EU Fuel Quality Monitoring – 2013 Summary Report

Final report to the European Commission DG Climate Action

Ref: DG ENV. 070307/572479/SER/C2

Report for European Commission DG Climate Action

Ricardo-AEA/R/ED56267
Issue Number 1
Date 14/11/2014

Customer:
European Commission DG Climate Action
Customer reference:
DG ENV. 070307/572479/SER/C2
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Ricardo-AEA reference:
Ref: ED56267- Issue Number 1

Contact:

Anna-Liisa Kaar
Ricardo-AEA Ltd
Gemini Building, Harwell, Didcot, OX11 0QR
t: +44 870 190 3270
e: Anna-Liisa.Kaar@ricardo-aea.com
Ricardo-AEA is certificated to ISO9001 and ISO14001

Authors:

Anna-Liisa Kaar, Andrea Demurtas

Approved By:

Nikolas Hill

Date:

14 November 2014

Signed:

Executive Summary

Introduction

This report produced for DG Climate Action represents a consolidation of the thirteenth year of Member States' submissions under Directive 98/70/EC[1], summarising the quality of petrol and diesel in the Community for the year 2013. Specifications for petrol and diesel sold in the European Community are included in the Directive. Three sets of fuel specifications are included, the first entered into force on 1 January 2000 and the second entered into force on 1 January 2005. A third specification for automotive road fuels came into force on 1 January 2009 and limits the sulphur content of all automotive road fuels in the EU to 10 ppm. Additional requirements were defined in the European Standard for fuel quality monitoring systems, EN 14274:2003, valid from 2004 under Directive 2003/17/EC. Under the Directive Member States were required to report for the first time by 30 June 2002 for the preceding calendar year (i.e. 2001).

The Directive also stipulates that Member States are required to report summaries of the quality of fuels sold in their territories. The original reporting format for this was laid out in Commission Decision 2002/159/EC of 18 February 2002[2]. The requirements of the Directive have changed with the introduction of new fuel specifications and reporting requirements. It is therefore anticipated that a new Commission Decision on the common reporting format for Fuel Quality Monitoring report will be released in line with these changes. All Member States receive an annually updated reporting template in order to ensure inclusion of all pertinent details to enable European wide analysis and comparison of Fuel Quality Monitoring results. This template follows the reporting requirements outlined in Commission Decision 2002/159/EC and is annually reviewed and agreed with the Commission. The 2013 reporting template has been included as an appendix to this report.

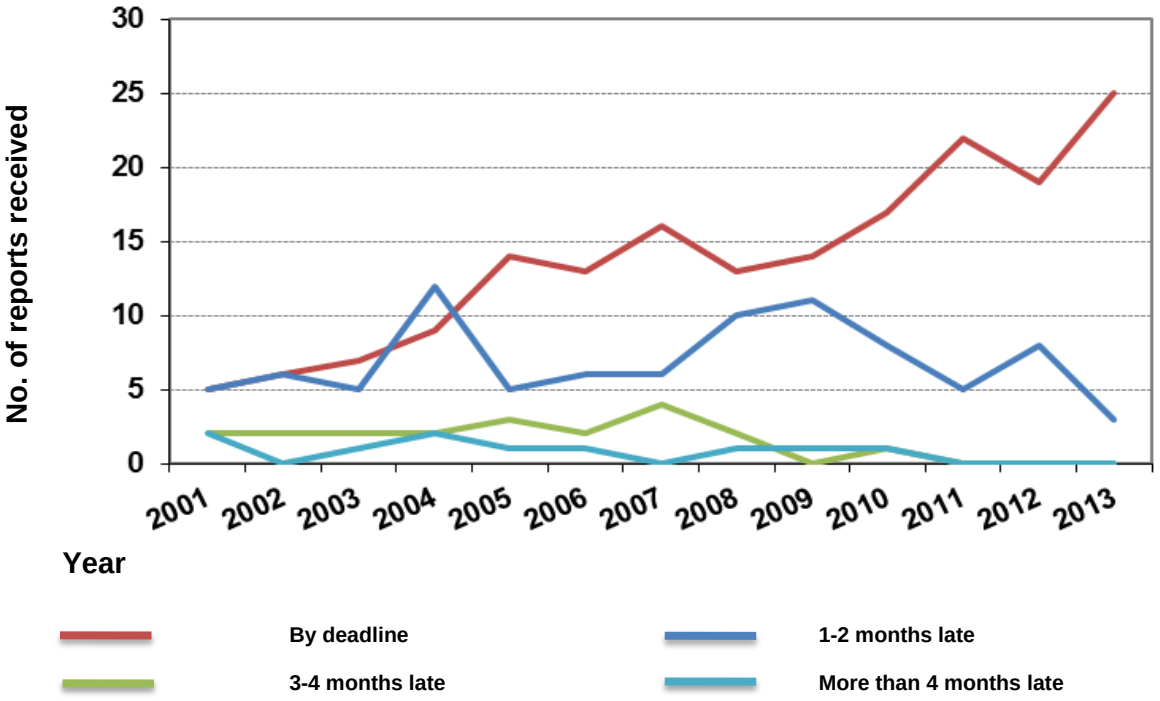
In 2013, all Member States have complied with the new fuel specifications. These specifications state that all automotive road fuels available on the market from 1st January 2009 contain less than 10ppm sulphur content. In addition, Member States have begun to report fuels with added ethanol from biofuels, which is a mandatory reporting requirement from 1st January 2011 under Directive amendment 2009/30/EC.

In 2013, all Member States submitted their reports in the Commission-approved template provided. Of the 28 annual FQMS reports, 25 were received by the reporting deadline, 30th June and the remaining 3 within the following month. Figure 1-1 presents reporting submissions (of reports received in the standard template) compared to the deadline from 2001. There is a clear improvement in the timeliness of submissions in 2013 compared with previous years - more timely submissions, and for the first time, no submissions over one month late. Late submissions can be for example due to delays in internal approvals within Member State departments.

Fuel sales in the EU in 2013 were heavily weighted toward diesel with 243,517 million litres of diesel fuel sales compared to 106,083 million litres of combined petrol grade fuel sales. Of the petrol fuel grades, very small amounts of RON 91 were still available on the market with sales of only 369 million litres (0.35%); RON 95 - 98 totalled 14,336 million litres (13.5%); RON 98 totalled 3,394 million litres (3.02%), whilst RON 95 represented the majority of petrol fuel sales with 87,984 million litres (82.9%). In diesel, the B7 grade represented the majority of sales with 241,948 million litres sold (99%). B+ and no FAME diesel totalled 1,570 million litres.

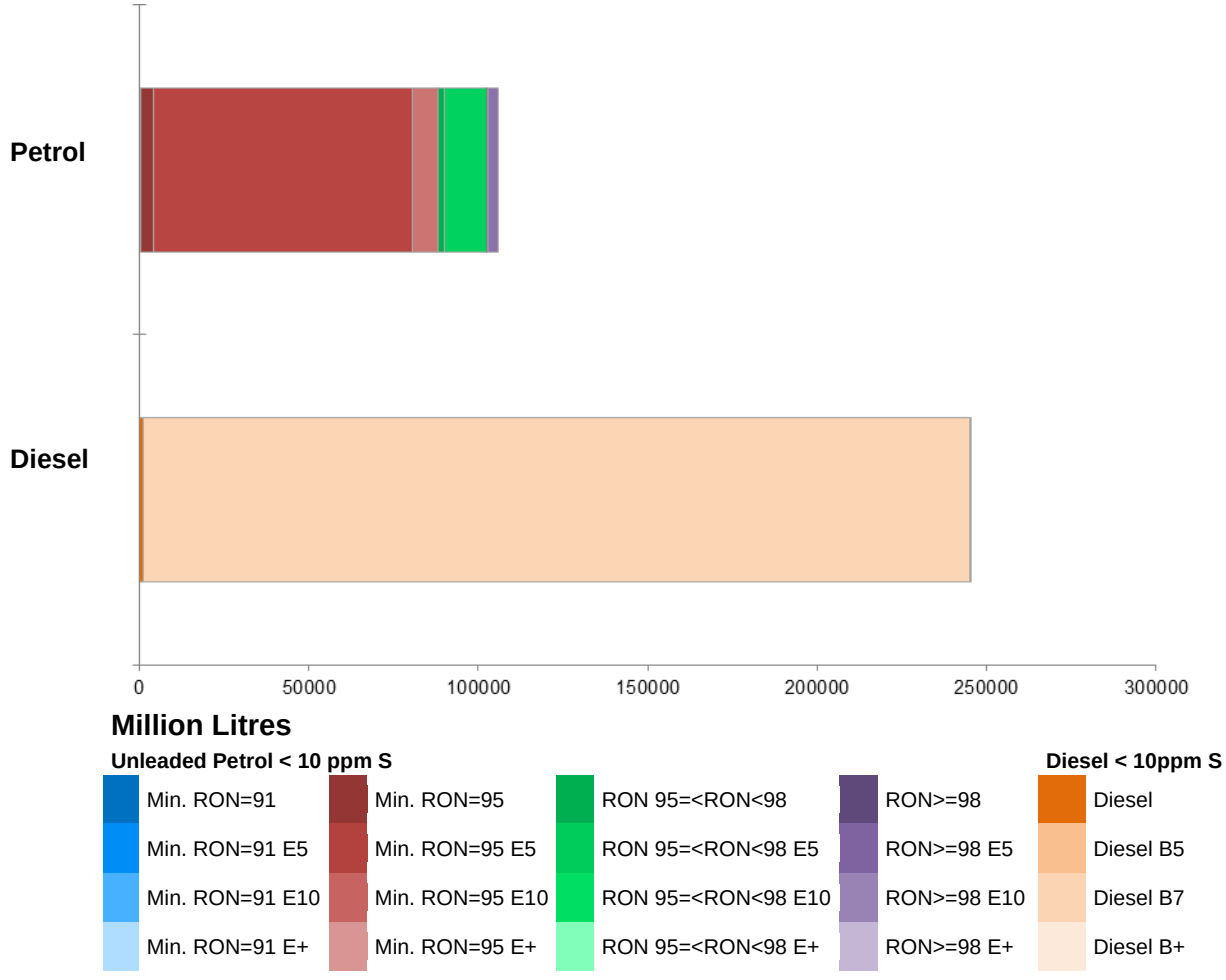
[1] O.J. L 350 of 28.12.1998, p. 58
[2] O.J. L 53 of 23.2.2002, p.30

Figure 1-1: Temporal trends in the punctuality of report submissions



*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. The EU expanded in 2004, 2007 from 15 to 27 Member States and in 2013 to 28 Member States.**

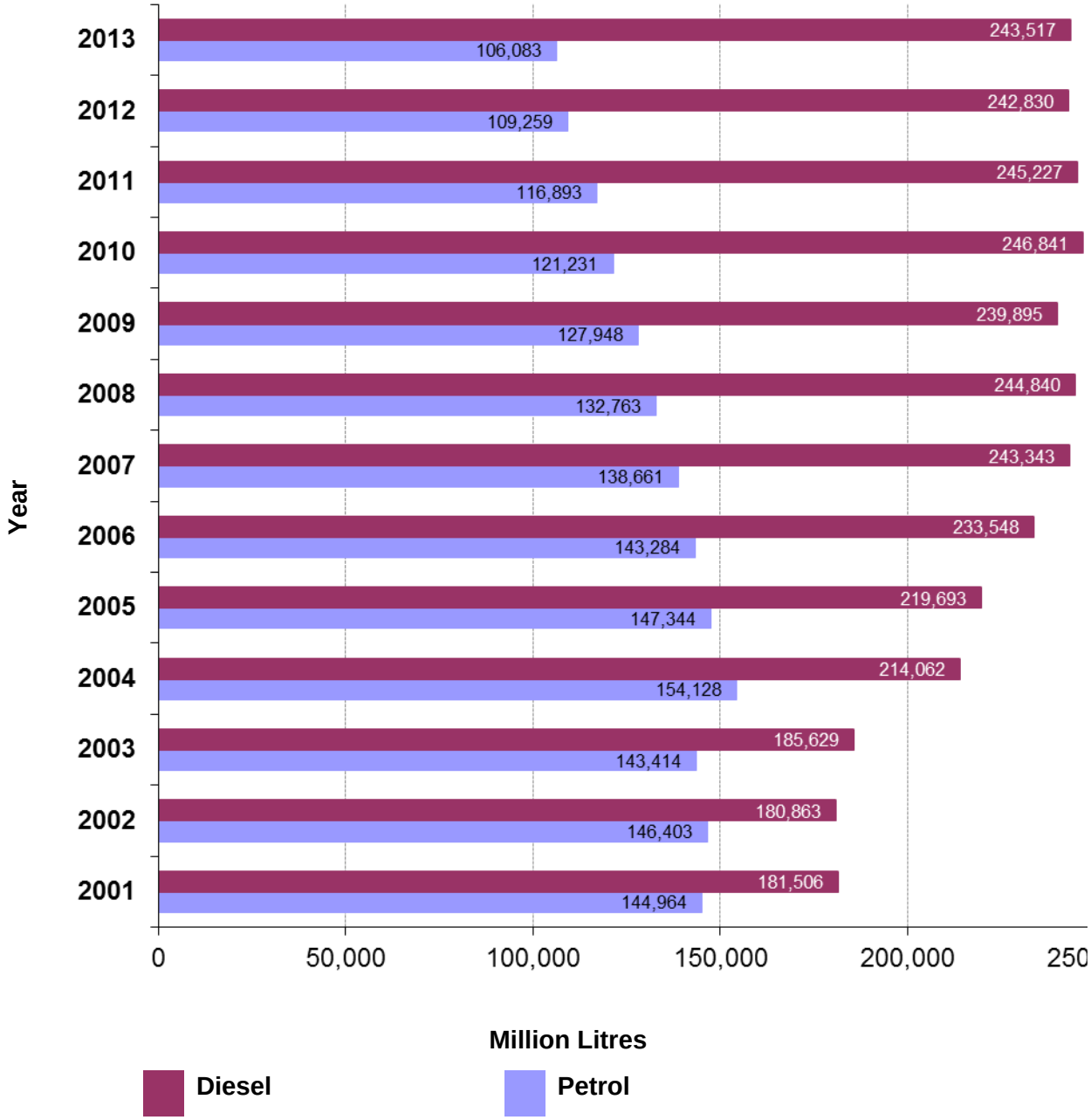
Figure 1-2: EU Fuel Sales volumes by fuel type[3]



[3] In addition, 7 million litres of RON 98 E15 and 104 million litres of E85 petrol was reported to have been sold on the EU market in 2013.

The overall EU-wide fuel sales in 2013 (see Figure 1-2) remained similar to sales in recent years, with a further decrease in petrol (reduction of 3,176 million litres compared to 2012) and an increase in diesel (increase of 688 million litres compared to 2012) fuel sales. This resulted in a total decrease of 2,488 million litres (0.71%) of automotive road fuels sold from 2012 to 2013.

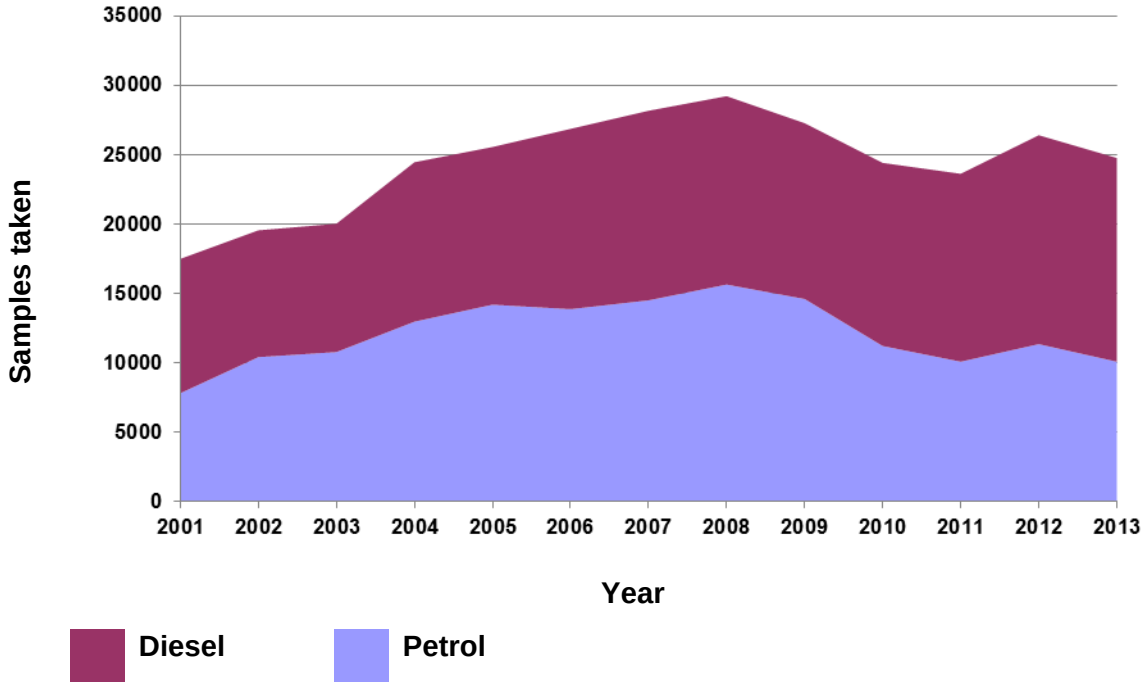
Figure 1-2: Temporal trends in EU fuel sales



*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. In addition, the EU expanded in 2004, 2007 from 15 to 27 Member States and in 2013 to 28 Member States.**

Figure 1-4 shows the total samples taken in the EU temporally from 2001 to 2013.

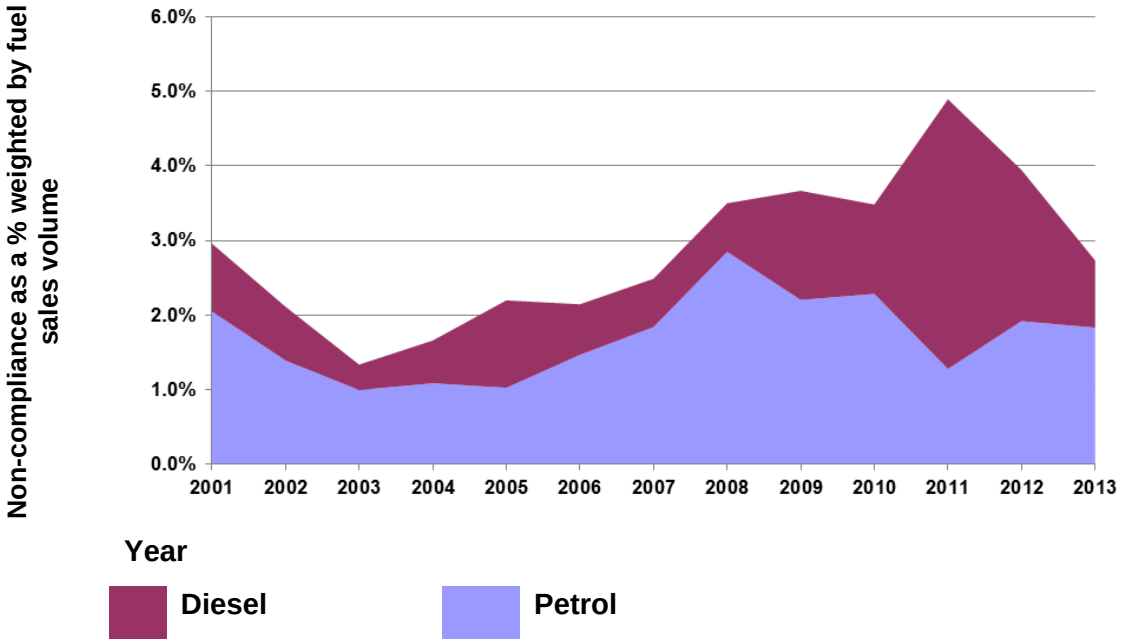
Figure 1-3: Temporal trends in sample quantities



*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. Also, the EU expanded in 2004, 2007 and in 2013 to 28 Member States.**

Samples exceeding tolerance limits and number of samples taken as reported by each Member State, combined with sales volume in each territory, have been used to determine volume weight of fuels exceeding tolerance limits, shown in Figure 1-5. This shows an overall decrease in 2012 and 2013 compared to the peak in 2011, which saw a spike in the number of diesel non-compliances. Compared to last year, petrol non-compliances have overall remained on the same level, however diesel non-compliances have shown a great decrease from 2% to 0.9%.

Figure 1-4: Temporal trends in total limit value non-compliances for petrol and diesel fuels



*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. Also, the EU expanded in 2004, 2007 and 2013 from 15 to 28 Member States.**

Key areas for improvement

- Some Member States are unable to confirm sales figures at the time of submitting the original report and request updates to their report after the submission deadline date. These requests are honoured wherever possible; however Member States should endeavour to submit their complete and accurate reports by the 30th June.
- Reporting templates have been developed and disseminated to all Member States in order to enable accurate, consistent, replicable and comparable reporting. Member States are encouraged to provide their annual FQM report in the template provided to assist with the timely analysis and reporting of EU-wide results. The report template is also updated annually to reflect changes as new requirements superseded those outlined originally in Directive 98/70/EC. It is anticipated that a new Commission Decision will update the Common Reporting Format for Fuel Quality Monitoring reports.
- As in previous years, some Member States basic numerical data appears to be inconsistent when scrutinised by analysis. Most inconsistencies are minor – for example contradictory sample numbers when comparing those in reporting sheets with those cited in the sales reporting table. These errors are not insurmountable. Currently they delay reporting and in some cases make the correct number of samples impossible to determine, resulting in some anomalous figures.
- The majority of Member States have submitted complete reports that contain all information requested for 2013 by the Commission. However, some have not provided additional statistical detail about sample results requested for 2013, such as the first and third quartile. This information has been requested in order to enable more complete statistical analysis of the sample results and EU-wide comparison of fuel quality between Member States (though it is not mandatory). Countries who have not provided this additional level of detail are the Netherlands and Sweden; however, some other Member States did not provide full information for some grades or did not test all the requested parameters with a sufficient number of samples to allow this type of analyses.
- Some Member States are not providing information about test methods, or the source of sales data, in their reporting. This makes it difficult to assess compliance with the Directive. Member States could include more information in future reporting.
- The test which revealed the largest number of samples exceeding tolerance limits, was the summer vapour pressure limits test. Many Member States reported that this was a result of service stations being slow to transition from summer to winter fuel grade, and vice versa due to low sales volumes. Member States could be clearer about the transition periods during which time the winter/ summer fuel grades are replaced with corresponding fuel grades for the opposite season. If Member States are reporting samples taken during the transition period, which are subsequently found to be out of specification, this should be made clearer.
- Some Member States are not fulfilling the minimum seasonal sampling requirements for some fuel grades, under EN 14274 and/or against the statistical model they are using. Others report that sufficient samples were taken but some parameters are tested in very low quantities. Any samples taken from terminals/ refineries should be reported in addition to those taken at service stations, to highlight any issues of contamination in the supply chain, whilst still assessing fuels at point of use.
- Some Member States are using a statistical model that may not be the most appropriate for their country, or using a national model, but not providing sufficient evidence to demonstrate equivalence with EN 14274 standards.

Table of Contents

1 Introduction

Key Messages

This report summarises the quality of petrol and diesel in the Community for the year 2013.

Concerns over air quality and climate change have grown significantly in the past decade. Transport is a significant contributor to emissions of greenhouse gases and other pollutants that are harmful to human health. The European Union has introduced specifications on fuel quality in order to reduce these emissions.

This report provides an EU-wide summary of the analysis used to assess of the quality of automotive road fuels available in the community during 2013, and subsequent results. In addition to the EU-wide analysis, Member State reports are summarised in individual chapters. This report is accompanied by an online database, to be made publicly available by the Commission, which provides Member State data in its original form.

This section outlines the key amendments to the Directives and implications for FQM reporting. The specifications and reporting formats have evolved since the first Directive entered into force in 1998. The most recent amendments entered into force in 2009 are discussed in detail at the end of this chapter.

Directive 98/70/EC[4], introduced specifications on the quality of petrol and diesel available within the European Community. The specifications for petrol and diesel sold in the European Community are included in the Directive for each parameter to be reported. Three sets of fuel specifications are included in the Directive; the first entered into force on 1 January 2000, the second entered into force on 1 January 2004 and both were superseded by specifications outlined in Directive 2009/30/EC which came into force on 25th June 2009 (which amended and widened the scope of Member States FQM reporting obligations as well as updating fuel specifications). The Directives have also effected a reduction in the sulphur content of automotive road fuels with the maximum sulphur content limit of 10ppm coming into force on the 1st January 2009.

The Directive also stipulates that Member States must report on the quality of fuels sold in their territories. The original reporting format for this was laid out in Commission Decision 2002/159/EC of 18 February 2002[5]. Additional requirements were defined in the European Standard for Fuel Quality Monitoring Systems, EN 14274:2003, required from 2004 under Directive 2003/17/EC.

Directive 2009/30/EC[6] of 23 April 2009 has introduced a number of new requirements to fuel quality monitoring reporting, summarised briefly as follows:

- Article 7a – with effect from 1 January 2011, Member States are required to collect lifecycle GHG emissions characteristics for fuels within their national territories from suppliers with further obligations to reduce GHG emissions according to a predetermined timeline.
- Introduction of a new grade of petrol with up to 10% ethanol by volume.
- Provisions for a derogation whereby petrol fuels with added ethanol may be subject to higher summer vapour pressure limits, where the increase in vapour pressure corresponds with the additional ethanol content and the ethanol added is a biofuel.

[4] O.J. L 350 of 28.12.1998, p. 58
[5] O.J. L 53 of 23.2.2002, p.30
[6] O.J. L 140 of 5.6.1010

- Article 8a - Metallic Additives (MMT) to be limited to 6 mg Manganese per litre from 1 January 2011 (with a subsequent reduction in 2014) and the presence of MMT in fuels shall be labelled clearly at the point of sale.
- Revisions to the definition of 'Severe' or 'Arctic' conditions based on temperatures being below the EU average.
- A requirement for Member States to ensure that suppliers market petrol with a maximum oxygen content of 2.7 % and a maximum ethanol content of 5 % until 2013.

Member States are required, under the Directive, to report on fuel quality monitoring findings of the previous calendar year by 30 June. The first year of reporting was 2002. The 10 new Member States joining the EU in 2004 submitted their first reports in 2005 for the period between May and December 2004. Bulgaria and Romania joined the EU in 2007, and both countries voluntarily submitted reports for 2006. After joining the EU in 2013, Croatia has submitted its first report for 2013. A summary of all the submissions received for the years 2001 to 2012 have been presented in previous reports.

The FQM reporting template was originally developed in line with Commission Decision 2002/159/EC and is updated on an annual basis to reflect changing requirements and to encourage accurate and complete reporting from Member States. The Member States submitted reports for 2013 with varying degrees of completeness and accuracy. Some Member States still do not sample and test according to test methods outlined in the Directive.

The majority of Member States have submitted complete reports that contain all information requested for 2013 by the Commission, including additional statistical detail (the 25% point of sample values, the median and the 75% point of fuel sample values) firstly requested in 2012. This information has been requested in order to enable more complete statistical analysis of the sample results and EU-wide comparison of fuel quality between Member States. For 2012, Romania, the Netherlands and Sweden did not provide the additional information; for 2013, the Netherlands and Sweden have again not followed with the request, while Romania has.

Overall, the improvement in the quality of submissions recorded last year has continued, with good levels of completeness, quality and timeliness of Member State reporting under the Fuel Quality Directive compared with recent years.

1.1 Report Structure

The original FQM reporting template was developed in 2004, agreed with the European Commission and validated at expert meetings with stakeholders. The stakeholders included Member State and EU candidate country representatives, the auto industry and the oil industry. The reporting format for 2013 can be found in the Appendix in section 35-2.

Section 1	This introductory section outlines the background and context of the Fuel Quality EU Summary report.
Section 2	Outlines the format for the summary chapter on each EU Member State, along with an explanation of the fuel quality monitoring and reporting requirements assessed in each part of the chapter.
Sections 3 & 4	Provides an overall EU summary, discussion of the 2013 reporting and conclusions/recommendations for future reporting.

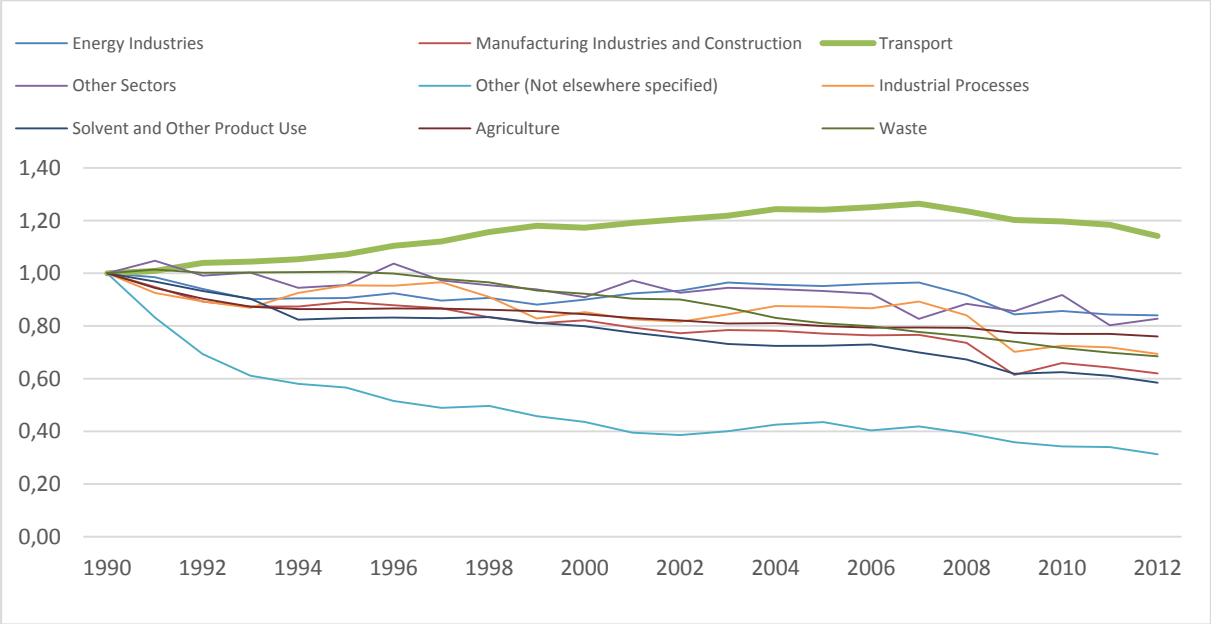
Section 5 - 32	Provides a more detailed summary of the information reported by individual EU Member States. This includes information on: • Fuel availability; • Summary descriptions of the monitoring systems in place; • Detailed descriptions of the fuel quality monitoring system; • Compliance with sampling, reporting requirements and with Directive 98/70/EC limits; • Temporal trends; • Sales of fuels per Member State; • Statistical Analysis
Section 33	Discussion and Conclusion
Section 34-35	• Glossary • Appendices which provide further detail on the specifications used for the analysis, the 2013 reporting format.

1.2 Context

Concerns over air quality and climate change have grown significantly in the past decade. Reduction of fuel consumption and associated greenhouse gas and other emissions has therefore become a higher priority for governments, the public, vehicle manufacturers and the fuel industry alike. Transport is a significant contributor to carbon dioxide (CO_2), as well as other emissions, and with transport demand ever increasing. The extent of the recent growth in transport emissions is reinforced by Figure 1-1, which presents a sectorial split of trends in CO_2 emissions from 1990 - 2012. Whilst the CO_2 emissions from other sectors have levelled out or have begun to decrease, transport's CO_2 emissions have risen steadily since 1990, with only a dip after 2007 - attributed in the most part due to the global economic downturn.

By far the largest single portion of transport emissions derives from passenger cars, which account for around half of the total transport CO_2 emissions in the European Union. Fuel quality has strong links to both CO_2 and air quality related emissions; the following sections briefly outline the main policy drivers relating to fuel consumption, CO_2 emissions, air quality and their influence on fuel quality legislation.

Figure 1-1: Carbon dioxide emissions by sector EU-28 (indexed 1990=1)[7]



1.2.1 Fuel Consumption and Carbon Dioxide Emissions

The Community's strategy[8] to reduce CO_2 emissions from passenger cars and improve fuel economy is aimed at delivering an average CO_2 emission value for new passenger cars. The automobile industry has also committed itself through voluntary agreements to improving the fuel economy of vehicles. Additionally on 7 February 2007, the Commission adopted Communication (COM (2007) 19) outlining a comprehensive new strategy to reduce CO_2 emissions from new cars and vans sold in the European Union. Furthermore, on 17 December 2008, the European Commission adopted a new schedule (Regulation *(EC) No 443/2009)* to phase in emission standards. New legislation adopted in 2014 laid down the modalities of the 2020/2021 targets for cars and vans and also asked the Commission to come forward with post-2020 targets by the end of 2015[9]. The Commission has also introduced compulsory requirements aimed at the gradual decarbonisation of road fuels, through the amendment of the Fuel Quality Directive under Directive 2009/30/EC (discussed later in Section 1.2.4).

The automobile industry attached a great importance to the availability of low sulphur (<50 ppm) and sulphur-free (<10 ppm) fuel to meet both the mandatory emission limits for nitrogen oxides (and diesel particulates) and the targets for reduced CO_2 emissions. Sulphur free fuels enable the use of improved catalytic technology and reduce particle emissions. Under the Directive 2009/30/EC, Member States have been required to implement *mandatory full conversion* to sulphur free fuels from 1 January 2009 onwards. This represents the fourth year of reporting since mandatory conversion.

In previous years, this report placed significant emphasis on the sulphur content of fuel grades. These sections have now been reduced as all fuel grades are now 'sulphur free' fuels (<10ppm sulphur content). Individual incidences where sample results indicate that the sulphur content exceeds Directive specifications will be highlighted within Member State report sections compliance tables.

[7] Source: EUROSTAT [env_air_gge] [Link]
[8] COM(95) 689 final, supported by the Council in 1996 and the European Parliament in 1997
[9] http://ec.europa.eu/clima/policies/transport/vehicles/index_en.htm

1.2.2 Life Cycle Greenhouse Gas Emissions

Transport fuel makes a significant contribution to overall Community greenhouse gas (GHG) emissions. One of the key changes in reporting requirements resulting from Directive 2009/30/EC is Article 7a on life cycle greenhouse gas (GHG) reporting. This article states that Member States must designate the supplier(s) responsible for monitoring and reporting life cycle GHG emissions per unit of energy from fuel and energy supplied. According to the 2009 amendment, from 1 January 2011 onwards, the suppliers were required to report annually:

a) Total volume of each type of fuel or energy supplied, indicating where purchased and its origin;

b) Life cycle GHG emissions per unit of energy.

The aim of Article 7a is to ensure that a fuel supplier makes choices to achieve a reduction in aggregate GHG intensity for the fuel supplied to road transport and additionally to non-road mobile machinery (NRMM), inland waterways and rail networks. Directive 2009/30/EC also introduced a 10 ppm sulphur limit on NRMM fuels effective from 2011. Suppliers should, by 31 December 2020, reduce life cycle GHG emissions by up to 10% per unit of energy compared to 2010 levels. At least 6% of this target is expected to be achieved via the increased use of biofuels, the increased use of alternative fuels, and/or reductions in flaring and venting emissions and fuel production and refining facilities (i.e. reduction in lifecycle emissions of conventional fossil petrol and diesel fuels). Subject to review, a further 2% reduction should be obtained through the use of environmentally friendly carbon capture storage technologies and electric vehicles. An additional further 2% reduction should be obtained through the purchase of credits under the Clean Development Mechanism of the Kyoto Protocol.

Annex D of Directive 2009/28/EC sets out a list of typical and default life cycle GHG emissions for a number of biofuel and bio liquid production pathways. The default values will be used unless the producer can demonstrate their emissions are lower than those that were assumed in the calculation of the default values. Annex C of the Directive sets out the methodology for calculating the life cycle GHG emissions from the production of biofuels. The biofuels used for compliance with the 6% reduction in life cycle GHG emissions should be sustainable and are required to fulfil sustainability criteria. These sustainability criteria are set out in Directive 2009/28/EC.

However, since the 2009 Directive amendment there has been a delay in the implementation of the GHG intensity monitoring and reporting activities, due to difficulties agreeing the details of implementation with Member States and the methodology for fossil fuels. On 6th October 2014 the Commission adopted a new proposal to implement existing obligations (COM (2014) 617) and lay down calculation methods for life cycle GHG emissions of fossil fuels and reporting requirements: *"The proposal establishes a method for calculating the carbon intensity for different fuel types, namely petrol, diesel, Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG). Each of these fuel types will be assigned a default value based on emissions produced over its entire life-cycle. From now on, suppliers will have to use these values when reporting the carbon intensity of their fuel supply to Member States to ensure a 6% reduction in their transport emissions in 2020."*[10]

1.2.3 Air Quality

In September 2005, the European Commission adopted a Thematic Strategy on Air Pollution, which defined the ambition level for further improvements in some key environmental problem areas related to air pollution in the European Community up to the year 2020. One of the key measures of the Thematic Strategy was a proposal for a new

[10] http://europa.eu/rapid/press-release_IP-14-1095_en.htm

Directive on air quality, bringing together a number of separate instruments into a single legal act[11], as well as introducing new limit values and exposure related objectives for $PM_{2.5}$. This new Directive[12] was adopted on 21 May 2008. Member States had two years from the date of adoption to transpose the Directive; until then the existing legislation generally applied, with some provisions of the new Directive to be implemented sooner.

Releases of carbon monoxide (CO), hydrocarbons (HC), nitrogen oxides (NO_x) and particulate matter (PM) from vehicles are covered under the vehicle emission standards (so-called Euro standards). These are all measured separately for petrol and diesel cars as well as light and heavy goods vehicle classes, and contain maximum permitted emissions over a standard drive cycle. There are currently six stages for cars and Light Commercial Vehicles (LCVs, i.e. vans) – conventionally labelled with Arabic numerals - that have progressively tighter emissions limits. Euro IV has been in force for new types of vehicles since 1 January 2005 and since 1 January 2006 for all new vehicles. A further two new standards, Euro V and Euro VI, were introduced in Regulation No 715/2007[13]. Euro V has been in force since 1 September 2009 for the approval of vehicles and as of 1 January 2011 for the registration and sale of new types of cars and vans and sets tighter emission limits of particles and NO_x for new cars and vans sold in the EU, for example an 80% reduction in PM emissions and a 20% reduction in NO_x emissions from diesel cars compared with Euro IV limits. Euro VI, which entered into force on 1 September 2014 for the approval of vehicles, sets significantly lower limits for NO_x emissions from diesel cars (68% lower than the current Euro 4 limits).

The emission classes for Heavy Duty Vehicles (HDVs) are also conventionally labelled with Roman numerals. Euro IV entered into force on 9 November 2006 for new types of vehicles, while Euro V entered into force on 1 October 2008 and set a 43% reduction in the NO_x emission limit compared to Euro IV. Euro VI emission standards were introduced by Regulation No 595/2009. The new emission limits became effective in 2013 for new type approvals and for all registrations in 2014 and set a 77% reduction in the NO_x emission limit compared to Euro V. The Euro VI standards also introduced particle number (PN) emission limits and lowered emission limits for several other pollutants (like CO, THC, NMHC, CH_4, NH_3). .

The stakeholder consultations for the Euro V and VI emission limits have shown that the only parameter of importance is the availability of sulphur-free fuels, which has since been implemented.

1.2.4 Fuel Quality

There are currently five key documents that set requirements for the quality of fuel sold in the EU and the monitoring and reporting of fuel quality. These are as follows;

- Directive 98/70/EC;
- Commission Decision 2002/159/EC;
- European Standard EN 14274:2003;
- Directive 2003/17/EC;
- Directive 2009/30/EC.

The parameters covered in the fuel quality standards outlined in Directive 98/70/EC fall loosely into two categories. The first include physical properties, such as octane number

[11] The Framework Directive 96/62/EC, the first Daughter Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air, the second Daughter Directive 2000/69/EC relating to limit values for benzene and carbon monoxide in ambient air, the third Daughter Directive 2002/3/EC relating to ozone in ambient air, and the Exchange of Information Decision 97/101/EC.
[12] Directive 2008/50/EC on ambient air quality and cleaner air for Europe.
[13] Regulation No 715/2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:171:0001:0016:EN:PDF

(RON and MON) for petrol; Cetane number and density for diesel. These need to be within certain limits in order for internal combustion engines to function efficiently, and have an impact on emissions of both air quality pollutants and CO_2. The second category includes fuel content that may be more directly linked to harmful emissions, such as hydrocarbons, sulphur and lead content. The standards are listed within Commission Decision 2002/159/EC.

A general ban on the marketing of leaded petrol was agreed by EU institutions from 2000. Sulphur is of particular interest as its presence in fuels can harm the effectiveness of several existing and emerging automotive technologies such as three-way catalytic converters, oxidation catalysts, NO_x absorber catalysts (NACs) and particulate traps. The mandatory limit for sulphur in 2005 was set at 50 ppm for petrol and diesel. Some EU states already provided fuel in previous years at <50 ppm ahead of this mandatory requirement. Debate as to whether the 2005 limit should be reduced further prompted the EC to launch a consultation with stakeholders in 2000[14]. The decision to amend Directive 98/70/EC resulted in a requirement for sulphur-free fuel (<10 ppm sulphur) to be made available *"on an appropriately balanced geographical basis"* from January 2005[15] (with annual reporting in availability[16]). Full mandatory conversion to sulphur-free petrol was to be implemented and achieved before 2009. The Commission did not find any grounds to propose prolonging that date. These requirements are implemented under the amended Directive 2003/17/EC[17].

The European Commission has conducted a review of the fuel quality Directive (98/70/EC). Following this review, the Commission made a proposal in early 2007 to modify certain aspects of the Directive, which was subsequently adopted as Directive 2009/30/EC. This is discussed in more detail later in this section. Further information on fuel quality monitoring and the Fuel Quality Directive is available from the Commission's website[18].

1.2.4.1 *Reporting on Fuel Quality from 2005*

Amendments to Directive 98/70/EC made in 2003 (Directive 2003/17/EC) required Member States to develop Fuel Quality Monitoring Systems (FQMS) in accordance with European Standard EN 14274:2003 and to implement these monitoring systems by 1 January 2004. A summary of monitoring and reporting requirements under the standard follows:

1. Specification of information requirements in order to set up the FQMS, including regional level data (number of refuelling stations, sales, population and number of vehicles);
2. The system is to be run twice a year, for the summer and the winter periods (as summer and winter fuels have different specifications);
3. Specification of the minimum number of sample sites of fuel grades required (in order to make the FQMS as robust and representative as possible), depending on the statistical model being used (chosen depending on the size of the country and how it is split into regions);
4. Specification of a list of all retail (public vehicle) and commercial (private fleet) fuel dispensing sites is required (by region) and that sampling should take place across randomly selected samples of these;
5. Specification of the minimum number of samples/sites for fuel grades with less than 10% of sales.

[14] The results of this consultation may be found on in the following report available on DG Environment's website: 'Consultation on the Need to Reduce the Sulphur Content of Petrol and Diesel Fuels Below 50 ppm: - A Policy Maker's Summary'. A report produced for the European Commission, DG Environment; George Marsh, Nikolas Hill and Jessica Sully, November 2000; AEA Technology Environment, UK.
[15] Directive 98/70/EC also specifies that Member States shall adopt and publish the laws, regulations and administrative provisions necessary to comply with the Directive by 30 June 2003.
[16] Article 8 of Directive 98/70/EC, as amended by Directive 2003/17/EC
[17] O.J. L76 of 22.3.2003, p. 10
[18] Fuel Quality Monitoring: http://ec.europa.eu/environment/air/transport/fuel.htm;
Fuel Quality Legislation: http://ec.europa.eu/clima/policies/transport/fuel/documentation_en.htm

Directive 2003/17/EC required that Member States report on the geographical availability of sulphur free fuels during the phase-in period before all fuels had to become sulphur-free, but neither the Directive nor EN 14274 defined what the appropriate geographical availability should be or how to measure this. These issues were addressed in Commission Recommendation 2005/27/EC, which contains guidance on what constitutes appropriate geographical availability and suggests a range of methods (options) by which Member States can calculate and report on geographical availability. However, the recommendations were not mandatory and many Member States did not supply this level of detail in their reports during the phase in period for sulphur-free fuels.

The progressive adoption of EN 14274 by Member States is leading to greater consistency in the data available for assessment of the various fuel quality parameters and Member States have been making efforts to improve their understanding of reporting requirements for the purposes of this summary report. However, there is an option in Directive 2003/17/EC, in which: *"the use of an alternative fuel quality monitoring system may be permitted provided that such a system ensures results of equivalent confidence"*. This means that some Member States use alternative systems, i.e. national systems, thus reducing both the ease of direct comparisons between different Member States and the guarantee of availability of certain data.

1.2.4.2 *Reporting on Fuel Quality from 2009*

EU Directive 98/70/EC as amended specifies mandatory quality requirements for all petrol, diesel and gas oil for use in non-road mobile machinery (NRMM) sold in the EU. The specified quality requirements are designed to deliver air quality benefits directly (e.g. by limiting lead and benzene content of petrol) or indirectly (e.g. by limiting sulphur content to enable efficient and durable operation of catalytic after treatment systems) and to standardise key operability parameters (e.g. octane rating of petrol and cetane number of diesel) to support a common market for vehicles.

The Commission's amendments to the original Directive (Directive 98/70/EC) delete a number of now obsolete requirements and Member States are required to bring laws, regulations and the administrative provisions necessary to comply with amendments to the Directive into force, no later than 31 December 2010. In addition, the amendments make a number of changes to requirements, summarised briefly as follows:

1. Introduction of a requirement for fuel suppliers to report on the lifecycle greenhouse gas emissions of their fuels.
2. Revision to the definition of 'Arctic or severe' conditions based on winter temperatures being below the EU average.
3. Amendment to the maximum distillation point of diesel fuels and gas oils for Member States with severe weather conditions.
4. Introduction of a new grade of petrol with up to 10% ethanol by volume (an increase in the current limit of 5%).
5. A requirement to update EN 590:2004 diesel fuel standards to enable placing diesel fuel with a higher bioethanol content on the market than provided for in the standard.
6. Creates provision for derogation (subject to Commission assessment), whereby petrol fuels with added ethanol may be allowed a higher summer vapour pressure where the increase in vapour pressure corresponds with the additional ethanol content and ethanol added is a biofuel.
7. Member States are required to ensure that suppliers market petrol with a maximum oxygen content of 2.7 % and a maximum ethanol content of 5 % until 2013. They may require the placing on the market of such petrol for a longer period if Member States consider it necessary. They shall also ensure the provision of appropriate information to consumers concerning the biofuel content of petrol and, in particular, on the appropriate use of different blends of petrol.

8. The Commission has been tasked with developing a test methodology for approving metallic additives for use in fuels.
9. Additionally, the presence of methylcyclopentadienyl manganese tricarbonyl (MMT) in fuel shall be limited to 6mg of manganese per litre from 1 January 2011; the limit will be reduced to 2mg of manganese per litre from 1 January 2014.

2 Member State Summaries: Reporting Format and Requirements

Key Messages

The Reporting Template has been provided to help Member States to comply with Fuel Quality Directive requirements. Use of the template is recommended to ensure that the reported information is complete, thus reducing the need for further clarification to be sought.

This section provides an outline of the presentation and format of Member State Fuel Quality Monitoring summary sections.

Information in the Member State summary sections has been provided by Member States either as part of their Fuel Quality Monitoring report for 2013, or following a request for clarification - where necessary.

The EU Fuel Quality Monitoring Submissions Reporting Template (Appendix 35.2) was designed based on the reporting requirements of the Directives and was updated most recently for 2013 reporting. The template has been provided to help Member States ensure that the information they report is complete, thus reducing the need for further clarification to be sought.

The Reporting Template is divided into mandatory reporting requirements under the Directives (including EN 14274 requirements) and optional reporting fields as per the Commission Decisions. Examples of these supplementary fields include test methods used for each parameter, which is important information to determine compliance with limit values, and the number of samples non-compliant with the limits and their values, which give an indication of the scale of the issue. Completion of these parts of the template reduces the need to seek clarifications or additional information from Member States. Provision has been made in the specifically designed reporting template to gather supplementary information in order to assist in the evaluation of the accuracy, reliability and compliance of Member States Fuel Quality Monitoring Systems.

The information reported by individual Member States, as part of their annual submission of national fuel quality data, includes:

- Sales quantities of different fuel grades;
- Summary descriptions of the monitoring systems in place;
- Compliance with sampling and reporting requirements and with Directive 98/70/EC limit values in the analysis of samples;
- Life cycle greenhouse gas emissions.

Box 1 summarises the requirements of the current five key documents relating to fuel quality monitoring and reporting in the EU.

Box 1: Key documents and requirements relating to fuel quality

Directive 98/70/EC

relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC

Specifies for the parent fuel grades, RON>91 petrol, RON>95 petrol and diesel:

- Limit values (and tolerance limits according to EN ISO 4259:1995) for each fuel parameter. The limit values are either a minimum (e.g. RON) or maximum (e.g. vapour pressure, DVPE).
- Test methods for monitoring the above.

Two sets of fuel specifications are included in the Directive, the first entered into force on 1 January 2000 and the second entered into force on 1 January 2005 (as amended by Directive 2003/17/EC). The Directive also stipulates that Member States are required to report summaries of the quality of fuels sold in their territories.

Commission Decision 2002/159/EC

on the common format for the submission of summaries of national fuel quality data

- Provides a common report template covering all parameters in Directive 98/70/EC.
- Reports to be submitted in both paper and electronic formats.
- Reports to be submitted by 30 June each year, data for the preceding calendar year.

European Standard EN14274:2003

Automotive fuels – Assessment of petrol and diesel quality – Fuel quality monitoring system (FQMS)

- Each Member State must establish a **Fuel Quality Monitoring System (FQMS)**, taking into account factors such as the number of refineries supplying the market, the number of fuel grades available and the sales volumes of different types of fuel.
- Builds on and expands the reporting format specified in Commission Decision 2002/159/EC.
- Summary of sampling requirements:

Sampling parameter	Requirement
By whom	Sampling by appointed organisations; analysis by accredited laboratories
Where	Refuelling stations
When	Separate summer and winter sampling and reporting periods
Number of sites	Minimum numbers for each of the summer and winter periods, according to statistical Model A, B or C or a national system.
Sample selection	Randomly in each region, to fulfil the minimum number of sample sites.
Methods	Specified in Directive 98/70/EC or EN228:2008 (petrol) and EN590:2009 (diesel) and EN 14275:2003.

European Standard EN14275:2003

Automotive fuels - Assessment of petrol and diesel fuel quality - Sampling from retail site pumps and commercial site fuel dispensers

- Determines sampling methodology and analysis and testing of samples for petrol and

diesel automotive fuels at retail site pumps and commercial fuel dispensers.

Directive 2003/17/EC

amending Directive 98/70/EC relating to the quality of petrol and diesel fuels

- In each Member State from 1 January 2005, sulphur-free (<10ppm) fuels were required to be made available "on an appropriately balanced geographical basis". From 1 January 2009 this limit was reduced to 10ppm for both petrol and diesel fuels.
- Requires Member States to annually report on the availability of sulphur-free fuels.

Directive 2009/30/EC

amending Directive 98/70/EC relating to the quality of petrol and diesel fuels

Key amendments brought into force by this Directive include:

- Article 7a - GHG Reporting whereby Member States are required to collect lifecycle GHG emissions characteristics for fuels within their national territories from suppliers with further obligations to reduce GHG emissions according to a predetermined timeline.
- Introduction of a new grade of petrol with up to 10% ethanol by volume.
- Provisions for a derogation whereby petrol fuels with added ethanol may be subject to higher summer vapour pressure limits where the increase in vapour pressure corresponds with the additional ethanol content and ethanol added is a biofuel.
- Article 8a - Metallic Additives (MMT) to be limited to 6 mg Manganese per litre from 1st January 2011 (with a subsequent reduction in 2014) and the presence of MMT in fuels shall be labelled clearly at the point of sale.
- Revisions to the definition of 'Severe' or 'Arctic' conditions based on temperatures being below the EU average.
- A requirement for Member States to ensure that suppliers market petrol with a maximum oxygen content of 2.7 % and a maximum ethanol content of 5 % until 2013.

The following sections outline the reporting structure used to summarise Member State reports.

2.1 Fuel Availability

For each Member State a table is presented listing the fuels that were reported to be available nationally, where full sales data were provided and the category under which sample analysis results were reported.

Sales in the EU of fuels containing more than 50ppm sulphur content were no longer permitted from 1 January 2005 and sales of fuels containing more than 10ppm sulphur content were no longer permitted from 1 January 2009. Therefore fuels under the previously defined categories that included these fuel grades - 1, 2, 4, 5, 7, 8, 10, 11 (for petrol) and 13, 14 (for diesel) - are no longer available and have been removed from the reporting template.

Table 2-1: Basic European fuel grade categories

Basic fuel grades	Fuel ID

Basic fuel grades	Fuel ID
Regular unleaded petrol (minimum RON = 91 & < 10 ppm sulphur)	**3**
Unleaded petrol (minimum RON = 95 & < 10 ppm sulphur)	**6**
Unleaded petrol (minimum 95 =< RON < 98 & < 10 ppm sulphur)	**9**
Unleaded petrol (minimum RON = 98 & < 10 ppm sulphur)	**12**
Diesel fuel (< 10 ppm sulphur)	**15**

2.1.1 Sales, sampling and reporting

2.1.1.1 *Sales*

This section shows the proportion of each of the fuel grade categories sold in the Member State. The charts are useful for comparing the degree to which different fuel grades have permeated the market in each Member State, as there is much variability across the EU.

There are three distinct levels of fuel grade categorisation, each a subset of the former level, under which Member States have previously reported sales quantities (or sample analyses). These levels are as follows:

1) **Parent fuel grades** – defined according to Directive 98/70/EC (i.e. minimum RON 91 unleaded or minimum RON 95 unleaded petrol);
2) **National fuel grades** – defined at a national level with additional requirements to the Directive parent grades, for example minimum RON 98 unleaded petrol, or sulphur-free fuels;
3) **Marketed fuel grades** – fuels may be marketed and sold by fuel suppliers as distinct grades with additional specifications beyond Directive and national requirements, e.g. higher RON levels (or sulphur-free fuel grades, previously).

In previous years, the Sulphur Content of fuel grades also represented a distinct categorisation, however this category is no longer applicable as all fuel grades are now 'sulphur free' fuels (containing less than 10ppm sulphur content).

2.1.1.2 *Sampling and reporting*

For each Member State a summary of reported sampling is provided, along with an assessment of compliance with the various elements of Directive 98/70/EC and EN14274.

Directive 98/70/EC specifies the parameters that are to be monitored for petrol and diesel fuels (19 and 6 parameters respectively). Member States are required under the Directive to use a monitoring system based on European Standard EN 14274, unless given dispensation by the European Commission to use their own national system where it is of equivalent statistical confidence. Where a National system has been utilised, information should be provided to demonstrate equivalence with EN 14274.

EN 14274 specifies separate reporting for summer and winter periods, and sets minimum sampling numbers for each fuel (dependant on the statistical model used and sales proportion). The standard specifies a minimum number of samples to be taken per fuel grade (in each of the winter and summer periods), see Table 2-2. This is to ensure a high level of statistical confidence (95%) that the results are representative of all the fuel sold in the territory.

Table 2-2: Fuel dispensing site sampling requirements for different Fuel Quality Monitoring Systems

Model	Samples per grade and per winter and summer period*	
	Small Country	Large Country
EN 14274 Statistical Model A	50	100
EN 14274 Statistical Model B	100	200
EN 14274 Statistical Model C	50	-
National System	-	-

* Annual sampling requirements are therefore double the table values per grade.

Any terminal and/ or refinery sampling should be carried out in addition to the minimum number of samples specified above.

The countries defined as "large" are France, Germany, Italy, Spain and the UK according to the definition contained in the European Standard EN 14274 (greater than 15 million tonnes automotive fuel sales per year). Individual Member States sections compare the FQM implemented by each Member State against the requirements outlined in Table 2-2.

The standard also specifies that individual samples are to be taken at separate refuelling stations. In Member States where sampling also takes place at other points of the distribution chain, the number/proportion of samples taken at refuelling stations needs to be reported and samples taken from other points in the distribution chain should be taken *in addition* to those from refuelling stations.

Definitions of the three statistical models from the standard are presented in Box 2, with the corresponding total sampling requirements previously identified in Table 2-2. In the macro region model (A), regions are defined with similar fuel sales and number of supply sources. For very small countries, such as Luxembourg, Malta and Cyprus, where there is basically only supply from one source, it does not make sense to divide the country into separate regions; therefore Model C may be applied. Other Member States, such as Ireland have also previously chosen to use Model C and in these cases a clear rationale for its use should be demonstrated on the basis of both number of fuel sources/supply points and size/possibility of division of the territory into regions. Similarly, Member States choosing to use own national systems should provide information on the fuel supply situation in their country and the statistical confidence of their system in order to demonstrate compliance with the Directive.

Box 2: Models for the FQMS defined in EN 14274:2003

Model A – Macro regions

In this model, the regions within the country are grouped (preserving some geographical identity) into macro regions so that they have similar total sales volumes relative to each other and also about the same number of different supply sources. This approach is recommended for countries as it is designed to capture fuel variation efficiently and hence requires a smaller number of samples. If geographical, and destructive or other circumstances do not allow fulfilment of the requirements for the design of this preferred model, Model B shall be considered the next best model.

Model B – Non-macro region

If the construction of macro regions (based on fuel supply patterns) is not possible within the country, then the country shall be divided into regions using only geographic and administrative criteria. To ensure that fuel variability is reliably captured, a large number of samples per grade are required: 100 for small-size countries and 200 for large-size countries.

Model C – Non-region model

If the country is small-sized and when it can be demonstrated that a division into macro regions or non-macro regions is not possible, having considered the procedures and provisions given in this European standard, then the country shall be considered as one region for sampling purposes.

2.2 Fuel Quality Monitoring

2.2.1 Description of system

This section outlines a summary of the key information components of the Member States individual Fuel Quality Monitoring System (FQMS), under the following headings:

Responsible organisation(s)	The organisation responsible for monitoring and reporting on fuel quality in the Member State, but not necessarily the actual sampling organisation which is often carried out by fuel companies or the organisation responsible for collation of fuel sales data.
Fuel Quality Monitoring System (FQMS)	EN 14274 statistical models A, B or C, or a national system.
Country Size	Classified as: Large (greater than 15 million tonnes automotive fuel dispensed per year), or Small.
Summer Period	1 May to 30 September (normal), or 1 June to 31 August (for Member States experiencing arctic or severe weather conditions). Different grades are available in the summer and winter periods. As far as reporting is concerned, the summer period is mainly relevant to vapour pressure limit values, however separate reporting tables on analyses for summer and winter periods are specified in EN 14274.
Location(s) of sampling	At refuelling stations (as required by EN 14274), and in addition, refineries or terminals/depots

Time/frequency of sampling	EN 14274 requires that sampling is undertaken in both the winter and summer periods
Specification of test methods	As per Directive 98/70/EC (as amended) tests should be carried out using methods specified in EN 590 (diesel) and EN 228 (petrol).
Collection of sales data	Details of who collates sales data; by the responsible organisation, from fuel companies or other sources.
Other details	This could include (for example) the number of refineries and distribution of fuel in the country, progress on implementation of EN 14274 or even full details and rationale for the use of a national system, plus any other details the Member State regards as pertinent to reporting.

2.2.2 Compliance with fuel quality limit values

This section provides details for each grade of fuel sold in the Member State on any non-compliance with the limit values specified in Directive 98/70/EC, and associated tolerance limits for the test methods. Where information has been provided by the Member States, it gives an indication of the number of non-compliances, their magnitude and statistical significance.

Directive 98/70/EC sets test methods, limit values and tolerance limits for a total of 19 parameters for petrol and 6 for diesel. The permitted test methods are those specified in Directive 98/70/EC or EN 228:2000 for petrol and EN 590:2000 for diesel, or later versions.

Each test method has a tolerance limit, based on the reproducibility of the method. The tolerance limit is the value that gives 95% statistical confidence of being equal to the limit value.

For each parameter Member States are required to report the minimum, maximum, mean and standard deviation of values, as per the reporting template. In addition from 2009, Member States were asked to provide the median for each parameter in order to aid statistical analysis. From 2010, Member States have been asked for two additional pieces of information to aid statistical analysis of EU-wide fuel quality; the first and last quartile of results (e.g. the results that represent 25% from minimum and 75% from minimum of all sample results). The Directive (and European Standard) does not require Member States to report the test method used for each parameter, although this information is required to confirm whether samples have exceeded limits where there is more than one possible method. Additional information is usually sought from Member States in order to determine compliance with the tolerance limits in these cases, because the test reproducibility (determining the tolerance limit) varies according to each specific analysis. Fields are provided in the Microsoft Excel© reporting template to allow Member States to provide this information with their submission.

This situation has been improved upon for the petrol and diesel distillation limit values in Directive 98/70/EC, for which the European Committee for Standardization (CEN) derived fixed precision statements (reproducibility) based on an extensive analysis of large sets of distillation data of petrol and diesel from national monitoring schemes. As recommended by CEN, these fixed precision statements were incorporated into the Excel reporting template and are now used to determine compliance where the reproducibility of a specific test is unavailable.

To facilitate improved compliance with fuel quality standards, Directive 2003/17/EC states *"Member States shall determine the penalties applicable to breaches of the national*

provisions adopted pursuant to this Directive. The penalties determined must be effective, proportionate and dissuasive." The Excel reporting template provides fields for Member States to describe punitive action taken against companies supplying non-compliant fuel.

In evaluating different Member State submissions there are clear variations in trends that emerge. Sample analysis results for different parameters show different trends with regards to levels of compliance with limit values and the range distribution of sample analysis results in relation to the mean and Directive limit values. In some cases the mean of sample values can appear very close to the Directive limit values even without any samples reported as exceeding tolerance limits. As part of the assessment of the compliance in relation to these analyses it is therefore useful to understand the reasons behind these differences.

Discussion with members of CEN Technical Committee 19, which deals with fuel quality issues, has helped provide valuable insight in this area. A summary of the parameters covered by the Directive and the likely proximity of the market quality to the limit values is presented in Box 3. Essentially there are at least three types of sample analysis distributions associated with the different fuel quality parameters:

1. Distributions for properties of relevant "economic" value, e.g. Research Octane Number (RON) for petrol and Cetane Number (CN) for diesel. In this case most results are just above the limit value (95 for RON and 51 for CN) and the distribution of sample analysis results is quite asymmetrical.
2. Distributions for properties that are quite easily fulfilled, e.g. percentage of petrol evaporated at 100°C. In this case the distribution of sample values is more normal (closer to a more typical symmetrical 'bell shaped' distribution).
3. Distributions for properties with tighter limits to be adopted in the near future (e.g. moving from <50ppm to <10ppm sulphur). In this case distributions are again not very normal as the decrease of sulphur content follows strategies that can be different from company to company and from region to region (and from country to country).

There is therefore no typical distribution curve associated with each test method (and these distributions can also change over time). A variety of functions might be generated to describe the distribution, based on the summary data supplied by each Member State, but these would not provide much insight unless one understands what is really motivating the particular refiner to meet the specification. The fuels supplied to many Member States are sourced from quite a wide variety of different companies (and different refineries from the same company). Therefore individual Member State submissions on analysis of sampling carried out across the fuel network will most likely contain a mix of fuels produced by different refineries with varying (and unknown) strategies. This means that the actual distribution curves of sample analysis would vary depending on the combination of these different fuels.

As a result there does not appear to be a suitable way available to statistically verify Member State submission analysis results with a level of demonstrable confidence with the available information currently provided. This would only be possible with the full sample analysis dataset, which would require a very significant additional reporting burden on Member States as well as a considerable increase in submission evaluation effort. There does not appear to be evidence to suggest this level of additional effort would provide significant benefits to the fuel quality monitoring process to warrant consideration.

Box 3: Key fuel parameters as regulated by the FQD

The following provides a brief overview (provided by CEN) of the parameters covered by the Fuel Quality Directive and the likely proximity of the market quality to the maximum or minimum limit value specifications:

Petrol

- *Research Octane Number (RON)*: It is usual for a refinery to be tight to specification on either RON or MON - it is unusual to be tight to both specs.
- *Motor Octane Number (MON):* This is usually the most limiting specification for European refineries.
- *Vapour Pressure for the Summer Period:* It is always difficult to meet this specification, whilst maintaining octane and not exceeding the maximum aromatics specification. Refineries try to maximise butane into the blend as it provides high octane but also has a high vapour pressure. The problem is made worse when ethanol is blended to the petrol due to its azeotropic effect causing a rapid increase in vapour pressure. It is therefore expected to see all countries tight to this specification.
- *Distillation:* This is generally not tight to specification, but may change in the future with the blending of ethanol, which causes a shift in the distillation curve.
- *Hydrocarbon Analysis:* Generally refineries will be tight to the maximum aromatics and benzene specifications. Some refineries will be tight to the maximum olefin specification but this is more unusual.
- *Oxygenates:* Due to the biofuels obligations in Europe there will be a move to be tight to the maximum ethanol, ETBE and oxygen specifications in future years.
- *Sulphur Content:* There are strong economic and supply reliability reasons for refiners to blend tight to the sulphur specifications. The industry tends to run tight to spec to maximise the hydrotreating catalyst lifetime and the energy consumption at the refinery. Thus for a 10ppm max sulphur specification blending is usually targeted around 8ppm max to account for downstream contamination issues in the distribution system where product can interface with 1000ppm gas oil and kerosene. Because of the uncertainty in testing this means that the real blend target can be as low as 6ppm. This is reaching the limit of the desulphurising capacity of the refinery and rapidly increasing energy consumption and reducing the catalyst life. The 10ppm sulphur specification is lower than may be required for many vehicle after treatment systems. In the USA legislation has settled on a maximum of 30ppm for petrol and 15ppm for diesel. Therefore, from an environmental perspective running tight to the maximum sulphur specification for sulphur-free fuels should not be construed as an indication of non-compliances.

Diesel

- *Cetane number:* There are strong economic drivers to upgrade lower quality high acid crude oils particularly as North Sea crude runs out. These lower quality crudes yield low cetane diesel that is brought up to specification by the use of cetane improver (2 ethyl hexyl nitrate). The cetane improver content is optimised such that cetane will be tight to specification at many refineries.
- *Density:* At the 845 kg/m^3 limit for this parameter it is unlikely that many refineries will be consistently tight to this specification unless they have medium/high pressure hydrofining. However, the blending of FAME (density approx. 890 kg/m^3) is likely to result in density being tighter to the maximum specification in the future as increasing amounts of biofuels will need to be blended with conventional fuels to achieve European biofuel targets.
- *Distillation 95% recovered*: This can be limiting but not all refineries are tight to this

specification.

- *Polycyclic aromatic hydrocarbons:* The highest European levels are around 8 - 8.5%, which is now tight to the maximum specification of 8%.
- *Sulphur content:* As for petrol there are strong economic and supply reliability reasons for refiners to blend tight to the sulphur specifications.
- *FAME content:* A maximum of 7% FAME content is permissible as regulated by Annex II of Directive 2009/30/EC; however there is also provision in Article 4.1 for Member States to market diesel fuel with FAME content greater than 7%. This has caused concerns amongst vehicle manufacturers as to the quality control of European fuels with regard to FAME.

2.3 Greenhouse gas emissions

From 2011, the amendments in Article 7a of Directive 2009/30/EC introduced a requirement for fuel suppliers to report on the lifecycle greenhouse gas emissions of their fuels and reduce these by up to 10% by 31 December 2020 compared with the fuel baseline standard. This GHG emission reduction is to be achieved through the use of biofuels and alternative fuels with reduced GHG intensity on a well to wheel basis. As a result, the extraction, refining and processing of fuels is also taken into consideration with the aim of encouraging greater movements towards reduced GHG intensity fuel supplies. Directive 2009/30/EC incorporates greater reporting obligations – and these obligations were scheduled to come into force with the 2011 Fuel Quality Monitoring report submissions. However, full reporting on GHG intensity is currently on hold whilst the methodological basis is being finalised – in particular relating to calculation of lifecycle emissions due to biofuels factoring in indirect land use change. These elements are addressed in a new Commission proposal to amend the Fuel Quality Directive posted in October 2012[19]. In addition a further proposal has been made in October 2014 (COM (2014) 617) to implement existing obligations and lay down calculation methods for life cycle GHG emissions of fossil fuels and reporting requirements.[20]

2.4 Temporal trends

Temporal trends are depicted in the individual Member State chapters in the form of either stacked area or line charts. This will include temporal trends of sales of fuels per Member State since reporting began.

In future years, with the submission of GHG Reporting, the EU Summary report will also begin to build a picture of the EU wide trends over time of GHG intensity.

2.5 Statistical Analysis

In addition to the assessment of Member States compliance with fuel quality limit values, each Member State report chapter features a section that outlines fuel quality performance within the national territory. Additional analysis and interpretation is made of the following parameters for petrol and diesel:

Petrol:

- RON (Research Octane Number)

[19] COM(2012) 595 final, Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources. Available at: http://ec.europa.eu/clima/policies/transport/fuel/docs/com_2012_595_en.pdf

[20] COM (2014) 617 final, Proposal for a COUNCIL DIRECTIVE on laying down calculation methods and reporting requirements pursuant to Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels. Available at: http://europa.eu/rapid/press-release_IP-14-1095_en.htm

- MON (Motor Octane Number)
- Vapour Pressure, DVPE which shows limit values for Member States with a low ambient temperature (Arctic) and those who do not have a derogation from the Commission (Normal)

Diesel:

- Density at 15 ^{o}C
- Distillation -- 95-%-Point

Member States have been asked for the additional information to carry out more detailed assessment on these parameters from 2010.

2.6 Member State Summaries

A summary has been prepared for each Member State listing the key areas for further improvement. The recommendations cover areas such as non-compliance or uncertainty about compliance, EN14274 sampling requirements, reporting issues and fuel availability. Recommendations are also presented for the current reporting year – and the previous 2 years. Given that the reporting is carried out per calendar year, data collection for the next reporting period will already be well underway by the time the EU Summary report provides key recommendations. Featuring the key recommendations for the past 3 years gives the opportunity to demonstrate that issues identified in earlier years are being addressed by the Member State. Examples of the types of recommendations include:

Key Areas for Improvement (example comments)		
	Monitoring	**Reporting**
2013	• MS is only carrying out sampling at refineries and depots. Samples should be taken from refuelling stations to comply with the Directive.	• No comment
2012	• MS is only carrying out sampling at refineries and depots. Samples should be taken from refuelling stations to comply with the Directive. • MS has not provided an explanation for utilising a National FQMS in place of the European Standard or its statistical equivalence to the standard.	• MS is reporting using an old reporting format, which results in missing information.
2011	• MS is not taking sufficient samples to comply with Statistical Model. • MS is only carrying out sampling at refineries and depots. Samples should be taken from refuelling stations to comply with the Directive. • MS is sampling at refuelling stations, terminals and refineries, however it is not clear what proportion has been taken from refuelling stations, therefore it is	• MS is reporting using an old reporting format, which results in missing information (required by Directive amends after the Commission Decision on a common reporting format). • MS was X months late in submitting its report. • MS reported a significant number of non-compliances with limit

Key Areas for Improvement (example comments)

Monitoring	Reporting
difficult to determine compliance according to sample numbers. • MS has not provided an explanation for utilising a National FQMS in place of the European Standard or its statistical equivalence to the standard.	values • MS is not/only partially compliant with reporting requirements, for example: • The MS did not sample/report all of the required reporting parameters (18 for petrol, 5 for diesel)

3 EU Summary

Key Messages

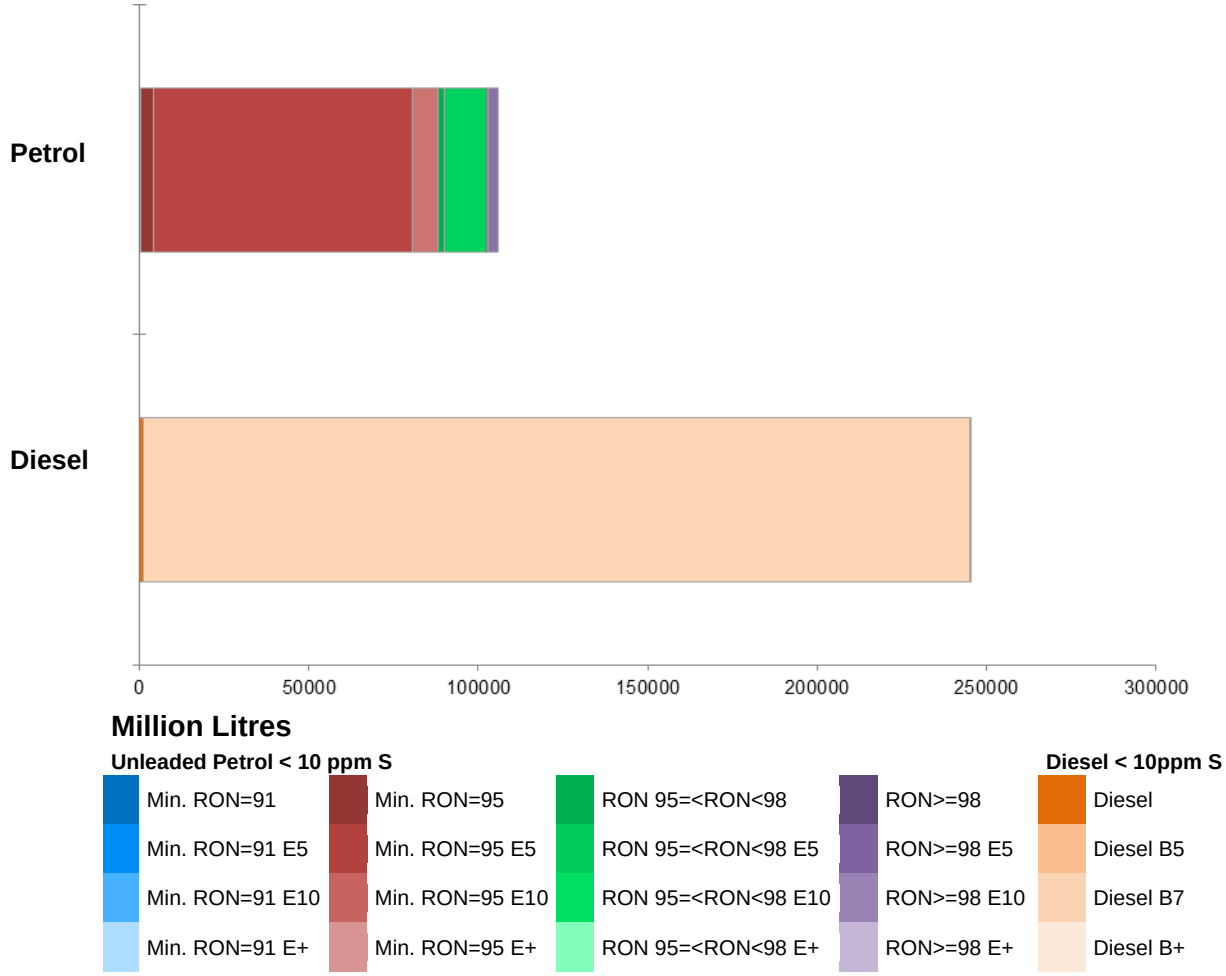
- **Member States continue to utilise diverse monitoring systems; 5 have opted to use EN 14274 statistical model A (Austria, Finland, Greece, Italy and Spain), 5 have used EN 14274 statistical model B (France, Germany, Poland, Bulgaria and Romania) and 10 have opted for EN 14274 statistical model C (Ireland, Portugal, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia). The remaining 8 Member States have used a national monitoring system.**
- **The level of detail from Member States is improving, which is in turn leading to** better **comparison**s between the **data.**
- **The increased level of detail within Member State reports can be seen within temporal trends as non-compliance appears to increase over time. How much this is due to more accurate reporting, or sampling at higher quantities is difficult to determine.**
- **Sampling patterns will also be affected by increases/ reductions to the number of fuel grades available on the EU market.**
- **Fuel sales in the EU in 2013 were heavily weighted toward diesel with over 243,517 million litres of diesel fuel sales compared to 106,083 million litres of combined petrol grade fuel sales.**
- **The only exceptions to this balance of fuel sales were Greece and Cyprus who both reported higher petrol fuel sales than diesel. Compared to 2012, the ratio petrol:diesel varied only marginally in most countries, with the exception of Estonia and Greece (respectively 4 and 3.6 percentage points increase in diesel share).**
- **Germany, France, UK and Italy had the highest volume of fuel sales in 2013 with 19.1%, 14.3%, 12.9% and 10.2% respectively of the share of EU fuel sales.**
- **Countries classified as 'Large' under the EN 14274 definition of fuel sales (whereby more than 15 million litres of automotive road fuel is dispensed per annum) in 2013 are: France, Italy, Germany, Spain and UK (65.2% of combined market share), with Poland reporting just below the minimum sales required to be considered a large country (the minimum sales required to report as large country is 15 million tonnes).**
- **Only Cyprus and Malta reported less than 1 million tonnes of automotive road fuel sales. Beside Malta and Cyprus, fuel sales were the least in Bulgaria, Slovenia, Croatia, Luxembourg, Slovakia, Lithuania, Latvia and Estonia which represent individually less than 1% of total EU fuel sales** each**.**
- **The average sulphur content EU-wide in 2013 for fuels remained below the limit of 10ppm mandated from 1st January 2009 in every Member State. In EU28, the average sulphur content in 2013** calculated from submissions **was of 4.8 ppm (Petrol) and 7.1 ppm (diesel).**
- **In general, of the 10,095 samples tested for petrol in 2013, 2.5% were found to be non-compliant (1.8% if weighted by fuel sales). Of the 14,764 samples tested for the 6 mandatory parameters for diesel in 2013, 1.1% of all samples were out of specification with Directive limits (0.9% if weighted by fuel sales).**

3.1 Fuel Availability 2013

3.1.1 Sales

Member States reported sales of 106,083 million litres of petrol in 2013. In addition, 7 million litres of RON 98 E15 and 104 million litres of E85 petrol was reported to have been sold on the EU market in 2013. As can be seen in Figure 3-1 and Table 3-1, very small amounts of RON 91 were still available on the market in 2013 with sales of only 369 million litres. RON 98 totalled 3,394 million litres, RON 95=<RON<98 totalled to 14,336 million litres, whilst RON 95 represented the majority of petrol fuel sales with 87,984 million litres. Temporal trends in fuel sales and the adoption rates of the differing fuel types have been discussed separately in Chapter 3.3 of the summary report. In diesel, the B7 grade represented the majority of sales with 241,948 million litres sold (99%). The remaining 1,570 million litres were split between diesel B0 (0.5% of total diesel sales) and diesel B+ (0.1% of total diesel sales).

Figure 3-1: EU Fuel Sales volumes by fuel type



*** In addition, 7 million litres of RON 98 E15 and 104 million litres of E85 petrol was reported to have been sold on the EU market in 2013.**

Table 3-1 gives fuel sales for each Member State according to fuel type in 2013 (as classified by the Member State).

Table 3-1: 2013 EU28 Fuel Sales by type

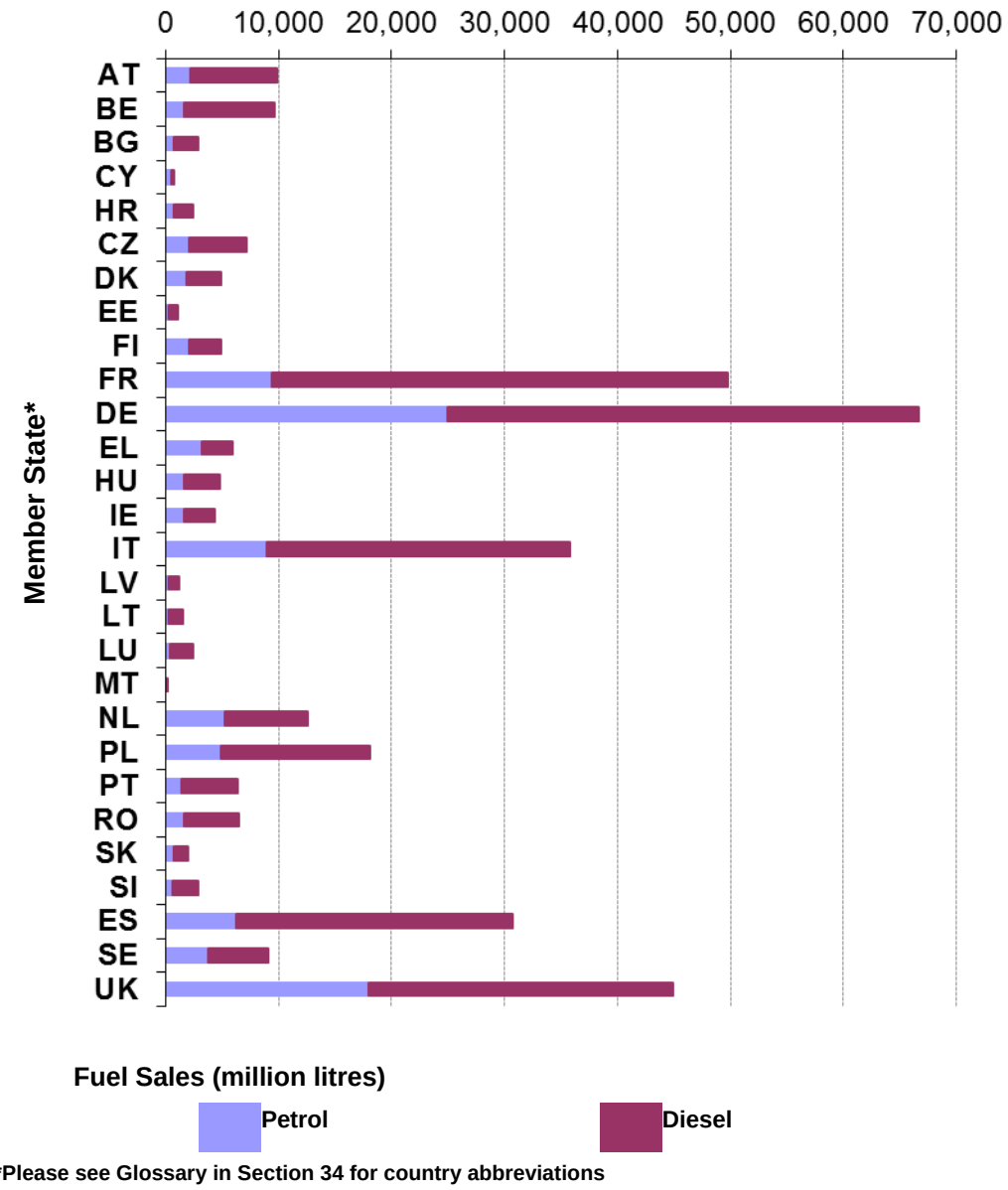
Fuel Type	Petrol Sales (million litres)					Diesel Sales (million litres)
Member State	**min. RON=91**	**min. RON=95**	**95=<RON <98 min. RON=98**	**RON ≥98**	**Total Petrol**	**Total Diesel**
Austria	31	-	2,151	53	2,235	7667
Belgium	-	1,389	-	278	1,667	8,011
Bulgaria	-	674	-	21	695	2,178
Cyprus	-	-	448	26	474	310
Croatia	-	693	24	25	742	1,682
Czech Republic	10	2,052	-	34	2,095	4,983
Denmark	322	1,503	1	-	1,827	3,032
Estonia	-	-	292	24	316	806
Finland	-	1,187	865	-	2,052	2,878
France	-	9,363	-	-	9,363	40,419
Germany	6	23,498	-	1,440	24,944	41,671
Greece	-	3,491	22	98	3,612	2,639
Hungary	-	1,537	-	48	1,585	3,244
Ireland	-	1,684	-	-	1,684	2,648
Italy	-	9,015	-	-	9,015	26,755
Latvia	-	251	23	-	273	889
Lithuania	-	262	-	8	270	1,288
Luxembourg	-	-	353	76	429	1,964
Malta	-	-	98	-	98	116
Netherlands	-	5,239	-	58	5,297	7,264
Poland	-	4,464	-	428	4,892	13,159
Portugal	-	-	1,360	103	1,464	4,867
Romania	-	-	1,585	91	1,676	4,807
Slovakia	-	691	-	13	704	1,317
Slovenia	-	-	591	32	623	2,213
Spain	-	-	5,872	424	6,296	24,411
Sweden	-	3,619	-	116	3,735	5,394
UK	-	17,370	650	-	18,020	26,904
Total	**369**	**87,984**	**14,336**	**3,394**	**106,083**	**243517**

Fuel Type	Petrol Sales (million litres)					Diesel Sales (million litres)
Member State	min. RON=91	min. RON=95	95=<RON <98 min. RON=98	RON ≥98	Total Petrol	Total Diesel
Market Share	0.35%	82.94%	13.51%	3.20%	100%	100%

Figure 3-2 shows the proportion of fuel sales per Member State by fuel type (aggregated by fuel type; petrol and diesel). The breakdown emphasizes some key trends:

- Diesel dominates the market in all but two of the 28 represented Member States with petrol fuels representing 57.8% share of Greek fuel sales and 60.4% of Cypriot fuel sales.
- Belgium, on the other hand, demonstrates the heaviest dependence on diesel fuel with 82.8% diesel share of the market. Above 80% of diesel share can also be found in Lithuania (82.7 %), Luxembourg (82.1%) and France (81.2 %).
- The greatest volume of fuel sales in 2013 took place in Germany, with 19.1% total EU fuel sales; the petrol:diesel sales ratio was 37.4%:62.6%. The next biggest market was France with a 14.3% share of EU petrol and diesel fuel sales; their petrol:diesel sales ratio was 18.8%:81.2%. UK fuel sales totalled 12.9% of all fuel sales in the EU with a ratio of 40.1%:59.9% for petrol:diesel.
- In most countries the tax rate for diesel is lower than for petrol (sometimes significantly), this coupled with the higher efficiency of diesel vehicles (vs petrol equivalents) and improvements to diesel cars has been a key driver in the shift to increasing diesel use in the EU.
- RON 95 is by far the most popular type of petrol fuel in most Member States, followed by 95<RON<98.

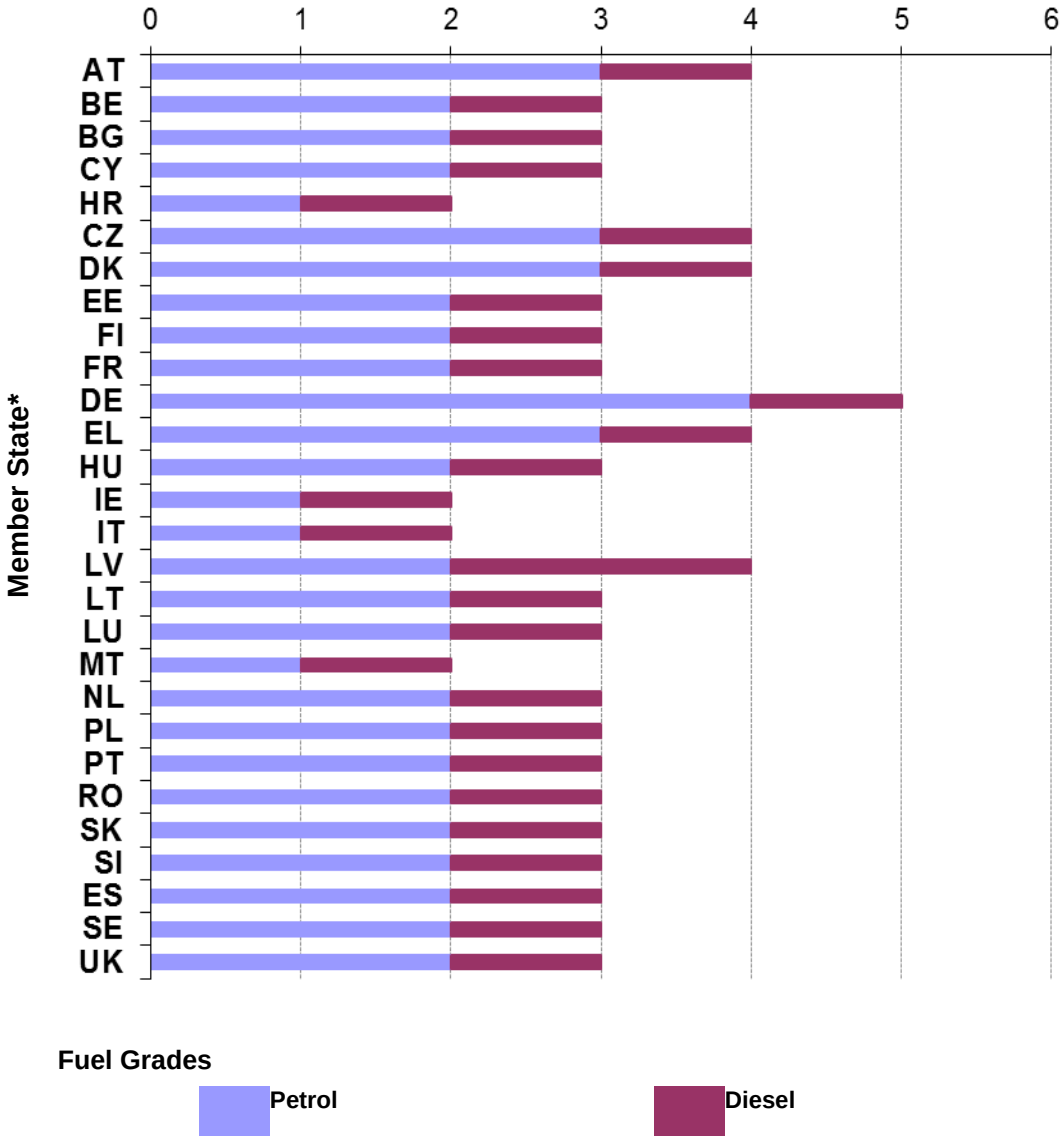
Figure 3-2: National fuel sales by fuel type across the EU (million litres)



*Please see Glossary in Section 34 for country abbreviations

Figure 3-3 provides details of the number of fuel grades available within Member States territories. In recent years there is a significant increase in the number of fuel grades on the market, with the introduction of fuels with variable ethanol/FAME content.

Figure 3-3: Number of Fuel Grades per Member State[21]



*Please see Glossary in Section 34 for country abbreviations

[21] Includes only fuels for which sampling statistics has been provided by Member States.

3.2 Fuel Quality Monitoring 2013

3.2.1 Description of systems

A number of different approaches have been used to implement Fuel Quality Monitoring Systems (FQMS) across the EU, with consistency between Member States methods improving slightly year on year. Approaches range from those based on European Standard EN 14274[22] that sample at a range of fuel retail stations through to national systems, where varying approaches are adopted.

Alternative monitoring systems may be permitted by the Directive, provided such systems ensure the results are of an equivalent confidence (although the criteria for assessing this are not specified). It is therefore not clear whether the existing systems not based on EN 14274 meet this criterion. In 2013, the majority of Member States have provided additional information about their selection of monitoring system (if using a statistical model from EN 14274) or have provided information about the selection of a National monitoring system.

Of the 27 Member State Fuel Quality Monitoring Systems used in 2013:

- 5 have opted to use EN 14274 statistical model A (Austria, Finland, Greece, Italy, Netherlands and Spain);
- 5 have used EN 14274 statistical model B (France, Germany, Poland, Bulgaria and Romania);
- 10 have opted for EN 14274 statistical model C (Croatia, Ireland, Portugal, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Slovakia and Slovenia); and
- The remaining 8 have used a National monitoring system (see Table 3-3).

Model A is the monitoring approach generally recommended in EN 14274 as it groups territories into macro regions with similar sales volumes and fuel supply sources. This approach requires fewer samples as it is designed to account for geographical and supply variability within the country. Model B similarly divides the National territory into regions, however this is when there is no way to make divisions using sales or supply patterns and so existing administrative boundaries may be used to collect monitoring information. Model C should only be considered where the Member State is very small and it can be demonstrated that the country cannot be effectively divided into separate sales/supply regions – and does not have distinct administrative or governing regions. As demonstrated i

Table 3-2, some Member States have opted to use statistical model C when there may be a very good case for them to use Model B or even A.

With regards to regional information on sampling, provision has been made within the reporting template for Member States to provide a regional breakdown of fuel sales and sampling. This is required for countries using models A, B or an equivalent National model that has determined regional divisions.

The Netherlands and Sweden have not provided statistical data to support the EU wide analysis. UK has not separated analysis results for summer and winter period, while Croatia has reported all petrol fuel grades together rather than in separate sheets of the reporting template.

[22] EN 14274:2003 - Automotive fuels - Assessment of petrol and diesel quality - Fuel Quality Monitoring System (FQMS).

3.2.2 Sampling and reporting

There are detailed requirements in EN 14274 on the number and location of samples to be taken and reported in Member States fuel quality reports. EN 14274 lists a number of useful factors to take into account when assessing the sampling regime; such as the number of refineries supplying the market, the number of fuel grades available and the number of different imported fuel grades and sources. The standard specifies minimum number of samples per fuel grade (in each of the winter and summer periods), as discussed in the introductory section. In previous years, there was some uncertainty from Member States about the sampling requirements – however sample quantities and the division of reporting between summer and winter periods have improved in recent years.

Table 3-3 provides a breakdown of individual Member States sampling and reporting in 2013. The total minimum samples required is calculated where the Member State has used a statistical model as outlined in EN 14274 such that the minimum sample requirement is known for each model (A, B and C). The table also provides a breakdown of the total sample numbers taken and the sampling carried out at service stations. All Member States provided this breakdown in 2013. The European Standard EN 14274 specifies that the minimum sampling requirement should be taken from fuel dispensing sites – which are defined as a "*site, retail or commercial where fuel is dispensed into road vehicles for propulsion.*" Therefore any sampling taken at distribution terminals or refineries should be taken in addition to those from service stations in order to meet minimum sampling requirements.

Where Member States have reported using a National system, an assessment has been made of the equivalent minimum sample requirements on the basis of the size of the country, and other details provided. Where the location of samples is known, it is possible to determine whether sample quantities demonstrate compliance with EN 14274.

- Belgium has reported as a small country (less than 15 million tonnes of fuel sales) and has not reported results broken down by sub-regions. Therefore the minimum number of samples to ensure the Belgium monitoring system sample quantities are equivalent to the specifications outlined in EN 14274, will be 100 samples per fuel grade for full year. Reporting two separate petrol fuel grades in 2013 and one diesel fuel grade, Belgium has taken 2,013 petrol fuel samples and 6,387 diesel fuel samples from service stations; Belgium clearly demonstrates compliance with the minimum number of samples required to achieve equivalence to EN 14274 requirements.

- Denmark have also reported 2013 fuel quality monitoring using a National Model and with fuel sales of less than 15 million tonnes and no sub-regional breakdown of reporting, is also required to take 100 samples per fuel grade for full year. In contrast to Belgium, Denmark has reported a fuel type (petrol RON 98) that represents a market share of national fuel sales of less than 10%. Subsequently, to meet equivalence with EN 14274 minimum sampling requirements, fewer samples are required. Using the calculation methodology laid out in EN 14274, fewer than one sample is actually required for petrol RON 98 to meet equivalence with the international standard, and this has been achieved. However, Denmark have reported a total of only 43 petrol samples for three fuel grades (two of which with >10% share), against a minimum equivalence requirement of 201; Denmark also reported only 21 diesel samples against an equivalence requirement of 100. Therefore the Danish FQMS is not compliant with the Directive as the National Monitoring System does not demonstrate equivalence with EN 14274.

- Latvia has reported using a National system and should demonstrate equivalence with EN 14274 requirements for small country with no regional breakdown. Having reported the sale of two petrol fuel grades (one of which with less than 10% market share) and two type of diesel (both above 10% market share), Latvia should have reported a total of 110 samples for petrol and 200 samples for diesel. Having taken

only 45 and 47 samples from service stations for petrol and diesel respectively, Latvia is not compliant with minimum sampling requirements.

- Luxembourg has also reported 2013 fuel quality monitoring using a National Model and with fuel sales of less than 15 million tonnes and with no sub-regional breakdown of reporting, is also required to take at least 100 samples per fuel grade for full year. Reporting two separate petrol fuel grades in 2013 and one diesel fuel grade, Luxembourg should have taken at least 200 samples and 100 samples for petrol and diesel respectively from service stations. With only a combined total of 58 petrol samples and 86 diesel samples, Luxembourg's FQMS is not compliant with the Directive as the National Monitoring System does not demonstrate equivalence with EN 14274.

- As a small country, Malta has also reported a small number of fuel samples using a National Monitoring System. With one petrol fuel grade and one diesel fuel grade and no sub-regions, Malta would be expected to report a minimum of 100 petrol samples and 100 diesel samples in total. In 2013, Malta sampled and reported only 34 petrol samples in total and only 32 diesel samples from service stations.

- The Netherlands is a small country with a National monitoring system and did not report a regional breakdown. In order to comply with EN 14274, it should have reported 102 samples from petrol and 100 samples for diesel fuel. Having taken 100 samples for petrol (no samples for RON 98 E5, with a market quota of 1%) and 100 samples for diesel, the Netherlands has been marginally incompliant.

- Sweden is a small country with no regional breakdown and there are two grades of petrol and one grade of diesel on the market. Although Sweden reported a very high number of samples (respectively 602 for petrol and 776 for diesel), none was taken from service station, making its submission not compliant with EN 14274.

- United Kingdom is the only large country reporting with a National system. To demonstrate equivalence, it should report at least 208 samples for petrol and 200 samples for diesel. UK's submissions largely exceeded minimum sampling requirements, even excluding all the samples taken from terminals. Samples were taken during both winter and summer period, but the reporting template included only aggregated analysis, while it should have presented them in separate sheets.

- Of the countries that used the recommended reporting system, three have failed to collect enough samples for petrol (Croatia, France and Germany) and three have failed to collected enough samples for both petrol and diesel (Portugal, Romania and Spain); while some of these countries have collected an overall sufficient number of samples, this analysis refers only to samples collected from service stations.

One of the complications in determining how many samples are required for a given fuel grade is that, at the time a Member State must decide how many samples to take, they do not know fuel sales for the year in question. Member States commonly tender contracts for fuel quality monitoring several years in advance that last a number of years, and they may need to decide when tendering how many samples of each grade should be taken. This may lead to uncertainty about whether a Member State's monitoring regime will comply with EN 14274 in future years.

As an example, in 2005 Poland sold 13,647 million litres of automotive fuel, meaning that it classified as a 'small' country under EN 14274. In 2006, 15,350 million litres of automotive fuel were sold in Poland, meaning it classified as a 'large country under EN 14274. This meant that in 2006 Poland would have been required to take more samples than in 2005, as the sampling requirements for 'large' countries are greater than for 'small' ones. However, Poland could not know in advance the quantity of fuel that would be sold in its territory, so might not have put the required monitoring system in place.

The same issue applies to fuels whose sales represent less than 10% of the market. In this instance, EN 14274 uses a formula based on sales volume relative to the parent fuel grade to determine the number of samples required. However, Member States do not know in advance whether a fuel will comprise less than 10% of the market or not, and do not have the relevant sales data to decide sampling frequency in advance. In some cases, it is not even possible to use historical data to determine how many samples to take, as some fuel grades (e.g. grades with varying amounts of ethanol or FAME) were not monitored in previous years.

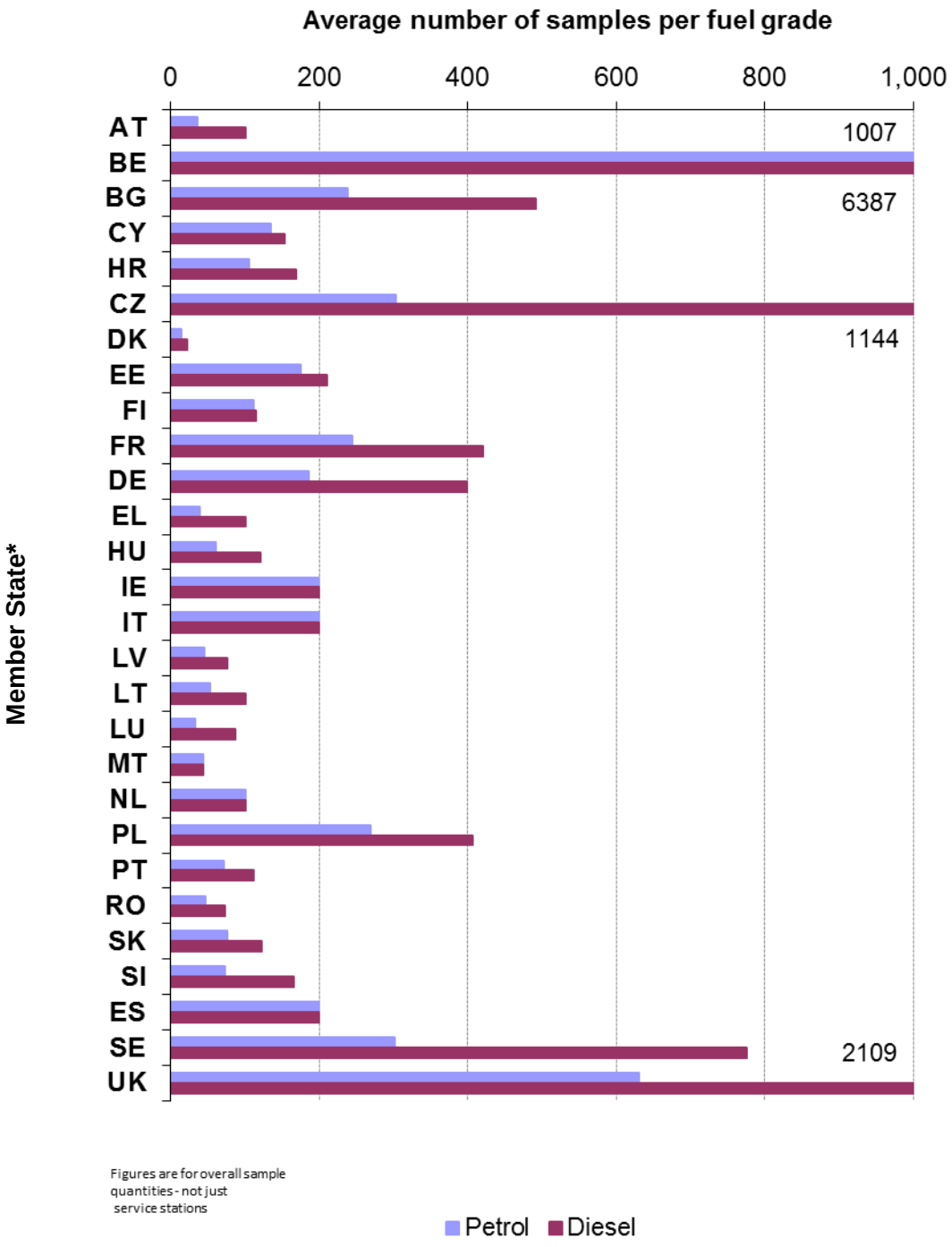
Table 3-2: Summary of Member State sampling and reporting in relation to the requirements of Directive 98/70/EC and of European Standard EN 14274

MS		FQMS Model (1)	Size (2)	Separate S&W? (3)	Samples per grade per period (4)	Total samples required (5)		Samples Taken (6)		Samples Taken at Service Stations (7)		Sampling Compliance (8)	
						Pet	Dsl	Pet	Dsl	Pet	Dsl	Pet	Dsl
Austria	AT	A	S	✓	50	104	100	106	100	106	100	✓	✓
Belgium	BE	N	S	✓	(50)	(200)	(100)	2013	6387	2013	6387	(✓)	(✓)
Bulgaria	BG	B	S	✓	100	206	200	475	491	460	476	✓	✓
Croatia	HR	C	S	✓	50	108	100	105	168	91	152	×	✓
Cyprus	CY	C	S	✓	50	106	100	268	153	268	153	✓	✓
Czech Republic	CZ	C	S	✓	50	103	106	907	1237	926	1237	✓	✓
Denmark	DK	N	S	✓	(50)	(201)	(100)	43	21	43	21	(×)	(×)
Estonia	EE	C	S	✓	50	108	100	350	210	350	210	✓	✓
Finland	FI	A	S	✓	50	200	100	223	115	223	115	✓	✓
France	FR	B	L	✓	200	800	400	487	420	487	420	×	✓
Germany	DE	B	L	✓	200	825	400	741	399	741	399	×	✓
Greece	EL	A	S	✓	50	103	100	116	100	116	100	✓	✓
Hungary	HU	C	S	✓	50	104	100	120	120	120	120	✓	✓
Ireland	IE	C	S	✓	50	100	100	199	199	199	199	✓	✓
Italy	IT	A	L	✓	100	200	200	200	200	200	200	✓	✓
Latvia	LV	N	S	✓	(50)	(110)	(150)	91	153	45	47	(×)	(×)
Lithuania	LT	C	S	✓	50	104	100	106	100	104	100	✓	✓
Luxem-bourg	LU	N	S	✓	(50)	(200)	(100)	66	86	58	86	(×)	(×)
Malta	MT	N	S	✓	(50)	100	100	44	43	34	32	(×)	(×)
Nether-lands	NL	N	S	✓	(50)	(102)	(100)	100	100	100	100	(×)	(✓)
Poland	PL	B	S	✓	100	220	200	539	406	539	406	✓	✓
Portugal	PT	C	S	✓	50	108	100	143	112	23	12	×	×
Romania	RO	B	S	✓	100	212	200	92	72	92	72	×	×
Slovakia	SK	C	S	✓	50	102	100	151	122	110	122	✓	✓
Slovenia	SI	C	S	✓	50	106	100	146	165	146	117	✓	✓
Spain	ES	A	L	✓	100	214	200	400	200	126	99	×	×
Sweden	SE	N	S	✓	(50)	(104)	(100)	602	776	0	0	(×)	(×)
UK	UK	N	L	×	(100)	(208)	(200)	1262	2109	473	280	(✓)	(✓)

#	Column	Explanatory notes
(1)	FQMS Model	N = National Fuel Quality Monitoring System (FQMS) A = EN 14274 Statistical Model A

		B = EN 14274 Statistical Model B C = EN 14274 Statistical Model C
(2)	Size – Country size	S = Small (total automotive road fuel sales < 15 million tonnes pa) L = Large (total automotive road fuel sales > 15 million tonnes pa)
(3)	Separate S & W?	✓ Separate summer & winter reporting × indicates full year sample results reporting only.
(4)	Samples per grade per period	EN 14274: There are reduced sampling requirements for grades comprising of less than 10% total sale. For Member States using a national FQMS, estimated equivalent minimum samples (based on fuel sales) are shown in brackets (XXX).
(5)	Total samples required	Calculation of the EN 14274 minimum sample total required according to FQM model and country size. The minimum sample requirement is to be taken from the 'point of use' at fuel dispensing sites. For Member States using a national FQMS, estimated equivalent minimum samples (based on fuel sales) are shown in brackets (XXX).
(6)	Samples Taken	The total number of samples taken per fuel type at all locations (service stations, terminals and refineries).
(7)	Samples taken at Service Stations	The total number of samples taken at service stations; fuel dispensing sites (public and commercial). This is reported separately in the standard reporting template; where samples taken at service stations do not match overall samples taken, this is due to differences in the original report submission.
(8)	Sampling Compliance	✓ indicates compliance with EN 14274 Sampling Number requirement and '×' indicates non-compliance. Note that this indicates overall sampling compliance across all fuel grades; see Member State report for sampling compliance for each fuel grade individually. Where a national FQM system is used, estimated compliance to demonstrate equivalence with EN14274 is shown in brackets (XXX).
	Pet.	Petrol
	Dsl	Diesel

Figure 3-4: 2013 Sampling rate across the EU (average number of samples per fuel grades)[23]



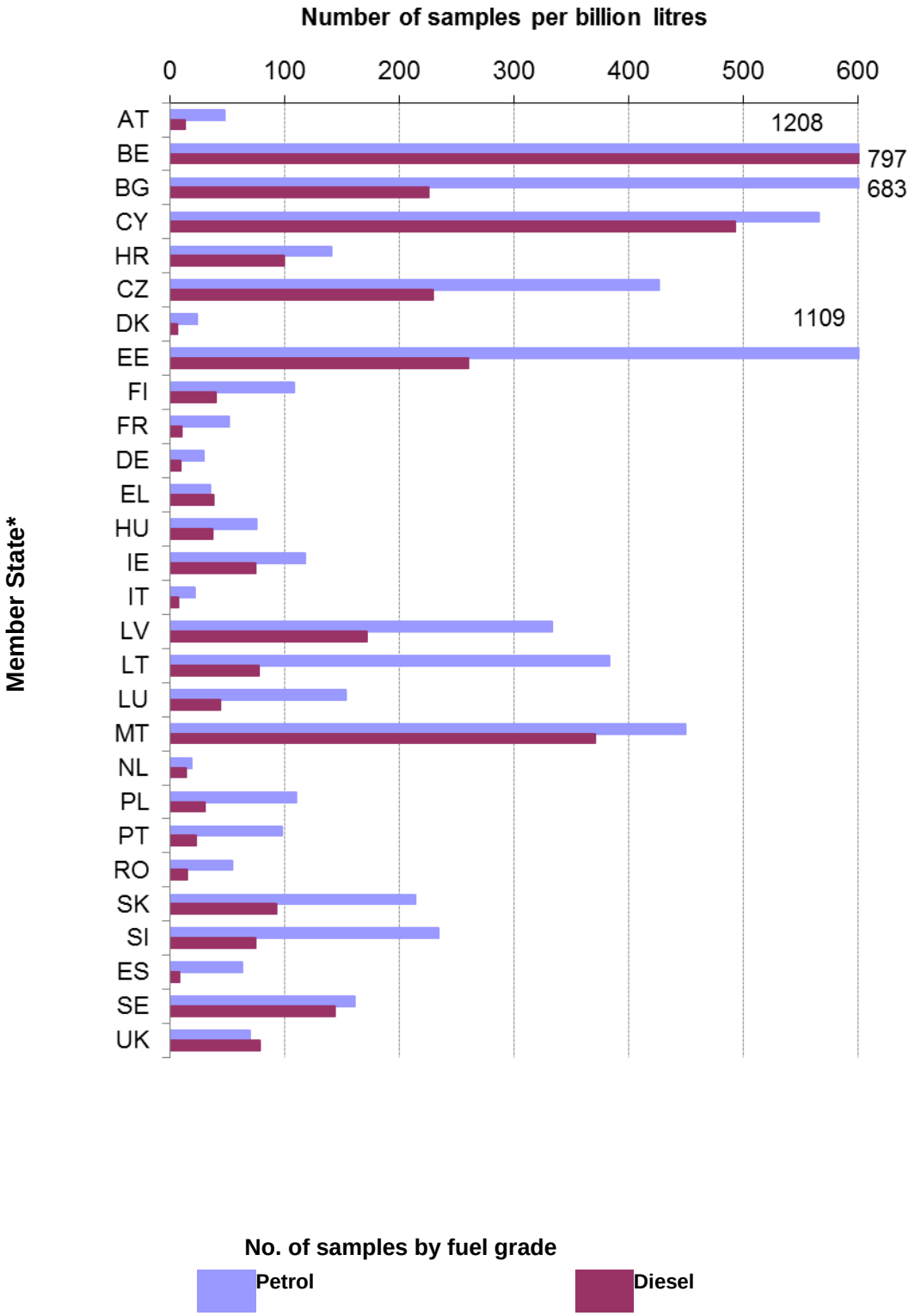
***Sampling taken from all locations (includes terminal/ refinery sampling)**

***Please see Glossary in Section 34 for country abbreviations**

***Scale adjusted to show full detail. For countries where samples per fuel grade is greater than 1,000 BE, CZ and UK, bars are truncated and values are indicated at the end of the bar.**

[23] Includes only fuels for which sampling statistics has been provided by Member States.

Figure 3-5: Number of fuel samples per billion litres



***Sampling taken from all locations (includes terminal/ refinery sampling)**

***Please see Glossary in Section 34 for country abbreviations**

***Scale adjusted to show full detail. For countries where samples per thousand litres is greater than 600 (BE, BG and EE), bars are truncated and values are indicated at the end of the bar.**

3.2.3 Compliance with 98/70/EC Limit Values

3.2.3.1 *Petrol reporting*

In 2013, all Member States provided minimum information about petrol sample compliance. In order to determine compliance, it is necessary to know which test method has been used to test for some parameters (because reproducibility and tolerance levels differ according to test method). Provision has been made for Member States to give this information within the reporting template – although this is not a mandatory part of the reporting it is vital to determine compliance levels. Furthermore, Member States were requested to report the number of samples that exceeded the 95% tolerance limits; the Netherlands and Sweden have not provided this figure.

The parameters found to be out of specification most frequently within the Community in 2013 were:

- Summer Vapour Pressure was exceeded 124 times in 2013 (3.12% of cases). However, many exceedances are the result of transitional periods; when suppliers swap the summer specification fuel for winter specification fuels and vice versa.
- RON and MON samples out of specification totalled respectively to 39 and 29 times, equivalent to 0.52% and 0.34% respectively.

Presentation of the temporal trends in compliance with limit values can be found in Section 3.3.3.

3.2.3.2 *Diesel reporting*

In 2013, some Member States did not provide full details of samples found to be out of compliance with tolerance limits. As with petrol reporting, details of temporal trends in parameter compliance can be found in Section 3.3.3.

Of the 6 parameters required to be tested for diesel in 2013, parameters found to be out of specification were:

- The Sulphur content maximum of 10ppm was exceeded by a total of 94 samples (0.65% of total). However the average sulphur content for all Member States remains below the mandatory limit of 10ppm.
- In total, 44 samples (0.33%) reported FAME content above the 7% limit (excluding B+ diesel).
- Distillation and density exceedances were reported respectively 16 and 5 times, equivalent to 0.12% and 0.03%.

3.2.3.3 *Overall Summary*

Table 3-4 summarises the compliance of Member States with Directive 98/70/EC for the year 2013 reporting in terms of the results of the analysis of samples against Tolerance Limits and the reporting format and content. Amendments to Directive 98/70/EC (Directive 2003/17/EC) included the insertion of a paragraph stating *"Member States shall determine the penalties applicable to breaches of the national provisions adopted pursuant to this Directive. The penalties determined must be effective, proportionate and dissuasive."* Some Member States have provided an explanation of the remedial actions and penalties imposed by national authorities where samples are found to be out of specification. These and other notes pertinent to the Member States monitoring systems have been highlighted in and also given in more detail in the individual Member State chapters of this report.

In general, of the 10,095 samples tested for petrol in 2013, 248 were found to be out of specification with tolerance limits for one or more parameter, which represents a non-

compliance rate of 2.5%. This figure is a small improvement of 0.3 percentage points in respect to 2012.

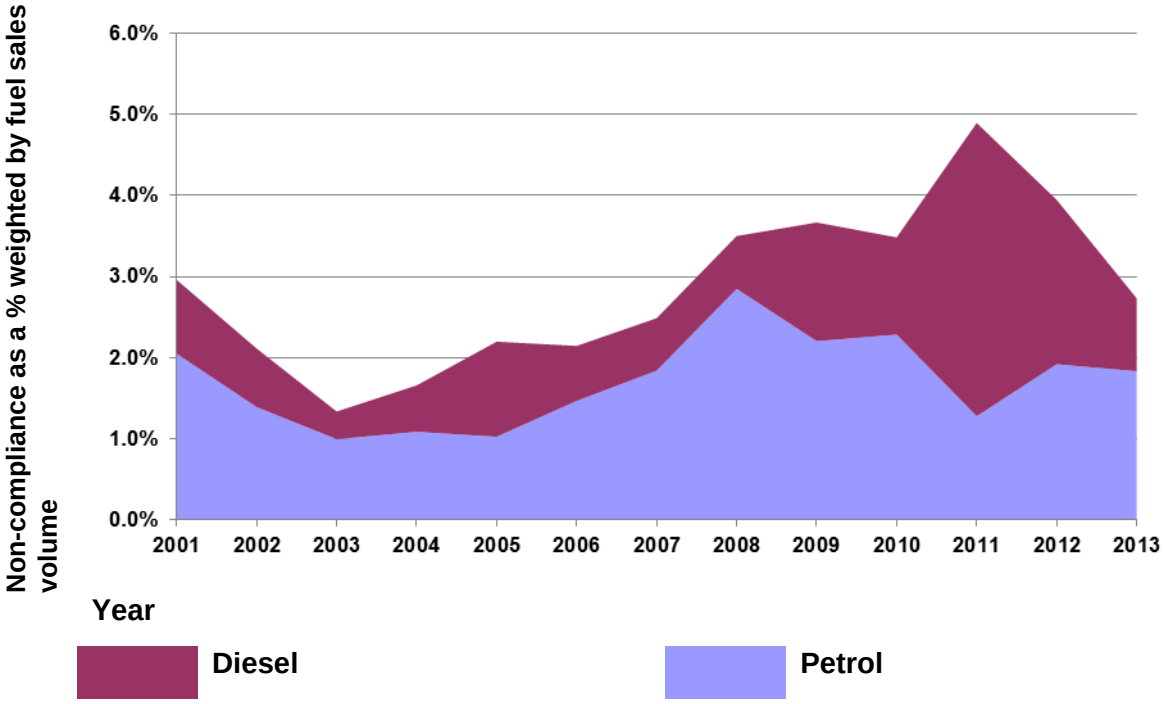
Of the 14,764 samples tested for the 6 mandatory parameters for diesel in 2013, 161 were found to be non-compliant with specified limits, representing 1.1% of all samples reported (0.5 percentage points improvement compared to 2012).

The proportion of samples found to be out of specification is reliant on the number of samples taken, which should be dependent (within each Member State) on the fuel sales volume, and supply sources. However, with Member States using National systems that may not demonstrate equivalence with Statistical models A, B or C and using statistical models that may not be the most suitable, it is necessary to also consider non-compliances within the Community weighted by sales volume and by sample numbers.

Figure 3-6 gives the rate of non-compliances weighted according to sales volume and sample numbers and shows a downward trends for diesel, following a peak registered in 2011, while petrol non-compliances have fluctuated more. In 2013, sales-weighted petrol non-compliances amounted to 1.8% (improvement of 0.1 percentage points compared to 2012); diesel sales-weighted non-compliances were 0.9%, an exceptional improvement of 1.1 percentage points compared to 2012.

A full discussion of temporal trends in compliance is provided in Section 3.3.3.

Figure 3-6: Temporal trends in total limit value non-compliances for petrol and diesel fuels (volume weighted)



*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. In addition, the EU expanded in 2004, 2007 from 15 to 27 Member States and in 2013 to 28 Member States.**

Table 3-3 provides the details of Member States compliance with 98/70/EC in terms of non-compliant samples, total samples collected and timeliness of their submission. Compared with previous years, the latter has greatly improved, with only a few Member States submitting the report after the 30th of June deadline.

Table 3-3: Summary of Member State compliance with 98/70/EC for 2013 reporting.

MS	Non-compliance with limit values number of non-compliant samples (NC) (a)				Incomplete reporting parameters not measured (NM) (b)		Timeliness (c)
	Petrol		Diesel		Petrol	Diesel	
	NC	Total	NC	Total	(out of 19)	(out of 6)	
AT	3	106	2	100	0	0	On time
BE	53	2013	92	6387	0	0	On time
BG	24	475	16	491	1	0	On time
HR	5	105	0	168	0	0	On time
CY	16	268	1	153	2	0	On time
CZ	28	907	13	1237	0	0	On time
DK	4	43	3	21	0	0	On time
EE	5	350	1	210	0	0	On time
FI	5	223	0	115	0	0	On time
FR	7	487	5	420	0	0	On time
DE	6	741	1	399	0	0	<1 month late
EL	1	116	4	100	2	0	On time
HU	1	120	0	120	0	0	On time
IE	18	199	3	199	1	0	On time
IT	4	200	0	200	0	0	On time
LV	0	91	0	153	0	0	<1 month late
LT	0	106	0	100	0	0	On time
LU	3	66	0	86	0	0	On time
MT	7	44	0	43	0	0	On time
NL	>1	100	>1	100	9	0	On time
PL	16	539	16	406	1	0	On time
PT	1	143	0	112	1	0	On time
RO	3	92	0	72	1	0	On time
SK	9	151	2	122	0	0	On time
SI	0	146	0	165	1	0	On time
ES	0	400	0	200	0	0	<1 month late
SE	0	602	0	776	6	1	On time
UK	28	1262	1	2109	0	0	On time

#	Column	Explanatory notes
(a)	Non-compliance with limit values (95% confidence limits)	It is not possible to confirm whether limit values have been respected in all samples, where reporting data is incomplete. Where it has not been possible to establish from submissions the number of samples exceeding the limit value a '>' symbol indicates that the number of samples exceeding limits is a minimum and might be greater.

		The table covers samples exceeding limit values stipulated in Directive 98/70/EC. In cases samples where however found to be exceeding national limit values.
(b)	Incomplete reporting	Some parameters may be sampled in smaller quantities, however all parameters should be sampled to accurately assess fuel quality. Member States should make it clear when sample results have been obtained and provide sample results. The table only covers fuels with >10% market share. For details on each single fuel grade see Table 3-5.
(c)	Late report	Directive 98/70/EC states that Member States should submit monitoring reports by no later than 30 June each year.

Table 3-4: Summary of parameters not reported by Member States for each fuel grade

Member State	Petrol and diesel grades marketed in each Member State in 2013				
Austria	**Unleaded petrol RON=91 E5**	**Unleaded petrol 95=<RON<98 E5**	**Unleaded petrol RON>= 98 E5**	**Diesel B7**	
	All reported	All reported	All reported	All reported	
Belgium	**Unleaded petrol RON=95 E5**	**Unleaded petrol RON>=98 E5**		**Diesel B7**	
	All reported	All reported		All reported	
Bulgaria	**Unleaded petrol RON=95 E5**	**Unleaded petrol RON>=98 E5**		**Diesel B7**	
	Motor Octane Number	Motor Octane Number		All reported	
Croatia	**Unleaded petrol min. RON=95 (<10 ppm S)**	**Unleaded petrol 95=<RON<98 (<10 ppm S)**	**Unleaded petrol RON>=98 (<10 ppm S)**	**Diesel B7**	
	All parameters reported aggregated (no split by fuel grade)			All reported	
Cyprus	**Unleaded petrol RON=95**	**Unleaded petrol RON 98**		**Diesel B7**	
	Manganese Iso-butyl alcohol	Manganese Iso-butyl alcohol		All reported	
Czech Republic	**Unleaded petrol RON=91 E5**	**Unleaded petrol RON=95 E5**	**Unleaded petrol RON>=98 E5**	**Diesel B7**	**Diesel B+**
	All reported	All reported	All reported	All reported	Only few parameters tested according to FAME content (see country report for details)
Denmark	**Unleaded petrol RON=91 E5**	**Unleaded petrol RON=95 E5**	**Unleaded petrol 95=< RON<98**	**Diesel B7**	
	All reported	All reported (albeit for some parameter <4 samples were tested)	All reported	All reported	
Estonia	**Unleaded petrol 95=<RON<98 E5**	**Unleaded petrol RON >= 98 E5**		**Diesel**	
	All reported	All reported		All reported	
Finland	**Unleaded petrol RON=95 E10**	**Unleaded petrol RON>=98 E5**		**Diesel B7**	
	All reported	All reported		All reported	
France	**Unleaded petrol RON=95 E5**	**Unleaded petrol RON=95 E10**		**Diesel B7**	
	All reported	All reported		All reported	
Germany	**Unleaded petrol RON 91 E5**	**Unleaded petrol RON 95 E5/E10**	**Unleaded petrol RON 98 E5**	**Diesel B7**	

Member State	Petrol and diesel grades marketed in each Member State in 2013				
	Olefins, oxygen content, methanol, iso-propyl alcohol, tert-butyl alcohol, iso-butyl alcohol, ethers with =>5 carbon atoms/molecule, other oxygenates, lead content	All reported	All reported	All reported	
Greece	**Unleaded petrol RON=95**	**Unleaded petrol 95=< RON<98**	**Unleaded petrol RON >= 98**	**Diesel B7**	
	Motor Octane Number Manganese	Motor Octane Number Manganese	Motor Octane Number Manganese	All reported	
Hungary	**Unleaded petrol RON=95**	**Unleaded petrol RON>=98**		**Diesel B7**	
	All reported	All reported		All reported	
Ireland	**Unleaded petrol RON=95**			**Diesel**	
	Manganese			All reported	
Italy	**Unleaded petrol RON=95**			**Diesel B7**	
	All reported			All reported	
Latvia	**Unleaded petrol RON=95 E5**	**Unleaded petrol 95=<RON<98**		**Diesel**	**Diesel B7**
	All reported	All reported		All reported	All reported
Lithuania	**Unleaded petrol RON=95**	**Unleaded petrol RON>=98**		**Diesel**	
	All reported	All reported		All reported	
Luxem-bourg	**Unleaded petrol RON=95 E5**	**Unleaded petrol RON>=98 E5**		**Diesel B7**	
	All reported	Manganese		All reported	
Malta	**Unleaded petrol RON 95-98**			**Diesel**	
	All reported			All reported	
Nether-lands	**Unleaded petrol RON 95**			**Diesel**	
	Research Octane Number Motor Octane number Methanol Iso-propyl alcohol Tert-butyl alcohol Iso-butyl alcohol other oxygenates Lead Content Manganese			All reported	
Poland	**Unleaded petrol RON 95**	**Unleaded petrol RON 98**		**Diesel**	
	Manganese	Manganese		All reported	

Member State	Petrol and diesel grades marketed in each Member State in 2013		
Portugal	**Unleaded petrol RON 95-98**	**Unleaded petrol RON 98**	**Diesel B7**
	Manganese	Manganese	All reported
Romania	**Unleaded petrol RON 95-98 E5**	**Unleaded petrol RON 98 E5**	**Diesel B7**
	Manganese	Manganese	All reported
Slovakia	**Unleaded petrol RON 95 E5**	**Unleaded petrol RON 98 E5**	**Diesel B7**
	All reported	All reported	All reported
Slovenia	**Unleaded petrol RON 95-98 E5**	**Unleaded petrol RON 98 E5**	**Diesel B7**
	Manganese	Manganese	All reported
Spain	**Unleaded petrol RON 95-98 E5**	**Unleaded petrol RON 98 E5**	**Diesel B7**
	All reported	All reported	All reported
Sweden	**Unleaded petrol RON 95 E5**	**Unleaded petrol RON 95-98 E5**	**Diesel B7**
	Methanol, Ethanol, Iso-propyl alcohol, Tert-butyl alcohol, Iso-butyl alcohol, Other oxygenates	Methanol, Ethanol, Iso-propyl alcohol, Tert-butyl alcohol, Iso-butyl alcohol, Other oxygenates	FAME content
UK	**Unleaded petrol RON 95 E5**	**Unleaded petrol RON 95-98 E5**	**Diesel B7**
	All reported	All reported	All reported

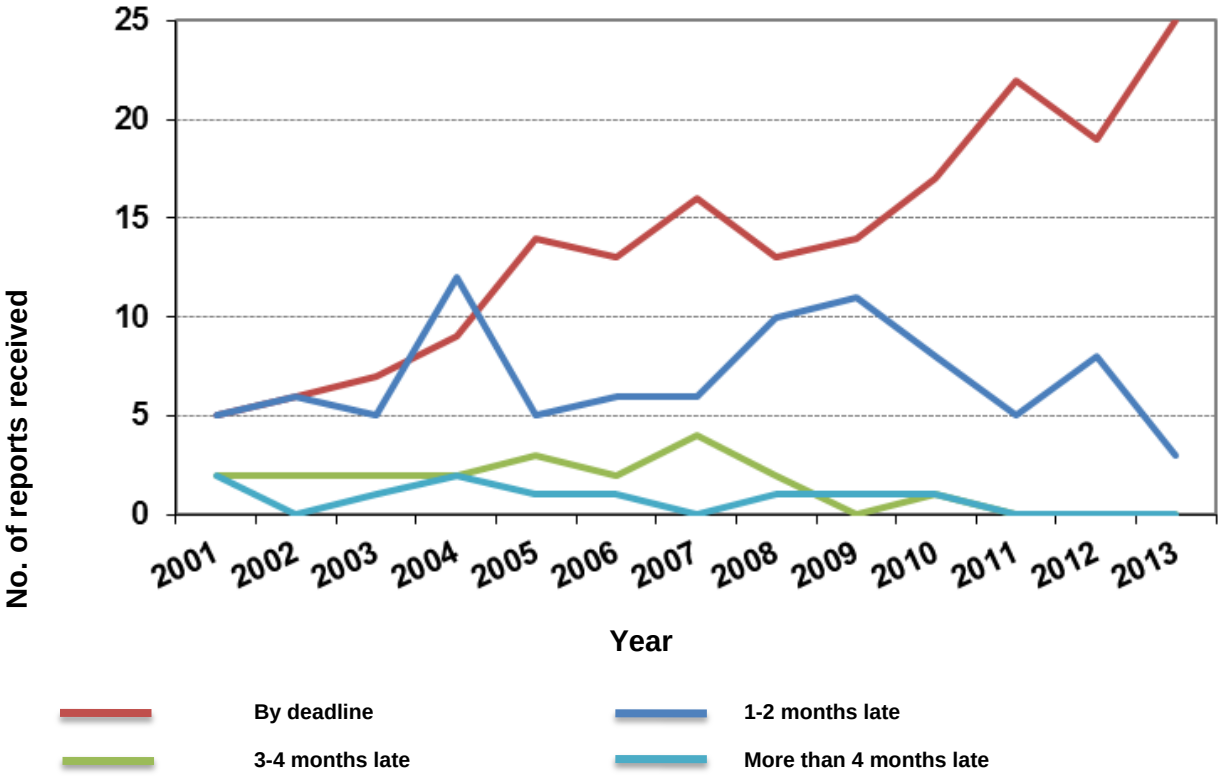
3.3 Temporal Trends

3.3.1 Temporal Trends in Sampling and Reporting

The following figures provide a summary of the temporal trends in sampling and reporting in the European Union. The interpretation of temporal trends, EU-wide is heavily reliant on consistent reporting by Member States on an annual basis.

The majority of reports for 2013 monitoring were received by the 30th June, with only three received within one month of the deadline (see Figure 3-7).

Figure 3-7: Temporal trends in the punctuality of report submissions

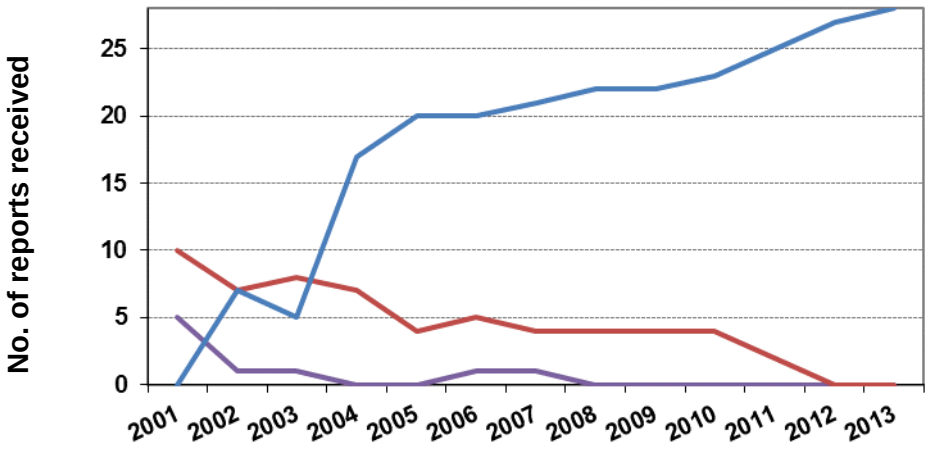


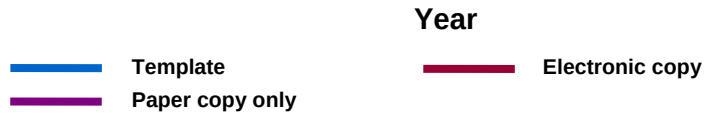
*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. The EU expanded in 2004, 2007 from 15 to 27 Member States and in 2013 to 28 Member States.**

Figure 3-8 gives the format of the reports received from Member States for 2013. EN 14274 specifies that Member States should submit their report by the reporting deadline of 30th June annually. The submission process requires Member States to email a copy of the report to ENV-Report-98-70@ec.europa.eu (which is considered the effective submission date) and to send a hard copy of the report to the Secretary General.

All of Member States have submitted their reports in the correct manner. Reporting consistency and accuracy is greatly enhanced by using a consistent format for reporting. In addition, the timely and accurate analysis of EU-wide and combined data is assisted by reporting in a consistent format. This enables feedback to the Community about fuel quality for the previous calendar year to be provided as soon as possible.

Figure 3-8: Number of Member State reports received on time, by format of submission



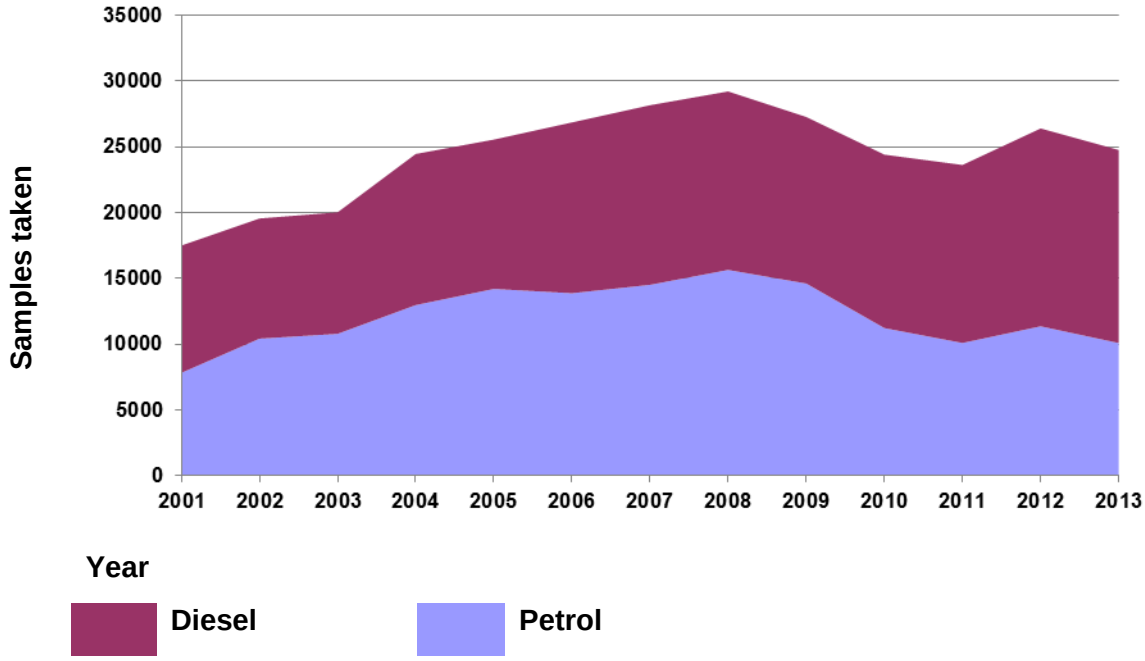


***Excludes France in 2003 - 2005, as no submissions were provided. *Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. In addition, the EU expanded in 2004, 2007 from 15 to 27 Member States and in 2013 to 28 Member States.**

Figure 3-9 shows how the number of samples has fluctuated over time. In 2013, a total of 10,095 samples were collected for petrol and 14,764 samples for diesel, fewer than 2012 but above the figure for 2010 and 2011.

The proportion in petrol to diesel samples reflects to the higher sales volume of diesel within the Community, which however are balanced by the higher number of petrol fuel grades available (usually only one type of diesel is sold in each country, against two to three grades of petrol). Future trends in sampling quantities will depend on availability of fuels with added ethanol content as the new specifications of Directive 2009/30/EC begin to have an impact on sample requirements and increase the number of fuel grades available within parent fuel specifications.

Figure 3-9: Temporal trends in the total number of petrol and diesel samples taken



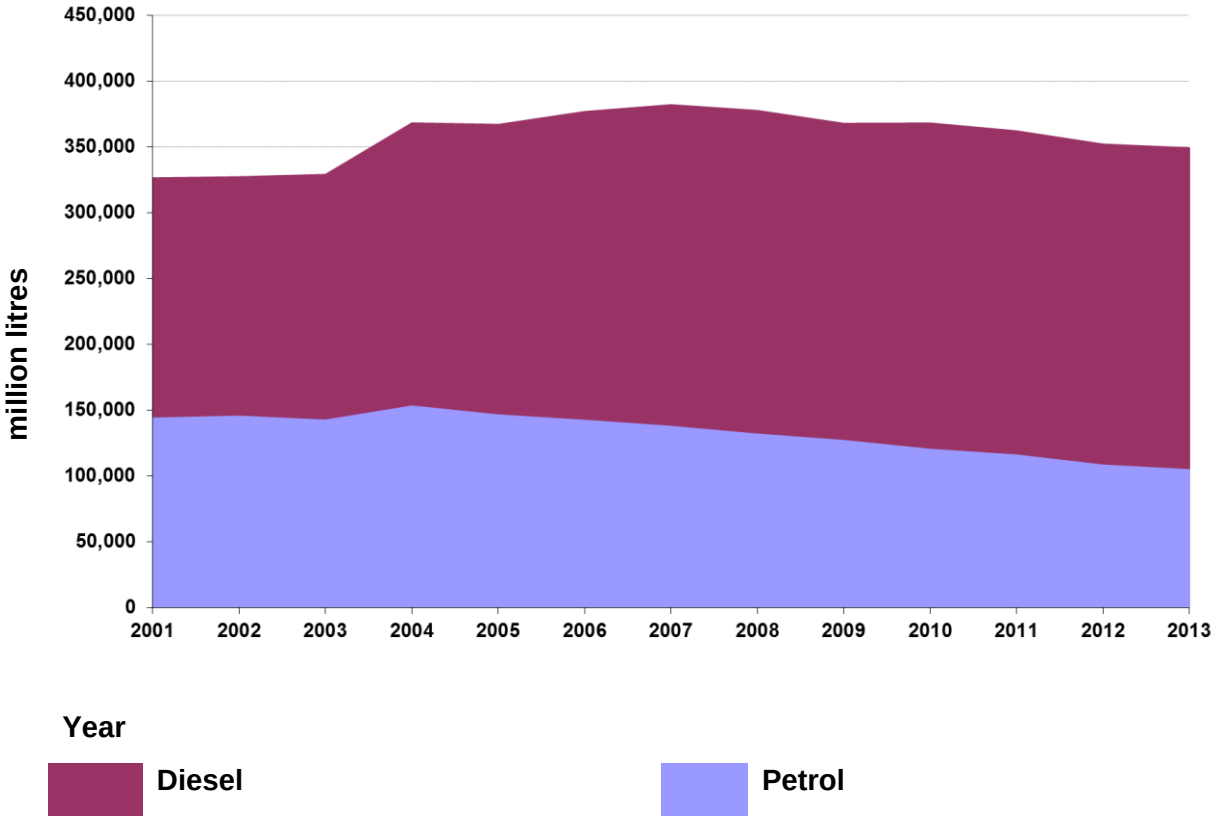
*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. In addition, the EU expanded in 2004, 2007 from 15 to 27 Member States and in 2013 to 28 Member States.**

3.3.2 Fuel Sales

Figure 3-10 gives the temporal trend in fuel sales from 2001 to 2013. Some reports have been missing from the data over the years which generates slight inconsistencies year on year. It is also necessary to bear in mind that total sales will be influenced by new entrants in the EU since 2001, including the latest addition, Croatia, in 2013.

Diesel sales in the EU have increased by 1% between 2012 and 2013, while petrol sales decreased by 2.9%, for an overall decrease of 0.7% since 2012. Total fuel sales have been decreasing since 2007, mostly due to a sustained decrease in petrol sales only partially compensated by an increase in diesel sales.

Figure 3-10: Temporal trends in EU28 Sales of petrol and diesel (million litres)



*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. In addition, the EU expanded in 2004, 2007 from 15 to 27 Member States and in 2013 to 28 Member States.**

In 2013, sales of petrol decreased in most countries compared to 2012, with the exception of Luxembourg (increase of 6 million litres) and Slovakia (increase of 48 million litres). Sales of diesel increased substantially in Germany and UK (increase of 1,439 and 1,175 million litres) and decreased by 1,795 million litres in Romania. The remaining Member States have seen variations in sales of diesel of smaller size in both directions (between -700 and +400 million litres).

3.3.3 Compliance with Limit Values

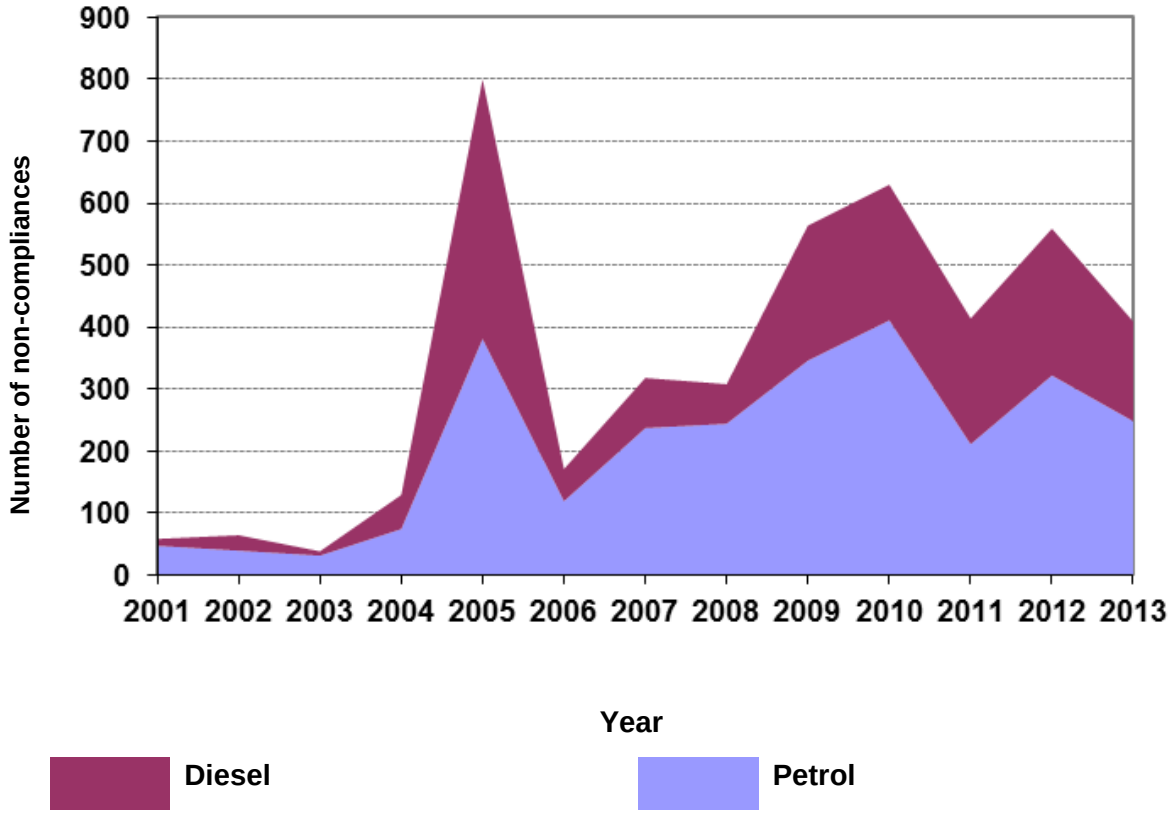
The following charts show the trends in the numbers of limit value non-compliances for petrol and diesel fuels in the European Union. Figure 3-11 gives the temporal trend in limit value non-compliance between 2001 and 2013. Figure 3-12 and Figure 3-13 provide a breakdown by key parameters of the temporal trends in non-compliant samples for petrol and diesel. The figures show a decrease in non-compliances between 2012 and 2013 for most of the parameters.

However, in 2013 samples that have exceeded tolerance limits, both in absolute terms and as a proportion of fuel sales (see Figure 3-6) are still higher than their levels in 2000-2004 (and 2006-2008). This may be the result of a number of different factors:

- Greater accuracy of reporting non-compliant samples. Historically, Member States have reported the maximum/ minimum values of all samples. However, this does not describe how many samples were found to be out of specification. Updates to the design of the reporting template and requests for clarification from Member States has greatly enhanced the detail given within Member State reports with regard to compliance reporting.

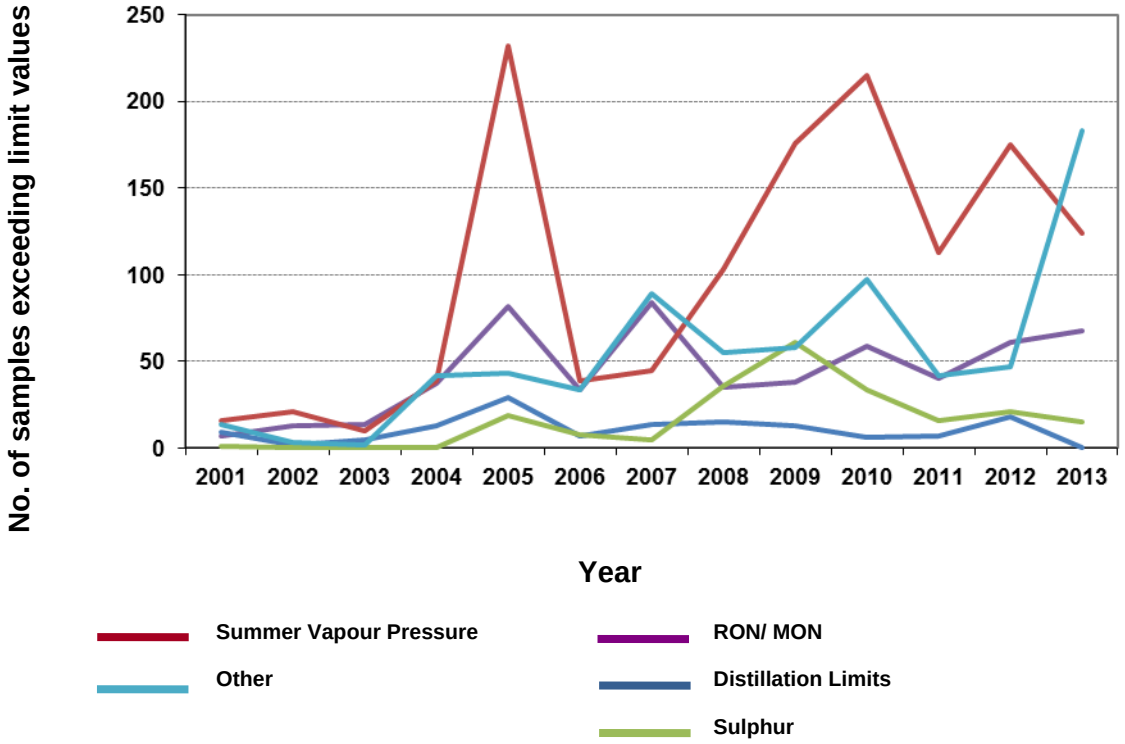
- Time taken for Member States and/or suppliers to adapt to new specifications, as limit values change (with new parameters added and/or more stringent limits introduced) – e.g. sampling for manganese, sulphur content.
- Specific problems with new fuel grades (for example, vapour pressure limits with high ethanol blends of gasoline).
- Member States are increasingly providing detail about the test methods used to determine fuel quality. As this level of detail increases, the accuracy of summary reporting also improves.

Figure 3-11: Temporal trends in EU28 total limit value non-compliances for petrol and diesel fuels



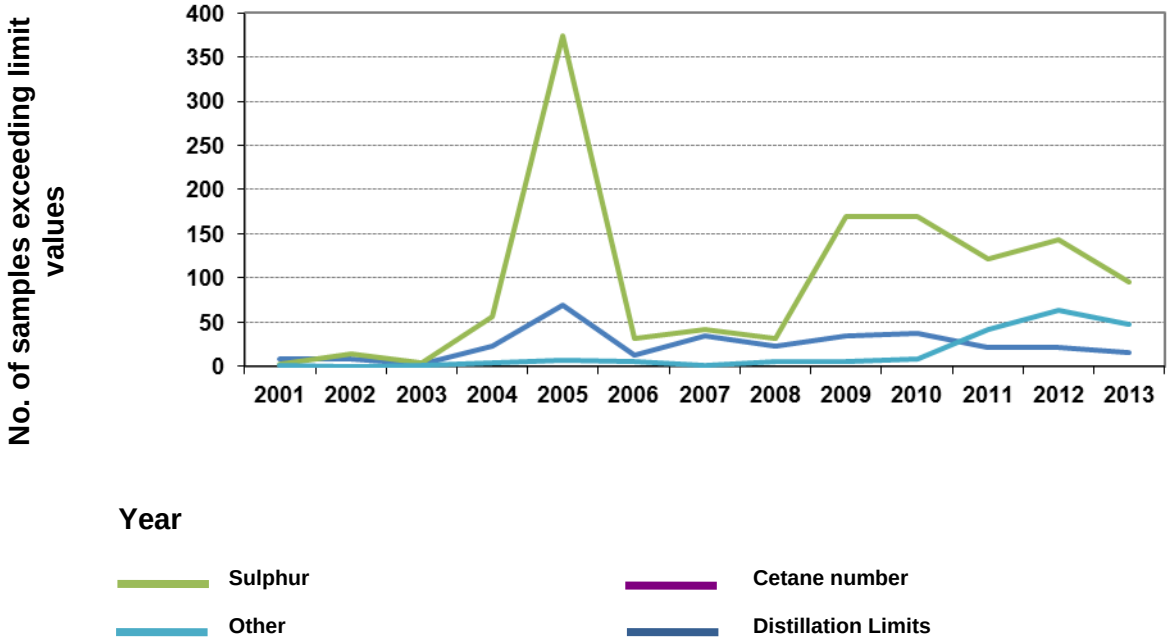
*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. In addition, the EU expanded in 2004, 2007 from 15 to 27 Member States and in 2013 to 28 Member States.**

Figure 3-12: EU28 temporal trends in numbers of samples exceeding limit values for specific petrol parameters



*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. The EU expanded in 2004, 2007 from 15 to 27 Member States and in 2013 to 28 Member States.**

Figure 3-13: EU28 temporal trends in numbers of samples exceeding limit values for specific diesel parameters



*** Excludes France in 2003 - 2005, as no submissions were provided. Excludes Luxembourg in 2007 to 2009 and Malta in 2006 and 2009 as no reports were provided. In addition, the EU expanded in 2004, 2007 from 15 to 27 Member States and in 2013 to 28 Member States.**

4 Statistical Analysis

Key Messages

The majority of Member States have provided additional detail within their 2013 report to enable further statistical analysis of parameter results. Member states who did not provide additional information are the Netherlands and Sweden, while Demark did not test enough samples to carry out a reliable statistical analysis. A limited number of other Member States did not provide full information for some grades.

Petrol

- **Parameter reporting shows that test results for RON and MON are relatively tight to fuel quality specification, with the majority of results above the specified minimum for the parameter. Outliers below specification are present in Bulgaria, Germany, Ireland, Italy and Poland for RON and Belgium, France and Italy for MON.**
- **Petrol vapour pressure shows a greater range in reported test results; with more Member States exceeding maximum specified limits (60 kPa and 70 kPa for countries with derogation for low ambient summer temperatures). In addition, the skew of results from samples tested within the Member States shows greater variation.**

Diesel

- **Density at 15^{o}C demonstrates variation in results – with most distribution heavily skewed towards the maximum limiting values for the parameter (845 kg/m^{3}), but exceedances only in Bulgaria and Poland.**
- **Distillation results for diesel show results where the majority of samples are tight to the specified limit (maximum 360 ^{o}C), although significant non-compliance have been identified only in Bulgaria, Czech Republic, Poland and Slovakia.**

4.1 Introduction to the Analysis Process

In evaluating different Member State submissions there are clear variations in trends that emerge. Sample analysis results for different parameters show different trends with regards to levels of compliance with limit values and the range distribution of sample analysis results in relation to the mean and Directive limit values. In some cases the mean of sample values can appear very close to the Directive limit values even without any samples that exceed tolerance limits. As part of the assessment of the compliance in relation to these analyses it is therefore useful to understand the reasons behind these differences.

In previous years, there was no suitable method to statistically verify Member State submission analysis results with a level of demonstrable confidence, due to the level of information provided. Therefore, starting in 2010, individually selected parameters have been subject to a higher level of analysis with the aim of determining trends and statistical anomalies within the EU-wide sample data. With this aim, Member States were asked to provide two additional pieces of information in their FQM reports from the 2010 reporting year; the lower 25% data range and the upper 25% data range (e.g. the results placed at 25% and 75% within the total results for that parameter). The majority of Member States were able to provide this information and individual summaries have been provided in

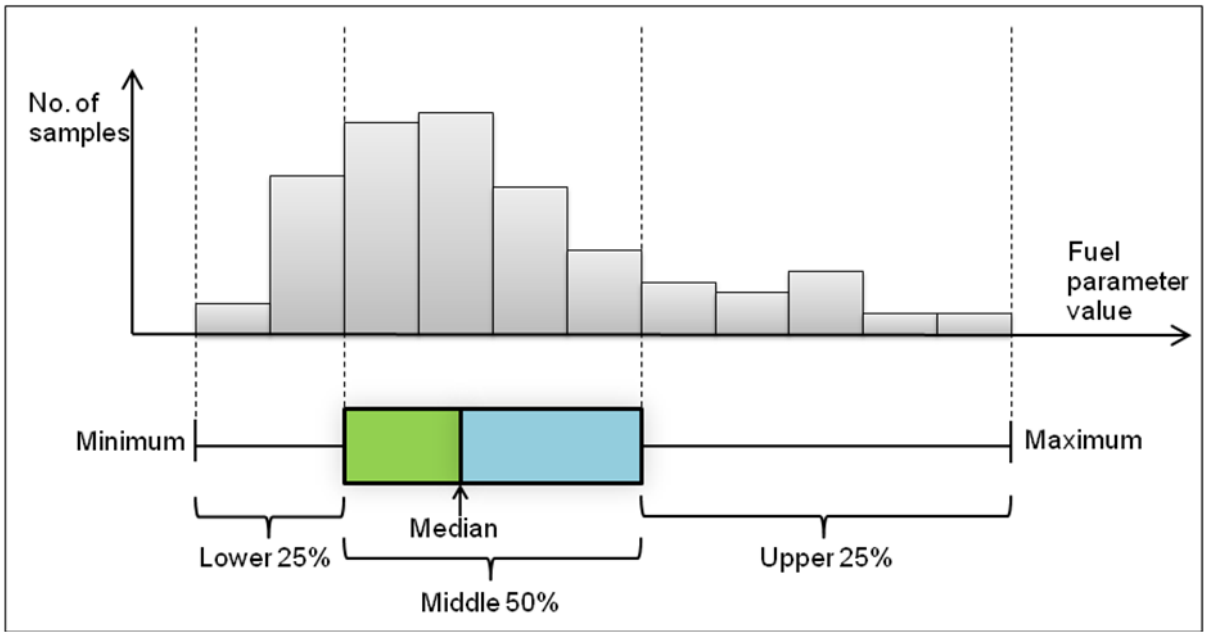
Member State chapters. The Netherlands and Sweden did not provide sufficient additional information for the analysis. Denmark, Bulgaria and Romania did not provide sufficient data for all petrol grades and all parameters, allowing to complete only part of the statistical analysis. In addition, where very low quantities (<5 samples) have been taken, results have been omitted from the overall calculations. The purpose of this section is to present the data across the EU to help identify possible trends or anomalies in fuel quality within the community.

The following charts are known as box-plots and they display the distribution of fuel characteristics by illustrating the:

- Sample minimum (already required by the Directive)
- Lower 25% range (requested from 2010 onwards)
- Middle 50% range (otherwise known as the mean - already required by the Directive)
- Median (requested from 2009 onwards)
- Upper 25% range (requested from 2010 onwards)
- Maximum (already required by the Directive)

Figure 4-1 illustrates how the box plot is constructed from a histogram (above the box plot) as a guide. This allows a comparison of one Member State fuel sample distribution with another which could aid in the spotting reporting irregularities. Figure 4-1 provides an illustration of a skewed distribution. This means that there are more samples on one side of the range than the other (to the right). This will mean that one of 25% values ('tails' in the box plot) will be longer than the other, and that the median value will not be centred in the middle 50% box. Box plots will help to determine how wide the sample values range – or how close they are to fuel specifications set by the Directive across the Community.

Figure 4-1: Explanation of Box Plot



This statistical analysis has been presented for some key parameters for petrol and diesel fuels. The selected parameters may change in future years with the introduction of new, key parameters and may also change to more closely monitor trends as fuel specifications

change over time. The following parameters have been presented in this section, and within Member State reports:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

Sample results have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. Limit value does not depict compliance or non-compliance as the Tolerance Limits - which do determine whether sample results can be considered to be compliant or non-compliant - are dependent on the test methods used – and the reproducibility of those test methods. The level of detail provided by Member States is not yet consistently sufficient to assess parameters against test methods used. However, limit values represent the maximum and minimum limits as determined by Directive specifications.

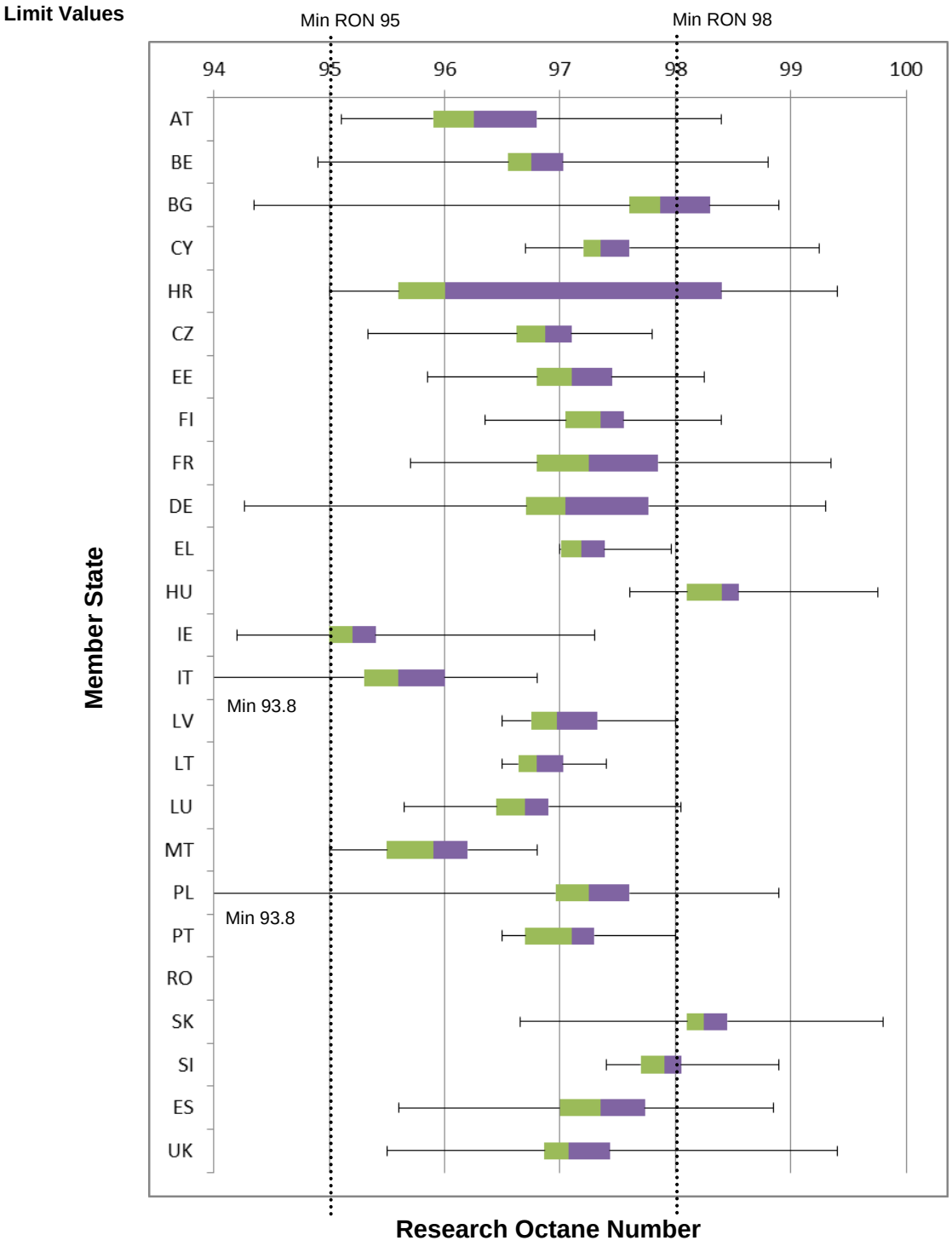
If less than 5 samples were tested and reported by the Member State, results have been removed from the following charts to avoid inaccuracies (a minimum of 5 datasets are required). In addition, where data appeared to be inaccurate, the data has been removed to avoid anomalous skew in the data (e.g. where reported results do not conform to maximum/ minimum parameter results provided in sampling analysis). More detail on Member State specific results and the anomalies observed have been provided within individual Member State chapters.

4.2 Key parameters – EU results

4.2.1 Petrol

4.2.1.1 *Research Octane Number (RON) Analysis*

Figure 4-2: Box plot of RON samples per Member State



***Results from <5 samples have been removed.**

****No data provided or out of range values for DK, NL, SE, RO.**

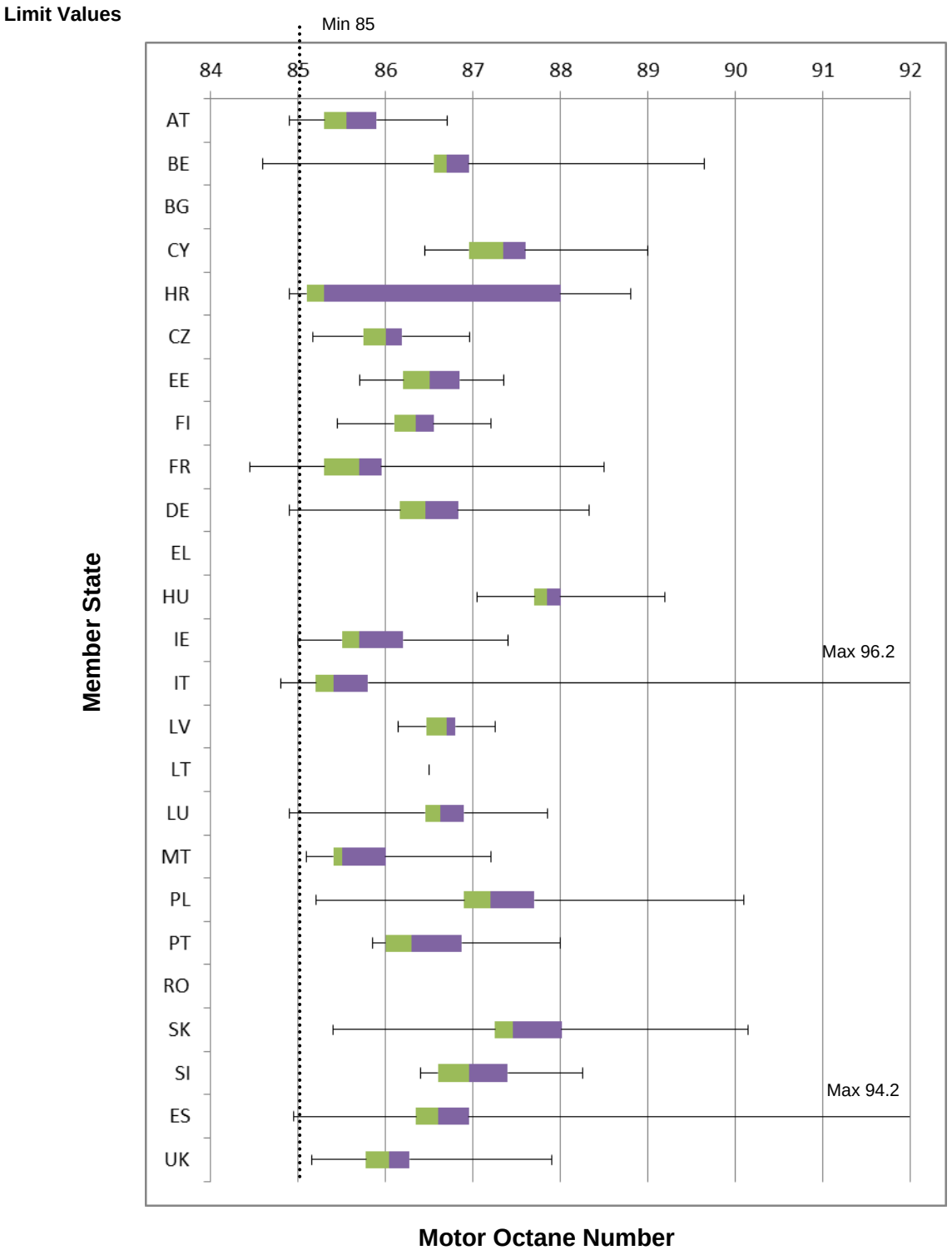
***HR did not provide separated analysis by fuel grade.**

***Please see Glossary in Section 34 for country abbreviations**

The average of sample results for Research Octane Number in 2013 (for fuel for which at least 5 samples have been tested) have been presented in Figure 4-2 and show that fuels in the Community (according to the data provided by Member States) were moderately tight to specifications for RON. The majority of fuel sold in the EU is RON 95 (83%), with another 13.5% of RON 95-98, and so it is unsurprising that the majority of sample results are above the minimum limit value of 95. A further 3.2% of fuel sold in the EU was RON 98, which further pushes the average about the 95 limit value. Overall, it appears that suppliers to the European market are generally not struggling to ensure fuels keep within the RON specifications, with the majority of samples for most Member States achieving RON median values between 96 and 98. Only Ireland and Italy present distribution curves close to limits, but only outliers seems to be below specification. RON 91 fuels (with a minimum limit value of 91) were available in Austria, the Czech Republic and Denmark. The analysis excludes fuel with less than 5 samples, and all RON91 cases fall in this category, therefore excluding all RON91 fuels from the analysis. Further details of individual Member States sample results have been provided in the following Member State chapters. Hungary and Slovakia have the highest average quality, with the mean value above RON 98.

4.2.1.2 *Petrol - Motor Octane Number (MON) Analysis*

Figure 4-3: Box plot of MON samples per Member State



***Results from <5 samples have been removed.**

***No data provided by BG, DK, EL, NL, RO**

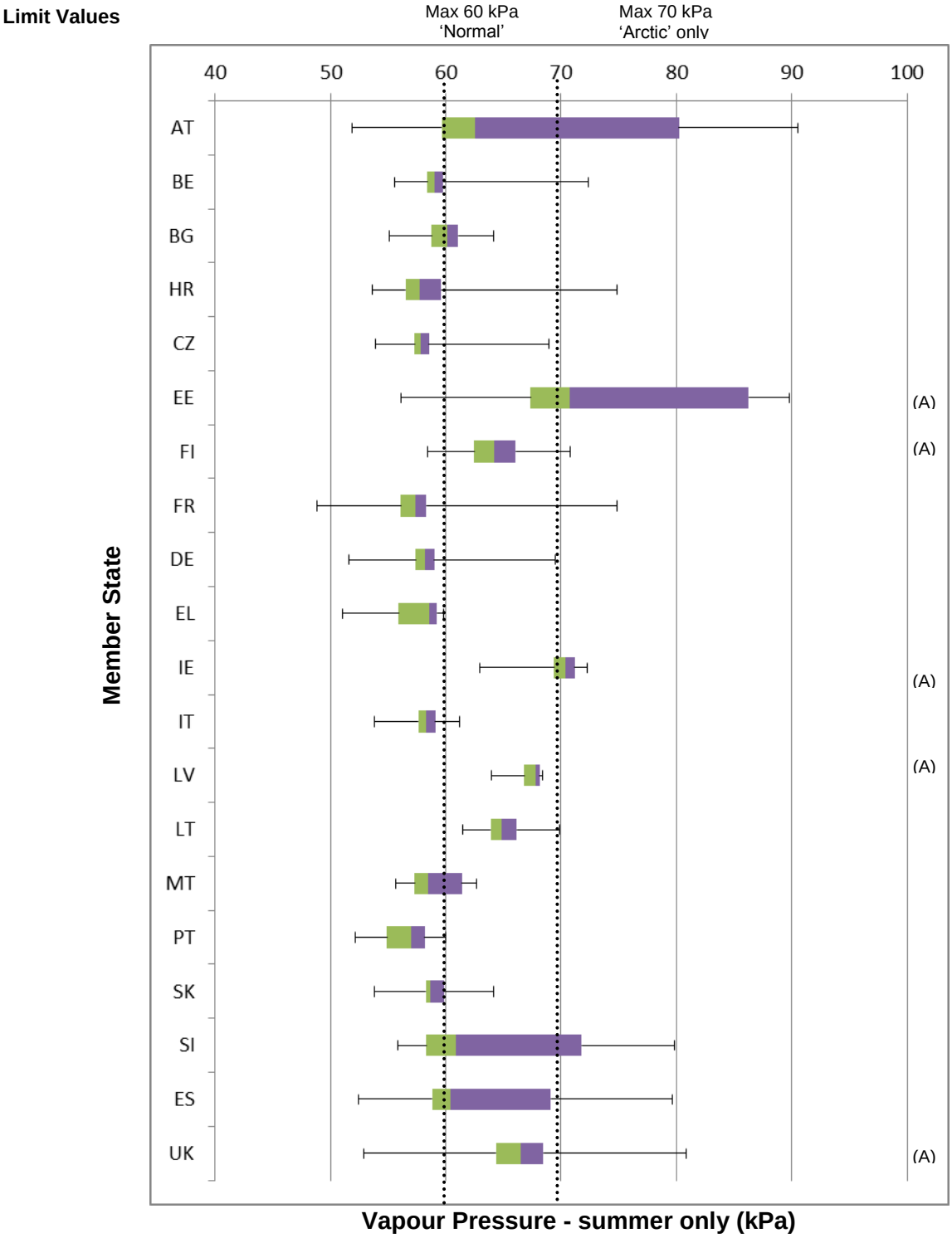
***HR did not provide separated analysis by fuel grade**

***Please see Glossary in Section 34 for country abbreviations**

Figure 4-3 demonstrates the MON results for petrol in 2013. In general MON results are closer to minimum limits, although only Belgium, France and Italy had minimum below the 85 threshold. The analysis excludes fuel with less than 5 samples, so all the RON91 fuels are excluded. Figure 4-3 shows that larger countries have, as expected, larger variation. However, the variation reported by Italy and Spain is much wider than any other country, with particularly high maximum values (96.2 and 94.2 respectively). On the opposite, Lithuania showed the tightest distribution, with all values at 86.5.

4.2.1.3 *Petrol - Vapour Pressure (VP) Analysis*

Figure 4-4: Box plot of Vapour Pressure samples across Member States



***Cyprus, Denmark, Hungary, Luxembourg, Netherland, Poland, Romania and Sweden have been removed due to inconsistent results and missing values.**

***Member States represented in the data above with a derogation to report according to 'Arctic' conditions with a corresponding summer vapour pressure maximum limit of 70kPa are Denmark, Estonia, Finland, Ireland, Latvia, Sweden and the UK. (A) denotes arctic derogation in place**

***The maximum vapour pressure limit in Lithuania is 70kPa – however the state remains classed as 'normal'.**

***Please see Glossary in Section 34 for country abbreviations**

Vapour pressure for the summer period is monitored closely and fuel specifications are subject to different limits in the winter period. Only the summer vapour pressure results are requested from Member States, however some also provide winter results. Wherever possible, winter results have been excluded from the chart. In addition, there is a transitional period; during this time, twice a year the summer and winter fuels are swapped in supply outlets. Some Member States also make use of the arctic derogation, which allows a higher summer vapour pressure of 70kPa. These are denoted with an (A) in the figure above.

Analysis results show very different distribution for Member States, with Austria and Estonia presenting particularly wide spreads whereas the majority of Member States show much tighter distributions. However, there is a lack of consistency between Member States with regard to the transition between summer and winter periods – with some Member States excluding results from samples taken during the transitional period and others reporting all summer, winter and transition period results. Therefore, until there is greater consistency, the results above may not provide an accurate comparison and might portray poorer quality fuels than neighbouring States when it might not be the case. In addition, some Member States have reported that some non-compliances against the vapour pressure limit are a result of retailers that have a low sales turnover continuing to sell winter blend in the summer period.

The Summer Vapour Pressure distributions in 2013 appear very close to limits in all member states. Since 2011 a number of new fuel grades with higher (5% and above) blends of ethanol are reported for the first time (e.g. France reported two petrol fuel grades: RON 95 E5 and RON 95 E10 with 5% and 10% bioethanol content respectively). Ethanol causes a rapid rise in vapour pressure, which makes it difficult for refiners to meet the specification. From the figure above it appears that many Member States have reported samples over the parameter limit. However, this may be misleading as the tolerance limit for vapour pressure varies with ethanol content, although this could not be shown in the graph. Table 4-1 demonstrates how maximum tolerance limit increases with bioethanol content.

Table 4-1: Summer Vapour Pressure tolerance limits according to bioethanol content

Vapour Pressure, DVPE	Bioethanol content (kPa)	Limit values 98/70/EC	Standard	Date	Repro-ducibility	Tolerance limit (max)
Normal summer	0	60.0	EN 13016-1	2007	2.2	61.3
	1-2	66.0	EN 1601	1997	2.3	66.1
	3-4	67.8	EN 1601	1997	2.3	68.0
	5-6	68.0	EN 1601	1997	2.3	68.2
	7-8	67.9	EN 1601	1997	2.3	68.1
	9-10	67.8	EN 1601	1997	2.3	67.9
Arctic or severe weather conditions	0-10	70	EN 13016-1	2007	3.2	71.9

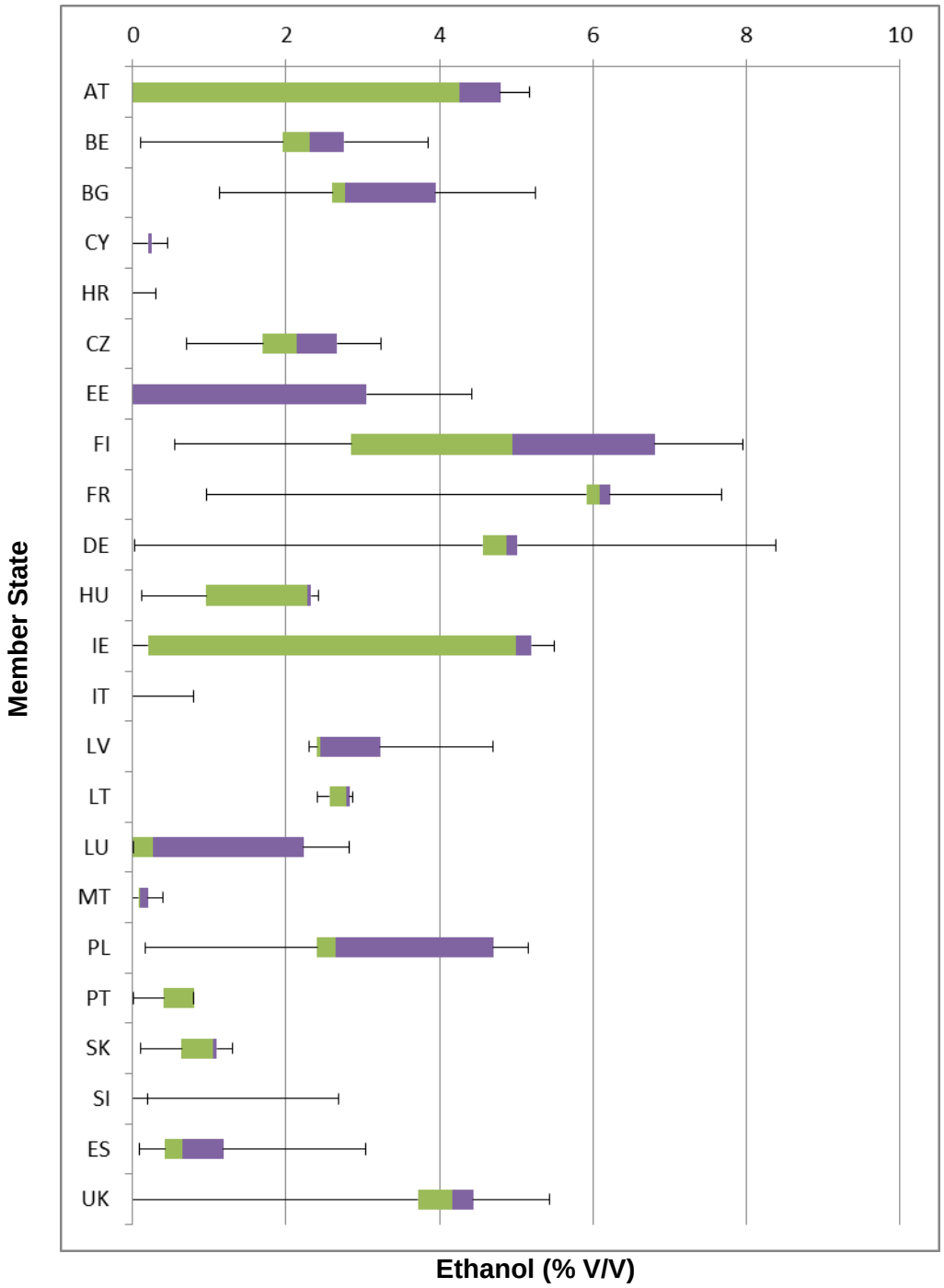
Figure 4-5 presents the skew of results for actual ethanol content of tested samples in Member States. Most of the distributions are strongly skewed towards zero, although the spread varies widely: Cyprus, Croatia, and Malta all report very low concentrations, near the detection limit, and very tight distributions. On the opposite, Finland, France and Germany

have very wide spreads, with outliers falling near 8%, and very high median values. Latvia and Lithuania are the only two countries with all samples above 2%.

Comparing Figure 4-5 and Figure 4-4, values above max limit for DVPE in Finland, France, and Germany can be explained by the high ethanol content in their fuels. DVPE value for Croatia appear not justified, given it has reported near zero concentration of ethanol; Slovenia and Spain too show relatively high DVPE values compared to their ethanol distribution.

Figure 4-5: Box plot of ethanol samples across Member States

Limit Values



***Denmark, Greece, Netherland, Romania and Sweden have been removed due to inconsistent results and missing values.**

***Fuels with low sales and for which fewer than five samples have been collected have not been included.**

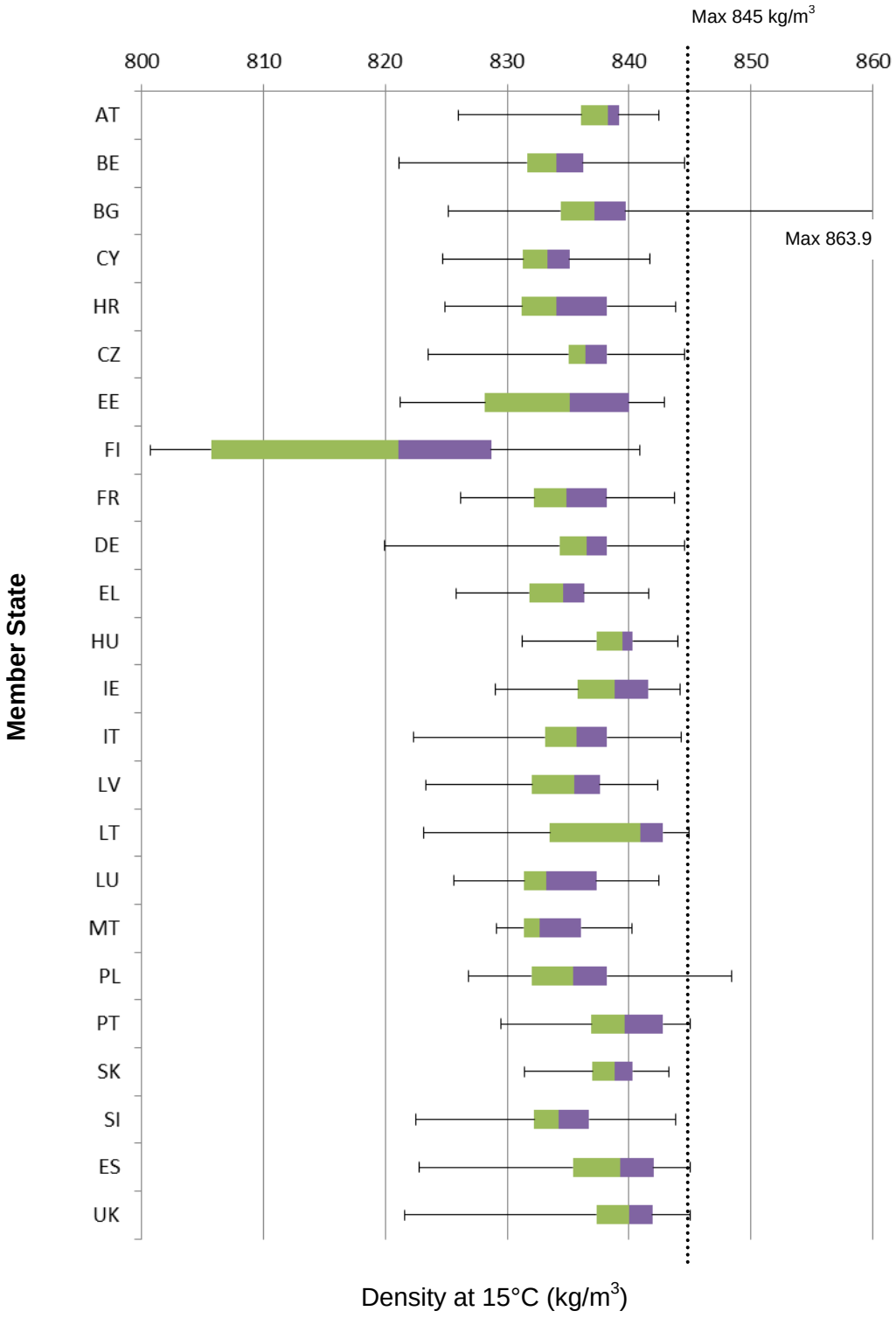
***Please see Glossary in Section 34 for country abbreviations.**

4.2.2 Diesel

4.2.2.1 *Density at 15°C Analysis*

Figure 4-6: Box plot of Density samples across Member States

Limit Value



***Results from <5 samples have been removed.**

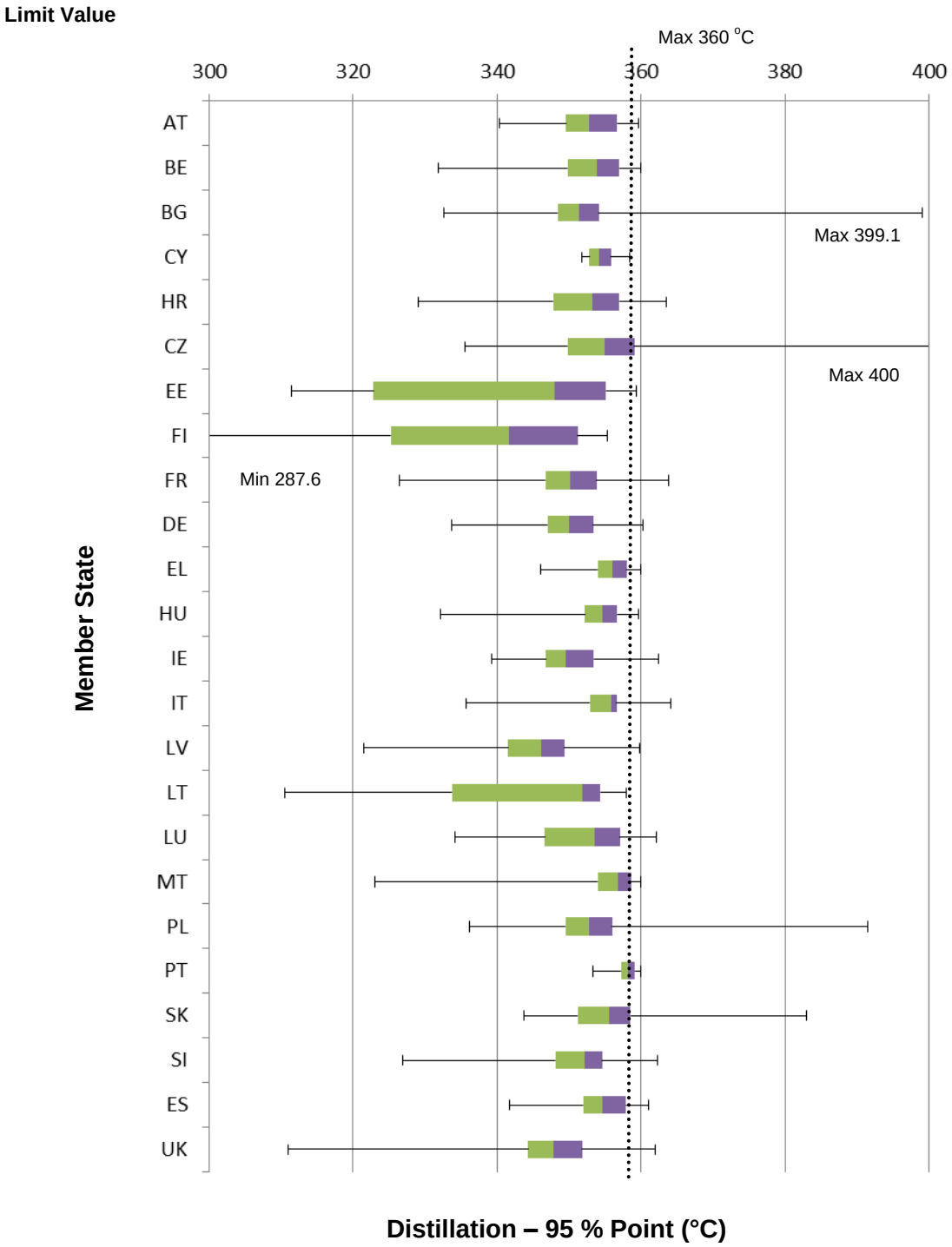
***Denmark, Netherland, Romania and Sweden did not provide enough statistical details.**

***Please see Glossary in Section 34 for country abbreviations.**

Continuing the trend seen in the last two years, only Bulgaria and Poland exceeded the maximum limit value for Density and the majority of Member States results show a comfortable margin between maximum value for the parameter, and the Limit Value. In spite of this, the majority results are skewed towards the maximum value, rather than the minimum value (as can be observed by the boxed areas remaining tight to the maximum value). This could suggest that the minimum values reported are outliers. Due to the higher density of biodiesel (approx. 890 kg/m^3 compared to 830 kg/m^3 of no FAME diesel) the results are moving towards the specification limit because Member States are increasing the percentage of FAME content. Finland shows a remarkably different distribution in comparison to other Member States, with much lower values for every quartile.

4.2.2.2 *Diesel - Distillation – 95% Point Analysis*

Figure 4-7: Box plot of Distillation samples across Member States



***Results from <5 samples have been removed**

***Denmark, Netherland, Romania and Sweden did not provide enough statistical details.**

***Please see Glossary in Section 34 for country abbreviations.**

Similar to the results for Density at 15°C, results of distillation analyses in many Member States are strongly skewed towards the maximum value allowed, while outliers above the 360 C° limits are present only in Bulgaria, Czech Republic, Poland and Slovakia. Looking at the distance from the minimum value and the 25% of results, minimum values seems to be outliers, especially in the case of Finland, Malta and UK. Finland and Estonia have a wider than average distribution.

5 Austria

5.1 Fuel Availability 2013

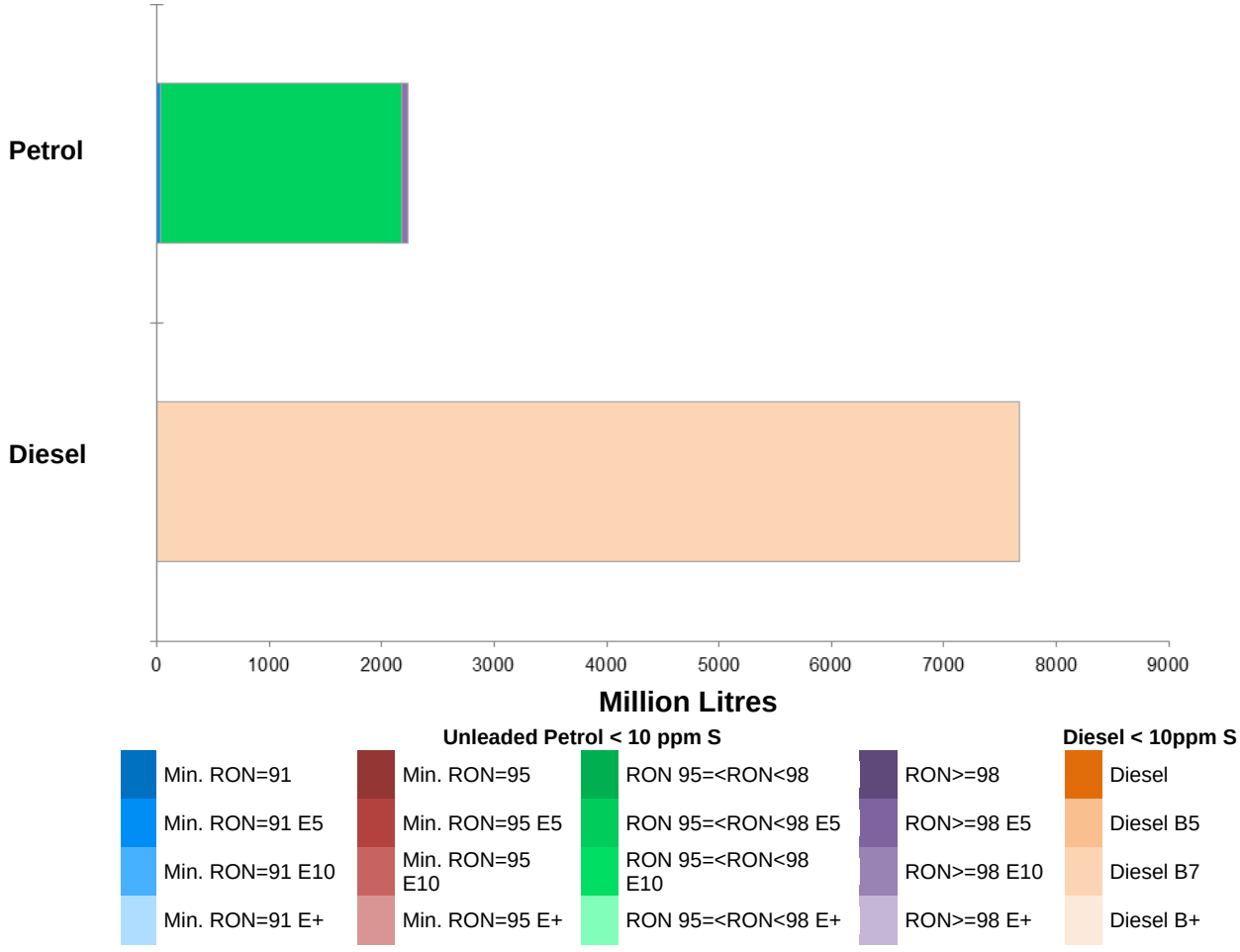
The following table lists the fuels that were reported to be available nationally in 2013.

Table 5-1: National fuel grade

Fuel grade	National fuel grade
Regular unleaded petrol (minimum RON = 91) E5	Normal
Unleaded petrol (minimum 95 =< RON < 98) E5	Super
Unleaded petrol (minimum RON >= 98) E5	Super Plus
Diesel fuel B7	Diesel

5.1.1 Sales, sampling and reporting

Figure 5-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Austria were dominated by diesel fuel sales. More than 7.6 million litres of diesel was sold in comparison to just over 2.2 million litres of petrol fuel sales (all petrol grades combined). Petrol fuel sales were mainly comprised of fuel grade RON

95=<RON<98. Austria has an unusually high number of fuel grades available, as it retains RON 91 petrol, which has disappeared from most markets.

Table 5-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales	Sales,	Samples (1)			Separate	Param's measured (4)	Add. Notes
	(Million litres)	% total of fuel type	S	W	TR (2)	S/W(3)		
Unleaded petrol min. RON=91 (<10 ppm S) E5	31	1.41%	3	0	2	Yes	19 of 19	
Unleaded petrol 95=<RON<98 (<10 ppm S) E5	2,151	96.23%	50	50	100	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S) E5	53	2.36%	3	0	2	Yes	19 of 19	
Total Petrol	**2,235**	**100.00%**	**56**	**50**	**104**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	7,667	100.00%	50	50	100	Yes	6 of 6	(a)
Total Diesel	**7,667**	**100.00%**	**50**	**50**	**100**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer and winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters. Austria has reported all parameters for all fuel grades.
(a)	Additional notes	Sometimes sold with no FAME (B0), due to harsh winter conditions in the Alps.

5.1.1.1 *Petrol Samples*

Austria has complied with minimum sampling requirements for Unleaded petrol 95=<RON<98 (<10 ppm S) E5, which amounts to over 96% of total sales and for Unleaded petrol min. RON=91 (<10 ppm S) E5 and Unleaded petrol RON>=98 (<10 ppm S) E5.

Sampling for Unleaded petrol RON>=98 E5 and Unleaded petrol min. RON=91 (<10 ppm S) E5 was only performed during the summer period due to the small number of samples required according to the EN 14274 minimum samples requirements.

5.1.1.2 *Diesel Samples*

Austria met the minimum sampling requirements for diesel B7 fuel grade. Diesel fuel is sold with no FAME added during harsh winter condition in the Alps, but falls into the same fuel grade.

5.2 Fuel Quality Monitoring 2013

5.2.1 Description of System

Responsible organisation(s)	Umweltbundesamt GmbH Wien
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model A
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Service stations
Time/frequency of sampling	The 3 samples for petrol fuel grade RON 91have been taken in June 2013. For fuel grade RON 98 and diesel with no FAME all samples have been taken over June and July, while for Petrol 95<RON<98 and for Diesel B7 samples have been taken during 6 months (January, February, Jun, July, October and November).
Specification of test methods	As per Directive 98/70/EC - Austria uses the EN 14274 norm for the interpretation of the analyses.
Collection of sales data	Sales data for 2013 has been provided by the Federal Ministry of Economy, Family and Youth. The data are published on the website of the Austrian Economic Chambers called “Verbrauchsstatistik” since 2006 (http://portal.wko.at/wk/startseite_dst.wk?AngID=1&DstID=308)

Other details: Regarding Statistical Model change: The Commission stated within the FQMS Summary Reports "Key areas for improvements" that "Austria has stated that it uses Statistical Model C, however this does not appear entirely consistent with the European Standard specification (discussed in section 2.2.2). Instead statistical Model A seems more appropriate, which would require further information to be reported on sample numbers in different regions." In past parameters didn´t show significant differences between Austrians states - since the introduction of blending Ethanol (ETBE) to petrol fuels, it appears that there are two different petrol sources since differences appear between the share of Ethanol and Bio-ETBE, both as part of the biogenic content. Based on analyses of the past three years, Austria chooses to adapt the FQM - model and switch from C to Model A (2 Macro-regions). This was implemented for the first time in reporting year 2011. Moreover, due to changes regarding fuel consumption of the petrol grade "normal", since 2012 there are only 3 samples taken according to the standard EN 14274.”

5.2.2 Fuel Quality Monitoring System

5.2.2.1 *Sampling*

Samples are taken only from service stations. The organisation responsible is Umweltbundesamt GmbH.

5.2.2.2 *FQMS Administration*

The quality of petrol and diesel fuels is performed by the Federal Environment Agency on behalf of the Federal Ministry Agriculture, Forestry, Environment and Water Management, checked by the Federal Ministry and then submitted to the European Commission.

5.2.2.3 *National Legislation that Transposed the FQD*

The transposition of the FQD in national law, as well as the RED, was done with a new Austrian Fuel Ordinance which was published in 2012 (BGBl. II Nr. 398/2012).

5.2.2.4 *Reporting Periods*

Summer period: 1st May – 30th September

Winter period: 1st October – 30th April

No arctic weather conditions in Austria.

5.2.3 Compliance with Fuel Quality Limit Values

Table 5-3: Petrol Fuel Grades

Normal Petrol (RON 91)- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.8	62.7	1	33%
Member State notes One sample was found to be above the tolerance limit, a penalty was imposed.					
Super Petrol (95 =< RON < 98)- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.8	61.35	1	2%
Member State notes One sample was found to be above the tolerance limit, a penalty was imposed. Austria has reported vapour pressure for the winter period too. Values above 60 kPa in winter are not considered an exceedance.					
Super Plus Petrol (RON 98)- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.8	65.15	1	33%
Member State notes One sample was found to be above the tolerance limit, a penalty was imposed.					

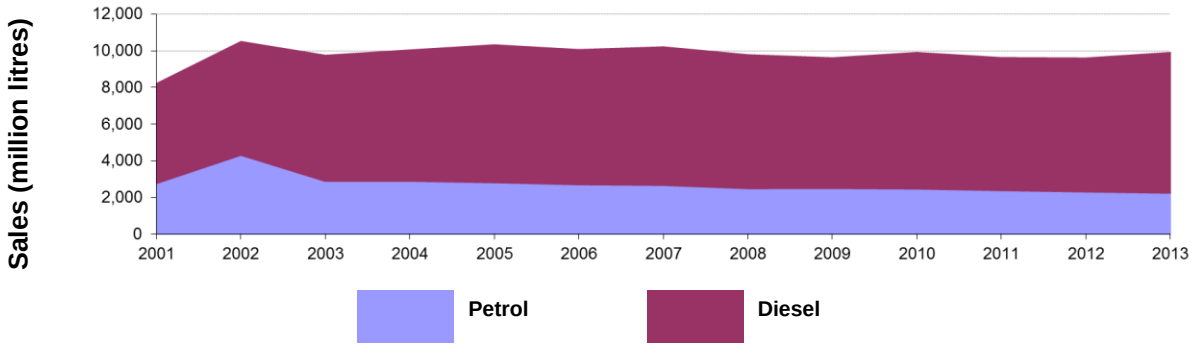
Table 5-4: Diesel Fuel Grades

Diesel B7- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
FAME Content	7	7.3	7.54	2	2%
Member State notes One sample was found to be above the tolerance limit, a penalty was imposed.					

5.3 Temporal Trends

Figure 5-2 shows the trend in total fuel sales since 2001. Diesel sales in Austria have increased by 5.8% (374 million litres) compared to 2012, with an overall increase of 40% since 2001. Petrol fuel sales have reduced by 6% (70 million litres) in the period between 2012 and 2013, with an overall reduction of 19% since 2001.

Figure 5-2: Temporal trends in national sales of petrol and diesel (million litres)



5.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, see section 4.

Fuel sampling in Austria in 2013 recorded relatively few test results out of specification with limits. The analysis charts for petrol (Figure 5-3) and diesel (Figure 5-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15°C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

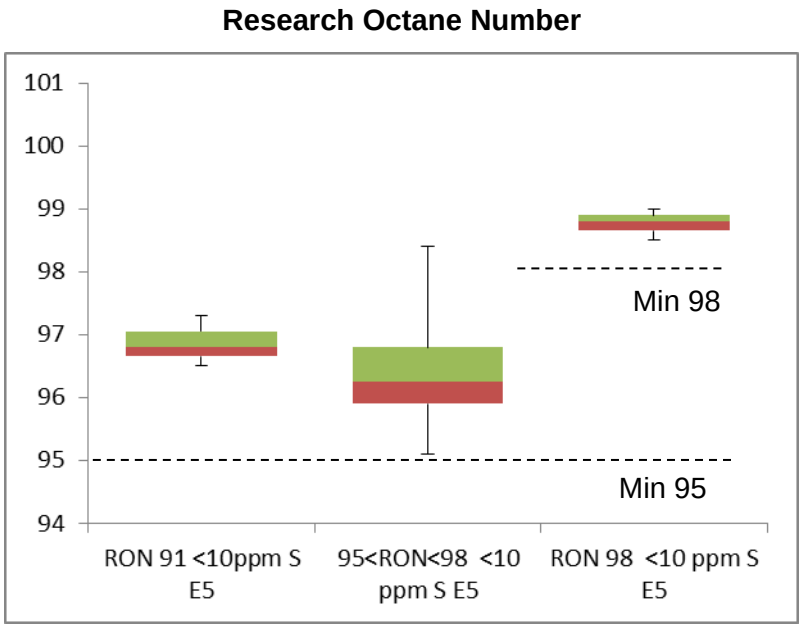
5.4.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. Note that the very low sampling of RON91 E5 and of RON98 E5 (3 samples) means that the statistical analysis has limited application. Also, due to the low number of samples, the variation exhibited by RON 98 DVPE analysis is rather surprising.

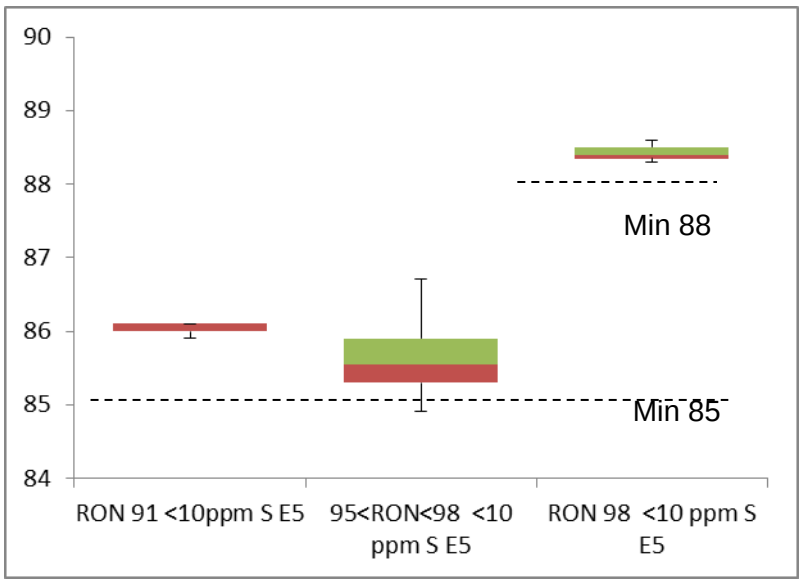
RON and MON sample results show that the fuels available in Austria have reasonably small variation in Octane levels for the majority of samples with no exceedances. Fuels marketed as RON91 still have RON values well above the 95 minimum, and actually higher on average than fuels sampled in the 95-98 RON category.

Summer Vapour pressure results shows that the samples were found to be tighter to the specifications of the Fuel Quality Directive, with one sample for each fuel exceeding limit values and the majority of samples skewed very close to the limit.

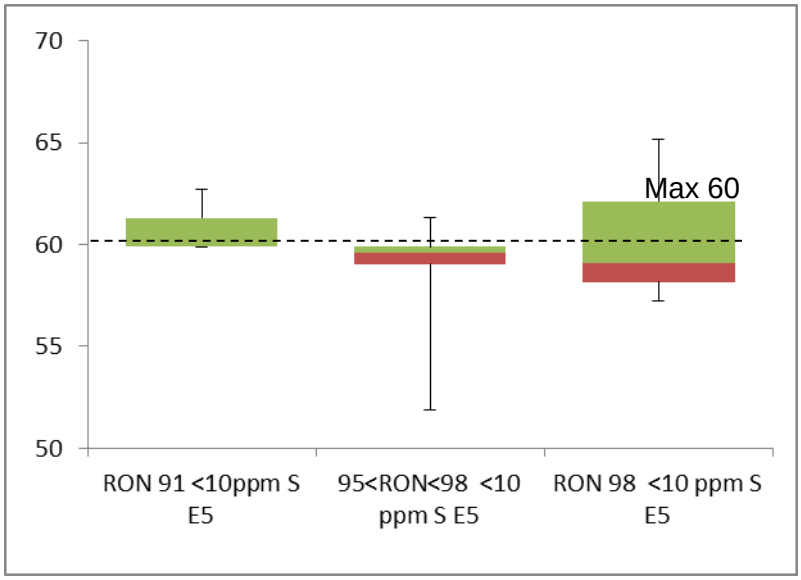
Figure 5-3: Petrol analysis



Motor Octane Number



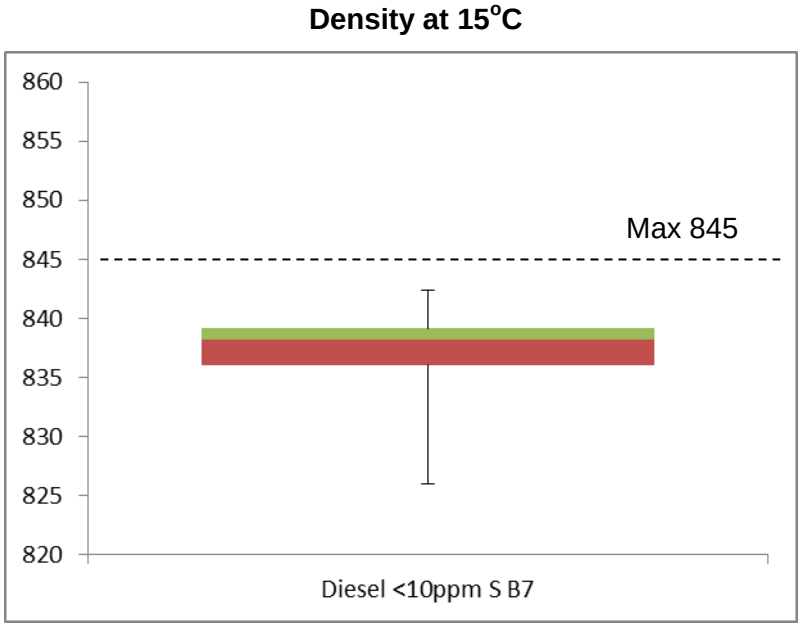
Summer Vapour Pressure (DVPE)

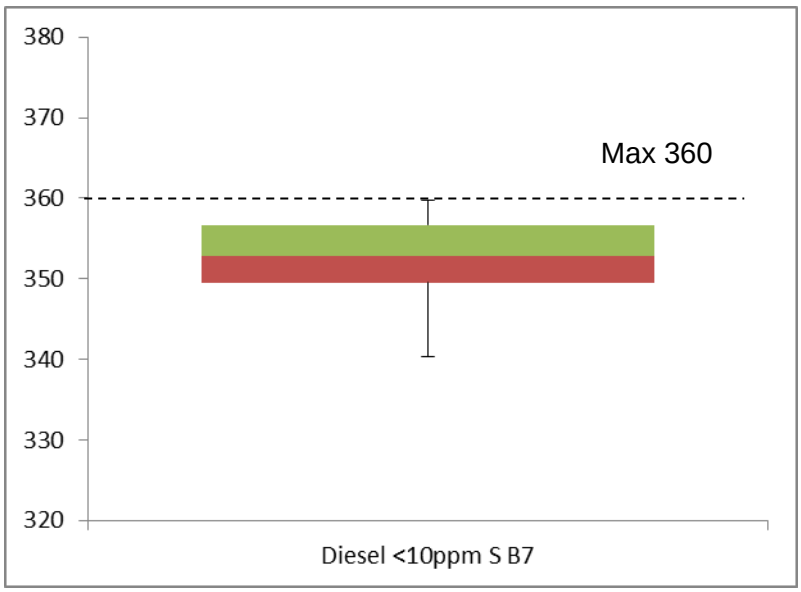


5.4.2 Diesel Analysis

Density and Distillation analysis of Diesel fuel show a fairly tight distribution, with the Distillation test being very close to limits. However, none of the sample exceeded specifications.

Figure 5-4: Diesel analysis





5.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Austria has complied with minimum sampling requirements.	• The 2013 report was received on time on the 30th of June.
2012	• Austria has complied with minimum sampling requirements.	• The 2012 report was received on time.
2011	• Austria has complied with minimum sampling requirements for all petrol fuel grades, with the exception of Unleaded petrol RON>=98 E5, where they exceeded the sampling requirement in the summer period but did not report any samples in the winter period. No information has been provided about test methods for 2011. • The source of sales data for 2011 has not been provided.	• The 2011 report was received on time.

6 Belgium

6.1 Fuel Availability 2013

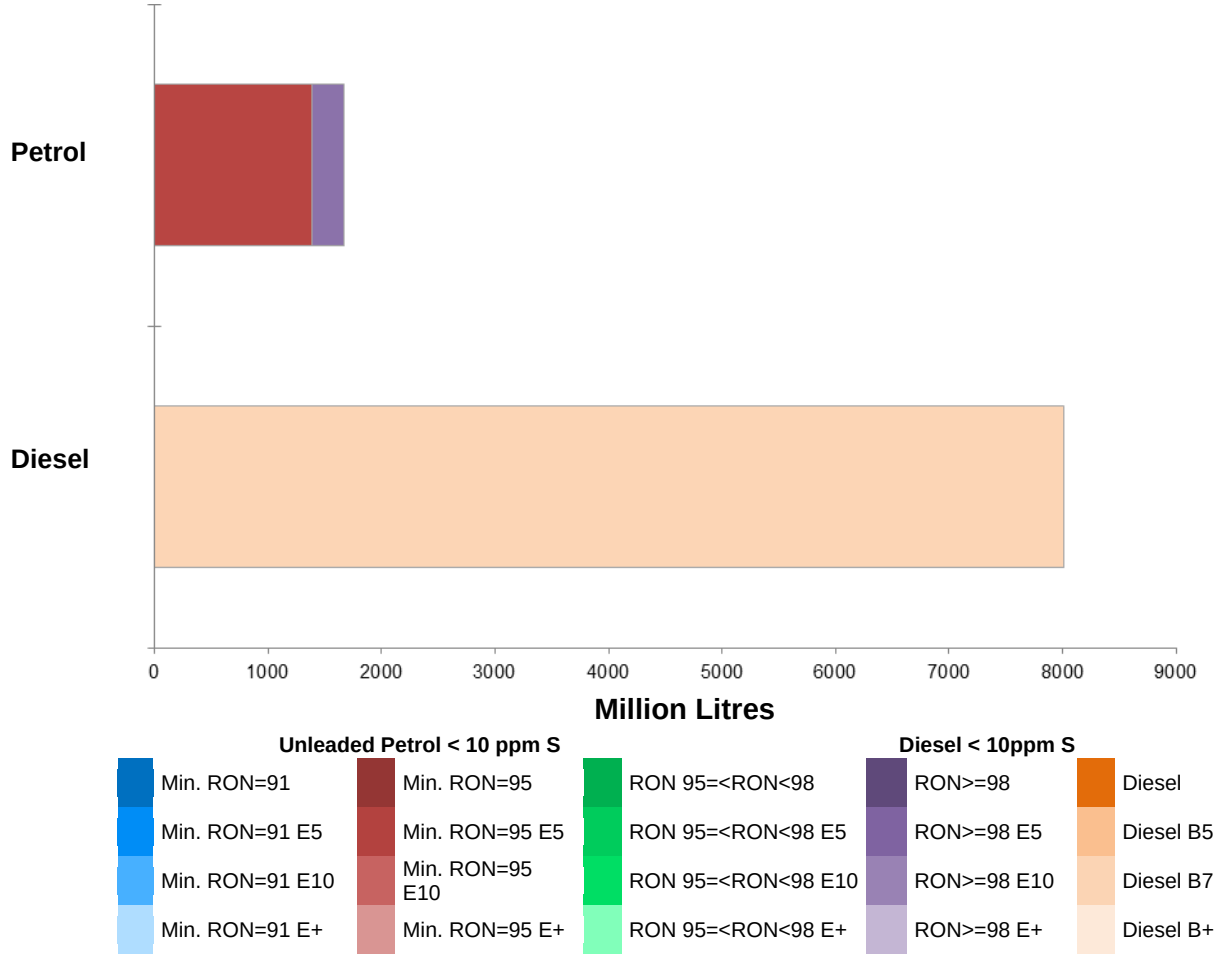
The following table lists the fuels that were reported to be available nationally in 2013.

Table 6-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	ES 10ppm S
Unleaded petrol (minimum RON >= 98) E5	S+ 10 ppm S
Diesel fuel B7	Diesel 10 ppm S

6.1.1 Sales, sampling and reporting

Figure 6-1: Fuel Sales proportions by fuel type



Diesel continues to dominate the automotive fuel sales market in 2013. 8,011 million litres of diesel fuel was sold in 2013 and all diesel fuels sold contained up to a maximum of 7% biofuel content. In contrast, only 1,667 million litres of petrol was sold in 2013, with a fuel grade split of RON 95 (83%) and RON 98 (17%). All petrol fuel grades contained up to 5% biofuel content.

Table 6-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E5	1,389	83.35%	586	1,185	(100)	Yes	19 of 19	(a)
Unleaded petrol RON>=98 (<10 ppm S) E5	278	16.65%	101	141	(100)	Yes	19 of 19	(a)
Total Petrol	**1,667**	**100.00%**	**687**	**1326**	**(200)**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	8,011	100.00%	2,473	3,914	(100)	Yes	6 of 6	(a)
Total Diesel	**8,011**	**100.00%**	**2,473**	**3,914**	**(100)**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a)	Additional notes	Belgium controls a lot more parameters than imposed by the European Commission to ensure and protect the customer of the quality of the sold fuel. For some parameters some projects have been undertaken to detect problems with analyses method. This kind of information is shared in the ONP (Organisation for Normalisation of Petrol Products), where a member of Fapetro is represented.

6.1.1.1 *Petrol Samples*

As in previous years, Belgium has sampled in high quantities, exceeding the minimum required sample quantities in order to demonstrate statistical equivalence with EN 14274 recommendations. Though Belgium are using the national system, they have still met the required 50 samples for summer and winter periods as required for models A and C and therefore do show that they are compliant with sampling requirements.

6.1.1.2 *Diesel Samples*

Sample quantities for diesel exceed the minimum number of samples required to demonstrate statistical significance with EN 14274. Though Belgium are using the national system, they have still met the required 50 samples for summer and winter periods as required for models A and C and therefore do show that they are compliant with sampling requirements.

6.2 Fuel Quality Monitoring 2013

6.2.1 Description of System

Responsible organisation(s)	Fapetro
Fuel Quality Monitoring System (FQMS)	National
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Refuelling stations
Time/frequency of sampling	Samples of all fuel grades have been taken in every month throughout the year.
Specification of test methods	As per Directive 98/70/EC - Belgium uses the ISO 4259 norm for the interpretation of the analyses results from 1 January 2009. All the samples were analysed by labs that were ISO 17025 certified. All the used test methods are accredited or the demand for accreditation is in progress.
Collection of sales data	Sales data are collected by the Energy Department of the Federal Public Service Economy, SMEs, Independent Professions & Energy.
Other details:	

6.2.2 Fuel Quality Monitoring System

6.2.2.1 *Sampling*

8354 samples were taken from public refuelling points (service stations) throughout the whole country in 2013. Belgium can announce that the results proved to be of the good quality. Only a very small number of samples were non- compliant, due to involuntary contamination.

The proportion of taken diesel and petrol samples has been adapted to the volume of fuel sold on the Belgian market, so mainly diesel samples are taken.

Concerning the results provided for petrol, Fapetro wants to draw special attention to the Belgian annex of the NBN EN 228 mainly for the parameter vapour pressure.

National specifications for the vapour pressure are:

- in summer (kPa): min 45.0 - max 60.0

- in winter (kPa): min 65.0 - max 95.0

- 2 transition periods: the months April and October (kPa): min 45.0 - max 95.0

Vapour pressure is analysed throughout the year in Belgium, as well as in summer as in winter.

The transition periods are used to give the fuel producers the ability to adapt the production of the fuel quality in order to meet the specifications of the summer or winter fuel quality.

However every year Fapetro notices a boost off DVPE infringements in the month May. Those infringements are involuntary and due to low stock rotation in mainly small retail stations (at the end of the chain). At those stations the 'winter' quality petrol staid longer in stock as the retail station didn't sell that much. As a result of this the transfer period from 'winter' to 'summer' quality petrol was disturbed. All those infringements were small, harmless for the environment and involuntary.

Non-compliant samples for vapour pressure, concerning petrol, were due to low rotation of stocks in transition periods between winter and summer grades.

All the samples were analysed by labs that were ISO 17025 certified. All the used test methods are accredited or the demand for accreditation is in progress.

6.2.2.2 *FQMS administration*

Fapetro, Funds for analyses of petrol products, is responsible for the quality monitoring of the automotive fuel sold in Belgium. Belgium uses the ISO 4259 standard for the interpretation of the analyses results from 1 January 2009. Belgium uses a national system that existed even before the FQMS was developed. The number of taken samples is higher than in the other statistical models A, B or C.

The organization Fapetro received an ISO EN 17020 certification by the Belgian Accreditation organization in 2013.

Above that Fapetro also effects twice a year an audit in the labs in order to reassure itself of the quality of the reported analysed samples.

6.2.2.3 *National Legislation that transposed the FQD*

Fuel Quality Directive was transposed to Belgium legal system as:

- Royal Decree of 19 September 2013 relating to names and characteristics of diesel for automotive fuels;
- Royal Decree of 19 September 2013 relating to names and characteristics of petrol for automotive fuels;
- Ministry Decree of 24 January 2002 concerning the surveillance of quality of fuel products (Fapetro was created before FQD).

6.2.2.4 *Reporting periods*

Summer – 1st May – 30th September

Winter – 1st October – 30th April

There are two transition periods for vapour pressure: April and October

6.2.3 Compliance with Fuel Quality Limit Values

Table 6-3: Petrol Fuel Grades

Eurosuper- 95RON- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
RON	95	94.6	93.7	4	8%

Eurosuper- 95RON- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
MON	85	84.5	84.1	2	0.1%
Summer Vapour Pressure, kPa	60	61.8	70.9	44	7.5%

Member State notes
Non-compliant samples for vapour pressure were due to low rotation of stocks in transition periods between winter and summer grades.

Super+ 98RON - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer Vapour Pressure, kPa	60	61.8	73.8	3	2.9%

Member State notes

- Non-compliant samples for vapour pressure were due to low rotation of stocks in transition periods between winter and summer grades.
- Belgium applies a National model were RON 98 fuels must have a minimum RON of 98 and minimum MON of 88. According to national specifications, 3 samples have exceeded RON tolerance limits and 4 samples have exceeded MON tolerance limit.

Table 6-4: Diesel Fuel Grades

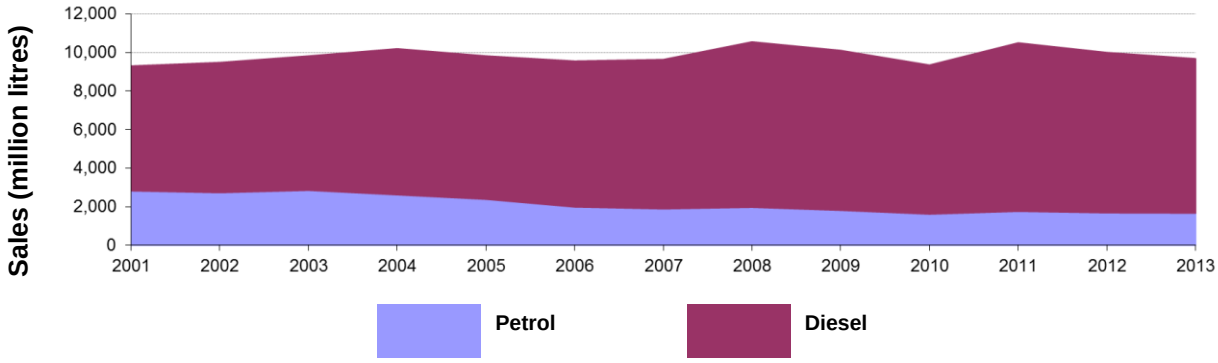
Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Sulphur Content, mg/kg	10	11.3	59.3	71	1.1%
FAME Content, % V/V	7	7.53	10.3	21	0.3%

Member State notes
The number of infringements is very low and all the small infringements were due to involuntary contamination. After receiving the CEN communication about the FAME method using the EN 14078 standard (IR-methode) Fapetro did an additional analysis using the EN14331 method for every FAME result that showed an infringement in order to be assured that the infringement was not due to overestimation of the FAME content (related to small C-chains).

6.3 Temporal Trends

Figure 6-2 shows the trend in total fuel sales in Belgium between 2001 and 2013. After having fluctuated for various years, total sales have been decreasing since 2011 both for petrol (-5.3%) than for diesel (-8.3%). In 2013 were sold 1,155 fewer litres of petrol and 1,536 more litres of diesel compared to 2001, equivalent to a -40.9% for petrol and +23.7% for diesel.

Figure 6-2: Temporal trends in national sales of petrol and diesel (million litres)



6.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4.

Fuel sampling in Belgium was randomly undertaken, representative for the geographical spread, the number of brands and the type of station. The size of the sampling is chosen to ensure that the results cover 95 % of all the sold fuels. Sampling recorded some test results out of specification with limits.

The analysis charts for petrol (Figure 6-3) and diesel (Figure 6-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

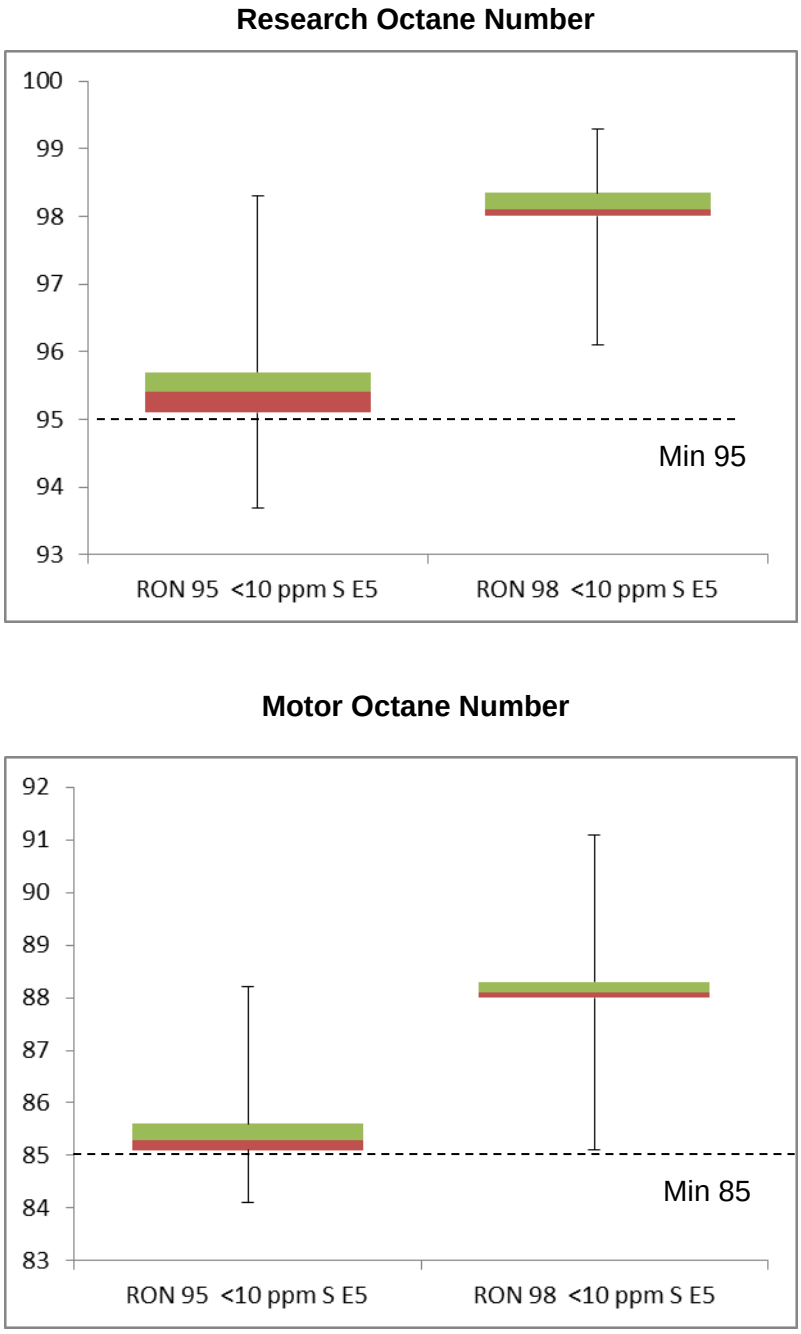
6.4.1 Petrol Analysis

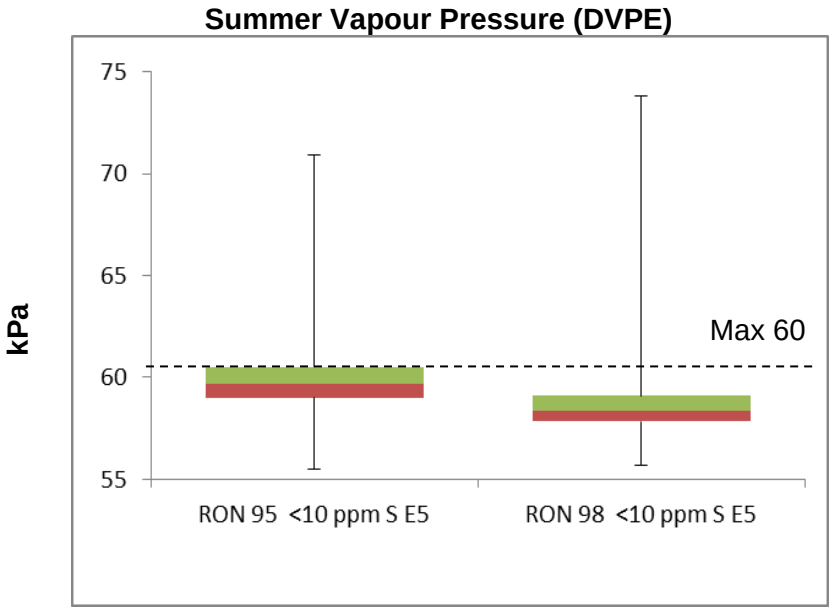
Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results.

RON sample results show that RON 98 fuel has reasonably small variation in octane levels, whereas RON 95 values are very close to tolerance limits and rather high percentage of samples (8%) actually fall below tolerance limits. MON levels do come close to the tolerance limits for RON 95, with a very small percentage of samples outside motor octane tolerance limits.

Summer Vapour pressure results show that samples mostly fall under tolerance limits but often exceed them, mainly due to samples taken during transition period from winter to summer. See Table 6-3 for further detail about non-compliant samples.

Figure 6-3: Petrol analysis



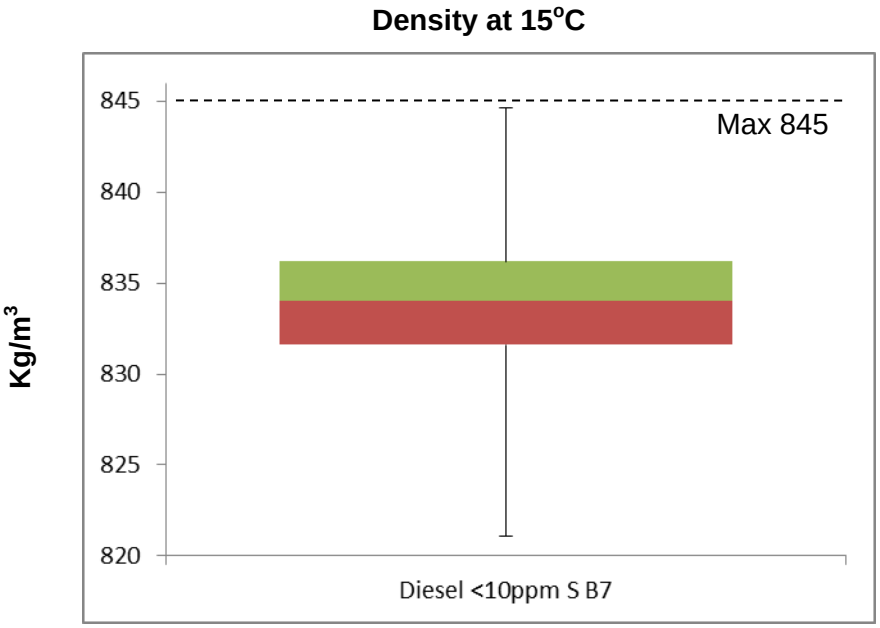


6.4.2 Diesel Analysis

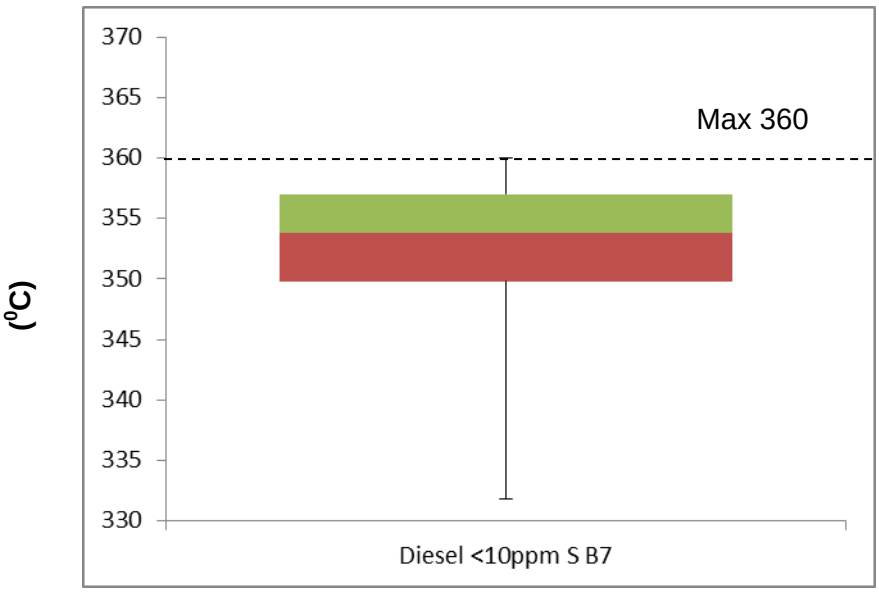
Diesel sample results for Density show a relatively even distribution of results that remain fairly close to specifications but none above limit.

Distillation, on the other hand demonstrates greater dispersion of test results, with the majority of sample results closer to Directive specification and significant outliers well below limit values for the parameter.

Figure 6-4: Diesel analysis



Distillation – 95% v/v recovered



6.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Monitoring requirements have been met.	• The Belgium report was received on time on the 30th of June.
2012	• Monitoring requirements have been met.	• The Belgium report was received on time.
2011	• Monitoring requirements have been met as Belgium has taken samples in quantities that exceeded minimum requirements in order to demonstrate equivalence with EN 14274. • Manganese was not tested during 2011, however Belgium has confirmed that this parameter will be tested and reported for in 2012.	• The Belgian report was received on time and in the requested format.

7 Bulgaria

7.1 Fuel Availability 2013

The following table lists the fuels that were reported to be available nationally in 2013.

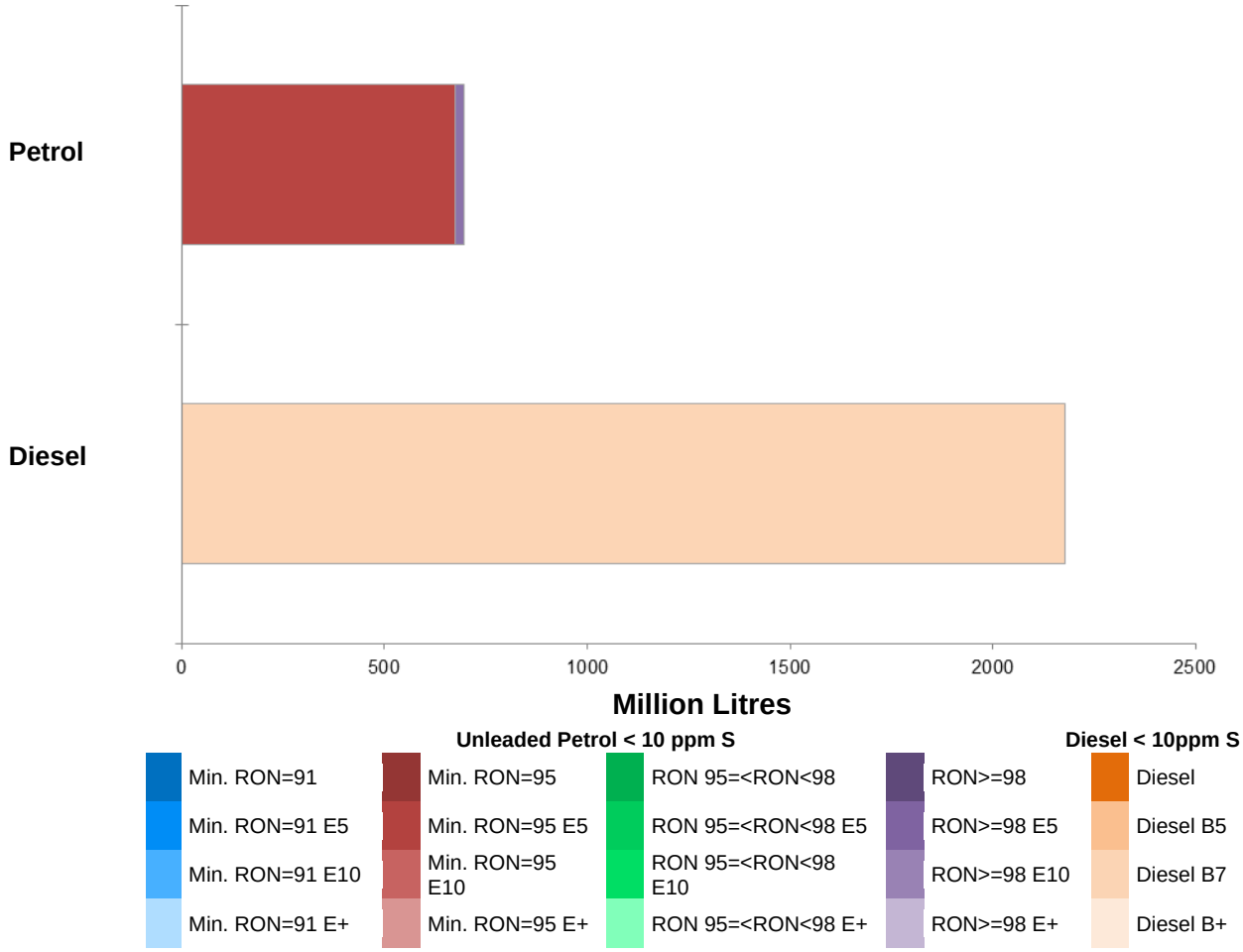
Table 7-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	Unleaded petrol RON 95
Unleaded petrol (minimum RON >= 98) E5	Unleaded petrol RON≥98
Diesel Fuel B7	Diesel fuel B7

7.1.1 Sales, sampling and reporting

Bulgaria reported the sales data for 2012 and the analysis for 2013.

Figure 7-1: Fuel Sales proportions by fuel type



Sales data provided relates to 2012. The source of this information for fuel consumption is the National Statistical Institute. According to the requirements on the basis of which NSI is collecting the information, official data for fuel consumption for 2013 will be available in December 2014. For this reason Bulgaria cannot provide the national fuel sales for 2013 in

the report. There is no data from the National Statistical Institute on consumption of petrol by category (octane number). In the Regulation 1099/2008/EC under which the National Statistical Institute reports, there are no requirements for collection of data for petrol by different types (octane numbers). Diesel fuel is the sum of consumption of diesel in the Republic of Bulgaria and diesel loaded in Bulgaria for international navigation of all ships (both international and Bulgarian).

During 2012 fuel sales in Bulgaria were dominated by diesel fuel sales; 2,049 million litres of diesel was sold in comparison to 727 million litres of petrol fuel sales (100% RON 95 E5).

Table 7-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales	Sales,	Samples (1)			Separate	Param's measured (4)	Add. Notes
	(Million litres)	% total of fuel type	S	W	TR (2)	S/W(3)		
Unleaded petrol min. RON=95 (<10 ppm S) E5	674	97.00%	231	223	200	Yes	18 of 19	(a)(b)
Unleaded petrol (minimum RON >= 98) E5	21	3.00%	5	16	6	Yes	18 of 19	(a)(b)
Total Petrol	**695**	**100.00%**	**236**	**239**	**206**	**Yes**	**18 of 19**	
Diesel (<10 ppm sulphur) B7	2,178	100.00%	248	243	200	Yes	6 of 6	(b)
Total Diesel	**2,178**	**100.00%**	**248**	**243**	**200**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a)	Additional notes	Motor Octane Number results were not reported.
(b)	Additional notes	Sales refer to 2012.

7.1.1.1 *Petrol Samples*

For petrol RON 95, minimum requirements for number of samples were adhered to. More than 200 samples were taken in summer and winter periods from petrol RON 95, complying with EN 14274 statistical model B, which requires 100 samples in winter and summer periods each. Market share of RON 98 was less than 10% in 2012 and on assumption that the sales have remained the same in 2013, Bulgaria has also fulfilled the requirements for minimum number of samples for RON 98.

7.1.1.2 *Diesel Samples*

Minimum requirements of sampling were adhered to - more than 200 samples were taken in summer and winter periods from Diesel fuel B7, complying with EN 14274 statistical model B, which requires 100 samples in winter and summer periods each.

7.2 Fuel Quality Monitoring 2013

7.2.1 Description of System

Responsible organisation(s)	Ministry of Environment and Water and the State Agency for Metrological and Technical Surveillance (SAMTS) to Ministry of Economy, Energy and Tourism.
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model B
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Sampling has been carried out at 451 locations for petrol consisting of; 428 service stations, 22 terminals and 1 refinery. Sampling has been carried out at 496 locations for diesel consisting of; 473 service stations, 22 terminals and 1 refinery.
Time/frequency of sampling	Samples are taken every week with a maximum of 20 samples taken per week, from across the territory. Sampling took place every month for RON 95, but only over 8 months for RON 98. Diesel samples were taken every month.
Specification of test methods	Tests have been carried out according to the tests methods mentioned in the Directive 98/70/EC amended by Directive 2009/30/EC.
Collection of sales data	The source of fuel consumption data in 2012 is from the National Statistical Institute.

Other details

1) Bulgarian monitoring system was introduced on 1st of October 2003 when the Clean Air Act, Law of renewable energy sources and the Regulation on liquid fuels quality and procedures and methods of their control were adopted. The Regulation implements the requirements of the Directive 98/70/EC and Directive 2009/30/EC. The latest Regulation amendment in 2011 and according to EN 228 and EN 590 introduced two transition periods for petrol and one autumn intermediate period for diesel. Each period lasts 6 weeks. The Regulation empowers the Directorate General “Quality control of liquid fuels” of SAMTS to take and test samples of liquid fuels for transport and heating purposes and Executive Agency “Maritime Administration” to take samples from vessels and send them for testing to the accredited laboratory.

2) The Directorate General “Quality control of liquid fuels” of SAMTS consists of three regional departments for control collecting samples which are located in Sofia, Burgas and Pleven. One department tests fuels within its own laboratory, having one stationary and two mobile departments. One department is used for control, issuing expert conclusion about the compliance/non-compliance of tested fuels. The staff of the regional control departments is spread out all over the country and is located in 7 main towns – Sofia, Plovdiv, Varna,

Burgas, Pleven, Ruse and Haskovo. The staff of the Directorate General “Quality control of liquid fuels” performs regular control of petrol stations, taking samples according to scheme for monitoring the fuel quality given in EN 14274 for small size country in model B, where the country has 3 macro-regions and 7 regions. There are no geographical areas that are left out from the monitoring programme. The total number of petrol stations which are spread out all over the country is about 2169. The petrol stations are located as follows:

- Regional department for fuel quality control in Sofia is responsible for Bulgaria west (from north to the south borders) - totally 580 petrol stations;
- Regional department for fuel quality control in Pleven is responsible for Bulgaria north – totally 735 petrol stations (Pleven region - 260 petrol stations, Varna region - 264 petrol stations and Ruse region - 211 petrol stations);
- Regional department for fuel quality control in Burgas is responsible for Bulgaria south - totally 854 petrol stations (Burgas region - 222 petrol stations, Plovdiv region - 349 petrol stations and Haskovo region - 283 petrol stations).

The marketed fuels are mainly produced by one Bulgarian refinery. Small amounts of both fuels are imported from abroad. Taking into account nearly the equal amount of petrol stations, marketing nearly the same amounts of fuels in each macro-region and the availability of both fuels, produced by one refinery, having branches in each macro region, the amount of samples to be taken is considered to be equal for each regional department of the Directorate General “Quality control of liquid fuels”. There are no geographical areas left out from the monitoring programme.

3) The samples taken are tested only in stationary, or first in mobile and then in stationary laboratory of the testing department. Equipment of mobile laboratories is mostly for express testing methods. When non-compliance is determined in mobile laboratory for one or more parameters, the test is repeated in stationary laboratory. Test methods are utilized in mobile laboratory as follows: Distillation by ASTM 7345, Benzene by ASTM 6277, Oxygen content and Oxygenates by ASTM 5845 and Sulphur content by ASTM 7212. Tests of the parameter "Cetan number" are done only in mobile laboratory with the help of diesel analyzer "Irox Diesel". Equipment of stationary department covers requirements of EN 228 and EN 590 where equipment for "Octane number" can be used only for testing according to EN ISO 5164 and "Sulphur content" according to EN 20846. Except parameters which are marked in Reporting Template, most of samples are tested for other parameters like: Density for Petrol and Cetane index, Viscosity, Flash point and FCPP for Diesel.

4) Non-compliances have resulted in enforcement actions according to Clean Air Act, Law of renewable energy sources and Regulation on liquid fuels quality and procedures and methods of their control.

7.2.2 Fuel Quality Monitoring System

7.2.2.1 *Sampling*

Fuel quality control is performed by the chairman of the State Agency for Metrology and Technical Surveillance (SAMTS) under the Directorate General "Quality control of liquid fuels" (DG "QCLF"). Officials of DG "QCLF" are authorized by the President of SAMTS for activities to take samples, test them and report the results.

The control of fuels in sea areas and inland waterways of the Republic of Bulgaria is carried out by authorized Executive Director of the Executive Agency "Maritime Administration" officials.

The officials of DG "QCLF" inspect storage tanks and fuel oil in commercial, industrial and storage facilities, in oil depots and terminals and in refuelling stations (from nozzles) and from portable tanks for the carriage of liquid fuels.

Frequency of sampling is weekly, maximum twenty samples per week and not more than 1000 samples per year. The places of sampling are fixed using software for an accidental choice or after receiving signal in SAMST or DG “QCLF” for fuel which is out of fuel quality requirements.

Bulgaria legislation is adopted with Directive 98/70/EC amended by Directive 2009/30/EC, Directive 2009/28/EC and Directive 1999/32/EC. Fuel quality monitoring model is for small country statistical model “B” according to EN 14274. The minimum number of samples each period is 100 for petrol RON 95 and diesel. Number of samples for petrol RON >= 98 was calculated by the help of formula according EN 14274 where market share of petrol RON >= 98 is not more than 5 %.

The samples are tested only in stationary or at first in mobile and then in stationary laboratory of testing department of DG QCLF. Equipment of mobile laboratories is mostly for express testing methods. Test methods are utilized in mobile laboratory as follows: Distillation according to ASTM D 7345, Benzene according to ASTM D 6277, Oxygen content and Oxygenates according to ASTM D 5845 and Sulphur content according to ASTM D 7212. Test for the parameter "Cetane number" is done in mobile laboratory with the help of diesel analyzer "Irox Diesel". Equipment of stationary department covers requirements of EN 228 and EN 590 and permits to apply test methods as follow: for petrol RON according to EN ISO 5164, Lead content according to EN 237, Density at 15 °C according to EN ISO 12185 and EN ISO 3675, Sulphur content according to EN ISO 20846, Oxidation stability according to EN ISO 7536, Copper strip corrosion according to EN ISO 2160, Hydrocarbon content - Alkenes and Arenes according to EN 15553, Benzene according to EN 238 + A1 and EN 12177 + AC, Oxygen content and Oxygenates according to EN 13132, Vapour pressure according to EN 13016 – 1, Distillation according to EN ISO 3405, Manganese according to EN 16135 and EN 16136 and for diesel ""Cetane number"" is according to EN 15195 for “Delivered cetane number” instead of engine according to EN 5165, Cetane index according to EN ISO 4264, Density at 15 °C according to EN ISO 12185 and EN ISO 3675, Polycyclic aromatic hydrocarbons according to EN 12916, Sulphur content according to EN ISO 20846, Flash point according to EN ISO 2719, Carbon residue (on 10% distillation residue) according to EN ISO 10370, Ash content according to EN ISO 6245, Water content according to EN ISO 12937, Total impurities according to EN 12662, Copper strip corrosion according to EN ISO 2160, Crushing capacity according to EN ISO 12156 – 1, Viscosity at 40 °C according to EN ISO 3104 + AC, Distillation according to EN ISO 3405, Cold filter plugging point according to EN 116 + AC and Content of methyl esters of fatty acids according to EN 14078.

7.2.2.2 *FQMS Administration*

Responsible organizations for managing and implementing the FQM Directive are the Ministry of Environment and Water and State Agency for Metrological and Technical Surveillance - Directorate General "Quality Control of Liquid Fuels" (DG QCLF).

Control is done through checks on: information on the marketing fuel, inspection of documents accompanying liquid fuels, sampling of liquid fuels and testing of samples, examination of the test results for compliance with the requirements for fuel quality and imposition of administrative measures.

Directorate General "Quality Control of Liquid Fuels" is the public body which is responsible for taking action where non-compliant samples are discovered. Every month, every three months and every year DG QCLF reports on the site of SAMST on data regarding number of checks, number of non-compliant cases, number and type of imposition administrative measures which have been taken during the reporting period.

The Bulgarian refinery is “Lukoil” in Burgas. There is a pipeline from the refinery to Sofia. The pipeline is connected with terminals in Karnobat, Stara Zagora, Plovdiv, Ihtiman and Sofia. In addition to these terminals there are 11 other bigger terminals – six of them are in north

Bulgaria and five in south Bulgaria. The owners of these terminals are “Lukoil”, “Naftex Petrol”, OMV, “Rompetrol”.

Bulgaria provides annual Fuel Quality Monitoring data report up to 30th of June.

7.2.2.3 *National Legislation that Transposed the FQD*

European fuel quality legislation is transposed to Bulgarian legislation by means of Clean Air Act, Law of renewable energy sources and the Regulation on liquid fuels quality and procedures and methods of their control. Clean Air Act and the Regulation on liquid fuels quality and procedures and methods of their control are in fuel quality area and introduce the requirements of EN 228 and EN 590. Law of renewable energy sources puts minimum requirements for blending fossil fuels with bio component. According article 47 of Law of renewable energy sources, terminals are obliged to blend fossil diesel with minimum 6 % (V/V) biodiesel.

The difference with the last (2012) reporting year is that the same article 47 orders terminals to blend petrol with minimum 3 % (V/V) bioethanol or ethers produced from bioethanol from 1st of March 2013 and 4 % (V/V) from 1st of September 2013. Two months later these rates of blending are in force for refuelling stations.

7.2.2.4 *Reporting Periods*

The summer period in Bulgaria lasts from 16th of April to 15th of October. The rest of the year is winter period – from 16th of October to 15th of April. No “Arctic” derogation has been granted for Bulgaria.

With the last amendment of Regulation on liquid fuels quality and procedures and methods of their control in 2011, two transition periods were introduced for petrol and one autumn intermediate period for diesel. Each period lasts 6 weeks. Winter – summer transition period for petrol begins on 16th of April and finishes on 31st of May. Summer – winter transition period for petrol and intermediate autumn period for diesel begins on 16th of October and finishes on 30th of November.

Samples during the transitions and intermediate periods are taken and tested with the same frequency as the rest of the year. All results of samples taken during transitions and intermediate periods are reported with annual fuel quality report except the sanctions for the exceeded values in them for “Vapour pressure” and “Cold filter plugging point”.

7.2.3 Compliance with Fuel Quality Limit Values

Table 7-3: Petrol Fuel Grades

RON 95 E5 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
RON	95	94.6	91.1	3	0.6%
Summer vapour pressure, kPa	60	61.8	67.1	4	1.7%
Distillation at 100^{o}C	46	43.6	62.4	4	0.8%
Benzene, % v/v	1.0	1.1	2.5	2	0.5%
Sulphur content, mg/kg	10	11.6	50	10	2.2%

RON 95 E5 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Member State notes All cases of non-compliances which have been established are over the samples taken from nozzles of retail stations. The conclusions of compliance/non-compliance have been given over the stationary laboratory results. All non-compliances resulted in a penalty fine of 10,000 lv (~€5,100) per each sample which exceeded tolerance limits.					
Unleaded petrol (minimum RON >= 98) E5- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Sulphur content, mg/kg	10	11.6	14.1	1	4.7%
The conclusions of compliance/non-compliance have been given over the stationary laboratory results. One case of non-compliance which has been established is over the sample taken from nozzles of retail stations. It resulted in a penalty fine of 10,000 lv (~€5,100).					

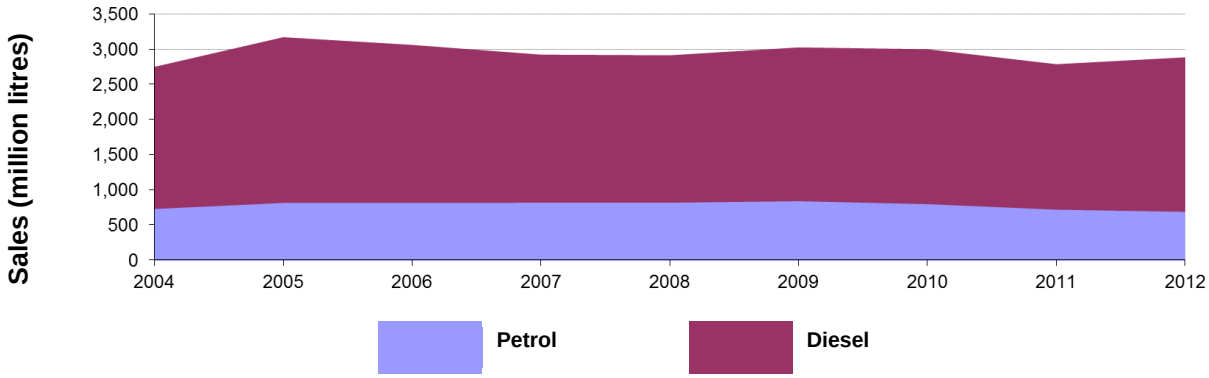
Table 7-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Density at 15 °C	845	845.3	863.9	4	0.8%
Distillation – 95-%-Point, °C	360	365.9	399	2	0.4%
Sulphur content, mg/kg	10	11.3	50	10	2%
Member State notes The conclusions of compliance/non-compliance have been given over the stationary laboratory results. All non-compliances resulted in a penalty fine of 10,000 lv (~€5,100) per each sample which exceeded tolerance limits.					

7.3 Temporal Trends

Figure 7-2 shows the overall trend in total fuel sales for Bulgaria from 2004 since Bulgaria began reporting under the FQM directive in 2005 (please note that Bulgaria always report figures of the previous year). Between 2004 and 2012 petrol sales have decreased by 41 million litres (5.6%), whilst diesel sales have increased by 177 million litres (2.3%). Between 2011 and 2012 diesel sales have increased by 130 million litres (6.3%), whilst petrol sales have decreased by 32 million litres (4.3%). [As noted earlier in 7.1.1 2013 fuel sales are not available until the end of 2014, so could not be included here.]

Figure 7-2: Temporal trends in national sales of petrol and diesel (million litres)



7.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see section 4.

Fuel sampling in Bulgaria in 2013 recorded a number of test results found to be out of specification with limit values. No test results were provided from MON for both petrol fuel grades, therefore petrol analysis shows only RON and DVPE.

The analysis charts for petrol (Figure 7-3) and diesel (Figure 7-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

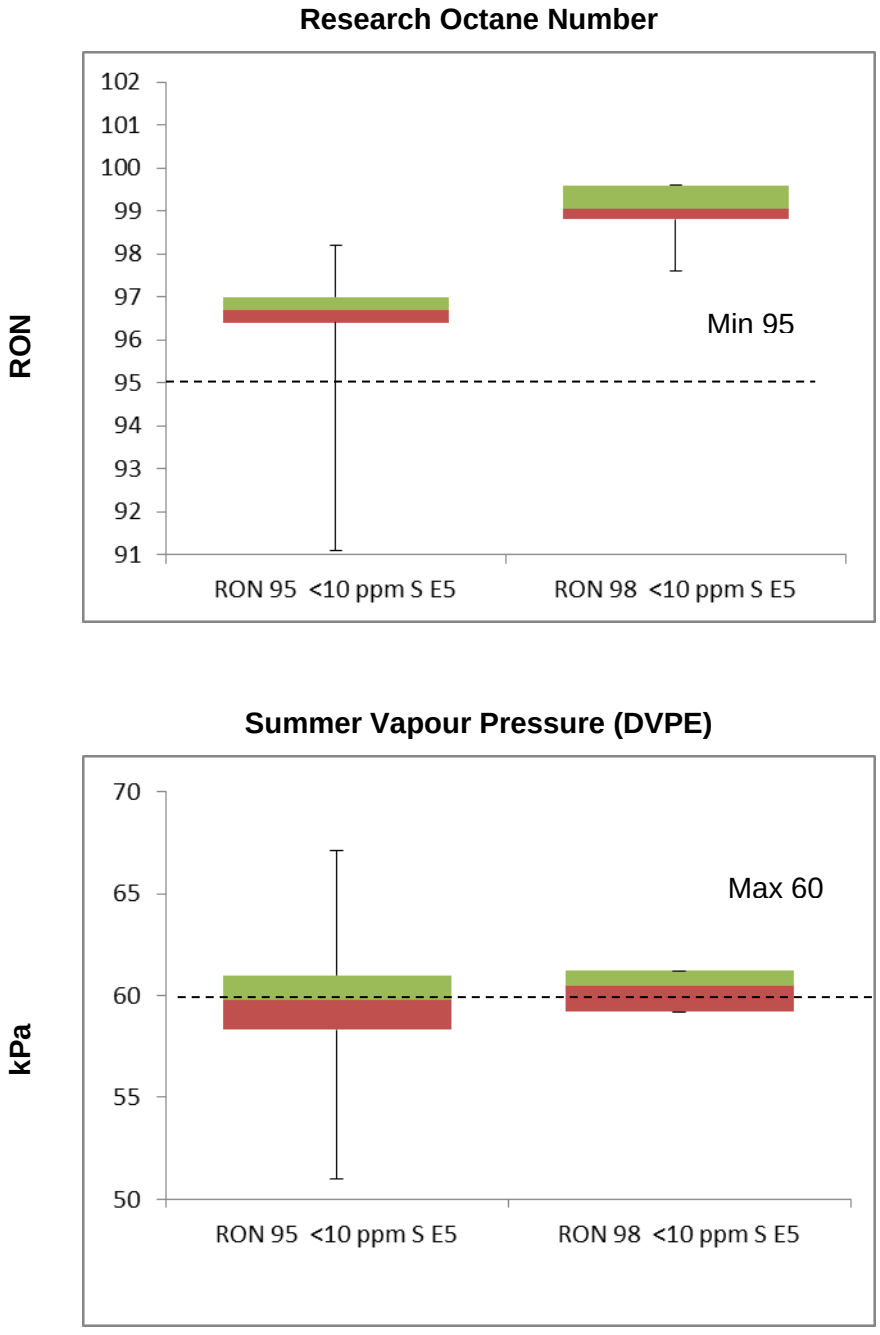
7.4.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. RON sample results show that RON 95 and RON 98 have a reasonably small variation in Octane and

most of the results are well above minimum limit. However, a few outliers in RON 95 are below the minimum values.

Results for Summer Vapour Pressure shows the both RON 95 and RON 98 are very close to tolerance limit, with a few exceedances identified in RON 95. The distribution of RON 98 is much tighter and no values exceed tolerance limit.

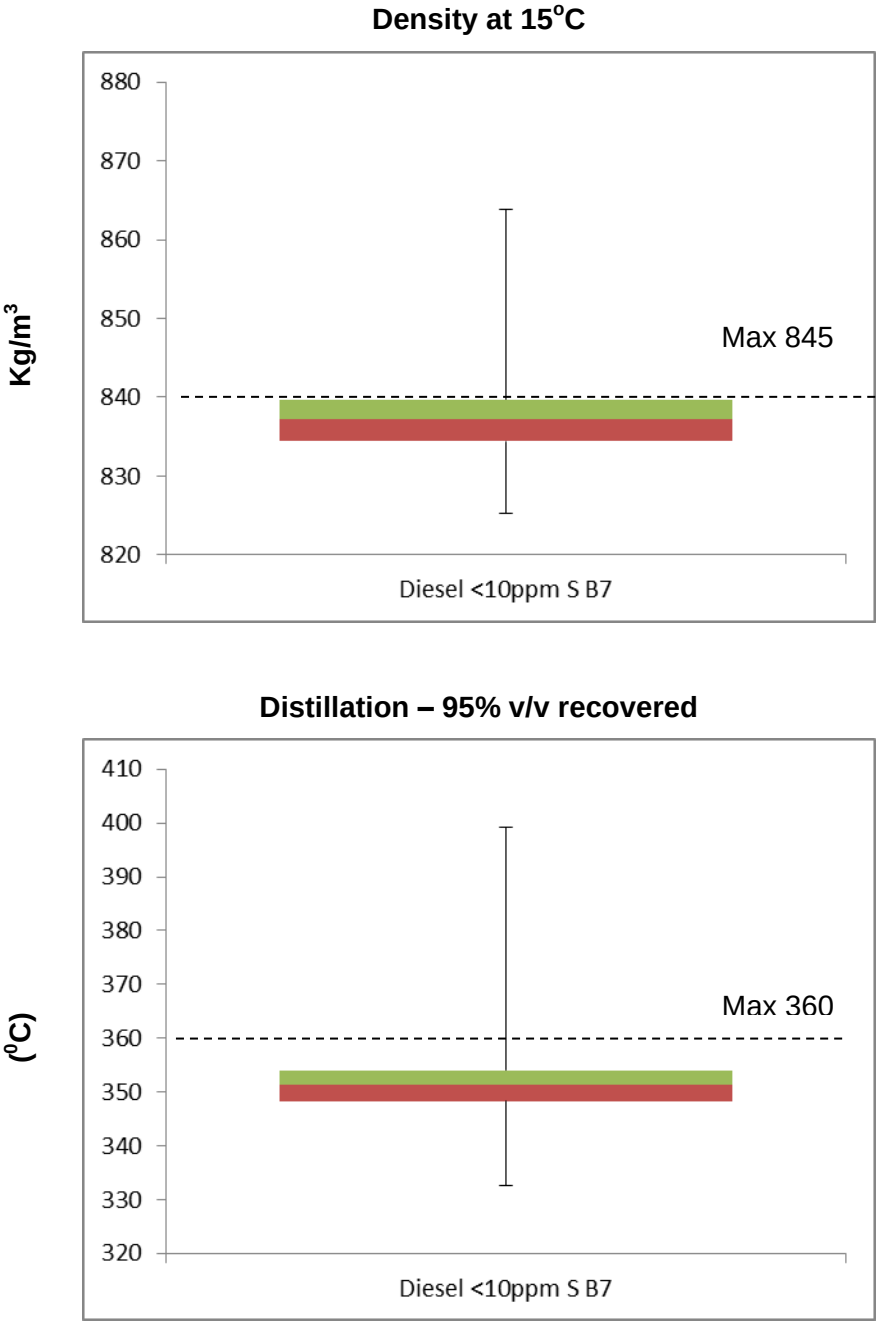
Figure 7-3: Petrol analysis



7.4.2 Diesel Analysis

Diesel sample results show a rather tight distribution for both Density and Distillation, with the former being very close to tolerance limits. Both distributions have outliers, including a few samples well above maximum limits.

Figure 7-4: Diesel analysis



7.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Sales data for 2012 was provided with the statistical analysis for fuels used in 2013. This approach restricts analysis. Sales data have to be reported by 30th June for the preceding year. • Petrol analysis did not include Motor Octane Number test.	• The report was received on the 28th June, before the 30th June deadline and in the correct format
2012	• Sales data for 2011 was provided with the statistical analysis for fuels used in 2012. This approach restricts analysis. Sales data have to be reported by 30th June for the preceding year. • Details of samples of Diesel B7 were not reported, which is required.	• Statistical data for all petrol fuel grades will improve future reports. • The report was received on the 28th June, before the 30 June deadline.
2011	• Bulgaria did not report parameter results for MON and Manganese for petrol fuel grades, Unleaded petrol min. RON=95 (<10 ppm S) E5 and Unleaded petrol RON>=98 (<10 ppm S) E5 or for MON, Olefins, Aromatics, Lead and Manganese for petrol fuel grade, Unleaded petrol 95=<RON<98 (<10 ppm S) E5. • The statistical analysis information provided was incomplete and had some inconsistencies. Though this is not a mandatory reporting requirement, if the data are routinely collected then they could be supplied for all grades. • Bulgaria has not provided fuel sales split by fuel grades.	• The 2011 report was submitted on time.

8 Croatia

8.1 Fuel Availability 2013

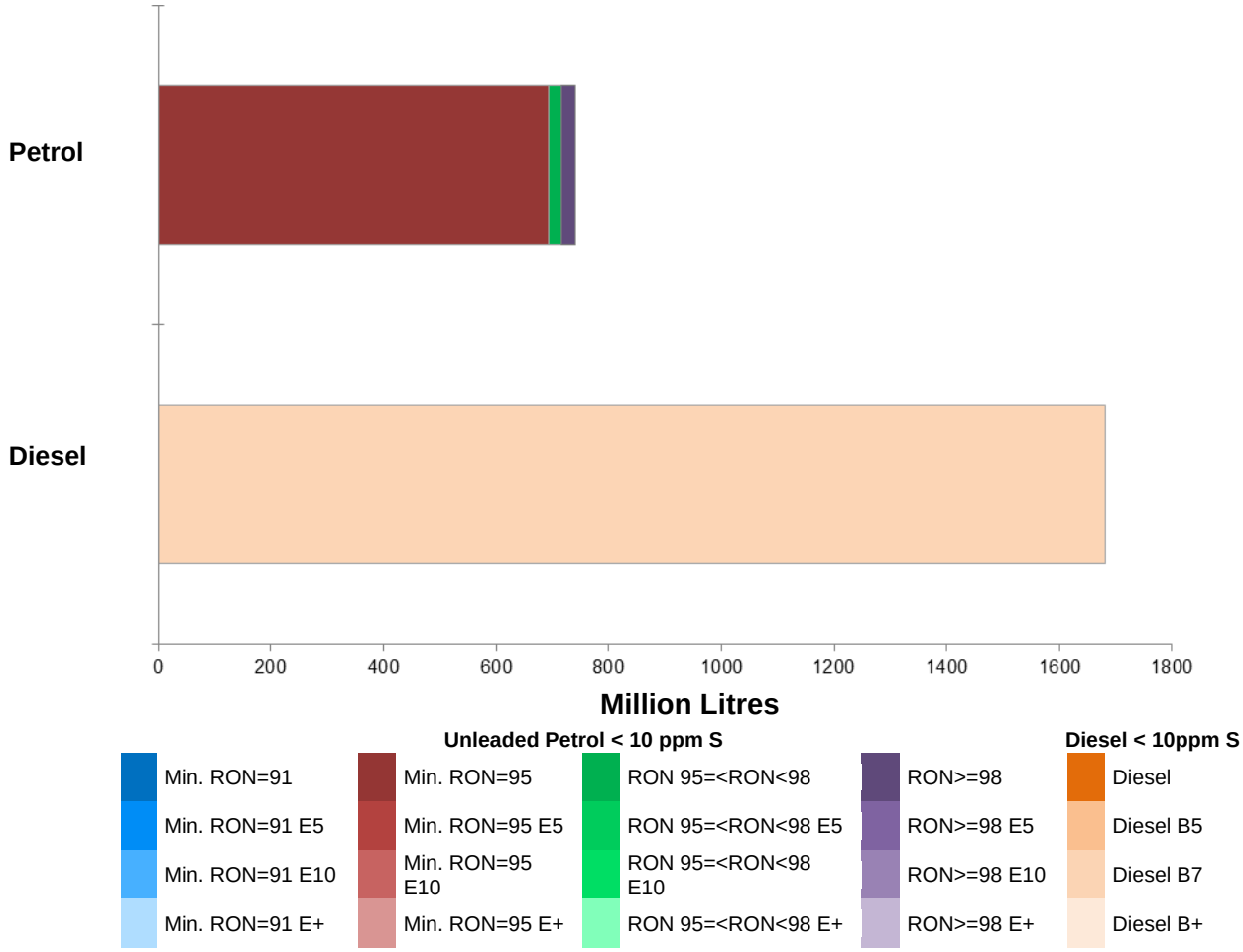
The following table lists the fuels that were reported to be available nationally in 2013.

Table 8-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95)	RON 95
Unleaded petrol (minimum 95 =< RON < 98)	RON 98
Unleaded petrol (minimum RON >= 98)	RON 100
Diesel fuel B7	B7

8.1.1 Sales, sampling and reporting

Figure 8-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Croatia were dominated by diesel fuel sales. More than 1,680 million litres of diesel was sold in comparison to just over 740 million litres of petrol fuel sales

(all petrol grades combined). Petrol fuel sales were mainly comprised of fuel grade RON 95, and all petrol is sold with no ethanol.

Table 8-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S)	693	93.5%	47	58	100	Yes	19 of 19	(a)
Unleaded petrol 95=<RON<98 (<10 ppm S)	24	3.19%	n/a	n/a	4	n/a	n/a	(a)
Unleaded petrol RON>=98 (<10 ppm S)	25	3.32%	n/a	n/a	4	n/a	n/a	(a)
Total Petrol	**2,235**	**100.00%**	**47**	**58**	**108**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	1,682	100.00%	76	92	100	Yes	6 of 6	
Total Diesel	**7,667**	**100.00%**	**76**	**92**	**100**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer and winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters. Croatia has reported all parameters for all fuel grades combined.
(a)	Additional notes	Croatia did not report separate analysis results for different petrol grades. Unleaded petrol 95=<RON<98 (<10 ppm S) and Unleaded petrol RON>=98 (<10 ppm S) samples are included with RON 95 samples.

8.1.1.1 *Petrol Samples*

According to the EN 14274 minimum sample requirements, Croatia should have collected 50 samples during the winter period and 50 samples during the summer period for each fuel grade with over 10% of market share. In addition Croatia should have collected additional samples for 95<RON<98 and for RON 98 petrol grades, and reported on them separately.

Croatia collected only a total of 91 samples from Service stations, which suggests that the number of samples is insufficient even for RON 95 fuel grade.

8.1.1.2 *Diesel Samples*

Croatia met the minimum sampling requirements for diesel B7 fuel grade according to EN 14274.

8.2 Fuel Quality Monitoring 2013

8.2.1 Description of System

Responsible organisation(s)	Croatian Environment Agency
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model C
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Service Stations and Terminals
Time/frequency of sampling	Croatia took samples for petrol and diesel fuel each month throughout the year.
Specification of test methods	As per Directive 98/70/EC - Croatia uses the EN 14274 norm for the interpretation of the analyses.
Collection of sales data	Not provided

8.2.2 Fuel Quality Monitoring System

8.2.2.1 *Sampling*

Distributors are obliged to submit fuel quality data to Croatian Environment Agency. The sampling is performed by the legal entity that is certified according to the HR EN ISO/IEC 17020 and HR EN ISO/IEC 17025.

8.2.2.2 *FQMS Administration*

Samples of petrol, diesel fuel and gas oil are taken according to the “Fuel quality monitoring programme” which is under the responsibility of Ministry of Environmental and Nature Protection. Ministry of Environmental and Nature Protection sets out “Fuel quality monitoring programme” current year for the next.

The information on the fuel quality monitoring was delivered to the Environmental Inspection and to the Inspection of Ministry of Economy, Republic of Croatia. According to the national legislation which transposes the Directive 2009/30/EC, the distributors are penalized in case of any exceedance.

8.2.2.3 *National Legislation that Transposed the FQD*

The Fuel Quality Directive was transposed to Croatian legislation in 2013 and implemented from 5th September 2013 by the Regulation on the quality of liquid petroleum fuels (Official Gazette of the Republic of Croatia, No. 113/2013).

8.2.2.4 *Reporting Periods*

Seasonal periods in Croatia are as follows:

Summer: from 1st May to 30th September;

Winter: from 1st October to 30th April.

Samples were taken and tested regardless of the transition periods and analysis results were reported normally throughout the year.

8.2.3 Compliance with Fuel Quality Limit Values

Table 8-3: Petrol Fuel Grades

All petrol grades combined (RON 95, 95<RON<98 and RON 98)- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.3	74.8	5	10%
Member State notes No details provided on actions following the identification of exceedances.					

Table 8-4: Diesel Fuel Grades

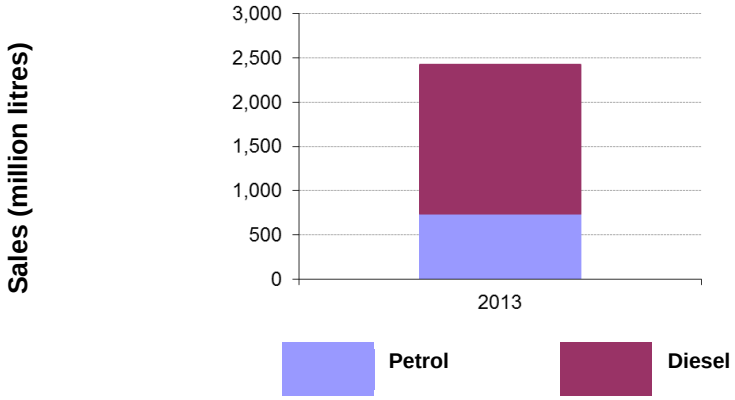
Diesel B7- Details of samples that exceed tolerance limits:
No sample exceeded tolerance limits

8.3 Temporal Trends

2013 is the first year the Croatia reports under the FQD, therefore no information concerning previous years' sales data is available.

Figure 8-2 show the proportion of diesel petrol versus fuel petrol in 2013. 31% (742 million litres) of 2013 sales were of petrol, the remaining 59% of diesel.

Figure 8-2: Temporal trends in national sales of petrol and diesel (million litres)



8.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, see section 4.

Fuel sampling in Croatia in 2013 recorded only one test result out of specification with limits. The analysis charts for petrol (Figure 8-3) and diesel (Figure 8-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

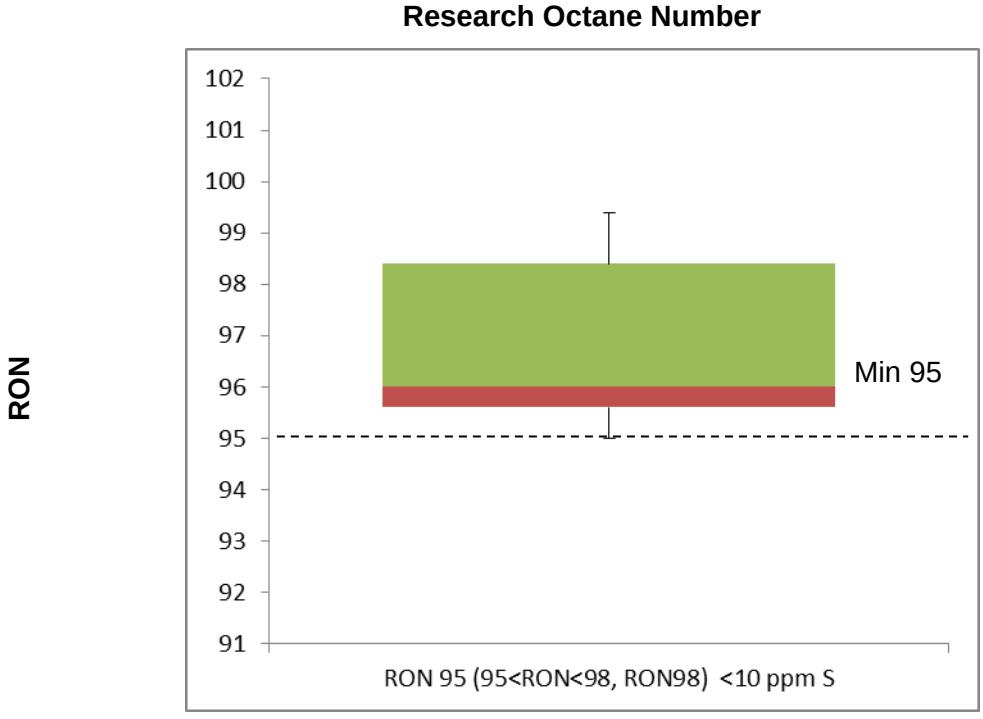
8.4.1 Petrol Analysis

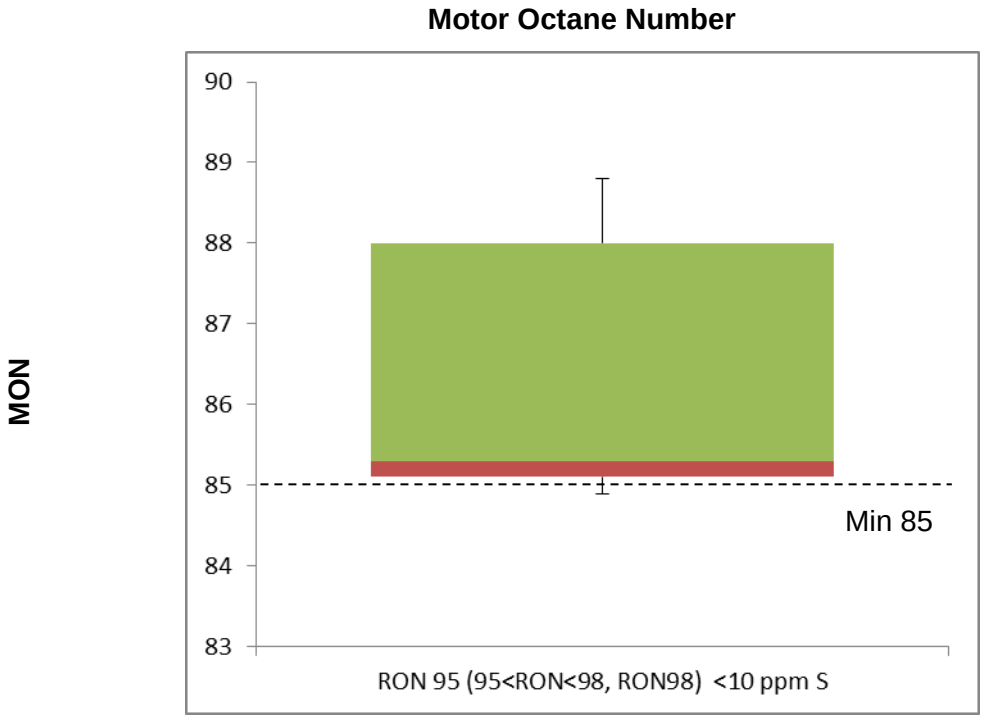
Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. Note that Croatia presented the results of all petrol grades combined and therefore is not possible to split the statistical representation.

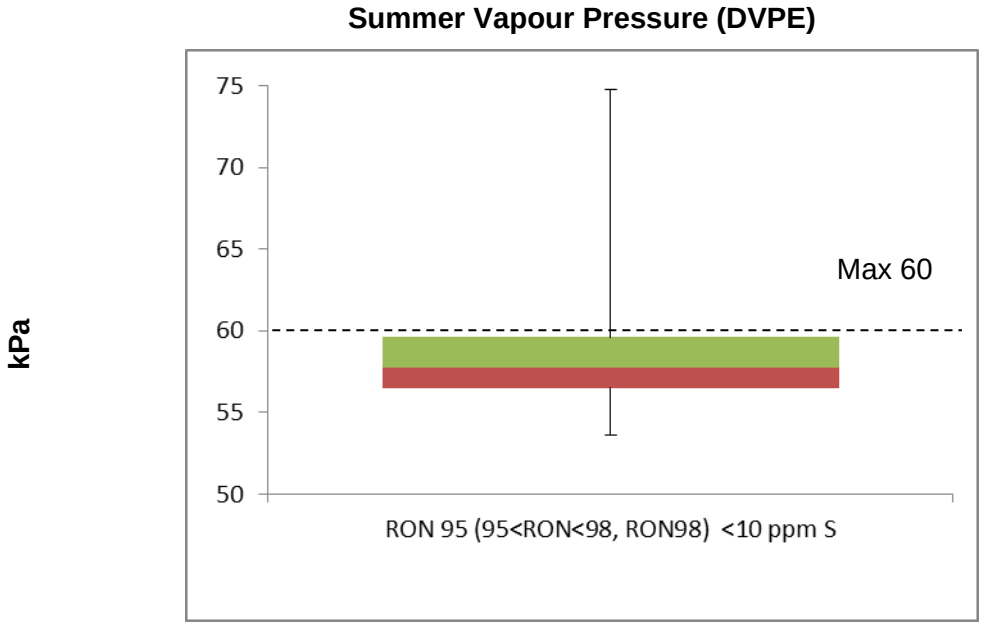
Due to the fact that analyses refers to different fuel grades, RON and MON tests show a very wide distribution (wide green and red bands), with the skew of the MON distribution being very close to limits.

On the opposite, DVPE distribution has 5 outliers above tolerance threshold, but the distribution is rather tight.

Figure 8-3: Petrol analysis



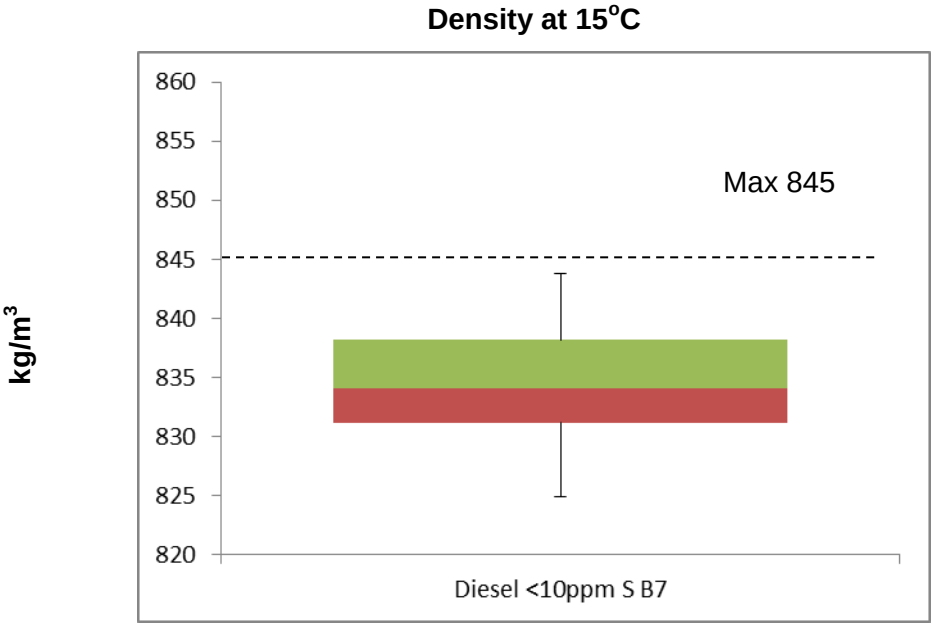


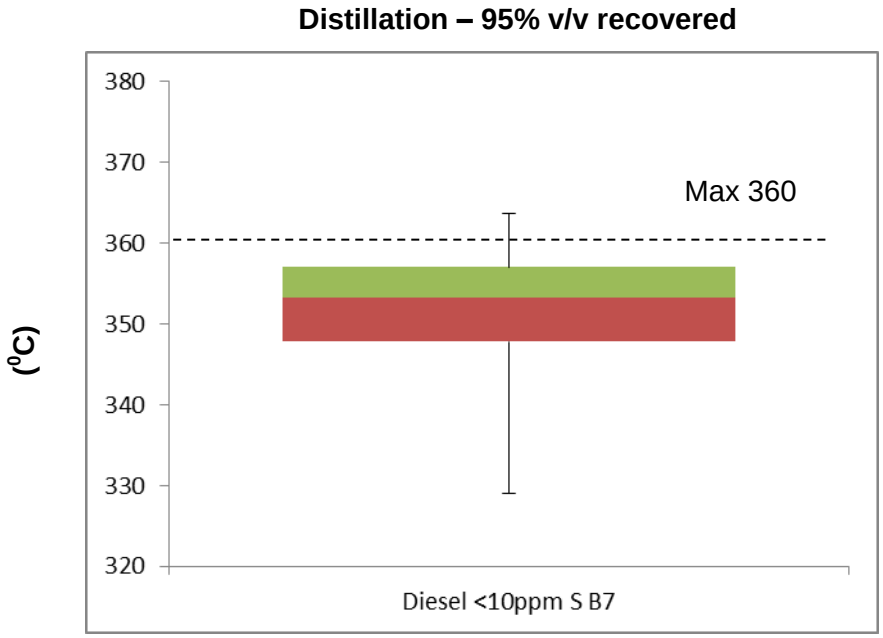


8.4.2 Diesel Analysis

Density at 15°C analysis shows an even tight distribution which is close to tolerance limits, but with no values above the threshold. Distillation 95% v/v has a tight distribution close to tolerance limits, with few outliers above limits but still within tolerance thresholds.

Figure 8-4: Diesel analysis





8.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• The number of samples did not meet minimum requirement so to comply with EN 14274; 50 samples from service stations in both summer and winter period are required for petrol fuel grades with more than 10% total market share, which Croatia did not provide. • The statistics was provided at an aggregate level for all petrol fuel grades that does not allow to correctly assess each petrol grade. Analysis for different fuel grades should be presented in separate tabs of the reporting template. • Croatia should provide more details on the setup of its monitoring system.	• The 2013 report was received on time on the 30th of June.

9 Cyprus

9.1 Fuel Availability 2013

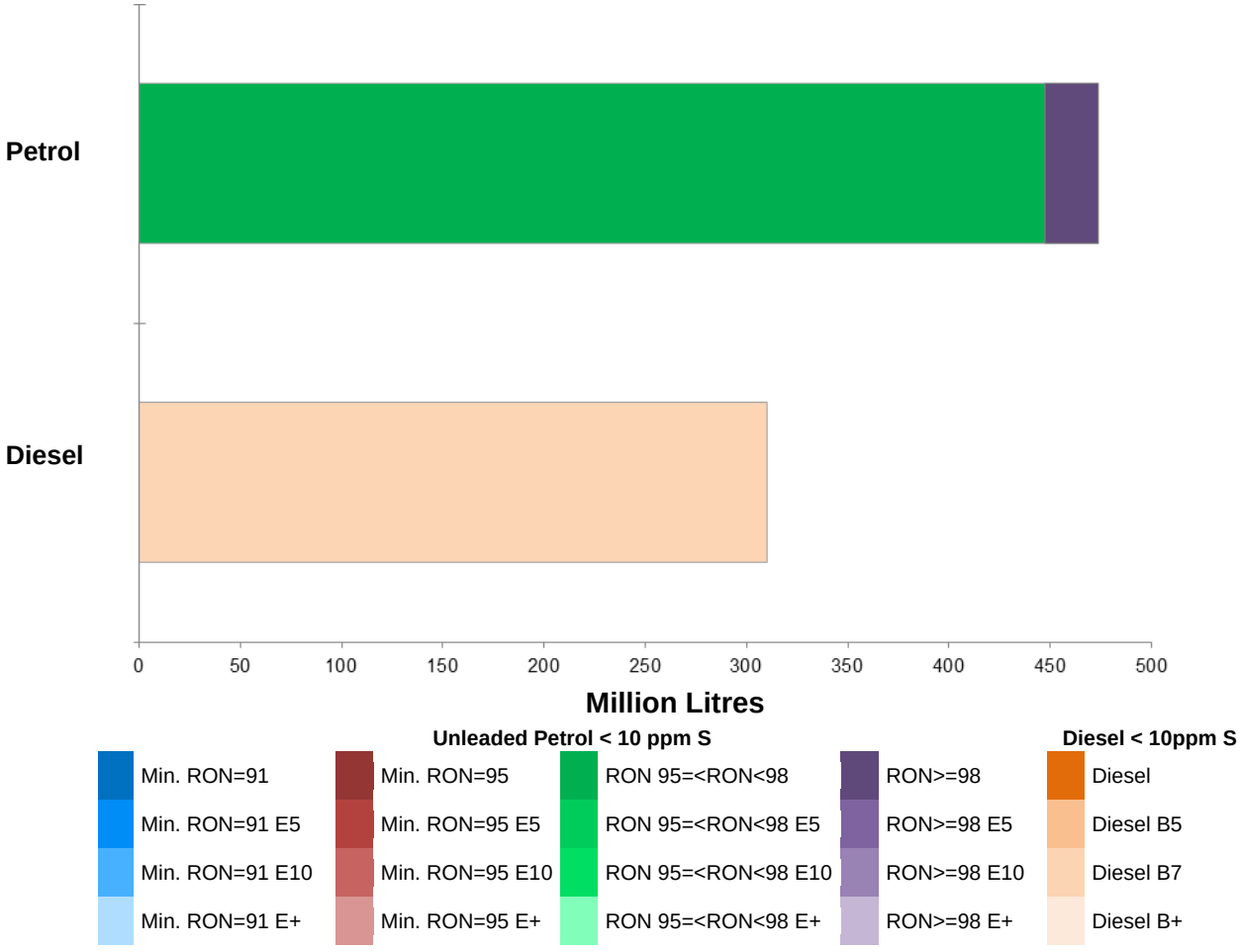
The following table lists the fuels that were reported to be available nationally in 2013.

Table 9-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum 95 =< RON < 98)	Unleaded Petrol RON 95
Unleaded petrol (minimum RON >= 98)	Unleaded Petrol RON 98
Diesel fuel B7	Eurodiesel

9.1.1 Sales, sampling and reporting

Figure 9-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Cyprus were dominated by petrol fuel sales, which is in stark contrast to the other member states whose sales are dominated by diesel. 474 million litres of petrol fuel sales (all petrol grades combined) was sold in comparison to 310 million litres of diesel fuel sales. Petrol fuel sales were mainly comprised of fuel grade unleaded petrol (95<RON<98).

Table 9-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S)	448	94.53%	80	57	100	Yes	17 of 19	(a)
Unleaded petrol RON>=98 (<10 ppm S)	26	5.47%	68	63	6	Yes	17 of 19	(a)
Total Petrol	**474**	**100.00%**	**148**	**120**	**106**	**Yes**	**17 of 19**	**(a)**
Diesel (<10 ppm sulphur) B7	310	100.00%	79	74	100	Yes	6 of 6	
Total Diesel	**310**	**100.00%**	**79**	**74**	**100**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member State and 6 diesel parameters.
(a)	Additional notes	Biofuel is not added to petrol fuel grades 95 and 98.

9.1.1.1 *Petrol Samples*

Cyprus has exceeded minimum sampling requirements for a small country monitoring and reporting using EN14274 statistical model C for all petrol fuel grades.

9.1.1.2 *Diesel Samples*

Diesel fuel samples have exceeded the minimum requirement for a small country monitoring and reporting using EN14274 statistical model C which requires 50 samples to be taken per fuel per period.

9.2 Fuel Quality Monitoring 2013

9.2.1 Description of System

Responsible organisation(s)	Energy Service, Ministry of Energy, Commerce, Industry and Tourism
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model C
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Samples of all fuel grades were taken from petrol stations, the depot at Larnaca, including CPSC farm, cars and other private installations of large consumers by the inspectors of the Energy Service on a daily basis. The number of samples taken from the Larnaca depot was determined by the number of petroleum shipments imported. All petroleum products held by the CPSC were tested in order to secure their compliance with the EU specifications. However, only samples from retail sites are included in the statistical and analytical results of the 2013 FQMS Report. The Mobile Lab of the Energy Service carried out almost all the tests required for monitoring the fuel quality for 2013, at the petrol stations. The Laboratory of the CPSC conducted only a limited number of tests especially for verification reasons.
Time/frequency of sampling	Samples have been taken in every month throughout 2013
Specification of test methods	The necessary tests for monitoring the quality of fuels which are stored either in installations or at petrol stations were conducted by the Mobile Lab of the Energy Service of the Ministry of Energy, Commerce, Industry and Tourism. The Energy Service since May 2007 owns a mobile lab for performing all the necessary tests for monitoring the fuel quality of fuels marketed Cyprus. The Mobile Lab, consists of 8 fully automatic analysers that can define most of the main parameters of diesel, petrol, kerosene gasoil, jet fuel, marine and fuel oil. The Mobile Lab is in the process of being an accredited fuel laboratory, based on the CYS EN ESO/IEC 17025:2005 standard.
Collection of sales data	The sales data is available for the full year.

Other details

1. Other parameters for diesel and petrol have also been measured but not reported herein. For example, water content, distillation at 250 and 350oC, CFPP point and cetane index are also measured for almost every diesel sample. Furthermore, parameters like distillation at 70oC, FBP and residue are also measured for every petrol sample.
2. Fuel grade of Unleaded Petrol was marketed in Cyprus only in the beggining of 2013

and only for a very small quantity -496 MT, so no results for these tests are reported.

3. None of the assigned by the Minister laboratories in Cyprus, the Mobile Lab or the CPSC lab, has the necessary equipment for measuring manganese concentration in petrol samples, yet. This fact has already been stated by representative, during the 6th and 7th meeting of the Fuel Quality Committee, as well as at the FQMS report of 2012.

9.2.2 Fuel Quality Monitoring System

9.2.2.1 *Sampling*

Samples of all fuel grades were taken from petrol stations, the depot at Larnaca, including CPSC farm, cars and other private installations of large consumers by the inspectors of the Energy Service on a daily basis. The number of samples taken from the Larnaca depot was determined by the number of petroleum shipments imported. All petroleum products held by the CPSC were tested in order to secure their compliance with the EU specifications. However, only samples from retail sites are included in the statistical and analytical results of the 2013 FQMS Report. The Mobile Lab of the Energy Service carried out almost all the tests required for monitoring the fuel quality for 2013, at the petrol stations. The Laboratory of the CPSC conducted only a limited number of tests especially for verification reasons.

9.2.2.2 *FQMS administration*

The Energy Service of the Ministry of Energy, Commerce, Industry and Tourism is the competent authority for monitoring the quality of fuels marketed in the government-controlled area of Cyprus. Retail site (petrol stations) samples were taken by the inspectors of the Energy Service on a daily surveillance program prepared by the Chief Inspector and/or his Assistant. Where non-compliant samples are discovered, the Chief Inspector who is appointed by the Minister of Energy, Commerce, Industry and Tourism, is responsible for forbidding the sale of off-specification fuels from retail sites, or the use of off-specification fuels from private installations, and the penal prosecution of the person who is responsible for the tank. Cyprus is considered as a single region and the supply, distribution and retail of petroleum products are carried out only by the four marketing companies, which utilize a single depot. Cyprus has no refineries.

9.2.2.3 *National Legislation that transposed the FQD*

The provision of the fuel quality directive that correlate with the fuel specifications have been transported to national law by the Decrees K.D.P. 442/2011 and K.D.P. 330/2012.

9.2.2.4 *Reporting periods*

Summer period is from 16/4-15/10 to and winter period from 16/10-15/4. Transition period from summer to winter and vice versa is set to 6 weeks. Samples are taken and tested during the transition period. The modifications of vapour pressure within the transition period is monitored (if the results are gradually complied with the seasonal specifications) and reported within the annual fuel quality report.

9.2.3 Compliance with Fuel Quality Limit Values

Table 9-3: Petrol Fuel Grades

95<RON<98 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.8	67.8	9	11%
Member State notes					

Summer vapour sample results found to be out of specification with tolerance limits were due to transition period from winter to summer (6 weeks).

RON 98 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.8	69	7	11%
Member State notes Summer vapour sample results found to be out of specification with tolerance limits were due to transition period from winter to summer (6 weeks).					

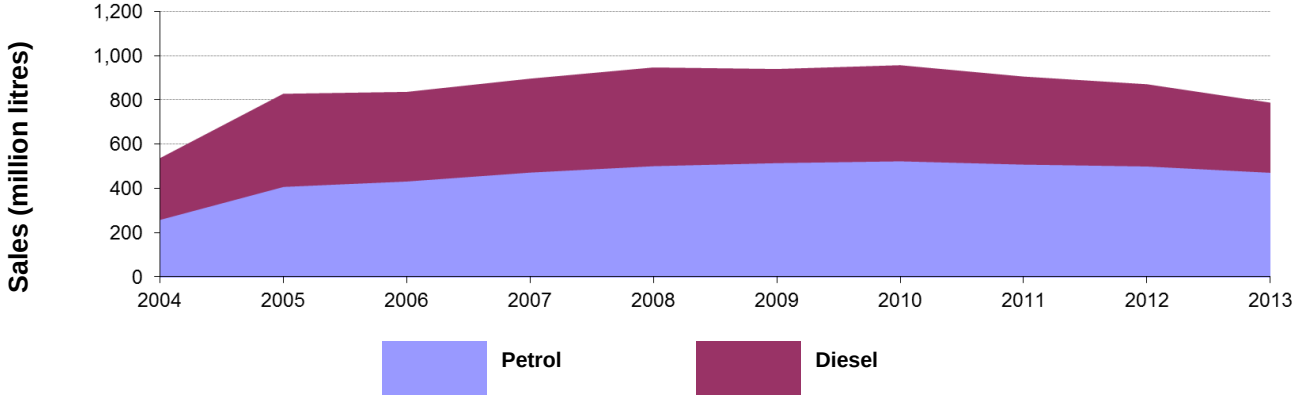
Table 9-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Sulphur content %v/v	60	11.8	43.4	1	0.7%
Member State notes Mixture of diesel with heating. Penal persecution against the service station.					

9.3 Temporal Trends

Figure 8-2 shows the overall trend in total fuel sales for Cyprus since 2004. Diesel sales in Cyprus have decreased by 55 million litres (15%) between 2012 and 2013, continuing the downward trend started in 2008. Petrol sales have instead peaked in 2010 at 526 million litres, as have since been decreasing at roughly the same pace as diesel. Petrol sales are now 10% lower than in 2010 and 5.7% lower than in 2012.

Figure 9-2: Temporal trends in national sales of petrol and diesel (million litres)



9.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range

- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4.

The analysis charts for petrol (Figure 9-3) and diesel (Figure 9-4) detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

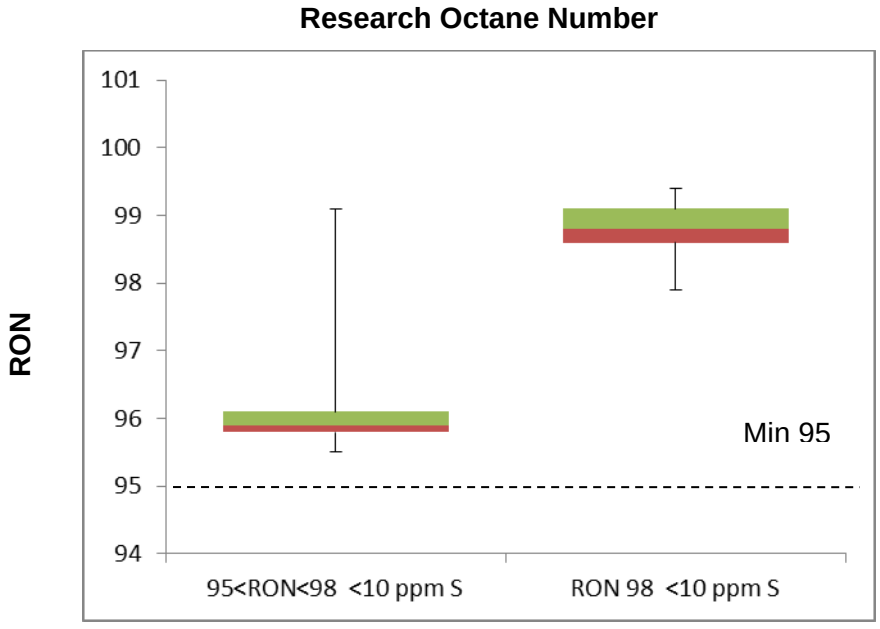
- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

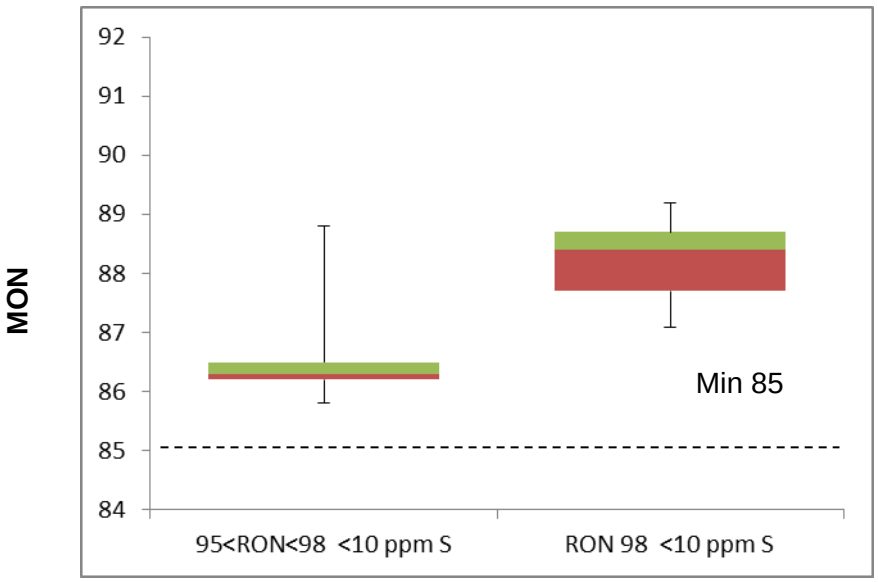
9.4.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. RON and MON sample results show that the fuels available in Cyprus have reasonably small variation in Octane levels, with values well above minimum limits. Summer Vapour pressure results shows that there are a few samples exceeding limit values, but the majority of samples skewed closer to the limit with little variation.

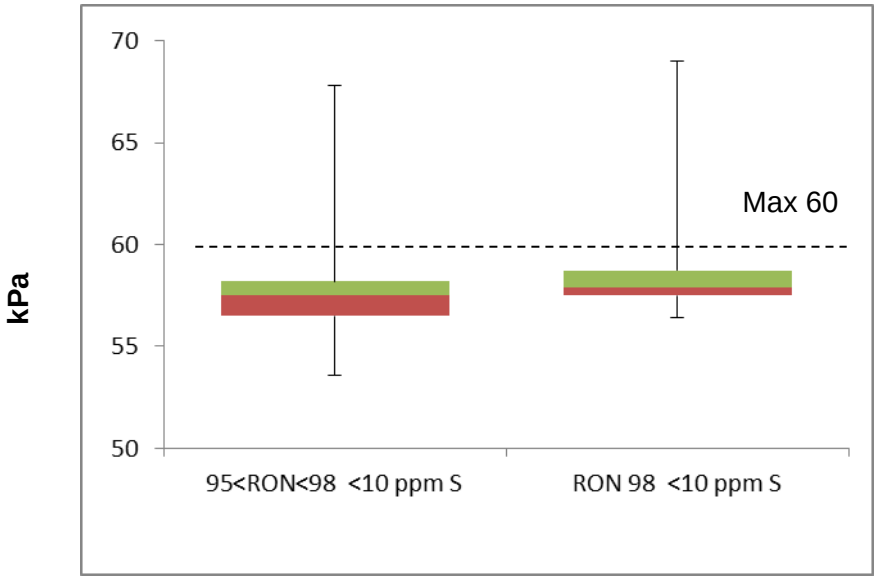
Figure 9-3: Petrol analysis



Motor Octane Number

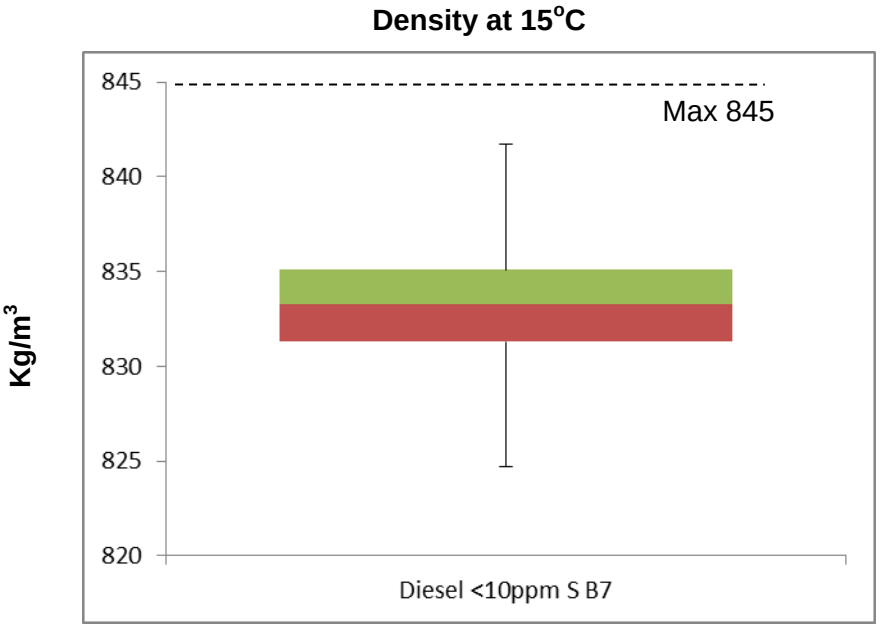


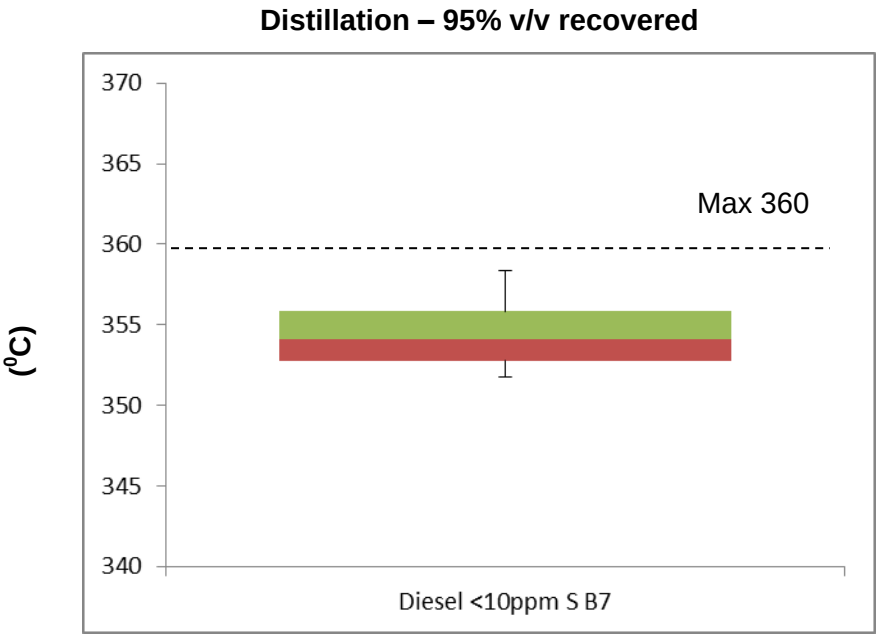
Summer Vapour Pressure (DVPE)



9.4.2 Diesel Analysis

Figure 9-4: Diesel analysis





9.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Cyprus did not report parameter results for manganese and Iso-butyl alcohol for either petrol fuel grades in 2013.	• The 2013 report was received on the 20th of June, so on time.
2012	• Cyprus did not report parameter results for manganese and Iso-butyl alcohol for either petrol fuel grades in 2012.	• The 2012 report was received on time.
2011	• Summer Vapour pressure results show that the samples were found to be exceeding limit values. • For fuel grade, Unleaded petrol min. RON=95 (<10 ppm S), there is an uneven split between summer and winter samples which meant that winter samples did not meet the minimum requirement under EN 14274. • Cyprus did not report parameter results for manganese and Iso-butyl alcohol for either petrol fuel grades in 2011.	• The 2011 report was received on time.

10 Czech Republic

10.1 Fuel Availability 2013

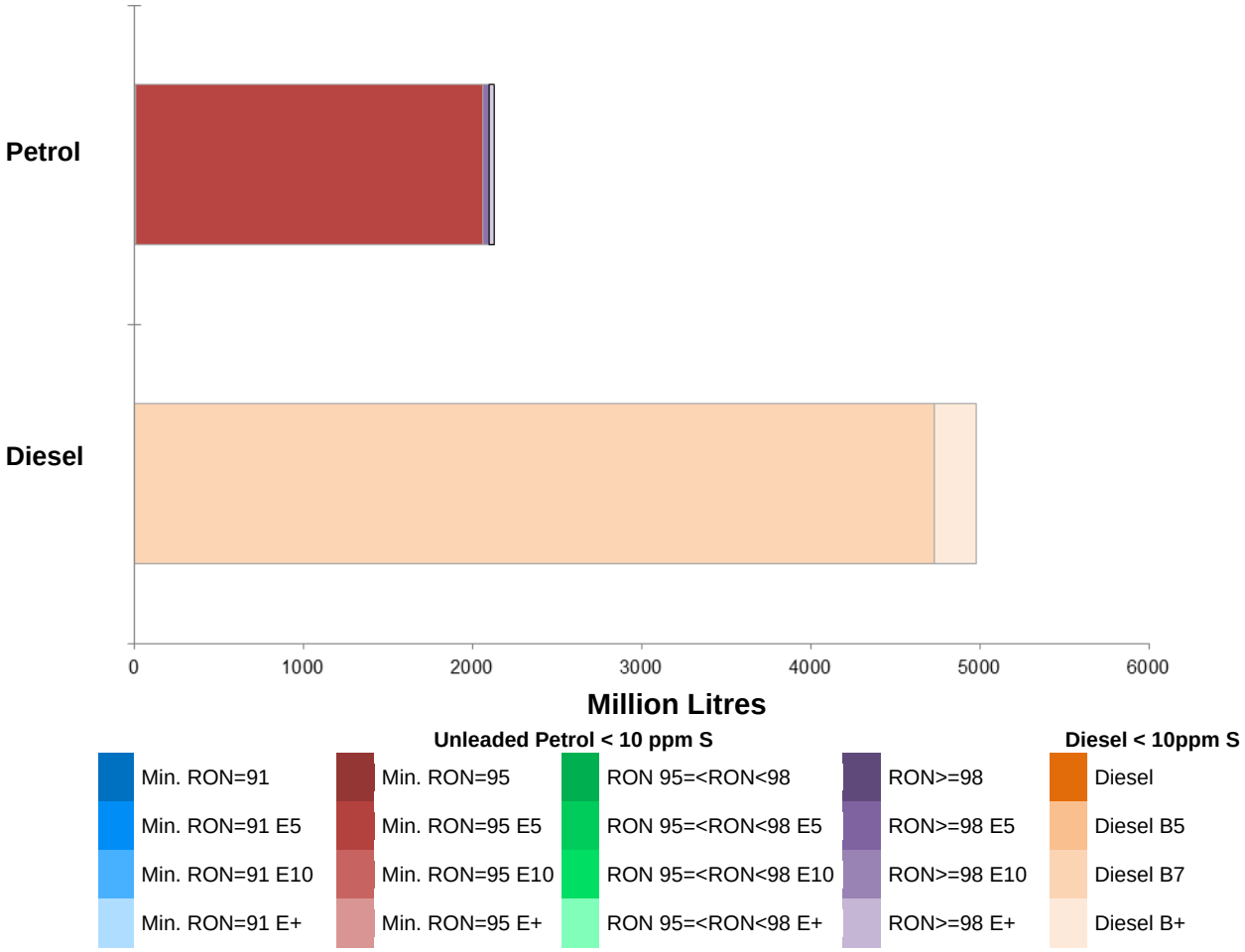
The following table lists the fuels that were reported to be available nationally in 2013.

Table 10-1: National fuel grade

Fuel grade	National fuel grade
Regular unleaded petrol (minimum RON = 91) E5	Special BA-91
Unleaded petrol (minimum RON = 95) E5	Super BA-95
Unleaded petrol (minimum RON >= 98) E5	Super Plus BA-98
Unleaded petrol (minimum RON >= 98) E+	E85
Diesel fuel (<10 ppm sulphur) B7	Motorová nafta B7
Diesel fuel (<10 ppm sulphur) B+ (>7% FAME<=30%)	Smesna motorova nafta
Diesel fuel B+ (FAME >30%)	FAME

10.1.1 Sales, sampling and reporting

Figure 10-1: Fuel Sales proportions by fuel type



During 2013, fuel sales in the Czech Republic were dominated by diesel fuel. More than 4,700 million litres of diesel were sold (all diesel grades combined) in comparison to 2,127 million litres of petrol (all petrol grades combined). Petrol fuel sales were mainly represented (96.5%) by fuel grade RON 95 with up to 5% biofuel content. In diesel fuel sales prevailed (94.9%) of the grade with up to 7% biofuel content. Czech Republic is one of the few countries where Diesel >7% FAME content is available.

Table 10-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=91 (<10 ppm S) E5	10	0.46%	2	5	1	Yes	19 of 19	
Unleaded petrol min. RON=95 (<10 ppm S) E5	2,052	96.51%	408	474	100	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S) E5	34	1.59%	13	5	2	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S) E+	31	1.44%	12	7	n/a	n/a	n/a	(a)
Total Petrol	**2,127**	**100.00%**	**435**	**491**	**103**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	4,728	94.88%	502	642	100	Yes	6 of 6	
Diesel (<10 ppm sulphur) B+	255	5.12%	37	56	6	Yes	n/a	(a)
Total Diesel	**4,983**	**100.00%**	**539**	**698**	**106**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a) Additional notes	19 samples were taken from petrol E85. DVPE, ethanol and methanol were tested for petrol E85. 71 samples were taken from diesel Smesna motorova nafta and 21 samples were taken from diesel FAME. No statistics has however been provided for the fuels in the reporting template. Czech Republic states that this is due to the specifics of the current reporting template. The statistics was provided on separate data sheets from the template. Density at 15C and Sulphur content were tested for diesel FAME and Cetane number,

	Density at 15C, Distillation 95% Point and Sulphur content were tested for diesel Smesna motorova nafta. For biofuels FAME and Smesna motorova nafta contents of FAME were provided by quality indicator MEMK – Methyl Ester of Fatty Acid.

10.1.1.1 *Petrol Samples*

The Czech Republic has taken a very high number of samples for RON 95 petrol, RON>98 and RON 91, above minimum requirement.

10.1.1.2 *Diesel Samples*

Diesel fuel samples tested in 2013 with up to 7% biofuel content exceeded the total minimum requirement.

Further, Czech Republic reported the sale of Smesna motorova nafta (biodiesel with FAME content above 7% but below 30%) and the sale of FAME (biodiesel with FAME content above 30%), both with market shares less than 10%, for which respectively 71 and 21 samples were taken, exceeding the minimum sampling requirements for full year.

10.2 Fuel Quality Monitoring 2013

10.2.1 Description of System

Responsible organisation(s)	Ministry of Industry and Trade of the Czech Republic
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical Model C
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Service Stations
Time/frequency of sampling	Samples have been taken monthly throughout the course of the year for diesel and Super BA-95. Petrol fuels Special BA-91 and Super Plus BA-98 represent less than 2% petrol fuels sales each and so have been sampled at a slightly reduced frequency.
Specification of test methods	The monitoring of quality fuels/biofuels has been conducted in accordance with FQMS of European standard EN 14274 :2013 and use regional model C, which is corresponding to the Czech national legislation and Czech standards for petrol and diesel (ČSN EN 228:2013 and ČSN EN 590 +A1:2010). The sampling has been performed by the Czech Trade Inspection with cooperation accredited inspection and certification authority SGS for laboratory testing all samples of liquid and gas fuels.
Collection of sales data	The fuel sale data was provided by Department of Raw Material and Energy Security at the Ministry of Industry and Trade of the Czech Republic in cooperation with Czech Statistical Office.

Other details

10.2.2 Fuel Quality Monitoring System

10.2.2.1 *Sampling*

The fuel samples have been tested monthly throughout the course of the year 2013 for diesel and petrol quality as for example Motorova nafta and Special BA-91, Super BA-95, Super Plus BA-98. This controlling process of all fuel samples has been carried out in collaboration with CTI and SGS laboratory tests according to European standards EN 228 and EN 590 and next amendments to the national standards ČSN EN 228:2013 and ČSN EN 590 +A1:2010. In 2013, 2496 samples in total were checked of fuels at the service stations in the whole country, including 907 samples of petrol and 1144 samples of diesel. The total number of fuel samples includes additional required fuels from the Czech market, namely samples of mixed diesel fuel (71 samples), FAME -100% biodiesel (ČSN EN 14214) (21 samples), Ethanol E85 (ČSN P – CEN/TS 15293) with about 70-85% bio-component (19 samples) and other gaseous fuel grades CNG- natural gas (ČSN 656517) (36 samples) and LPG - Liquefied Petroleum Gas (ČSN EN 589 + A1) (298). There were checked by Article 3 and 4 of Directive 2009/30/EC a total of 423 petrol samples and 502 diesel samples in summer time and 484 petrol samples and 642 diesel samples in winter time, plus 1 sample of artic diesel in winter time. The samples data with laboratory analyses are presented in parts of Reporting part tables of electronic template, directly. Sampling requirements were performed by amendments to the national standards in compliance with the national and European legislation. It means minimum 50 samples in season from petrol and diesel according to the European standard 14274. Sampling has been taken at the petrol stations of whole country.

10.2.2.2 *FQMS administration*

The Fuel Quality Monitoring System is controlled by Ministry of Industry and Trade of the Czech Republic (MIT): Department of Gas Industry and Liquid Fuels. This organisation is responsible for this work agenda at the national level in conformity with the FQD, Directive 2009/30/EC of the European Parliament and of the Council. This is in regards to the specification of petrol, diesel fuel, marketed in the EU and introducing a mechanism to monitor and reduce greenhouse gas emissions, in cooperation with the Czech Trade Inspection and SGS Czech Republic, Ltd., accredited inspection office for laboratory testing fuel samples.

The Czech Trade Inspection (CTI) performed the sampling of liquid and gas fuels in cooperation with accredited inspection and certification authority SGS for laboratory testing all samples per year 2013. The collected annual data from the fuel quality monitoring of the previous calendar year has been provided by CTI in form of annual report to coordinating office - MIT. The annual analyses fuel amounts, which were sold at the Czech trade in the previous year has been provided by the Department of Raw Material and Energy Security of MIT.

10.2.2.3 *National Legislation that transposed the FQD*

The fuel quality has been monitored by Decree No. 133/2010 Coll on requirements for fuels, monitoring of the composition and quality of fuels and their records, which has been amended by Decree No. 278/2011 Coll. with the combination of the Act for fuels and petrol stations No. 311/2006 Coll., in its next amended by Act No. 91/2011 and its last amended Act No. 234/2013 Coll. for fuels and fuel stations and amendments of some related laws (fuels), as subsequently amended, and Act No. 455/1991 Coll. trades (Trade Law), as amended.

10.2.2.4 *Reporting periods*

Summer period: 1st May -30th September

Winter period: 1st October – 30th April

10.2.3 Compliance with Fuel Quality Limit Values

Table 10-3: Petrol Fuel Grades

Special BA-91- Details of samples that exceed tolerance limits:					
No samples exceeded tolerance limits					
Super BA-95 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
RON	95	94.6	93.8	11	1.3%
MON	85	84.5	83.8	12	1.4%
Summer vapour pressure, kPa	60	61.3	77.7	2	0.2%
Distillation – 100°C, % v/v	46	43.6	42.5	1	0.1%
Distillation – 150°C, % v/v	75	72.6	68.5	1	0.1%
Methanol, % v/v	3	3.2	3.7	1	0.1%
Member State notes No additional information about non-compliant samples, investigation undertaken or enforcement actions has been provided for 2013.					
Super Plus BA-98 - Details of samples that exceed tolerance limits:					
No samples exceeded tolerance limits.					

Table 10-4: Diesel Fuel Grades

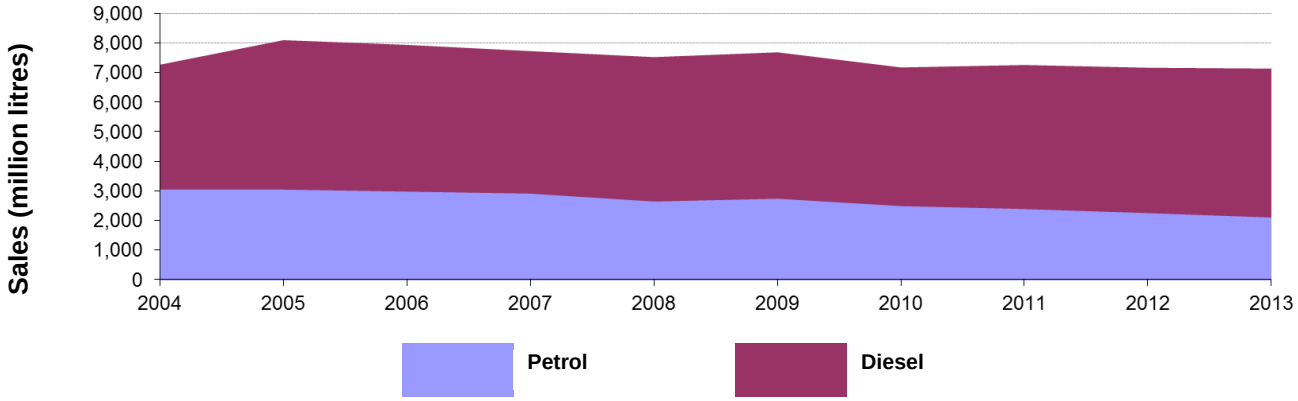
Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Distillation –95-%--Point, oC	360	365.9	400	8	0.6%
Sulphur content mg/kg	10	11.3	30.7	4	0.3%
FAME content, % V/V	7	7.53	9	1	0.1%
Member State notes No additional information about non-compliant samples, investigation undertaken or enforcement actions has been provided for 2013.					

10.3 Temporal Trends

Figure 9-2 shows the trend in total fuel sales since 2004. Diesel sales in the Czech Republic have increased by 118 million litres (2.4%) compared to 2012 sales figures, representing an overall increase of 19.5% since 2004. Petrol fuel sales have decreased by 148 million litres

(6.5%) in the period between 2012 and 2013 with an overall reduction of 30.8% in the period 2004 to 2013.

Figure 10-2: Temporal trends in national sales of petrol and diesel (million litres)



10.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4.

Fuel sampling in the Czech Republic in 2013 recorded some test results out of specification with limits. The analysis charts for petrol (Figure 10-3) and diesel (Figure 10-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

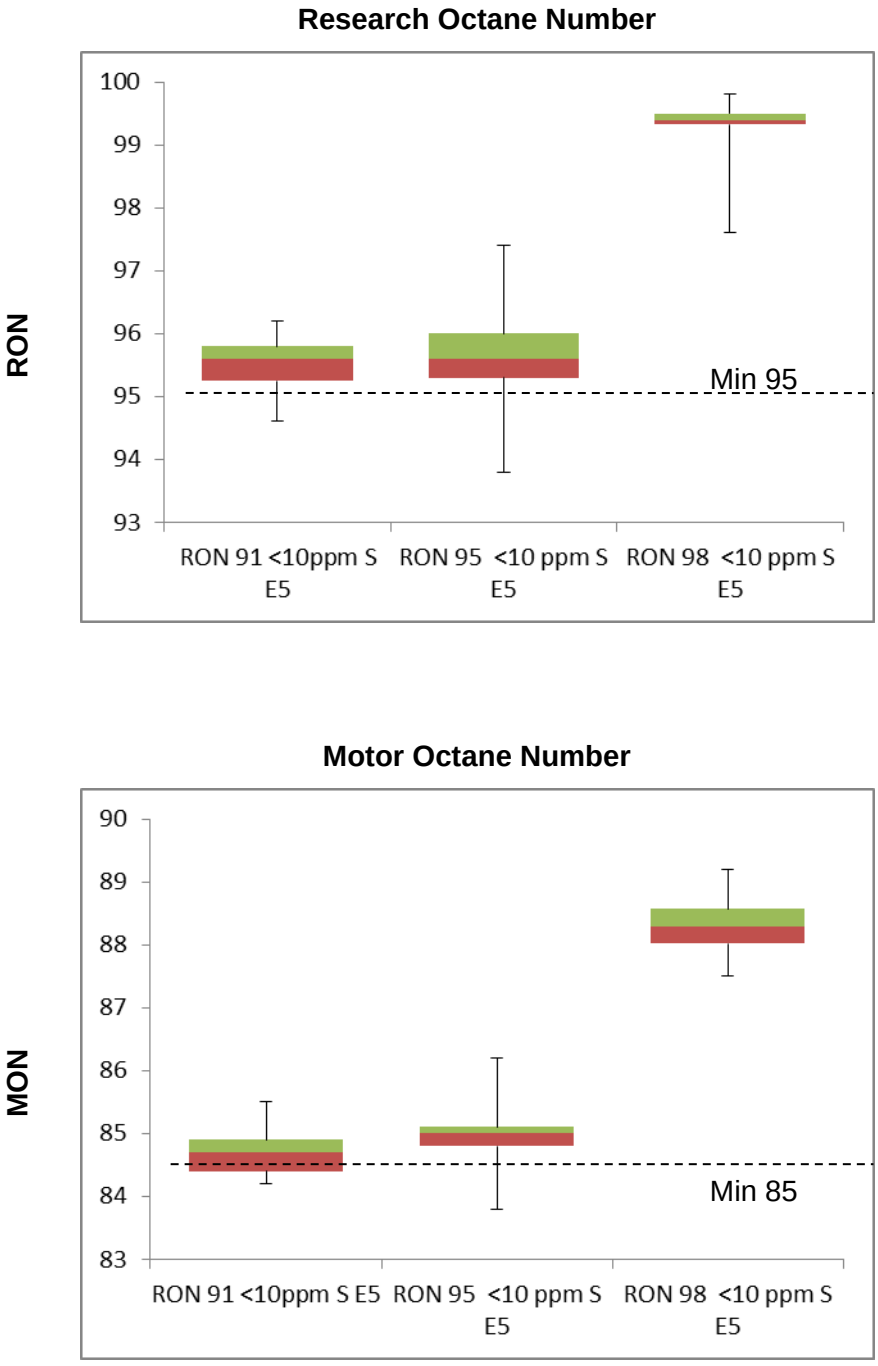
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

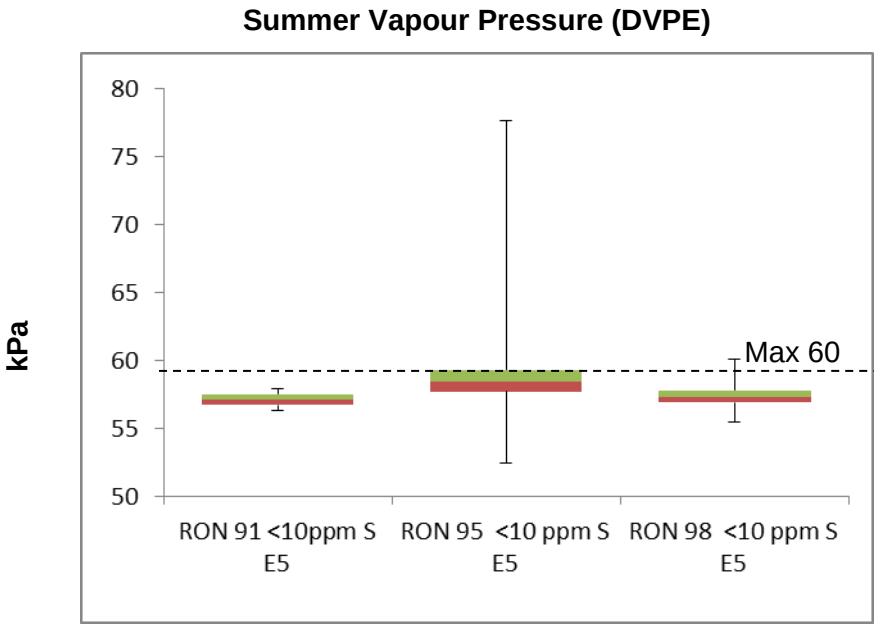
10.4.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. RON and

MON samples are fairly tightly distributed with few outliers for RON 91 and RON 95, whilst DVPE shows more variance for RON 95 and samples above limits in both RON 95 and RON 98, although the latter within tolerance limit. Exceedances have been recorded for RON and MON of RON 91 and RON 95.

Figure 10-3: Petrol analysis

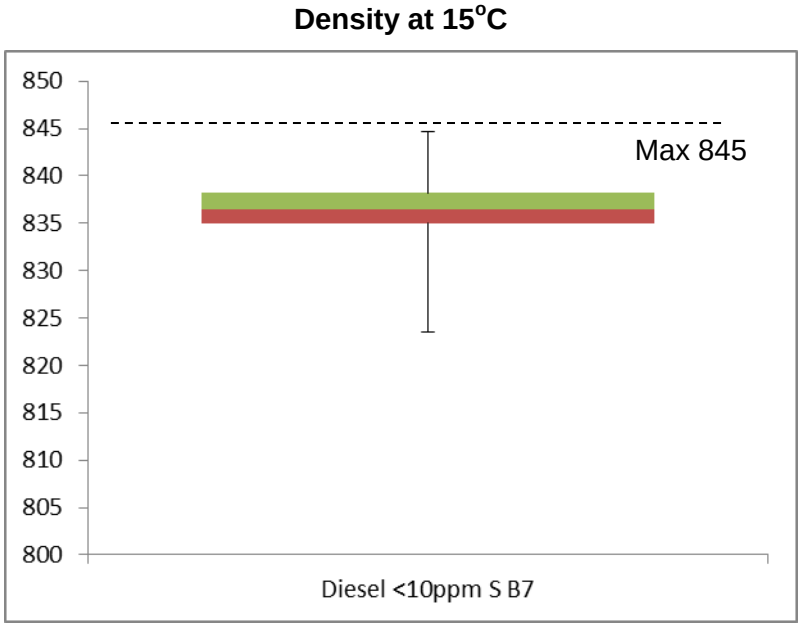




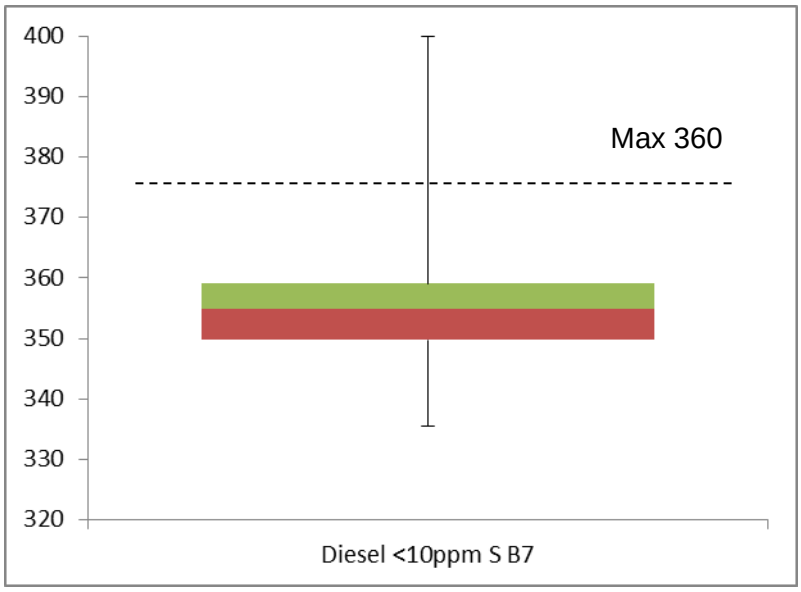
10.4.2 Diesel Analysis

Diesel sample results for Density and Distillation show large variations in Distillation, exhibited by the large spread of outliers, although only 0.6% (8 samples) is above tolerance limit. Density samples are all within tolerance limits.

Figure 10-4: Diesel analysis



Distillation – 95% v/v recovered



10.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	As in previous years – the Czech Republic have reported using EN 14274 statistical model C when models A or B may be more appropriate. Some statistical analysis was provided for the fuels with low sales volumes – Smesna motorova nafta & FAME (Diesel B+) separate from the reporting template. Czech Republic reports that this is due to the reporting template being adapted only for standard parameters of petrol and diesel and not for parameters requested for other types of biofuels.	The submission was submitted on the 13th June, well before the reporting deadline.
2012	As in previous years – the Czech Republic have reported using EN 14274 statistical model C when models A or B may be more	A number of samples were reported as above tolerance limits, however the maximum sampling result was lower than the TL, details of samples

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
	appropriate. Testing for E85 sampled 5 out of 18 parameters, a full set of testing parameters would be more appropriate.	exceeding tolerance limits would benefit the report.
2011	As in previous years – the Czech Republic have reported using EN 14274 statistical model C when models A or B may be more appropriate. The Czech Republic has reported a diesel market fuel share of 4.19% for diesel fuels with more than 7% biofuel content. Although 61 samples were reportedly taken for this fuel type, sample parameter results for only one sample has been partially reported, therefore it has not been possible to assess compliance. The Czech Republic did not report parameter results for FAME Content for diesel fuel grade with more than 7% biofuel content in 2011.	In 2011 sample parameter reporting meets with the requirement of the Directive for all fuel types (with the exception of Diesel B+), however the Czech Republic have noted that further sampling was carried out in 2011 – but not reported.

11 Denmark

11.1 Fuel Availability 2013

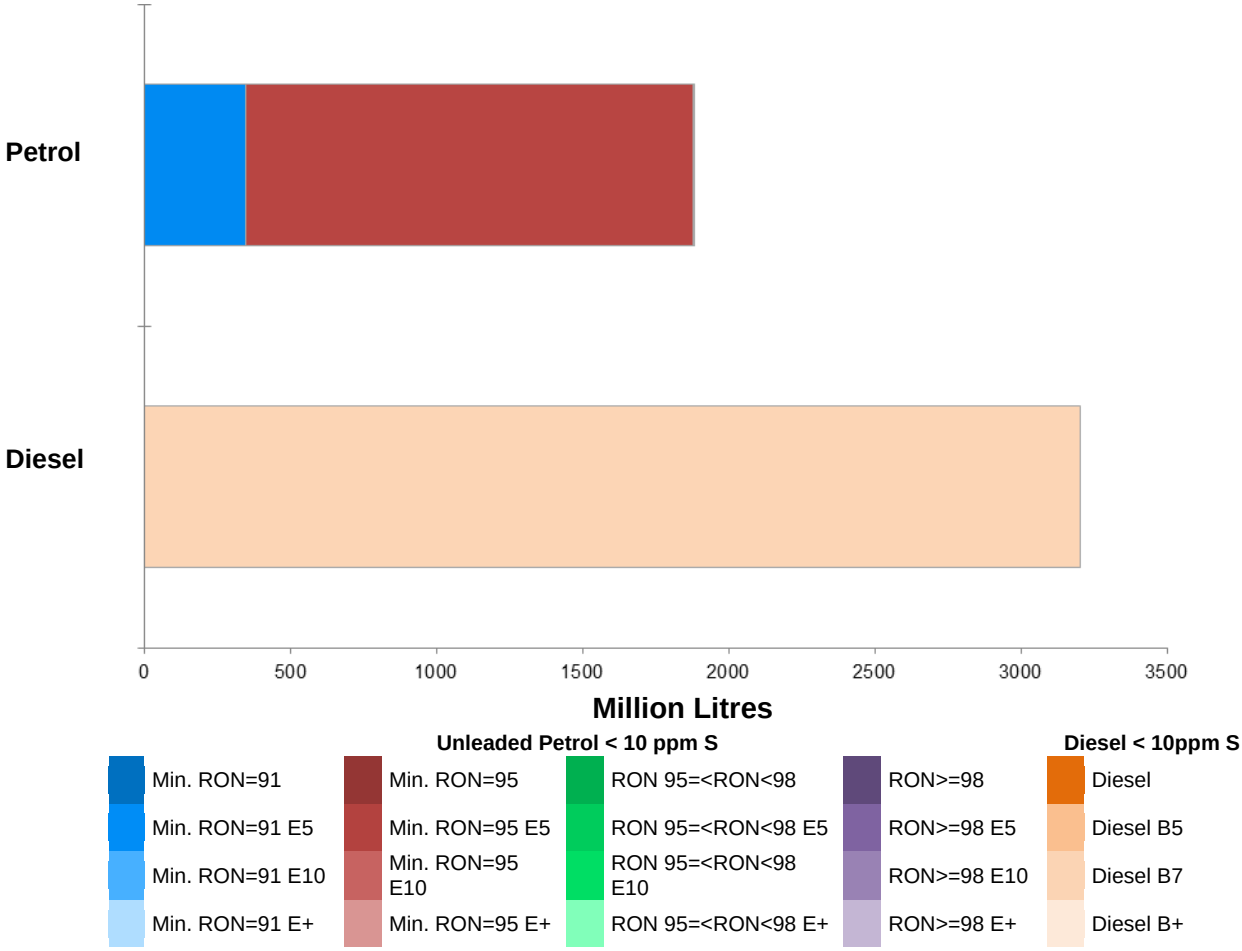
The following table lists the fuels that were reported to be available nationally in 2013.

Table 11-1: National fuel grade

Fuel grade	National fuel grade
Regular unleaded petrol (minimum RON = 91) E5	RON 92
Unleaded petrol (minimum RON = 95) E5	RON 95
Unleaded petrol (minimum 95 =< RON < 98)	RON 98
Diesel fuel B7	Diesel B7

11.1.1 Sales, sampling and reporting

Figure 11-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Denmark were dominated by diesel fuel sales. 3.205 million litres of diesel fuels were sold in 2012 in comparison with petrol fuels which (combined) totalled 1.882 million litres. Petrol fuel sales were comprised of 18.54% RON 91 (with up to 5%

biofuel content), 81.38% RON 95 (with up to 5% biofuel content) and 0.1% petrol 95=<RON<98 (with 0% biofuel content).

Table 11-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=91 (<10 ppm S) E5	322	17.65%	5	4	(100)	Yes	19 of 19	(a)
Unleaded petrol min. RON=95 (<10 ppm S) E5	1,503	82.27%	14	18	(100)	Yes	19 of 19	(a)
Unleaded petrol 95=<RON<98 (<10 ppm S)	1	0.08%	1	1	(1)	Yes	19 of 19	(a)
Total Petrol	**1,827**	**100.00%**	**20**	**23**	**(201)**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	3,032	100.00%	10	11	(100)	Yes	6 of 6	(a)
Total Diesel	**3,032**	**100.00%**	**10**	**11**	**(100)**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters. Denmark has reported parameter results against all parameters for all fuel grades.
(a) Add. Notes	Very low sample quantities have been taken for some parameters, in addition to the very low overall sample quantities. Though Denmark is using a national system, they should still demonstrate equivalence with EN 14274. They are not compliant with sampling requirements for petrol fuel grades RON 91 E5 or RON 95 E5 or diesel B7.

10.1.1.1 Petrol

Denmark have not provided regional sampling data and so the recommended equivalent number of samples for statistical assessment would be 50 samples per summer and winter period (100 samples over the full year) for a member state with fuel sales of less than 15 million tonnes per annum.

In addition, not all parameters have been measured in every sample taken and some parameters have been sampled at extremely low quantities. For example, fuel grade RON 95 comprises over 80% of fuel sales, and for some parameters a total of 32 samples have been taken over the full year. However for RON, MON, Oxygen content, some of the Oxygenates and lead content, only one sample has been taken.

10.1.1.2 Diesel Samples

For diesel fuel only 21 samples have been taken. For statistical equivalence with EN 14274 there should have been 50 samples taken in the summer period and 50 in the winter period.

11.2 Fuel Quality Monitoring 2013

11.2.1 Description of System

Responsible organisation(s)	Miljøstyrelsen (The Danish Environmental Protection Agency)
Fuel Quality Monitoring System (FQMS)	National model
Country Size	Small
Summer Period	Arctic
Location(s) of sampling	Service Stations
Time/frequency of sampling	Samples of petrol RON 95, RON 98 and diesel have been taken during 3 months of the year (1 in summer, 2 in winter). Samples of RON 91 have been taken only in August.
Specification of test methods	All test methods applied for analysis complies with the methods set out in EN 228:2004 and EN 590:2004.
Collection of sales data	Sales data has been provided by the Danish Petroleum Association.

Other details:

Denmark applies a national FQMS with a reduced number of samples due to the following reasons

- More than 99% of the fuels used for road transport in Denmark are distributed from the two Danish refineries or from terminals owned by members of the Danish Petroleum Association (EOF) which have to meet the Association's Exchange specifications. These specifications are in accordance with DS/EN 228 for petrol and DS/EN 590 for diesel and the current Danish Statutory Order regarding the quality of petrol and diesel fuel.
- More than 99 % of the fuel used for road transport in Denmark is delivered from terminals, which are certificated according to ISO 9001 or equivalent quality management system.
- The error rate when filling fuel tanks at fuel dispensing sites is very low. According to EOF there are about 435.000 fillings of fuel tanks at Danish fuel dispensing sites per year. About 20 errors when filling fuel tanks at fuel dispensing sites is reported to EOF per year. 5-10 of the 20 errors has effect on the costumers. This equals an error rate at 0,002 %. The other errors are found and corrected, before the costumers get to fill their vehicles.
- Every year the refinery-laboratories analyses 900-1,000 fuel samples of fuel imported to Denmark or produced in Denmark for the Danish fuel marked.
- The majority of the refinery-laboratories hold an accreditation in accordance with ISO 17025 for test methods for some environmental parameters in wastewater, but the laboratories don't hold an accreditation in accordance with ISO 17025 for test methods required for the FQMS. Instead the laboratory on the Danish, the Swedish and the Finnish refinery is certificated according to ISO 9001, while the laboratory at

the Norwegian refinery follows QP&G, Quality Practice and Guidelines for Exxon Mobil Laboratories.

As in earlier years, some of the specified parameters are only measured on a reduced number of samples. It is parameters which are estimated to have minor influence on the environment.

11.2.2 Fuel Quality Monitoring System

11.2.2.1 *Sampling*

The Danish Petroleum Association (EOF) is responsible for sample collection and analysis, and data reporting to the Danish Environmental Protection Agency. Sampling and analysis is performed by laboratory accredited according to EN 14274 and EN 14275. Sampling is done at service stations. Approximately half of the samples are collected east of the Great Belt and approximately half west of the Great Belt. The population of east and west of the Great Belt is almost the same.

The laboratory sends the proposal for sampling points for acceptance to the Environmental Protection Agency. EPA ensures that the sampling covers all companies in the Danish market and that sampling takes place across the country.

11.2.2.2 *FQMS administration*

The Danish Environmental Protection Agency is responsible for implementing the part of the Directive which deals FQMS to the Danish legislation.

Sampling is carried out by an accredited laboratory of the Danish Petroleum Association (EOF). The results of sampling and analysis are sent to the EPA. Environmental Protection Agency oversees that the analytical results meet the limit values of the Directive. Environmental Protection Agency enforces any excess under the applicable rules of the Environmental Protection Act. In Denmark there are two refineries and 18 terminals.

More than 99% of the fuel used for road transport in Denmark is distributed from two Danish refineries or terminals, owned by members of the Danish Petroleum Association. Members meet the Association's Exchanges specifications. More than 99% of the fuel used for road transport in Denmark comes from terminals that are certified according to ISO 9000 or equivalent management systems. More than 99% of the fuel used for road transport in Denmark is distributed from terminals where each import / batch is analysed according to EN 228 for petrol and EN 590 for diesel. Some samples of import / batch are not evaluated for all parameters. In the case of RON, MON, oxygen and oxygenates, which has a low impact on the environment, and lead which has not been added to petrol for more than 10 years.

10.1.1.3 National Legislation that transposed the FQD

Parts of the Directive are incorporated in the Danish Statutory Order No 366 of 15 April 2011 on the quality of petrol, diesel and biofuel blends for use in motor vehicles.

10.1.1.4 Sampling periods

Sampling is done at service stations. Samples are taken 3 times a year, in spring, summer and autumn. Sampling in spring and autumn covers the winter period.

Vapour Pressure Waiver was granted with the Commission decision of 7.6.2011 on the request of the Kingdom of Denmark on the exception under Article 3. 4 and 5 of Directive 98/70/EC as amended by Directive 2009/30/EC (C(2001)3837).

11.2.3 Compliance with Fuel Quality Limit Values

Table 11-3: Petrol Fuel Grades

Regular unleaded petrol (minimum RON = 91) E5 - Details of samples that exceed

tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
RON	95	94.6	93.2	2	67%
MON	85	84.5	84	1	33%
Member State note					
No action as Denmark allow the marketing of petrol with RON> 91.					
Unleaded petrol (minimum RON = 95) E5 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Aromatics	35	36	36.2	1	3%
Member State note					
EPA has made the industry aware of the limit values for aromatics.					
Unleaded petrol (minimum 95 =< RON < 98) - Details of samples that exceed tolerance limits:					
No samples were found to be out of compliance with the Directive specifications.					

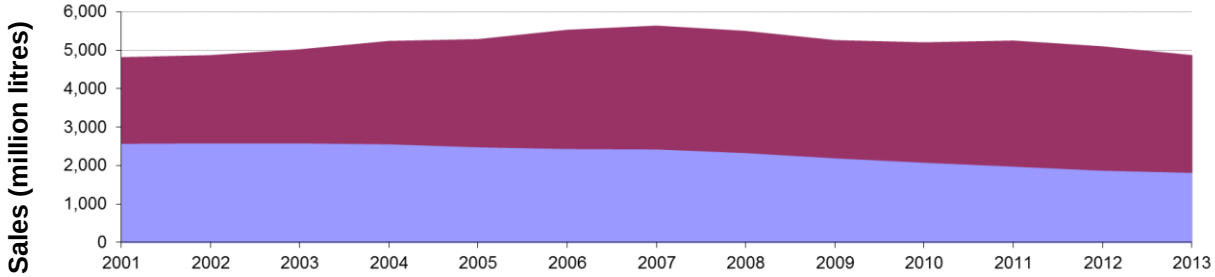
Table 11-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
FAME content	7	7.3	7.5	3	14%
Member State note					
EPA has made the industry aware of the limit values for FAME.					

11.3 Temporal Trends

Figure 10-2 shows the trend in total fuel sales since 2001. Diesel and petrol sales in Denmark have decreased by 5.4% and 2.9% respectively, compared to 2012. Between 2001 and 2013, diesel sales have increased by 36.5% (811 million litres) and petrol fuel sales have decreased by 29.3% (756 million litres). Overall, after a peak in 2007, fuel sales are at the same level they were in 2001.

Figure 11-2: Temporal trends in national sales of petrol and diesel (million litres)



Petrol Diesel

11.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

Fuel sampling in Denmark in 2011 recorded no test results out of specification with tolerance limits. The analysis charts for petrol (Figure 11-3) and diesel (Figure 11-4) detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

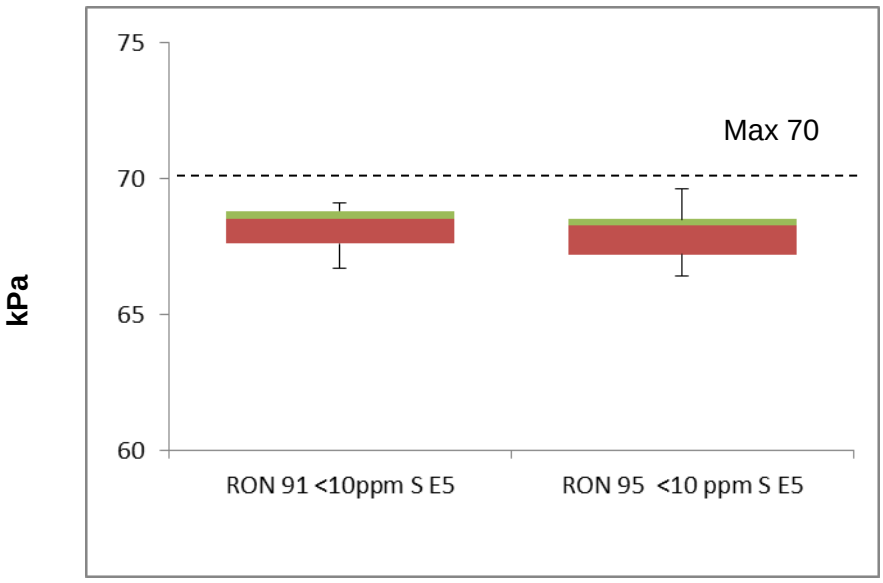
11.4.1 Petrol Analysis

Denmark have sampled RON and MON in very low quantities, with only 3 samples of each parameter tested and reported for fuels Regular unleaded petrol (minimum RON = 91) E5, 1 sample for Unleaded petrol (minimum 95 =< RON < 98) and 2 samples of each parameter reported for Unleaded petrol (minimum RON = 95) E5. Therefore it has not been possible to draw any conclusions from statistical analysis of these parameters.

Similarly, only one sample has been tested and reported for the parameter summer vapour pressure for Unleaded petrol (minimum 95 =< RON < 98) and so the results of this fuel grade cannot be included in the analysis chart below. Of the total 19 samples tested and reported for DVPE during summer 2013 for both RON 91 and RON 95, none were reported to have exceeded tolerance limits, which for Arctic countries is set at 70 kPa. The number of samples taken allows for this analysis to not be conclusive of petrol fuel quality in Denmark.

Figure 11-3: Petrol analysis

Summer Vapour Pressure (DVPE)



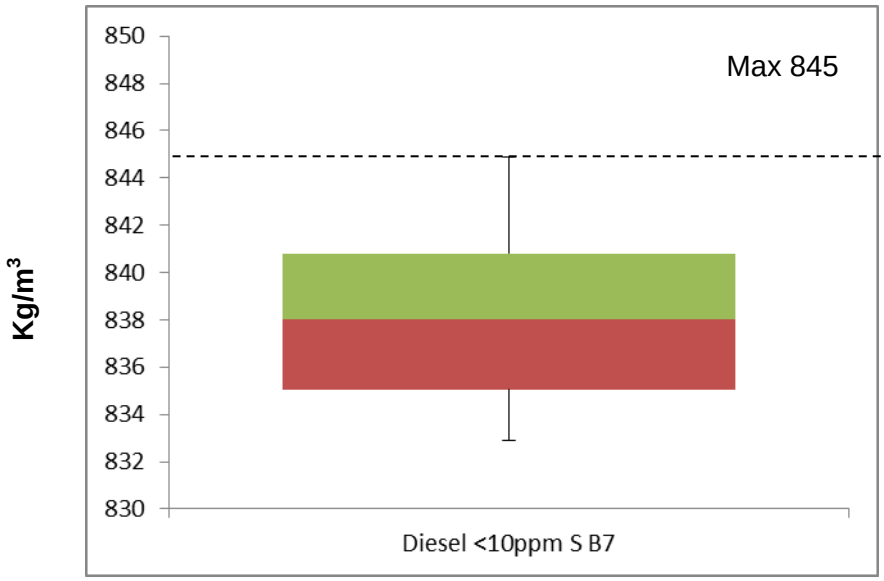
11.4.2 Diesel Analysis

As with petrol samples, the low number of diesel samples (21 in total) limits the conclusions that can be drawn from the results.

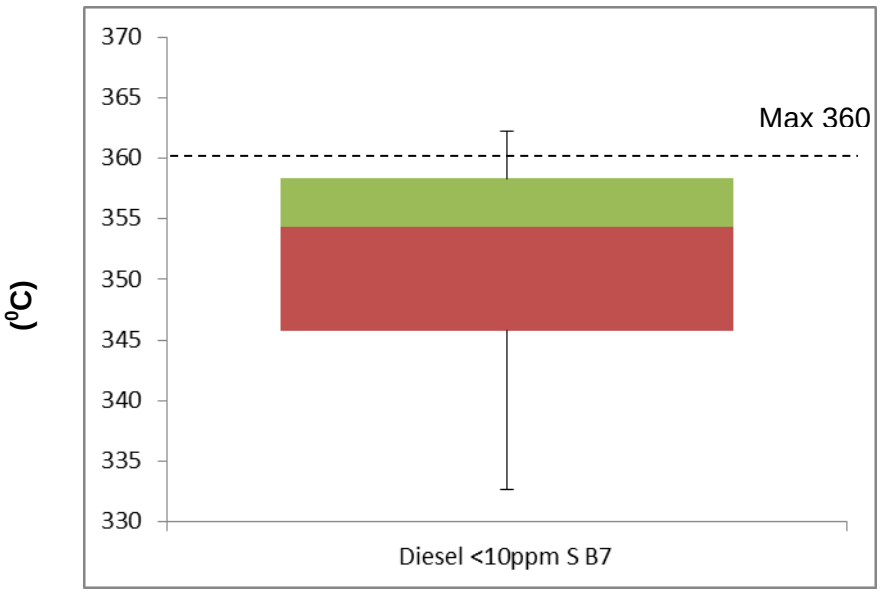
No samples reportedly exceeded tolerance limits for the parameters; however both sets of values present a rather wide distribution (surprising given the limited number of samples) and remained fairly close to specifications.

Figure 11-4: Diesel analysis

Density at 15°C



Distillation – 95% v/v recovered



11.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• The monitoring system employed in Denmark's national Model does not demonstrate equivalence with EN 14274. Although Denmark is using the national system, they should still demonstrate equivalence with EN 14274. However, they are not compliant with sampling requirements for petrol fuel grades RON91 E5 or RON95 E5 or for diesel fuel grade B7. • Too few samples have been taken for all fuel grades with >10% market share. • Some parameters have been sampled at much lower quantities, further eroding statistical confidence in the monitoring carried out in 2013.	• The Danish 2013 report was received ahead of the reporting deadline on the 26th of June.
2012	• The monitoring system employed in Denmark's national Model does not demonstrate equivalence with EN 14274. Although Denmark is using the national system, they should still	• The Danish 2012 report was received ahead of the reporting deadline and in the updated 2012 format.

	demonstrate equivalence with EN 14274. However, they are not compliant with sampling requirements for petrol fuel grades RON91 E5 or RON95 E5 or for diesel fuel grade B7. • Too few samples have been taken for all fuel grades with <10% market share. • Some parameters have been sampled at much lower quantities, further eroding statistical confidence in the monitoring carried out in 2012.	
2011	• The monitoring system employed in Denmark's national Model does not demonstrate equivalence with EN 14274. Although Denmark are using the national system, they should still demonstrate equivalence with EN 14274. However, they are not compliant with sampling requirements for petrol fuel grades RON91 E5 or RON95 E5 or for diesel fuel grade B7. • Too few samples have been taken for all fuel grades with <10% market share. • Some parameters have been sampled at much lower quantities, further eroding statistical confidence in the monitoring carried out in 2011. • Denmark has reported two types of diesel fuel sales (diesel with up to 7% biofuel content and diesel with 5% biofuel content). However, it would have been more correct to report it as one type of diesel fuel sale, since diesel with up to 7 % biofuel content was phased in during 2012.	• The Danish 2011 report was received ahead of the reporting deadline and in the updated 2011 format.

12 Estonia

12.1 Fuel Availability 2013

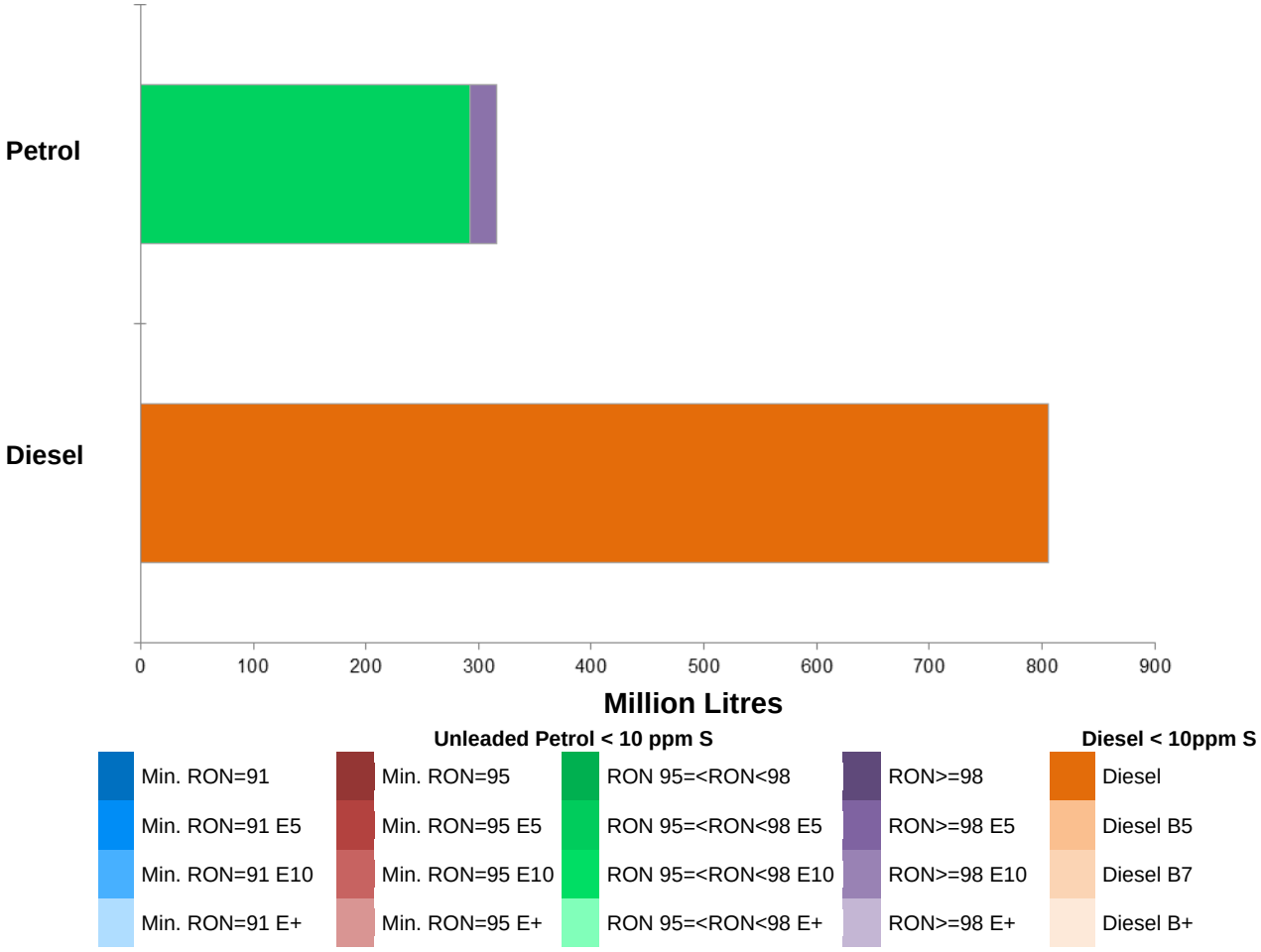
The following table lists the fuels that were reported to be available nationally in 2013.

Table 12-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum 95 =< RON < 98) E5	RON 95
Unleaded petrol (minimum RON >= 98) E5	RON 98
Diesel fuel	Diesel

12.1.1 Sales, sampling and reporting

Figure 12-1: Fuel Sales proportions by fuel type



During 2013, over 800 million litres of diesel was sold in comparison to less than 320 million petrol fuel sales (all petrol grades combined). Petrol fuel sales were mainly comprised of fuel grade RON 95 (92.5%), which contained up to 5% of biofuels.

Table 12-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol 95=<RON<98 (<10 ppm S) E5	292	92.53%	90	90	100	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S) E5	24	7.47%	85	85	8	Yes	19 of 19	
Total Petrol	**316**	**100.00%**	**175**	**175**	**108**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur)	806	100.00%	100	100	100	Yes	6 of 6	
Total Diesel	**806**	**100.00%**	**100**	**100**	**100**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters. Estonia has reported all parameter results for all fuel grades.

12.1.1.1 *Petrol Samples*

Estonia has exceeded minimum sampling requirements for petrol fuel grades RON 95 and RON 98.

12.1.1.2 *Diesel Samples*

Sampling quantities of diesel exceeded the minimum requirement of 50 samples per fuel grade per summer and winter period for a small country monitoring using EN 14274 statistical models C.

12.2 Fuel Quality Monitoring 2013

12.2.1 Description of System

Responsible organisation(s)	Estonian Ministry of Environment
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical Model C
Country Size	Small

Summer Period	Arctic
Location(s) of sampling	Service stations
Time/frequency of sampling	2013 fuel samples have been taken in 7 months of the year for RON 95 and RON 98 fuels and over 8 months for diesel, covering both winter and summer periods.
Specification of test methods	The monitoring followed the European Standard EN 14274. The sample taking followed the European standard EN 14275. Analyses were done in the laboratory of the Estonian Environmental Research Centre and the applied methods had accreditation.
Collection of sales data	Sales data was obtained from the Estonian Tax and Customs Board.

12.2.2 Fuel Quality Monitoring System

12.2.2.1 *Sampling*

Sampling is done according to standard EN 14275 by the Estonian Environmental Research Centre, which is also responsible for analysis and reporting of results. Samples are taken only from retail fuel stations. Sampling points are selected by way that most of the refuelling stations are covered within the period of two years. Frequency of sampling is done the way that summer/winter period samples are evenly distributed through the respective period.

12.2.2.2 *FQMS administration*

Estonian Ministry of Environment is responsible for managing and implementing the FQM Directive. Fuel sampling and analysis is contracted privately with the Estonian Environmental Research Centre and annual report deadline is 30 of May. When non-compliant samples occur, the responsible public bodies of taking actions are Estonian Environmental Inspectorate and Estonian Tax and Customs Board. These two bodies are informed immediately by e-mail and by post. If necessary, new samples are taken by Tax and Customs Board. The system has been designed in 2004-2005 using EN 14274 model C.

12.2.2.3 *National Legislation that transposed the FQD*

Elements of the Directive requirements are described in national regulation by Ministry of the Environment regulation no 45, 21.06.2013.

12.2.2.4 *Reporting periods*

Winter period: 01.12 - 28/29.02.

Summer period: 01.05 - 30.09.

Transition periods are 01.10 - 30.11 and 01.03 - 30.04. No samples are taken during the transitions periods.

12.2.3 Compliance with Fuel Quality Limit Values

Table 12-3: Petrol Fuel Grades

RON 95 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit**	**Tolerance**	**Max/Min value**	**No samples**	**% samples**

	Value	Limit* (TL)	of samples tested	outside TL	outside TL
MON	85	84.5	84.4	2	2%
Summer vapour pressure, kPa	70	71.9	72.2	2	2%

Member State notes
In the case of all samples found to be non-compliant with specified limits, authorities were informed and an investigation was initiated.

Octane numbers MON and RON are reported without correction stated in EN 228. No metal additives, methanol, isopropyl alcohol, isobutyl alcohol, tertbutyl alcohol and other oxygenates were found or the samples were below method detection limit.

RON 98 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	70	71.9	75.7	1	1.1%

Member State notes
Further, one RON sample was found outside limit values according to national specification (minimum 98). In all cases where samples were found to be non-compliant with specified limits, authorities were informed and an investigation was initiated.

Octane numbers MON and RON are reported without correction stated in EN 228. No metal additives, methanol, isopropyl alcohol, isobutyl alcohol, tertbutyl alcohol and other oxygenates were found or the samples were below method detection limit.

Table 12-4: Diesel Fuel Grades

Diesel fuel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Sulphur Content	10	11.8	12.9	1	0.47%

Member State notes
In all cases where samples were found to be non-compliant with specified limits, authorities were informed.

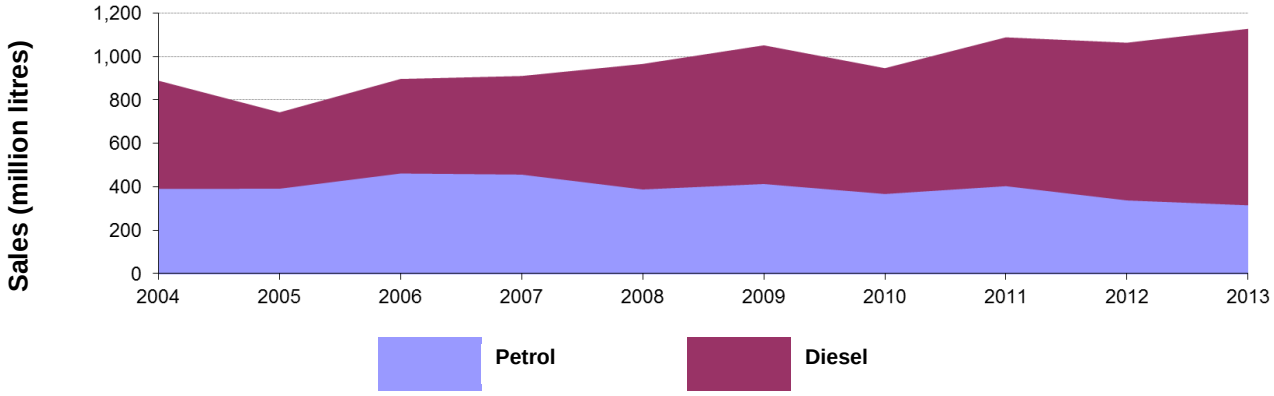
Colorants were also analysed, no residues were found.

12.3 Temporal Trends

Figure 12-2 shows the trend in total fuel sales since Estonian EU reporting began in 2004. In the period 2012 to 2013, petrol fuel sales in Estonia have decreased by 7.3% from 341 million litres to 316 million litres of petrol sold. In the period since 2004, petrol fuel sales in Estonia have fluctuated, peaking at 464 million litres in 2006, before declining. Overall, the decrease in petrol fuel sales since 2004 has been just over 19%.

Diesel sales between 2012 and 2013 have increased by 12% rising from 719 million litres to 806 million litres. Diesel fuel sales have also fluctuated in the years since reporting began, as demonstrated in the chart, below. In the period since 2004, diesel fuel sales decreased in the period 2004-2005 and again in the period 2008-2009, however have risen between all other reporting periods. Overall, diesel fuel sales have increased by 63.9%.

Figure 12-2: Temporal trends in national sales of petrol and diesel (million litres)



12.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

The analysis charts for petrol (Figure 12-3) and diesel (Figure 12-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

12.4.1 Petrol Analysis

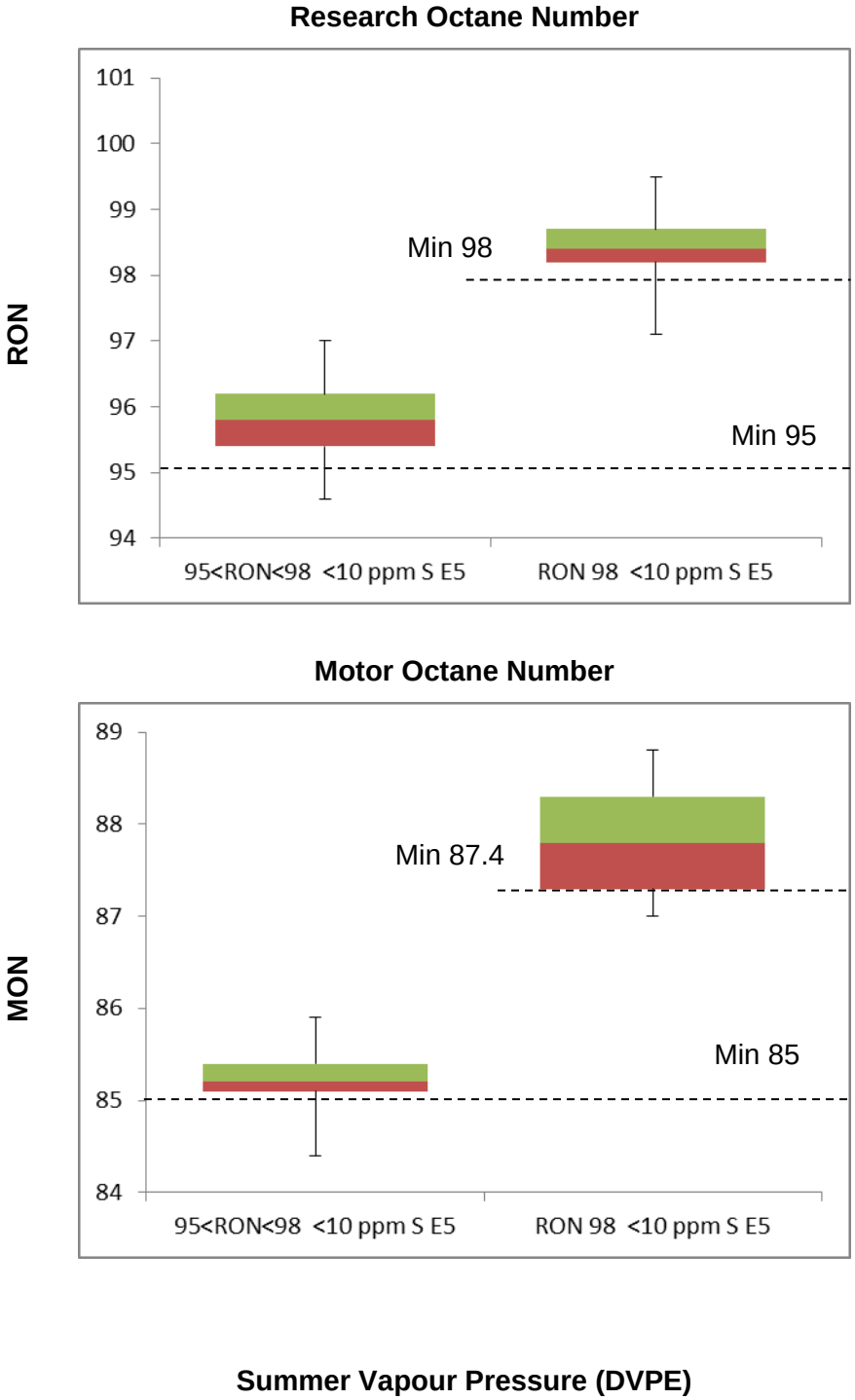
Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum), to demonstrate the skew of sample results.

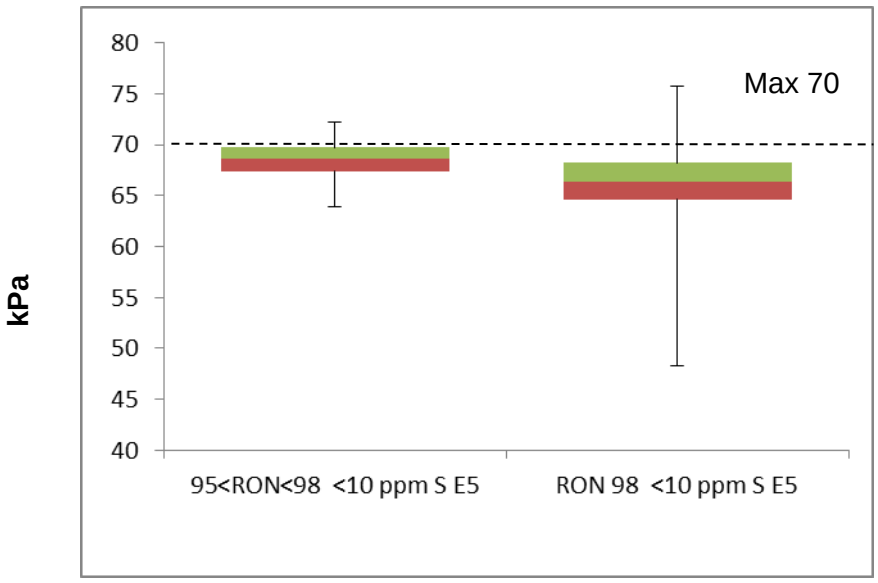
RON and MON sample results show that the fuels available in Estonia have reasonably small variation in Octane level and that the majority of sample results remained very tight to

minimum specifications for the parameters. There were samples of RON 95 that were found to be non-compliant with minimum levels for both RON and MON, however these were outliers. RON 98 was well above EU limits although some samples were below national specifications.

Summer Vapour pressure results demonstrate wider spread (especially for RON 98), with the bulk of results remaining within specification although very close to the limit.

Figure 12-3: Petrol analysis



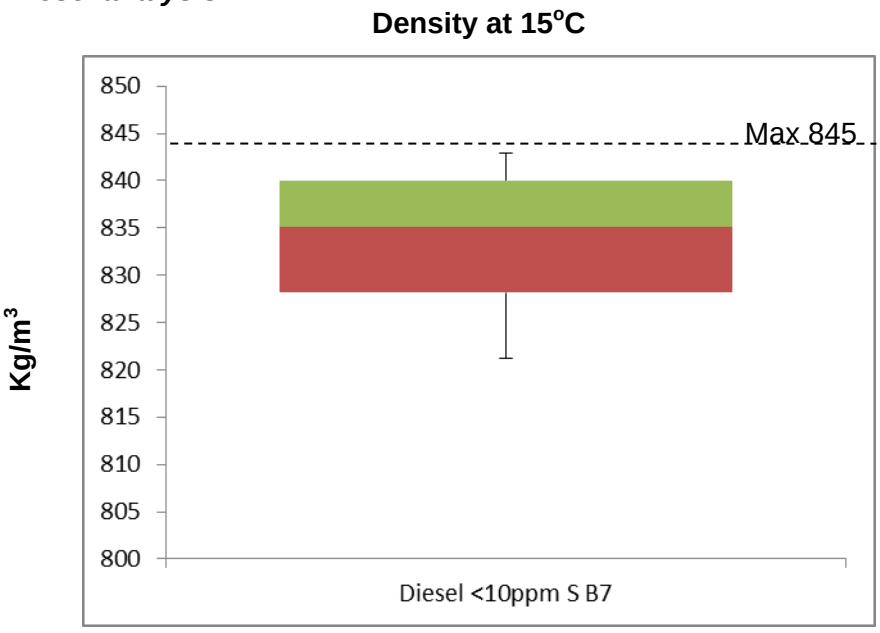


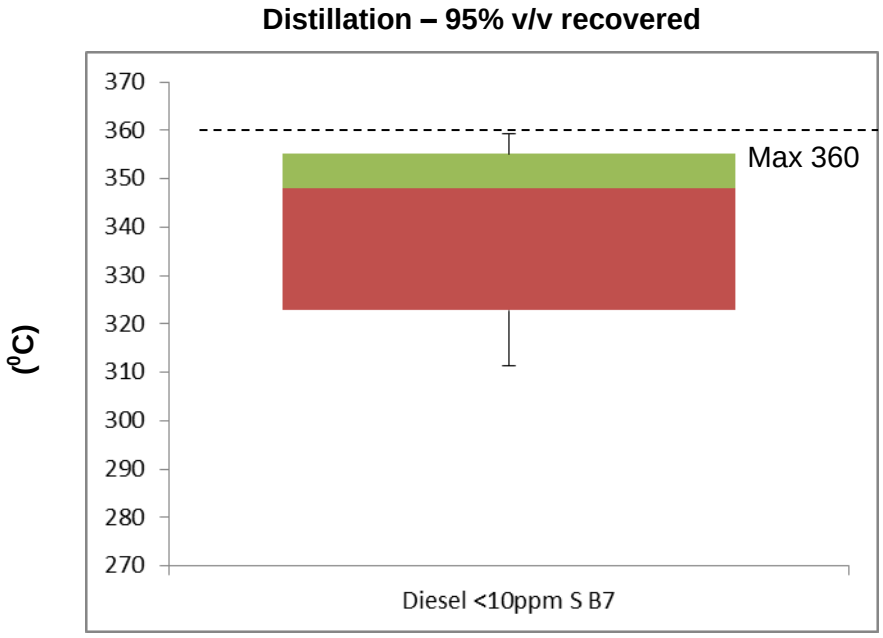
12.4.2 Diesel Analysis

Diesel sample results for Density show a slightly wider variation for the bulk of samples tested for density and for distillation, exhibited by the widely spread coloured bands at the 25 and 75 quartile – in comparison to the tight bands shown in the petrol analysis box plots.

Density and Distillation are both very close to limits and outliers lie very close to specification (maximum values), with however no values over the limit values for either parameter.

Figure 12-5: Diesel analysis





12.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• No regional split of sales has been provided for Estonia again in 2013 and it has not been demonstrated that division into macro-regions or non-macro regions is not possible.	• The report was received on time on the 27th of June and in the correct format
2012	• No regional split provided however detail of sampling of marine fuels and certain liquid fuels were provided in addition to details for the FQMS.	• No comment, all information provided
2011	• No regional split of sales has been provided for Estonia again in 2011 and it has not been demonstrated that division into macro-regions or non-macro regions is not possible.	• The Estonian report was received on time and in the 2011 format. All information was provided.

13 Finland

13.1 Fuel Availability 2013

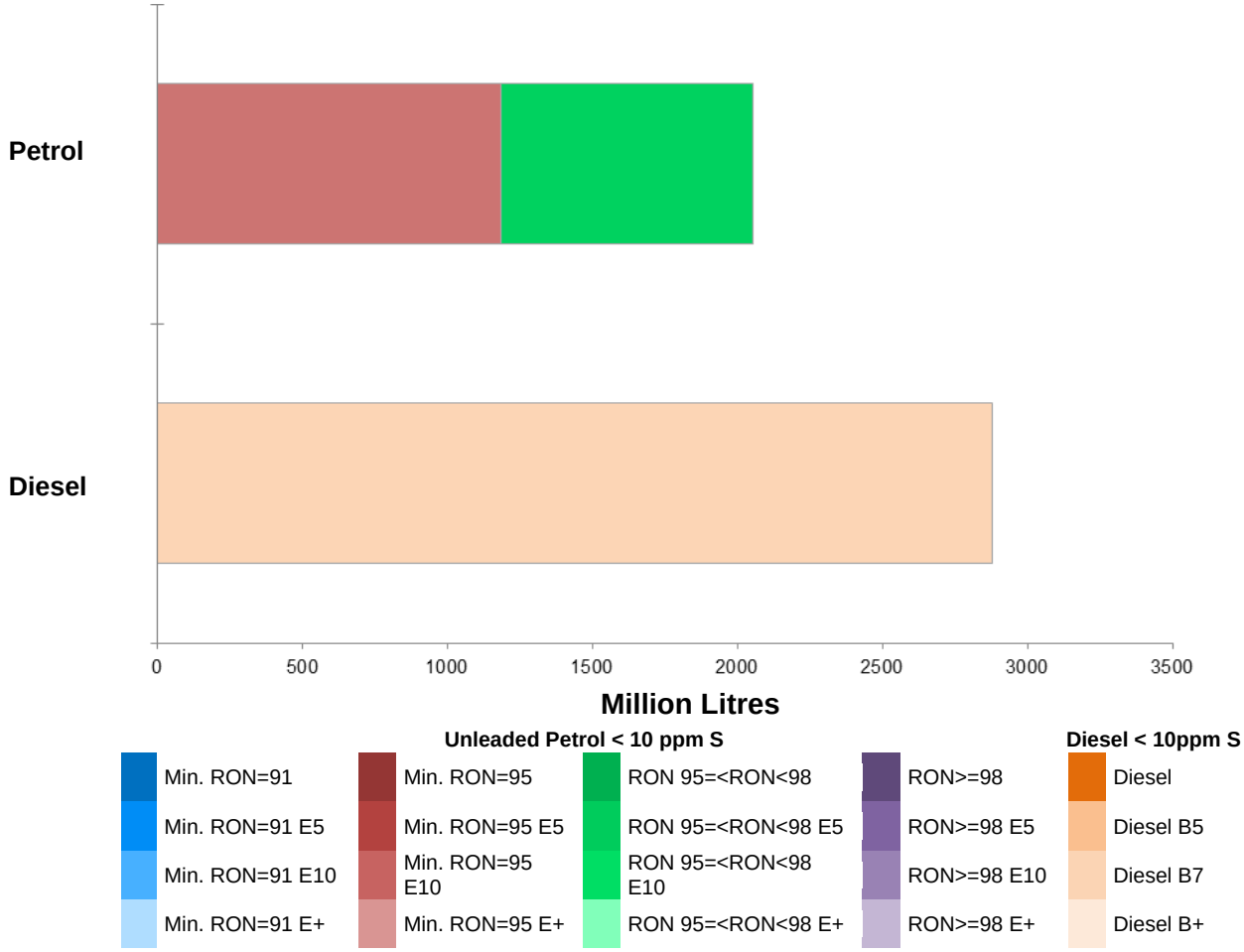
The following table lists the fuels that were reported to be available nationally in 2013.

Table 13-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E10	Moottoribensiini 95 E10
Unleaded petrol (minimum RON >= 98) E5	Moottoribensiini 98 E5
Diesel fuel B7	Dieselöljy

13.1.1 Sales, sampling and reporting

Figure 13-1: Fuel Sales proportions by fuel type



During 2013 diesel fuel sales in Finland have exceeded petrol fuel sales with 2,878 million litres of diesel compared to combined petrol sales of just over 2,052 million litres. The maximum FAME content of all diesel fuel is 7%. Petrol fuel sales of Min. RON=95 with ethanol content of up to 10% and RON 98 with ethanol content of up to 5% were reasonably equally weighted, amounting to 58% and 42% petrol fuel share respectively.

Table 13-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E10	1,187	57.83%	54	57	100	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S) E5	865	42.17%	54	58	100	Yes	19 of 19	
Total Petrol	**2,052**	**100.00%**	**108**	**115**	**200**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	2,878	100.00%	55	60	100	Yes	6 of 6	
Total Diesel	**2,878**	**100.00%**	**55**	**60**	**100**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.

13.1.1.1 *Petrol Samples*

Finland has complied with and exceeded minimum sampling requirements (50 per period per fuel grade comprising over 10% of market share) for all petrol fuel grades reported.

13.1.1.2 *Diesel Samples*

Diesel fuel samples tested in 2013 complied with the total minimum requirement of 50 samples per grade per period for a 'small' (total fuel sales of less than 15 million tonnes) member state using EN 14274:2003 statistical model A.

13.2 Fuel Quality Monitoring 2013

13.2.1 Description of System

Responsible organisation(s)	Finnish Customs Laboratory
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model A
Country Size	Small
Summer Period	Arctic
Location(s) of sampling	Service stations
Time/frequency of sampling	Sampling was done in the whole country according to the sampling plan following the guidelines of the standard EN 14274:2003 model A. The division of the consumption per macro region is based on total annual consumption of petrol (including 95 and 98) octane

	grades. Since the sales volume for 99 octane petrol was small (less than 2%) it was excluded from the actual sampling. Fuel consumption figures are for the whole year given in million litres.
Specification of test methods	Except for the lead, manganese, aromatics, olefins and FAME methods, all other methods of analysis used (including those subcontracted) were reference methods according to the standards EN 228:2008 and EN 590:2009. The lead method used by the laboratory (determination of lead content in petrol by energydispersive X-ray fluorescence spectroscopy) is a so called screening method. Sulphur, density and vapour pressure methods have been accredited by FINAS Accreditation service. Other methods used by the laboratory have been tested and validated according to quality procedure of Customs Laboratory. Manganese content of petrol was also examined by energydispersive X-ray fluorescence spectroscopy. The laboratory has the ability to confirm the manganese content with the EN 16136 method if necessary. Aromatics and olefins contents of petrol were examined by ASTM D1319 method. The FAME content of diesel was examined by NIRS (Near-Infrared Spectroscopy) screening method. The laboratory has the ability to confirm the FAME content with the EN 14078 method by subcontractor if necessary. The authenticity and accuracy of the methods used by the laboratory have been verified by the national Round Robin and international PT comparative studies.
Collection of sales data	Sales data was provided by the Finnish Petroleum Federation for 2013.
Other details	

13.2.2 Fuel Quality Monitoring System

13.2.2.1 *Sampling*

According the agreement (38/481/2001) between Finnish Customs and Ministry of Environment, Customs is responsible for sampling, analysis and reporting the results of analysis. Sampling was done in the whole country according to the sampling plan following the guidelines of the standard EN 14274:2003 model A. Country was divided to 3 macro-regions with about same sales volume and variability factor (see Regional Sampling sheets). There were 2 refineries and 19 terminals in operation. The number of retail sites in macro regions were about 645, 750 and 485, making a total of 1877. The sampling places were selected randomly, however, ensuring that all distribution chain companies were included. All samples were taken in retail sites. The division of the consumption per macro region is based on total annual consumption of 95 (95 E10) and 98 (98 E5) octane grades. Diesel fuel consumption figures per macro region are for the whole year as well. The sampling was split to winter and summer periods in order to take minimum sample amount in both periods.

The grades investigated were unleaded RON 95 (95 E10) and RON 98 (98 E5) octane sulphur free (max. 10 mg/kg) petrol and sulphur free (max. 10 mg/kg) diesel fuel. The fuels were furthermore divided into summer and winter grade. Since the sales for RON 99 octane petrol was small (less than 2%) it was excluded from the actual sampling. Also, there was no

quality under RON 95 octane on the market. The sampling aims to comply, when applicable, with the requirements of standard EN 14275:2004. The sampling was done by trained personnel. One litre metal containers and five litre plastic containers approved for this purpose were used as sampling containers. Before the vapour pressure analysis, the sampling containers were cooled according to the requirements of the method.

The analyses were conducted at the Customs Laboratory, which is a testing laboratory accredited by FINAS Accreditation Service. For octane and cetane numbers, subcontractors whose competence was confirmed were used. Except for the lead, manganese, aromatics, olefins and FAME methods, all methods of analysis used (including those subcontracted) were reference methods according to the standards EN 228:2008 and EN 590:2009. The lead method used by the laboratory (determination of lead content in petrol by energydispersive X-ray fluorescence spectroscopy) is a so called screening method. The sensitivity of the method used, however, is much better than the limit indicated in the quality requirements. The average lead content measured in the samples was clearly below the limit set in the quality requirements. If needed, the laboratory has the ability to confirm the lead content of the sample with the EN 237 method according to the directive (Petroleum products. Petrol. Determination of low lead concentrations by atomic absorption spectrometry) in cases where the result is near or exceeds the quality limit. Sulphur (method EN-ISO 20846), density (method EN-ISO 12185) and vapour pressure (method EN 13016-1) methods have been accredited by FINAS Accreditation service. Other methods used by the laboratory have been tested and validated according to quality procedure of Customs Laboratory. These test methods are EN-ISO 3405 (distillation of petrol and diesel), EN 13132 (oxygen and oxygenates contents of petrol) and EN 12916 (polycyclic aromatic hydrocarbons of diesel). Aromatics and olefins contents of petrol were examined by ASTM D1319 method. As lead, manganese content of petrol was also examined by energy dispersive X-ray fluorescence spectroscopy. The laboratory has the ability to confirm the manganese content with the EN 16136 method if necessary. The FAME content of diesel was examined by NIRS (Near-Infrared Spectroscopy) screening method. The laboratory has the ability to confirm the FAME content with the EN 14078 method by subcontractor if necessary. The authenticity and accuracy of the methods used by the laboratory have been verified by the national Round Robin and international PT comparative studies. The determination of RON- (EN-ISO 5164), MON -(EN-ISO 5163) and cetane number (EN-ISO 5165) have been done by external contractor, which also provides the accreditation procedure for these methods.

In 2013, the Customs Laboratory took part in the Round Robin Finland testing, which performs national inter-laboratory fuel examinations and tests organized by IIS (Institute of Interlaboratory Studies). The results of the parameters measured in the tests (sulphur content, density, distillation, vapour pressure, lead, benzene content, total oxygen content, aromatics and olefins contents, ethers and ethanol contents) were acceptable. In 2001 - 2012 the laboratory also took part in these tests with acceptable results.

13.2.2.2 *FQMS administration*

Ministry of the Environment is responsible for transposition of the Directive into the national legislation, approving plans and giving general guidance. Finnish Customs is responsible for the practical implementation and fuel quality monitoring as explained in previous sections. In case non-compliant samples the analyses will be repeated as soon as possible. If non-compliance is confirmed, the Customs contacts the fuel supplier/oil company to get a detailed account. If clear reason for non-compliance is not found, if there's no signs of intentional offending action, and the case is not a serious one, a written procedure is often considered appropriate and sufficient. When non-compliant samples are repeatedly found, remark or formal complaints may also be given. According to Section 84 (Rectification of a violation or negligence) of the Environmental Protection Act (86/2000) a supervisory authority may prohibit a party from continuing or repeating a procedure violating existing regulations or order a party to fulfil its duty in some other way. Ministry of the Environment is informed about actions taken. If there is a risk that non-compliant fuel can cause damage to the vehicle (lead, sulphur) and the fuel is still on the market, it is possible to order the fuel

supplier to remove the product from the market. According to Section 87 (Decision to prohibit or require action on substances, preparations, products, equipment and machines) the Ministry of the Environment may prohibit the manufacturer, importer or other market supplier from continuing operations that are contradicting existing regulations; prohibit the trading, sale or other supply of products that are in violation of the existing regulations; require the offender to bring the product into compliance with the regulations or otherwise meet its obligations. If a product has been placed on the market, the Ministry may require the party acting contrary to the existing regulations to remove the product from the market.

13.2.2.3 *National Legislation that transposed the FQD*

The supervision of the quality of fuel is based on the Environmental Protection Act (86/2000), the Government Decree on the quality requirements for petrol and diesel fuel (1206/2010) and an agreement between the Ministry of the Environment and Finnish Customs (38/481/2001). According to the agreement, Finnish Customs prepares a yearly sampling plan, which is to be approved by the Ministry of the Environment. Finnish Customs is in charge of the practical realization of the supervision. The Customs' national district organization takes care of taking liquid fuel samples according to the sampling plan, and the samples are analyzed at the Customs Laboratory. The supervision aims to comply, when applicable, with the requirements of standard EN 14274:2003 model A three macro regions.

13.2.2.4 *Reporting periods*

Summer – 1st June – 31st August

Winter – 1st September – 31st May

An 'Artic' derogation has been granted in 2011. The summer period is 1.6 - 31.8 during which the maximum vapour pressure is 70 kPa. For details see Commission decisions K(2011) 714 final and K(2011) 3772 final and the Finnish notification letter on Fuel Quality Vapour Pressure Derogation. Original notification dated 17 February 2010, supplementary information 26 June 2010 and 6 September 2010.

The sampling was split to winter and summer periods in order to take minimum sample amount in both periods. The results of samples taken during the transition period have been reported within the annual fuel quality report.

13.2.3 Compliance with Fuel Quality Limit Values

Table 13-3: Petrol Fuel Grades

Unleaded Petrol (Minimum RON = 95) – Moottoribensiini 95 E10 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Motor Octane Number	85	84.5	84.2	2	5.7%
Distillation – evaporated at 100°C %v/v	46.0	43.6	63.5	1	1.8%

Member State notes

- The determination of RON and MON -numbers have been done by external contractor.
- Two MON results (84. 2 and 84.4) were below the minimum limit value (85) and the minimum tolerance limit (84.5). No reasons were found and special enforcement actions were not deemed necessary.
- The lead content was measured by energy dispersive X-ray fluorescence method with sensitivity much better than the limit indicated in the quality requirements. The laboratory has the ability to confirm the lead content with the EN 237 method if necessary.
- The manganese content was also measured by energy dispersive X-ray fluorescence method. The laboratory has the ability to confirm the manganese content with the EN 16136

method if necessary.
- One distillation value at 100 ºC (42.3 % v/v) was below the minimum limit value (46 % v/v) and the minimum tolerance limit (43.6 % v/v). No reason was found and special enforcement actions were not deemed necessary.
- ASTM D1319 method was used.
- The highest aromatics content (36.4 % v/v) was above the maximum limit value (35.0 % v/v), but within the maximum tolerance limit (37.2 % v/v).
- The highest oxygen content (3.9 % m/m) was above the maximum limit value (3.7 % m/m), but within the maximum tolerance limit (3.9 % m/m).
- The highest ethanol content (10.5 % v/v) was above the maximum limit value (10 % v/v), but within the maximum tolerance limit (10.5 % v/v).
- The limit value for Finland is 70.0 kPa.
- The highest sulphur content (11.6 mg/kg) was above the maximum limit value (10 mg/kg), but within the maximum tolerance limit (11.6 mg/kg).

Unleaded Petrol (Minimum RON = 98) – Moottoribensiini 98 E5 - Details of samples that exceed tolerance limits:

Parameter	Limit Value	Tolerance Limit* (TL)	Max/Min value of samples tested	No samples outside TL	% samples outside TL
Vapour Pressure, DVPE	70	71.4	71.6	1	0.54%
Distillation – evaporated at 100°C %v/v	46.0	43.6	42	1	1.12%

Member State notes
- The determination of RON and MON -numbers have been done by external contractor.
- The lead content was measured by energydispersive X-ray fluorescence method with sensitivity much better than the limit indicated in the quality requirements. The laboratory has the ability to confirm the lead content with the EN 237 method if necessary.
- The manganese content was also measured by energydispersive X-ray fluorescence method. The laboratory has the ability to confirm the manganese content with the EN 16136 method if necessary.
- One distillation value at 100 ºC (42.0 % v/v) was below the minimum limit value (46 % v/v) and the minimum tolerance limit (43.6 % v/v). No reason was found and special enforcement actions were not deemed necessary.
- FN6: ASTM D1319 method was used.
- The highest oxygen content (2.9 % m/m) was above the maximum limit value (2.7 % m/m), but within the maximum tolerance limit (2.9 % m/m).
- The limit vapour pressure value for Finland is 70.0 kPa.
- One vapour pressure value (71.6 kPa) was above the maximum limit value (70.0 kPa) and the maximum tolerance limit (71.4 kPa). No reason was found and special enforcement actions were not deemed necessary.
- The highest sulphur content (11.1 mg/kg) was above the maximum limit value (10 mg/kg), but within the maximum tolerance limit (11.6 mg/kg).

Table 13-4: Diesel Fuel Grades

Diesel Fuel B7 Dieselöljy - Details of samples that exceed tolerance limits:

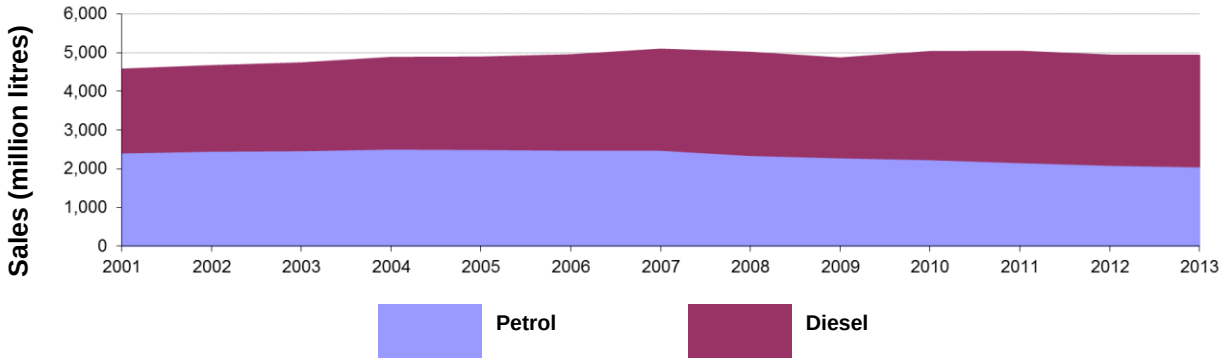
No samples found to be outside tolerance limits

Member State notes
- The determination of cetane -number has been done by external contractor.
- The lowest cetane number (50.4) was below the minimum limit value (51.0), but within the minimum tolerance limit (48.5). FN15: The FAME content was examined by NIRS (Near-Infrared Spectroscopy) screening method. The laboratory has the ability to confirm the FAME content with the EN 14078 method by subcontractor if necessary.
- The highest FAME content (7.3 % v/v) was above the maximum limit value (7 % v/v), but within the maximum tolerance limit (7.3 % v/v).

13.3 Temporal Trends

Figure 13-2 shows the trend in total fuel sales since 2001. Diesel sales in Finland in 2013 have risen by 33.3% since 2001 (719 million litres) and by 1.2% since 2012 (35 million litres). Petrol fuel sales have instead decreased by 18.3% since 2001 (360 million litres) and have not changed in 2013 compared to 2013. Since 2001 total sales have remained fairly stable, but while the petrol/diesel split in 2001 was 53% to 47% now it is 42% to 58%.

Figure 13-2: Temporal trends in national sales of petrol and diesel (million litres)



13.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

Fuel sampling in Finland in 2013 recorded five test results out of specification with limit values. The analysis charts for petrol (Figure 13-3) and diesel (Figure 13-4) detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

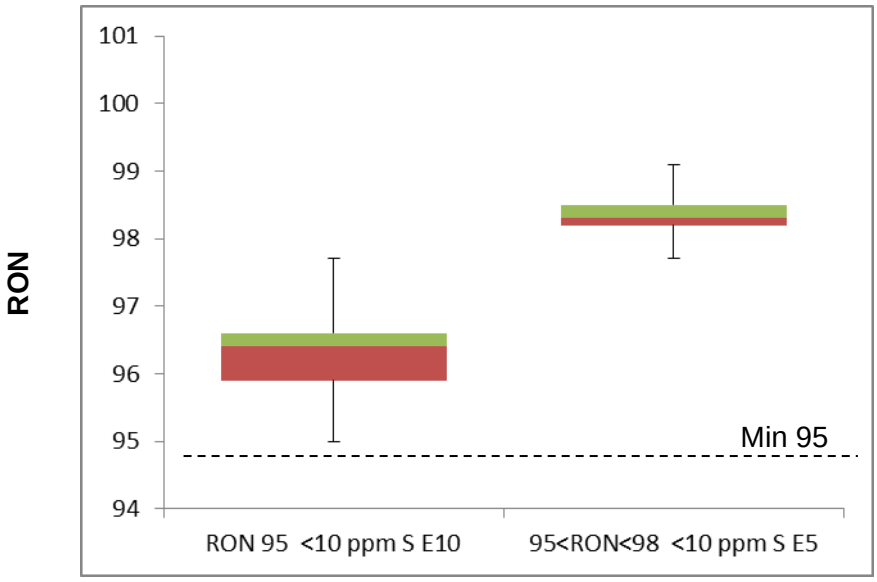
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

13.4.1 Petrol Analysis

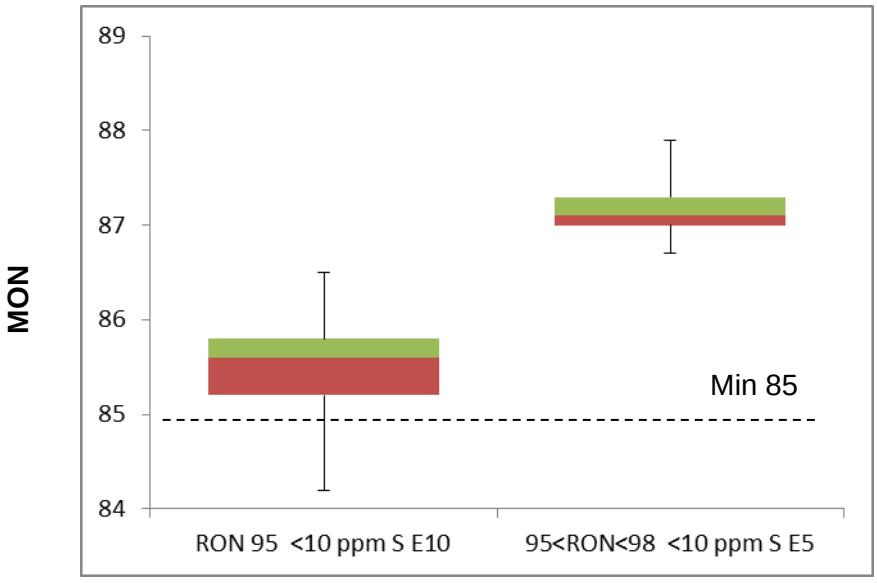
RON and MON analysis show a tight distribution, with only 1 RON 95 sample exceeding the limit. Finland reported vapour pressure according to arctic climatic conditions. This means that the limit value for summer vapour pressure is 70 kPa. Vapour pressure results for 2013 showed a more tight distribution compared to last year, with very similar DVPE distributions for both RON 95 and RON 98. Only 1 sample of RON 98 marginally exceeded limits.

Figure 13-3: Petrol analysis

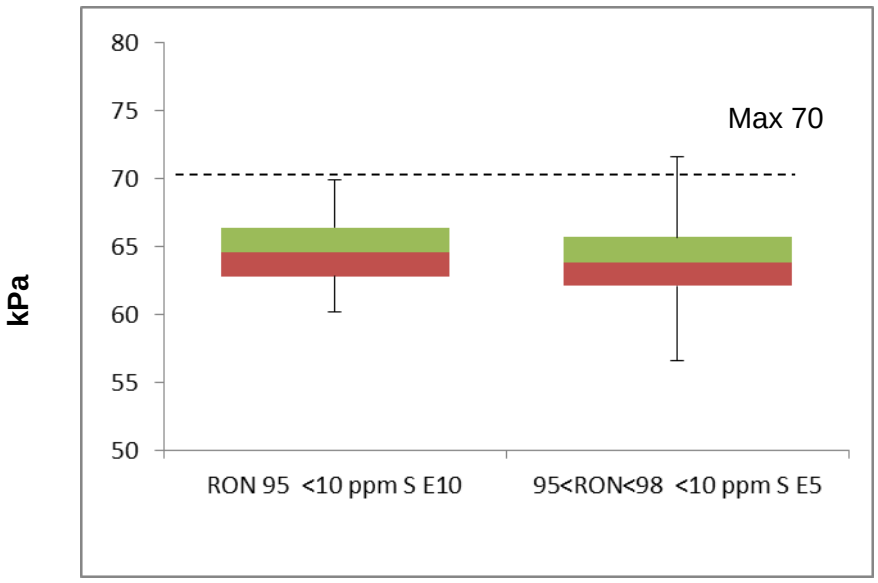
Research Octane Number



Motor Octane Number



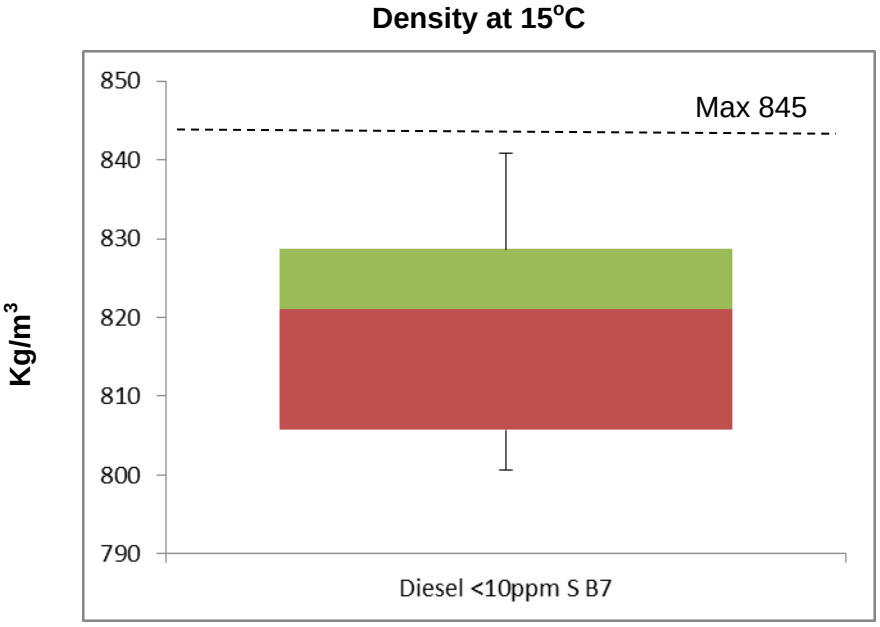
Summer Vapour Pressure (DVPE)

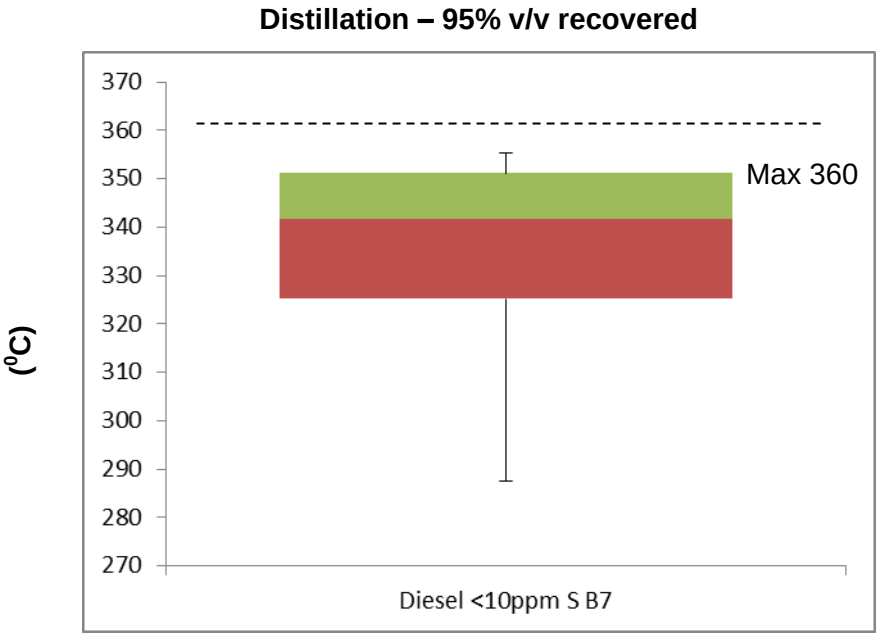


13.4.2 Diesel Analysis

Diesel sample results for Density show a slightly wider variation, exhibited by the widely spread coloured bands at the 25 and 75 quartile. All samples of density and distillation remained within limit values and tolerance limits, but density shows a very wide variation within the second quartile while Distillation is very wide in the lower quartile.

Figure 13-4: Diesel analysis





13.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
Year	**Monitoring**	**Reporting**
2013	• None. All requirements have been met.	• The Finnish report was received on time on the 25th of June and in the correct reporting template.
2012	• Manganese has not been tested for in Finland in 2012. • Finland did not report parameter results for FAME Content for diesel fuel grade in 2012. However Finland has expressed plans to report the parameter from 2014 onwards.	• The Finnish report was received before the 30th June deadline and in the 2012 reporting template. • All information and relevant details required for the reporting period were provided for 2012.
2011	• Manganese has not been tested for in Finland in 2011. Suppliers have stated that no metallic additives are used in fuels on the market. • Finland did not report parameter results for FAME Content for diesel fuel grade in 2011. However Finland has expressed plans to report the parameter from 2013 onwards.	• The Finnish report was received before the 30th June deadline and in the 2011 reporting template. • All information and relevant details required for the reporting period were provided for 2011.

14 France

14.1 Fuel Availability 2013

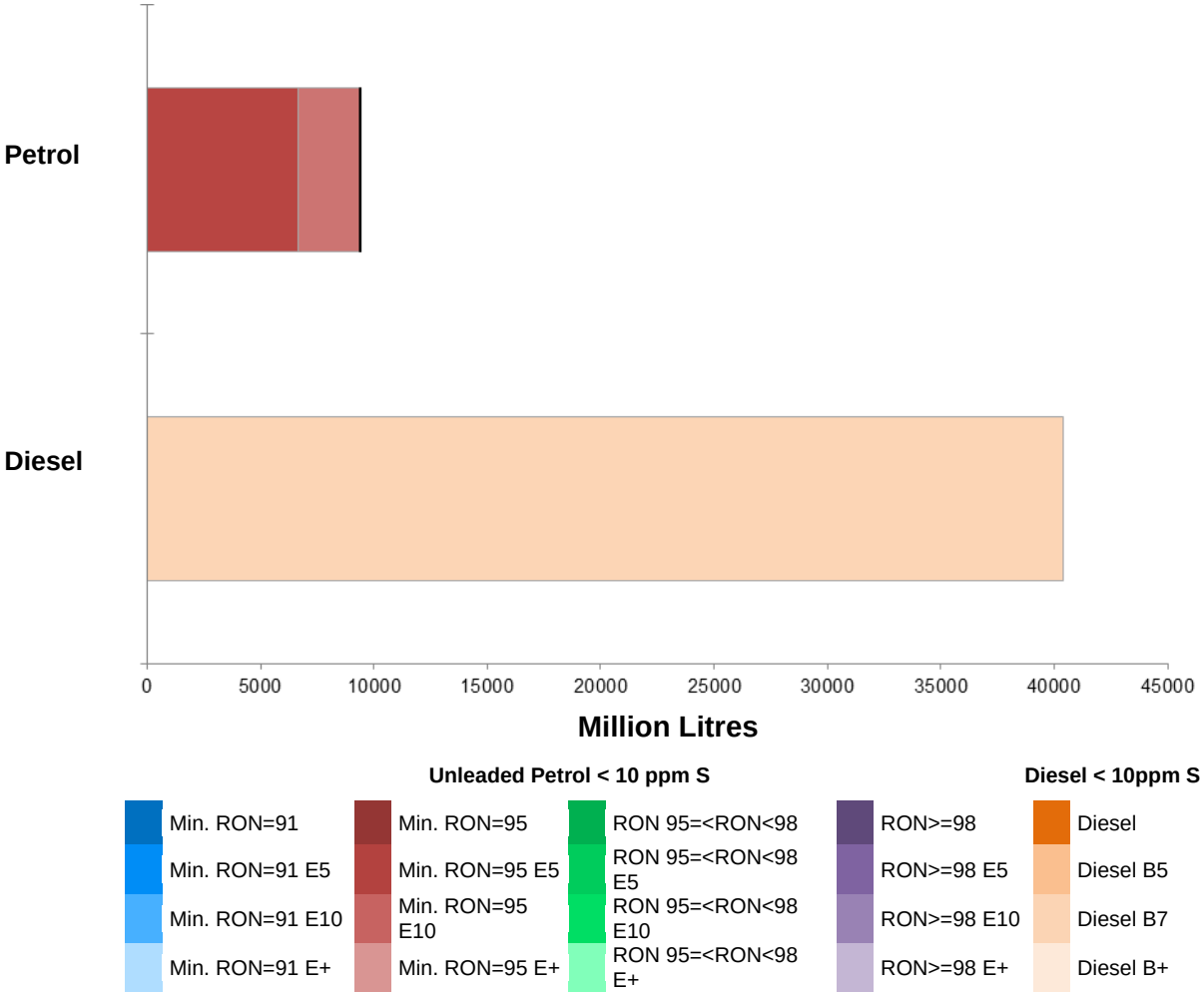
The following table lists the fuels that were reported to be available nationally in 2013.

Table 14-1 National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	SP95/98
Unleaded petrol (minimum RON = 95) E10	SP95-E10
Unleaded petrol (minimum RON = 95) E+	E85
Diesel fuel B7	Gazole

14.1.1 Sales, sampling and reporting

Figure 14-1 Fuel Sales proportions by fuel type



In 2013, France has reported sales of two different petrol fuel grades under Directive 1998/70/EC: Unleaded petrol (minimum RON = 95) E5 and Unleaded petrol (minimum RON = 95) E10. Diesel dominated fuel sales in 2013 with sales of 40,419 million litres compared to petrol fuel sales (all grades combined but excluding E85) of 9,363 million litres.

Table 14-2 Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E5	6,650	70.5%	220	200	400	Yes	19 of 19	(a)
Unleaded petrol min. RON=95 (<10 ppm S) E10	2,714	28.8%	34	33	400	Yes	19 of 19	
Unleaded petrol min. RON=95 (<10 ppm S) E+	74	0.8%	3	0	n/a	n/a	n/a	(b)
Total Petrol	**9,438**	**100.00%**	**254**	**233**	**800**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	40,419	100.00%	220	200	400	Yes	6 of 6	
Total Diesel	**40,419**	**100.00%**	**220**	**200**	**400**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters. France has reported results for all parameters in all fuel grades.
(a) Additional Notes	Two E5 petrol fuel grades have been reported in combination as French legislation defines fuels 95 and 98 as a single E5 fuel grade. SP98 is not a regulatory fuel grade in France (SP98 is a commercial ("premium") grade derived from SP95 regulatory grade).
(b)	E85 analysis is not reported under the Fuel Quality Monitoring Directive.

14.1.1.1 *Petrol Samples*

France has taken 275 samples of petrol grade RON 95 E5and 145 samples of petrol grade RON 98 E5, for a total of 420 samples, which have been reported as single fuel grade given that RON98 is not a regulatory grade. The sampling requirements have therefore been satisfied for regulatory grade RON95 E5 but were severely short for RON 95 E10: France provided only 67 samples instead of the required 400.

14.1.1.2 *Diesel Samples*

Diesel fuel samples tested in 2013 with up to 7% biofuel content exceeded the total minimum requirement.

14.2 Fuel Quality Monitoring 2013

14.2.1 Description of System

Responsible organisation(s)	Ministère de l'écologie, du développement durable et de l'énergie, Direction générale de l'énergie et du climat French Ministry for Ecology, Sustainable Development and Energy, Directorate General for Energy and Climate (DGEC)
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model B. France opted out using Model A in 2010 when choosing the provider who performs sampling and analysis, selected by European tender, as the geographical layout of refineries and oil depots does not allow for the identification of macro-regions containing a number of very local sources, as required by the standard.
Country Size	Large
Summer Period	Normal
Location(s) of sampling	Service stations
Time/frequency of sampling	Unleaded petrol min. RON=95 (<10 ppm S) E5 and Unleaded petrol min. RON=95 (<10 ppm S) E10 were reported over 11 and 10 months respectively in 2013, with an even spread between summer and winter periods. Diesel fuel (<10 ppm sulphur) B7 was reported over 11 months, with an even spread between summer and winter periods.
Specification of test methods	For some parameters listed below, France used updated version of test methods and used the Reproducibility associated to these updated test methods version. This has been taken into account during the report sample compliance analysis, and details have been provided, as below: Petrol: • Distillation has been tested using updated 2011 test methods. • Manganese has been tested using EN 16136: 2010.
Collection of sales data	Sales data was provided by the Directorate General of Customs in 2013.
Other details	

For SP95 and SP98 E5 petrol fuels, it was decided to sample the fuel available in the controlled service stations (SP95 or SP98). This choice is justified by the market development of SP95E10 petrol fuel, which gradually replaces either SP95 or SP98 petrol fuel in service stations. The controls on the RON and MON are those which apply respectively to fuel taken.

For fuels SP95, SP98 and SP95 E10, the following analyses is made in addition to the tests required by the directive on fuel quality:

- Appearance (visual inspection)
- Density at 15 ° C (NF EN ISO 3675, EN ISO 12185)
- Distillation at 70 ° C (NF EN ISO 3405)
- Boiling endpoint (NF EN ISO 3405)
- Distillation residue (NF EN ISO 3405)
- Oxidative stability (EN ISO 7536)
- Content current gums (solvent washed) (NF EN ISO 6246)
- Strip corrosion of copper (3 h at 50 ° C) (NF EN ISO 2160)

For diesel, the following analyses is made in addition to the tests required by the directive on fuel quality:

- Cetane index (EN ISO 4264)
- Density at 15 ° C (ISO 3675 - ISO 12185)
- Appearance (visual inspection)
- Flash Point (EN ISO 2719)
- Carbon Residue (EN ISO 10370)
- Ash content (EN ISO 6245)
- Water content (EN ISO 12937)
- Total contamination (EN 12662)
- Strip corrosion of copper (EN ISO 2160)
- Oxidation stability - total insoluble at 95 ° C (EN ISO 12205)
- Oxidation stability - Rancimat (EN 15751) Change in the acid value at 115 ° C (XP M 07-1342)
- Lubricity, wear diameter corrected mark (EN ISO 12156-1)
- Viscosity at 40 ° C (ISO 3104)
- Distillation - condensed to 250 ° C and 350 ° C (ISO 3405)
- Cold filter (EN 116)

Given the remoteness of the overseas departments, the organisation of controls is by area:

Zone 1: Guadeloupe, Martinique, French Guiana

Zone 2: La Réunion

Given the difficulties and costs of implementation of controls in these areas, it was decided to control each zone every two years. In 2013, the area was controlled 1.

14.2.2 Fuel Quality Monitoring System

14.2.2.1 *Sampling*

The provider who performs the sampling and analysis on behalf of the Directorate General for Energy and Climate (DGEC) is Intertek OCA France, selected by European tender. The contract started in 2011 for a maximum period of 4 years. Intertek OCA France, who is in charge of monitoring and analysis, is audited once a year by DGEC.DGEC is responsible for reporting on the basis of data supplied by the provider.

The controls are carried out throughout the country and concern petrol fuels (called “supercarburants” in French) and diesel fuel (called “gazole” in French). The objective of the controls is to verify that fuels meet regulatory requirements, as close to the customers.

The controls are made at the service stations. Service stations are drawn by DGEC from a listing of French service stations, updated every year.

According to EN 14274:2003 standard, France provides an average annual number of 400 samples for each type of road fuel sold on its territory (200 samples during summer period and 200 during winter period). SP95E10 petrol fuel is sampled proportionally to its market share (E10 petrol was launched in 2009 and its market share is gradually increasing). Some E85 fuel samples are also collected.

The sampling campaigns in service stations are spread over a calendar year. They are organized by quarterly programs except for Overseas Territories, where the sampling campaign is once a year, because of the absence of seasonality in these territories (summer all the year).

Administrative regions where controls occur during the summer of year N, are controlled during the winter period of year N +1.

14.2.2.2 *FQMS administration*

DGEC is responsible for the implementation of the European Directives on fuel quality and sulphur content of marine fuels as well as the implementation of the quality monitoring system (FQMS).

The objective of controls is to verify that fuels meet regulatory requirements, as close to the customers. When a non-compliance on a fuel sample is detected, DGEC notifies the retailer and asks for explanation and for corrective and preventive actions to be taken. If necessary during a campaign, DGEC may expressly request additional sampling and analyses.

The General Directorate for Competition, Consumption and Repression of Fraud (DGCCRF) can make specific intervention and reports violations. In case of serious or repeated deviations, the DGCCRF is formally notified.

Under Articles 3.2.2 and 5.3.3 of EN 14274:2003standard, France is ranked as a Large country and corresponds to the model B. Indeed, the annual fuel sales are more than 15 million tons. The Model A was not chosen in 2010 for the new European tender because the geographical layout of refineries and oil depots does not define macro-regions containing a number of sources of supply very close, as required by the standard.

Controlled areas are the 22 metropolitan administrative regions and administrative French overseas territories: Martinique, Guadeloupe, French Guiana, La Réunion.

14.2.2.3 *National Legislation that transposed the FQD*

Requirements for fuel quality, defined in the Fuel Quality Directive 2009/30/EC amending 98/70/CE, have been implemented in ministerial orders relating to the characteristics of the fuel (a specific ministerial order for each fuel) and decisions laying down the test methods for the fuel characteristics/parameters.

Ministerial orders and decisions are modified as necessary according to the evolution of Directive 98/70/EC(Directive 2011/63/CE is the latest evolution of 98/70/EC Directive).

14.2.2.4 *Reporting periods*

Summer: 1st May – 30th September

Winter:1st October – 30th April

For diesel fuel, there is no regulatory transition period between summer and winter.

For petrol, the regulatory transition periods (inter-season) are as follows: from 16thMarch to 30th April and from 1stto 31stOctober.

14.2.3 Compliance with Fuel Quality Limit Values

Table 14-3: Petrol Fuel Grades

SP95/98 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Benzene %v/v	1	1	1.040	1	0.2%
Vapour pressure (summer) kPa	60	61.3	68	4	1.8%
Member State notes Notes not provided					
SP 95 – E10 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
MON	85	84.5	84.4	1	1.4%
Vapour pressure (summer) kPa	60	61.3	61.8	1	2.9%
Member State notes Notes not provided					

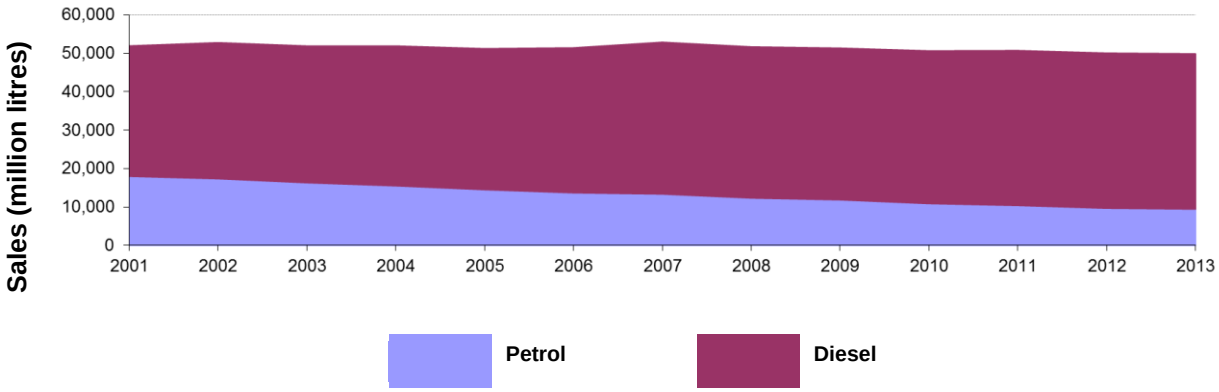
Table 14-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Sulphur content, mg/kg	10	11.3	17.5	2	0.4%
FAME Content	7	7.3	7.5	3	0.7%
Member State notes Notes not provided					

14.3 Temporal Trends

Figure 14-2 shows the trend in total fuel sales since 2001. Petrol fuel sales have decreased by 3.1% in the period 2012 to 2013 following the steady decline since 2001; there has been a47.9% reduction from 2001 to 2013, from 17,974 million litres to 9,363 million litres. Diesel fuel sales have fluctuated but have, by contrast, increased during the same period, from 33,994 million litres in 2001 to 40,419 million litre in 2013 (19% increase). Between 2012 and 2013, diesel fuel sales have marginally increased, by 0.1%.

Figure 14-2: Temporal trends in national sales of petrol and diesel (million litres)



14.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

Fuel sampling in France in 2013 recorded relatively few test results out of specification with limits. The analysis charts for petrol and diesel detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

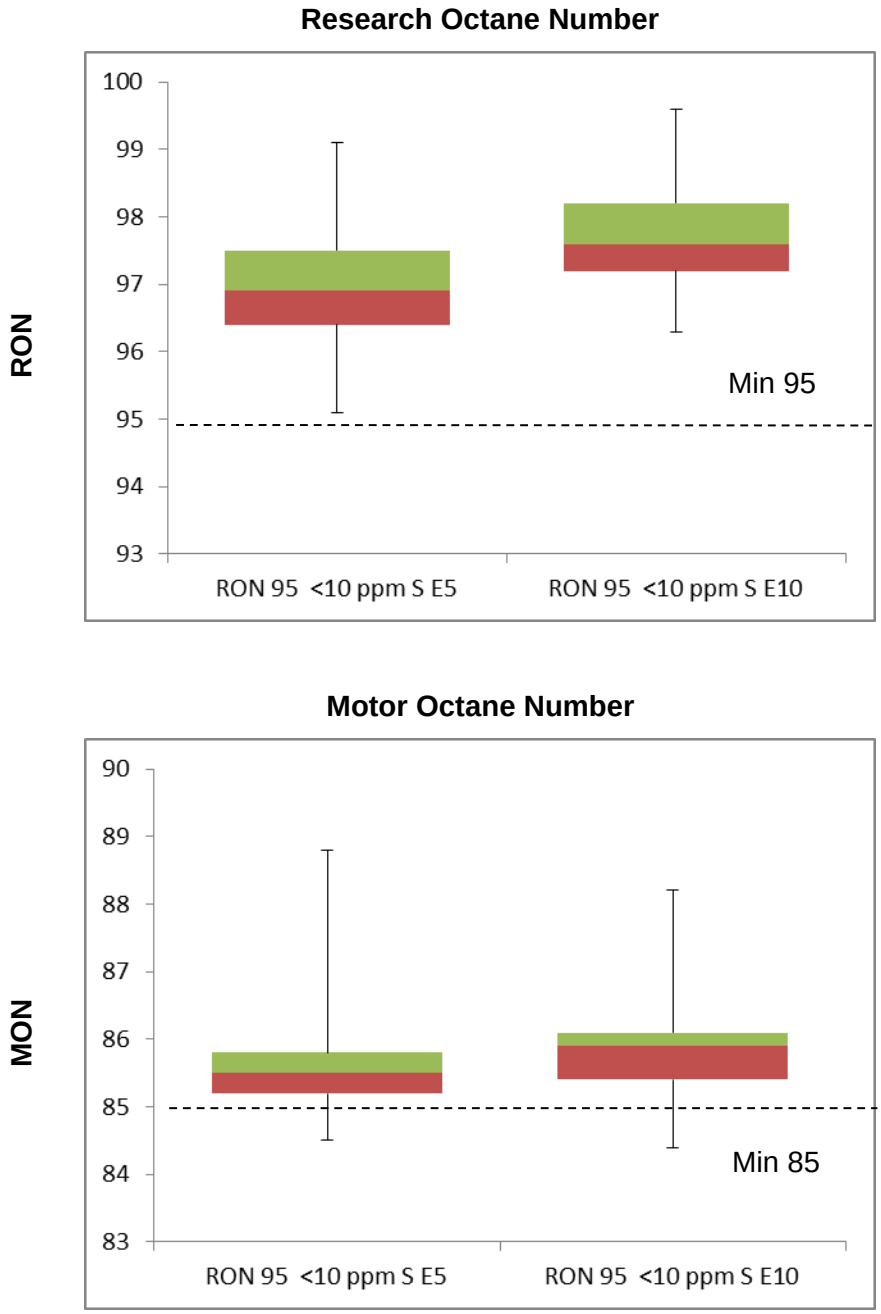
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

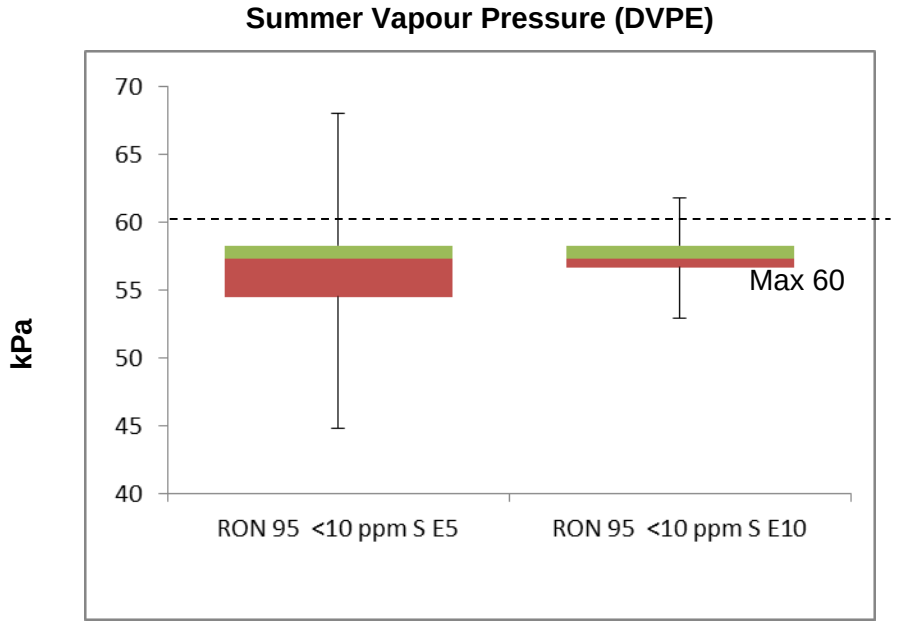
14.4.1 Petrol Analysis

Sample results in 2013, based on combined reporting of fuel grades, RON=95 (<10 ppm S) E5and RON>=98 (<10 ppm S) E5 are presented in the chart below under the lowest fuel grade (RON 95 <10ppm S E5). RON 95 <10ppm S E10 has been reported separately. Due to combined reporting of fuel grades RON 95 and RON 98, the results may be skewed and not accurately representative of the fuel quality conditions for the different fuel grades.

However, based on the charts below, it can be observed that parameter MON, remains tighter to specifications that RON. The analysis of DVPE shows a high degree of variance in the samples as well as a few outliers being not compliance.

Figure 14-3: Petrol analysis

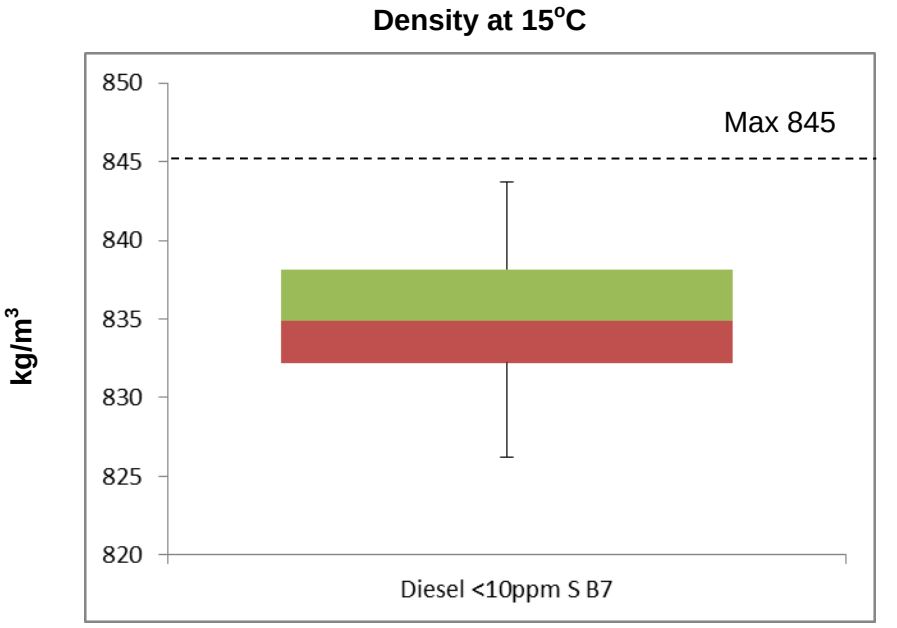




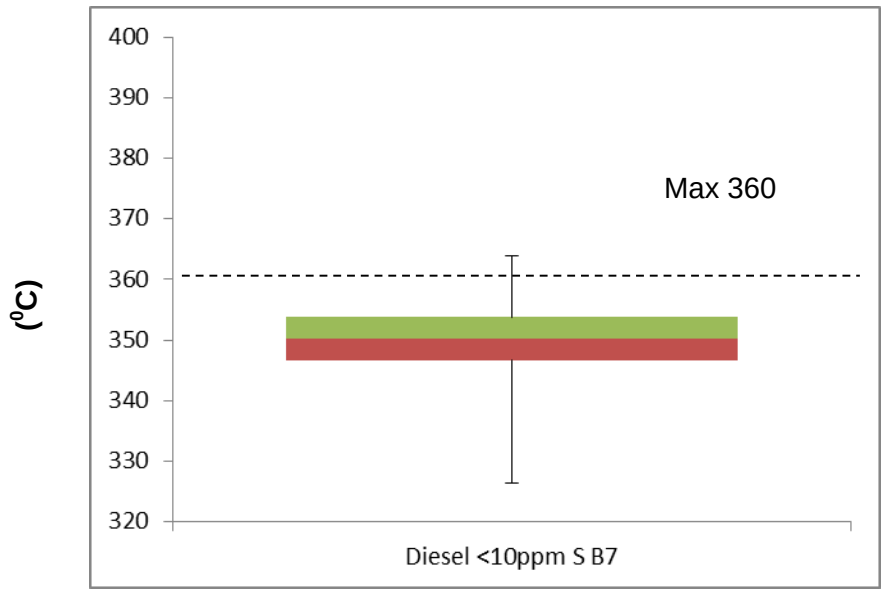
14.4.2 Diesel Analysis

Sample results for diesel demonstrate that sample results for the parameters are less tight to specification. The majority of samples remain comfortably within specification (as demonstrated by the coloured bands); however some outliers do exceed limit values for distillation.

Figure 14-5: Diesel analysis



Distillation – 95% v/v recovered



14.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• The results for petrol SP 95 and SP 98 were reported together • Monitoring of Unleaded petrol min. RON=95 (<10 ppm S) E10 petrol grade have not fulfilled requirements of the Directive. In future years, an increase in the level of sampling for RON 95 E10 will be required in order to maintain compliance, as sales in 2013 were above 10% of the total petrol market.	• France submitted the report on the 27th June, before the 30th June deadline, and in the correct template.
2012	• The results for petrol SP 95 and SP 98 were reported together • Monitoring of Unleaded petrol min. RON=95 (<10 ppm S) E10 petrol grade have not fulfilled requirements of the Directive. In future years, an increase in the level of sampling for RON 95 E10 will be required in order to maintain compliance, as sales in 2012 were above 10% of the total petrol market.	• France submitted the 2012 report within member state deadline.

2011	• In future years, an increase in the level of sampling for RON 95 E10 will be required in order to maintain compliance, as sales in 2011 were above 10% of the total petrol market. For 2011, RON95 E10 summer and winter period samples did not comply with minimum sampling requirements as set out in EN 14274. • Monitoring of other petrol and diesel grades appears to have fulfilled requirements of the Directive.	• France submitted the 2011 report within member state deadline. • There is insufficient historical petrol sales information regarding petrol grade samples to determine compliance.

15 Germany

15.1 Fuel Availability 2013

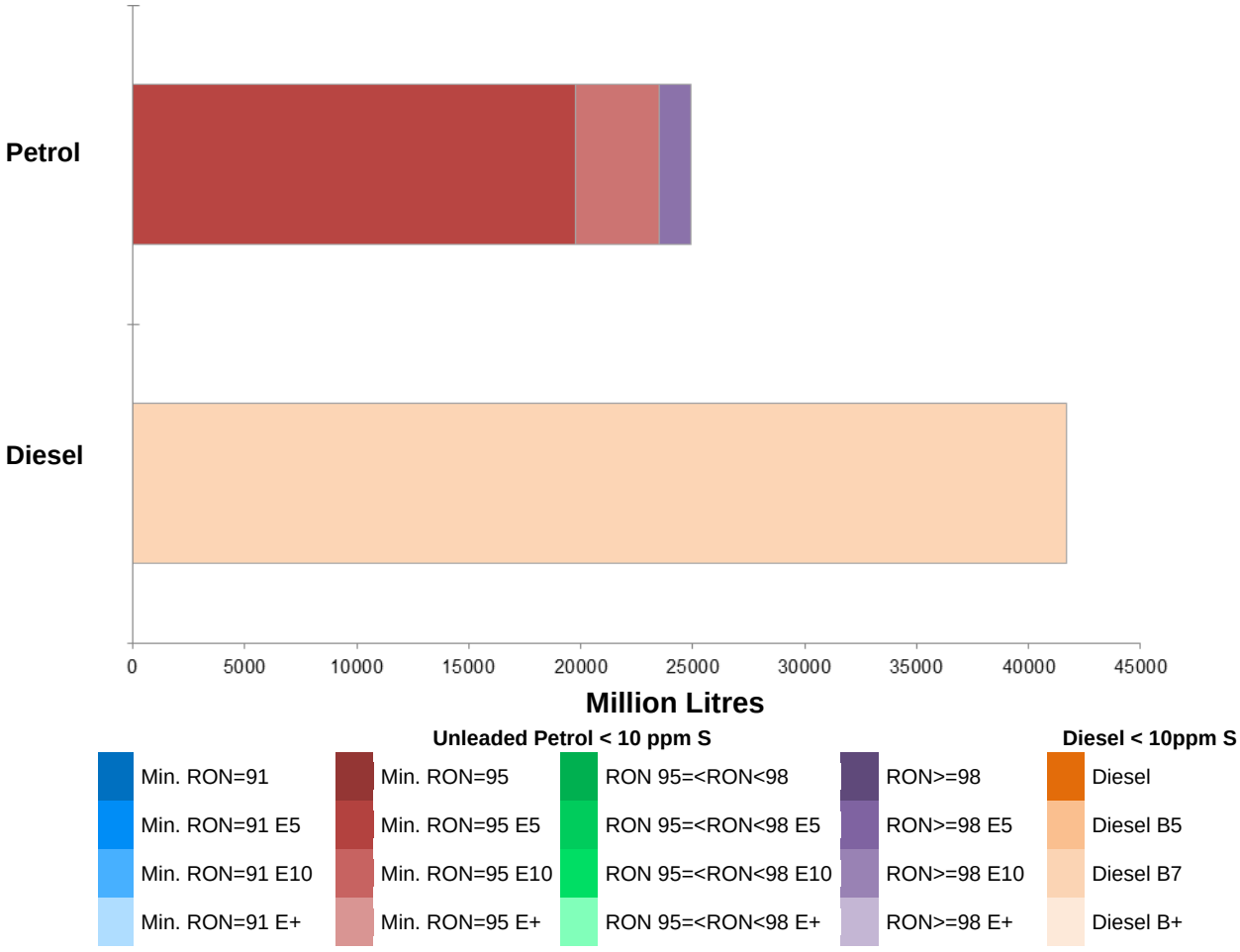
The following table lists the fuels that were reported to be available nationally in 2013.

Table 15-1: National fuel grade

Fuel grade	National fuel grade
Regular unleaded petrol (minimum RON = 91) E5	Normal
Unleaded petrol (minimum RON = 95) E5	Super
Unleaded petrol (minimum RON = 95) E10	Super E10
Unleaded petrol (minimum RON >= 98) E5	Super Plus
Diesel fuel B7	Diesel

15.1.1 Sales, sampling and reporting

Figure 15-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Germany were dominated by diesel fuel; 41,671 million litres of diesel were sold in comparison to 24,944 million litres of petrol (all petrol grades combined).

Petrol fuel sales were mainly comprised (79%) of Super fuel grade. Diesel available on the market in Germany contains biofuel content of up to 7%, while petrol contains 5% or 10% biofuel content.

Table 15-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded min. RON=91 (<10 ppm S) E5	6	0.02%	1	0	1	No	10 of 19	(a)
Unleaded petrol min. RON=95 (<10 ppm S) E5	19,759	79.21%	190	187	400	Yes	19 of 19	
Unleaded petrol min. RON=95 (<10 ppm S) E10	3,739	14.99%	157	144	400	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S) E5	1,440	5.77%	32	30	24	Yes	19 of 19	
Total Petrol	**24,944**	**100.00%**	**380**	**361**	**825**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	41,671	100.00%	192	207	400	Yes	6 of 6	
Total Diesel	41,671	**100.00%**	**192**	**207**	**400**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a) Additional notes	Olefins, oxygen content, methanol, iso-propyl alcohol, tert-butyl alcohol, iso-butyl alcohol, ethers with =>5 carbon atoms/molecule, other oxygenates and lead content was not measured for petrol RON 91.

15.1.1.1 *Petrol Samples*

Germany met the sampling requirements for RON 91 and RON 98, both had market share of less than 10%. The sampling requirement for RON 95 E5 were slightly missed with regards to the requirements number and the sampling requirements for E10 was not met.

15.1.1.2 *Diesel Samples*

Germany has met the minimum sampling requirements of 200 samples for winter period for Diesel B7 but slightly missed the requirements number in the summer period.

15.2 Fuel Quality Monitoring 2013

15.2.1 Description of System

Responsible organisation(s)	Umweltbundesamt
Fuel Quality Monitoring System (FQMS)	EN14274 Statistical Model B
Country Size	Large
Summer Period	Normal
Location(s) of sampling	All samples were taken from service stations.
Time/frequency of sampling	The only Normal petrol sample was collected in August. Samples of Super (RON 95 E5) and Super E10 (RON 95 E10) were collected in every month excluding April and October, and samples of SuperPlus (RON98 E5) were collected in every month excluding April, May and October. Diesel B7 was sampled over 10 months (April and October excluded).
Specification of test methods	Information on test methods used was provided in the reporting template.
Collection of sales data	Federal Office of Economics and Export Control: Official oil data for the Federal Republic of Germany.

Other details

Referring to DIN EN 14274-2003 (D) Germany uses the monitoring system model B (non-macro regions) for a large country. The number of the regions is 16 based on the 16 federal states of Germany.

Thus, the minimum number of samples of each period is 200. DIN EN 14274-2003 (D) defines number of samples for each of these regions. The fixed distribution of these samples regarding the states is reported on the sheets for the regional petrol sampling of the template.

For the year 2013, only the Free State of Saxony was able to take a sample for "OK Normal". According to the official data on mineral oils of the Federal Office for Economic Affairs and Export Control (BAFA), there has been a strong decline in the share of "OK Normal" in the total amount of petrol fuel sold. This share was 0.67 % in 2011, 0.20 % in 2012 and 0.02 % in 2013 (definitive data). Based on current knowledge, "OK Normal" is not being produced or delivered in Germany. It cannot be completely ruled out that a few service stations still sell "OK Super" as "OK Normal". Further explanations were communicated within the framework of the pilot procedure against Germany in the communication of the Government of the Federal Republic of Germany to the European Commission dated 5 June 2014 (Obligation of annual reports in accordance with Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 on the quality of petrol and diesel fuel, Reference No. 6306/14/CLIM).

15.2.2 Fuel Quality Monitoring Service

15.2.2.1 *Sampling*

The organizations responsible for the sampling at regional level are the 16 governments of the federal states. The results of the regional sampling are forwarded to the Umweltbundesamt (Federal Environment Agency – UBA), where data are collected and subsequently consolidated into a report.

The sampling was carried out at refuelling stations only, at the frequency shown on the data sheets.

Selection of the sampling points is the responsibility of each government of the 16 German states, and differs from state to state.

The test methods used to sample the different parameters are presented on the datasheets.

15.2.2.2 *FQMS Administration*

The competent authorities of the Länder monitor the quality of petrol and diesel fuels and are responsible for fuel quality monitoring in general. These authorities include district administrations, lower administrative authorities, districts, non-district municipalities and independent towns.

The competent authorities also select fuel retail stations, as a rule taking into consideration the population distribution and regional aspects, sometimes according to the rotation principle, random selection or free choice. The Länder have to convey their results to the Federal Environment Agency until 30th April of the following year, where a general report is produced. The Federal Environment Agency passes this report on to the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, which in turn passes it on to the European Commission.

The governments of the German states and/or the lower-ranking government agencies are responsible for taking action in case of non-compliant samples. The design of the system was defined in DIN EN 14274-2003 (D). It was adopted into legislation by the German 10th BImSchV in 2008.

The number of refineries in Germany was 13.The number of refuelling stations in Germany was 14.622 at the end of 2013.

15.2.2.3 *National Legislation that Transposed the FQD*

The elements of the directive are transposed into the German “Zehnte Verordnung zur Durchführung des Bundesimmissionsschutzgesetzes (Verordnung über die Beschaffenheit und Auszeichnung der Qualitäten von Kraft- und Brennstoffen – 10. BImSchV)” i.e. Tenth Ordinance Implementing the Federal Immission Control Act (Tenth BImSchV).

15.2.2.4 *Reporting Periods*

For petrol, the summer period starts 1st May and ends 30th September. The winter period starts 16th November and ends 15th March. Transition periods are from 1st October to 15th November and 16th March to 30th April. For diesel, the summer period starts 15th April and ends 30th September. The winter period starts 16th November and ends 28th February. Transition periods are from 1st October to 15th November and 29th February/1st March to 14th April.

Samples could to be taken during the whole year, preferably in the summer or winter period.

15.2.3 Compliance with Fuel Quality Limit Values

Table 15-3: Petrol Fuel Grades

Petrol RON 91, Normal - Details of samples that exceed tolerance limits:					
Only one sample was taken, no parameters were found to be exceeding the tolerance limits.					
Petrol RON 95, Super E5 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
RON	95	94.6	92.6	1	0.3%
Summer vapour pressure, kPa	60	61.7	69.2	1	0.05%
Oxygen content *petrol with 5% (v/v) or less ethanol content	2.7	2.9	3.570	1	0.4%
Samples exceeding national limits were found for Ethanol, however these did not exceed requirements in Directive 2009/30/EC. In the rare cases of non-compliant samples, respective authorities imposed administrative penalties and/or issued letters of warning.					
Petrol RON 95, Super E10 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.7	67.4	1	0.6%
Ethanol	10	10.5	10.7	1	0.4%
Member State notes In the rare cases of non-compliant samples, respective authorities imposed administrative penalties and/or issued letters of warning.					
Petrol RON 98, Super Plus - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.7	71.9	1	3.1%
Member State notes In the rare cases of non-compliant samples, respective authorities imposed administrative penalties and/or issued letters of warning.					

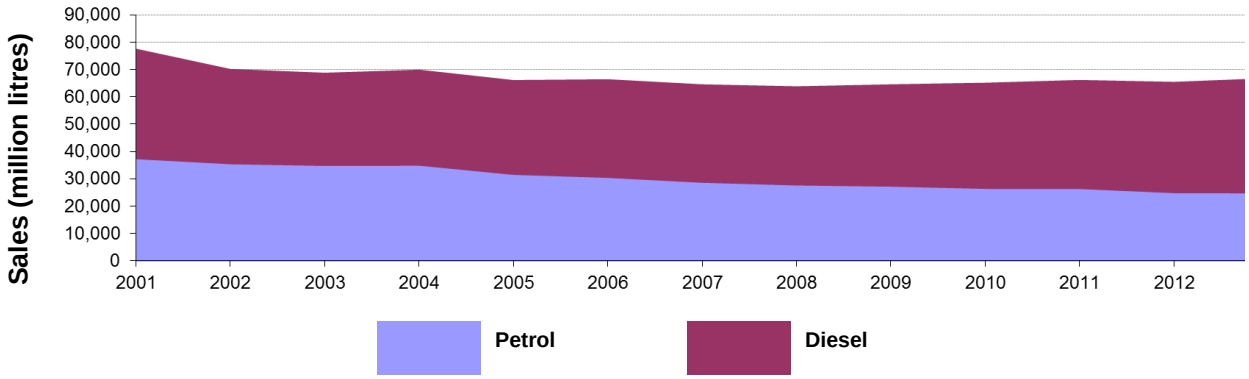
Table 15-4: Diesel Fuel Grades

Diesel B7 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
FAME content	7.3	7.53	8.05	1	0.27%
Member State notes In the rare cases of non-compliant samples, respective authorities imposed administrative penalties and/or issued letters of warning.					

15.3 Temporal Trends

Figure 15-2 shows the trend in total fuel sales since 2001; between 2001 and 2013 there has been a decline in Petrol sales of 12,529 million litres (33.4%), whilst diesel sales have fluctuated but slightly increased by 1741 million litres (4.36%). Between 2012 and 2013 petrol sales have decreased by 87 million litres (0.3%), whilst diesel sales have increased by 1,439 million litres (3.6%).

Figure 15-2: Temporal trends in national sales of petrol and diesel (million litres)



15.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see section 4.

Fuel sampling in Germany in 2013 recorded only a few test results out of specification with limit values. The analysis charts for petrol (Figure 15-3, Figure 15-4) and diesel (Figure 15-5, Figure 15-6) detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

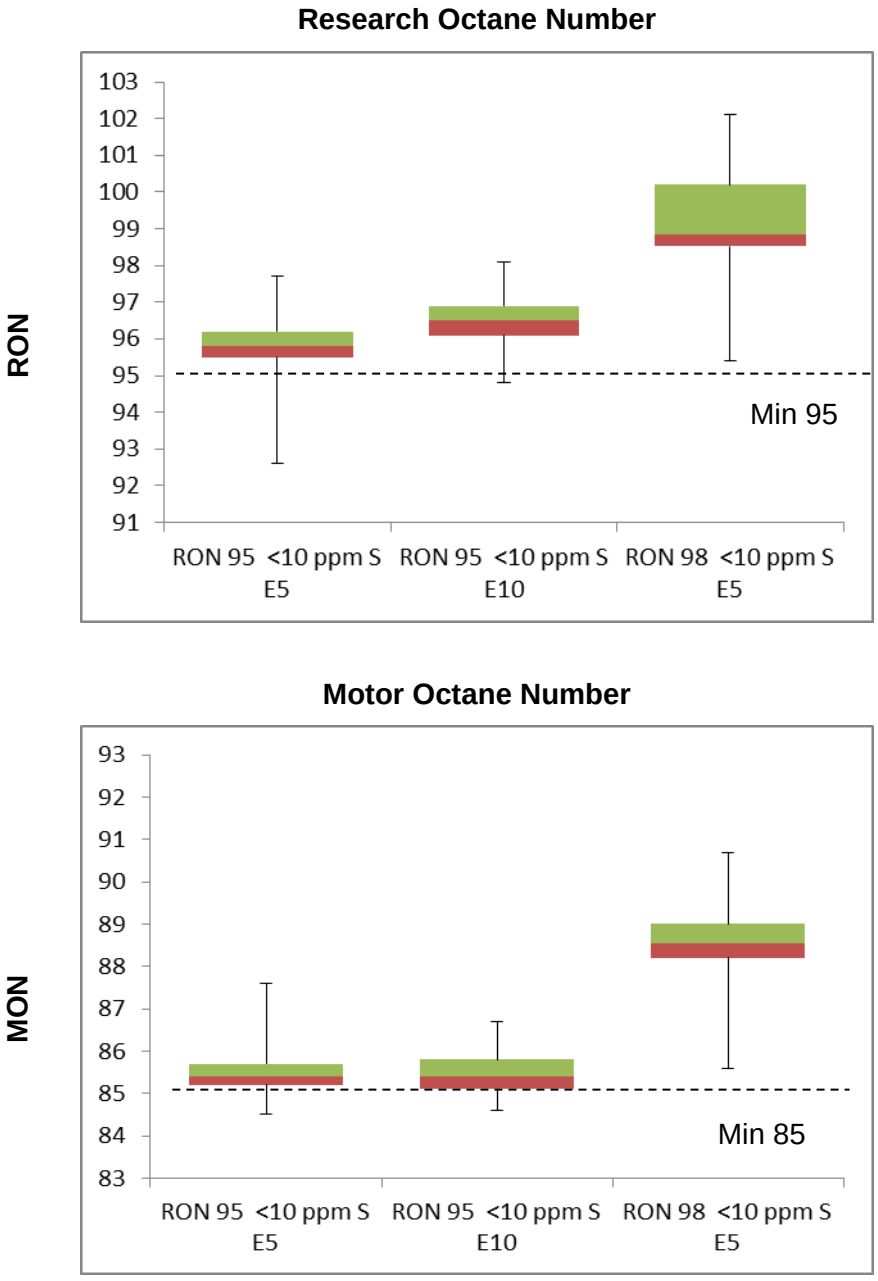
- Density at 15^{o}C
- Distillation – 95% v/v recovered

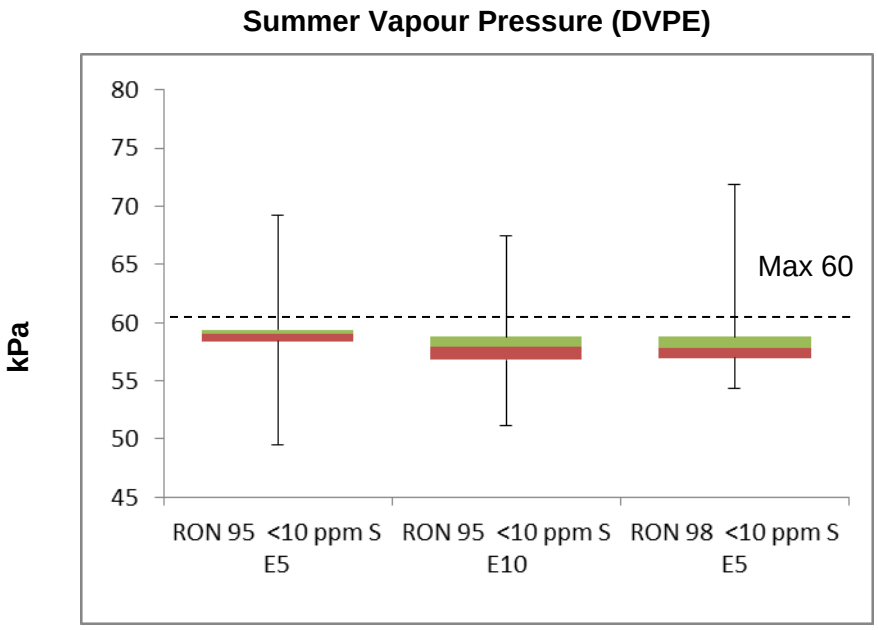
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

15.4.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. It was not possible to carry out this type of analysis for RON 91 E5 fuel because only one 1 sample was provided. RON and MON sample results show parameters are very tight to specification (RON 95 E5 and RON 95 E10) with only 1 sample exceeding tolerance limits for MON (RON 95). The distribution of samples for RON 98 is instead very far from minimum limits. The vapour pressure samples show a distribution that is tight to specification with a few samples over the tolerance limits for all grades.

Figure 15-3: Petrol analysis

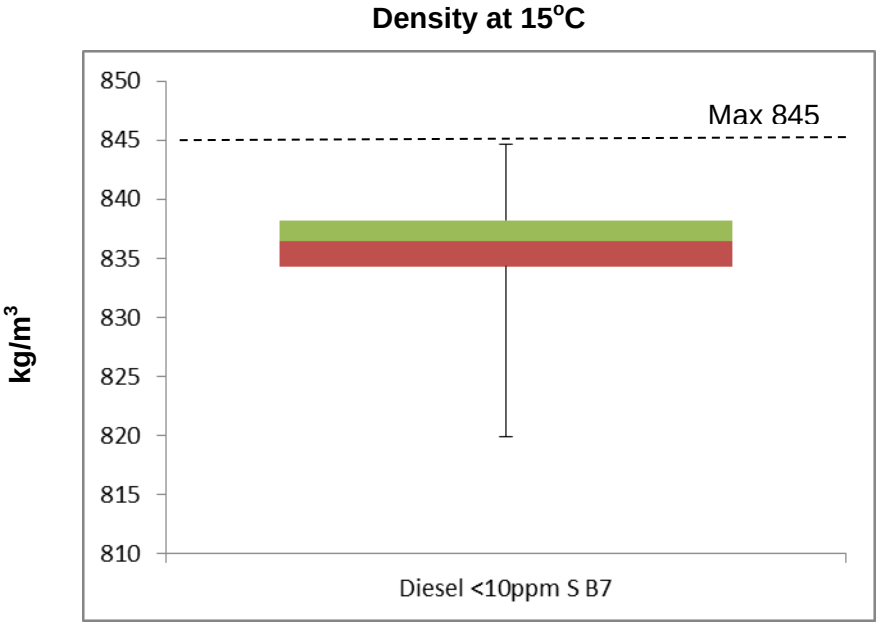


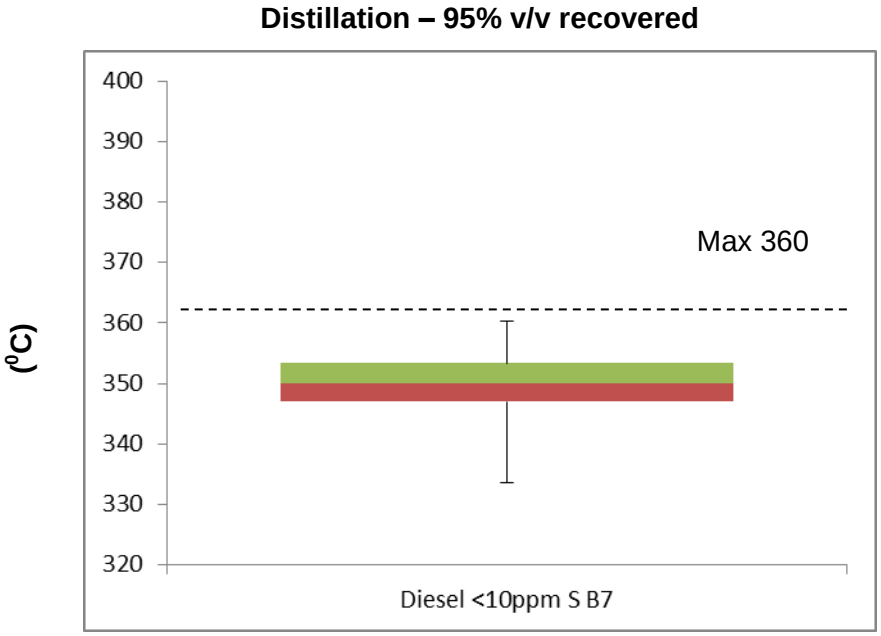


15.4.2 Diesel Analysis

Sample results for diesel demonstrate that sample results for the parameters are less tight to specification with a wider variation in density, exhibited by the widely spread coloured bands at the 25 and 75 quartile. Distillation results show a few samples exceed limit values, but are within tolerance limits.

Figure 15-5: Diesel analysis





15.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Sampling requirements (number of samples) have not been met for RON=95 E10 and have slightly missed for RON=95 E5, both in summer or winter periods. Also the sampling requirement (number of samples) for Diesel B7 during the summer period was slightly missed.	• The report was submitted 18th of July, after the 30th of June deadline, in the EC approved template provided.
2012	• Sampling requirements have not been met for RON=95 E10 either in summer or winter periods. Also the sampling requirement for RON 95 during the summer period was not met.	• The report was submitted 19th August in the EC approved template provided.
2011	• Two different sampling methodologies have been used in 2011. Whilst this leads to uncertainty as to how many samples were actually taken, from the evidence supplied it appears that Germany has not complied with the	• The 2011 report was submitted within member state deadline, though not in the EC approved template provided. • Germany did not use the EC

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**
minimum sampling requirements for petrol or diesel fuel grades.	approved template, possibly due to the use of multiple methodologies as outlined above. They were one of only two Member States not to use the template in the 2011 reporting year.

16 Greece

16.1 Fuel Availability 2013

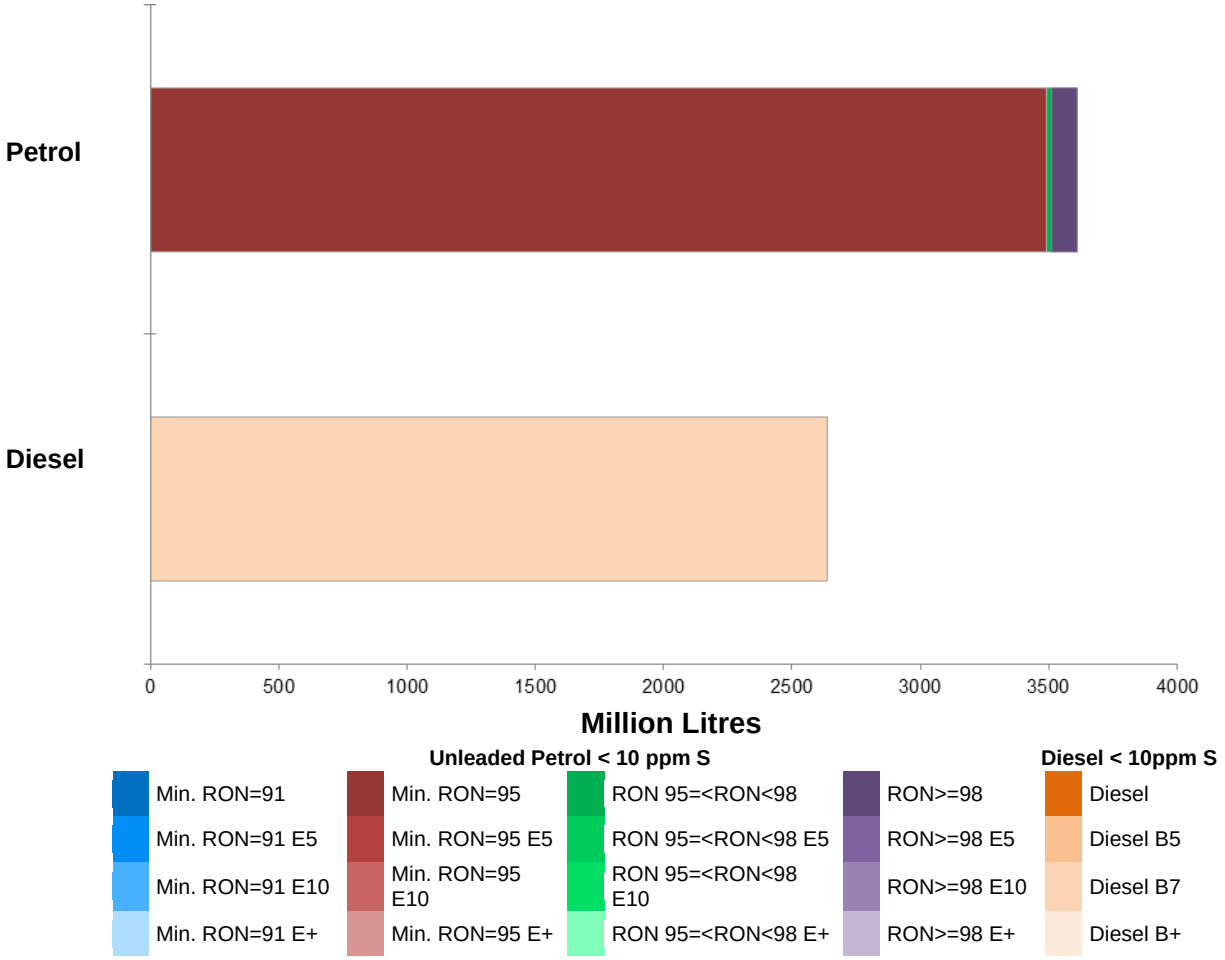
The following table lists the fuels that were reported to be available nationally in 2013.

Table 16-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95)	95 RON
Unleaded petrol (minimum 95 =< RON < 98)	LRP (96 RON)
Unleaded petrol (minimum RON >= 98)	Super unleaded (100 RON)
Diesel fuel B7	Diesel

16.1.1 Sales, sampling and reporting

Figure 16-1: Fuel Sales proportions by fuel type *(provisional figures)*



During 2013 fuel sales in Greece were dominated by Petrol fuel sales, which is in stark contrast to most of the Member States; 3,612 million litres of petrol (all petrol grades

combined) was sold in comparison to 2,639 million litres of diesel. Petrol fuel sales were mainly comprised (96.4%) of fuel grade RON 95.

Table 16-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S)	3,491	96.66%	50	50	100	Yes	17 of 19	(a)
Unleaded petrol 95=<RON<98 (<10 ppm S)	22	0.62%	5	5	1	Yes	17 of 19	(a)
Unleaded petrol RON>=98 (<10 ppm S)	98	2.72%	3	3	2	Yes	17 of 19	(a)
Total Petrol	**3,267**	**100.00%**	**58**	**58**	**103**	**Yes**	**17 of 19**	
Diesel (<10 ppm sulphur) B7	2,639	100.00%	50	50	100	Yes	6 of 6	
Total Diesel	**2,506**	**100.00%**	**50**	**50**	**100**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a) Additional Notes	MMT is not added to fuels. The only oxygenate added to petrol in refineries is MTBE. Oxygenated substances in petrol such as Methanol, Iso-propyl alcohol, Tert-butyl alcohol, Iso-butyl alcohol are not detected by the mid-IR method used. Manganese has not been measured.

16.1.1.1 *Petrol Samples*

Greece has complied with the minimum sampling requirements for petrol fuel grades, having taken all its samples from service stations.

16.1.1.2 *Diesel Samples*

Greece has complied with the minimum sampling requirements for diesel fuel grades, having taken all its samples from service stations.

16.1.2 Description of System

Responsible organisation(s)	General Chemical State Laboratory, Directorate of Petrochemicals
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model A
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Service stations
Time/frequency of sampling	Samples were taken throughout the year for RON 95 and diesel. Samples were taken over 6 months for RON 100 and LRP.
Specification of test methods	The laboratories monitor compliance with the requirements of the Decision No. 316/2010 relating to petrol and diesel fuels, based on analytical methods which are set out in the ELOT EN 228 and ELOT EN 590 standards respectively. The mid-IR method used is able to measure oxygenates such as methanol, iso-propyl alcohol, tert-butyl alcohol, iso-butyl alcohol. The fact that these oxygenates are not detected by the mid-IR method, means that they do not exist in petrol samples. The only oxygenated substance added in petrol in Greek refineries is MTBE ether.
Collection of sales data	The Ministry of Environment Energy and Climate Change is responsible for reporting fuel sales.
Other details	

16.1.3 Fuel Quality Monitoring System

16.1.3.1 *Sampling*

Greece is classified as a small country under the criteria in Article 3.2 of the ELOT EN 14274 standard taking into account fuel sales levels. Model A applies to Greece. In this model, in order to plan fuel sampling activities, the country is divided into three geographical regions. Region A consists of Attica. Region B includes Thessaly, Macedonia, Epirus, Thrace and Thessaloniki. Region C includes Sterea Ellada, Evia, the Ionian Islands, the Peloponnese, Crete and the Aegean Islands. For Region A the competent body for taking fuel samples is the Fuel Distribution & Storage Inspectorate (KEDAK) of the Ministry of the Environment, Energy & Climate Change. For Region B and C the competent bodies for taking fuel samples are the mixed inspection teams from the competent Chemical Services of the General Chemical State Laboratory working in collaboration with the relevant regional directorates of the Fraud Squad (SDOE).

Refuelling stations are used as sampling locations. Sampling locations are chosen at random. The number of samples to be tested in each period (summer and winter) for each grade of fuel with annual sales accounting for at least 10% of the fuel market are at least 50.

The number of samples to be tested in each period (summer and winter) for each grade of fuel with annual sales accounting for less than 10% of the fuel market are calculated using the following formula:

N(χ) = where:

N(χ): the number of samples taken from fuel (χ) where sales account for less than 10% of the fuel market.

M(χ): the share of sales held by fuel (χ). [Calculations are made on a rough basis based on past data].

M: the share of sales for the main category of fuel in which fuel (χ) belongs.

Based on the sales percentage of various grades of fuels in each region, the Petrochemicals Directorate sets the minimum number of fuel samples to be taken from refuelling stations in the area. Optionally, the Petrochemicals Directorate may issue a decision requiring that samples taken in each period include fuel samples from each refinery. Care is taken to ensure that samples are taken in a uniform manner across the entire year.

The competent bodies for sampling send the samples to the central fuel inspection laboratories of the General Chemical State Laboratory which are ISO 17025 accredited. The samples received from Regions A and C are examined by the Piraeus D Chemical Service while the samples from Region B are examined by the Thessaloniki D Chemical Service. The laboratories monitor compliance with the requirements of the Decision No. 316/2010 relating to petrol and diesel fuels, based on analytical methods which are set out in the ELOT EN 228 and ELOT EN 590 standards respectively. The central fuel inspection laboratories send the test results to the competent authorities for sampling and to the Petrochemicals Directorate. Where the fuel samples do not meet the specifications, the relevant sanctions shall be imposed by the competent authorities. The Petrochemicals Directorate use the results in the sample testing reports for statistical purposes in order to prepare and submit the annual report to the European Commission.

16.1.3.2 *FQMS administration*

The Competent Authority for the system of monitoring fuel quality (automotive petrol and diesel) is the Petrochemicals Directorate of the General Chemical State Laboratory. The system was designed using model A of the ELOT EN 14274 standard taking into account fuel sales levels. Greek Organization for Standardisation (ELOT) has adopted EN 14274 standard without changes. The system was implemented in Greece with the State Supreme Chemical Council Decision No. 316/2010, (Government Gazette 501/B/2012). Fuel sampling is carried out by public authorities. Where non-compliant samples have been discovered the sampling authority is responsible for taking action. Failure to comply with the provisions of the legislation result in the sanctions specified in article 10 of the State Supreme Chemical Council Decision No. 316/2010, (Government Gazette 501/B/2012). In Greece there are 4 refineries and approximately 7000 refuelling stations.

16.1.3.3 *National Legislation that transposed the FQD*

Fuel Quality Directive 2009/30, (with the exception of Articles 7a to 7e of Directive 98/70/EC as amended by Article 1 of Directive 2009/30/EC), was transposed into Greek law with the State Supreme Chemical Council Decision No. 316/2010, (Government Gazette 501/B/2012).

16.1.3.4 *Reporting periods*

The System is implemented twice a year, once for the summer period from 1 May to 30 September and once for the winter period from 1 October to 30 April. No Arctic derogation has been granted.

16.1.4 Compliance with Fuel Quality Limit Values

Table 16-3: Petrol Fuel Grades

Petrol 95 RON - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Ethers with ≥5 carbon atoms / molecule	22	22.6	27.8	1	1%
Member State notes					
The exceedance was recorded at a service station. The owner was fined and prosecuted.					
Petrol 95<RON<98 - Details of samples that exceed tolerance limits:					
No samples found to be outside tolerance limits					
Petrol RON 98 - Details of samples that exceed tolerance limits:					
No samples found to be outside tolerance limits					

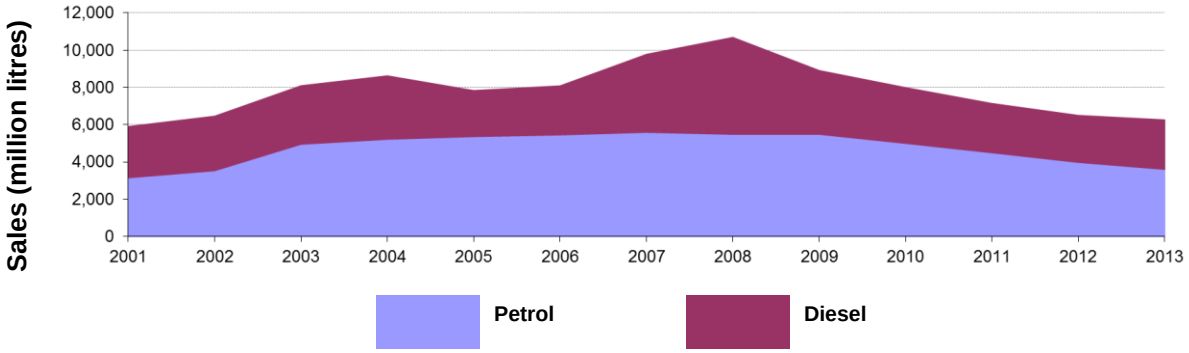
Table 16-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
FAME Content	7	7.3	8.3	4	4%
Member State notes					
NO ACTION TAKEN, because for these samples all values of the other parameters of Annex II of Decision 316/2010 are satisfied. According to Article 4 of Decision 316/2010 which transposes Directive 2009/30/EC into Greek law Diesel shall only be placed on the Greek market if it meets the environmental specifications contained in Annex II of Decision 316/2010.(FAME<=7). However, diesel may be traded in the Greek market with a content of Fatty Acid Methyl Esther (FAMEs) over 7% under the restriction that all values of the other parameters of Annex II of Decision 316/2010 are satisfied , as well as the terms and conditions laid down in the Greek legislation and in particular Article 15A (1) of Law 3054/2002 as this is amended and in force.					

16.2 Temporal Trends

Figure 15-2 shows the trend in total fuel sales since 2001. Petrol sales increased until 2007 then have gradually fallen; diesel sales fluctuated more noticeably until the peak in 2008, and have remained around 2.6 million litres per year since 2010. In 2013 petrol sales have continued their downward path and now are 14.4% lower than in 2001 and 35.5% lower than in 2007. Diesel sales have followed a similar trend, with current sales at roughly 2001 level (-3.5%) but 49.1% lower than in 2008.

Figure 16-2: Temporal trends in national sales of petrol and diesel (million litres, 2013 provisional)



16.3 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see section 4.

Fuel sampling in Greece in 2013 recorded 2 test results out of specification with limit values. The analysis charts for petrol (Figure 16-3.) and diesel (Figure 16-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

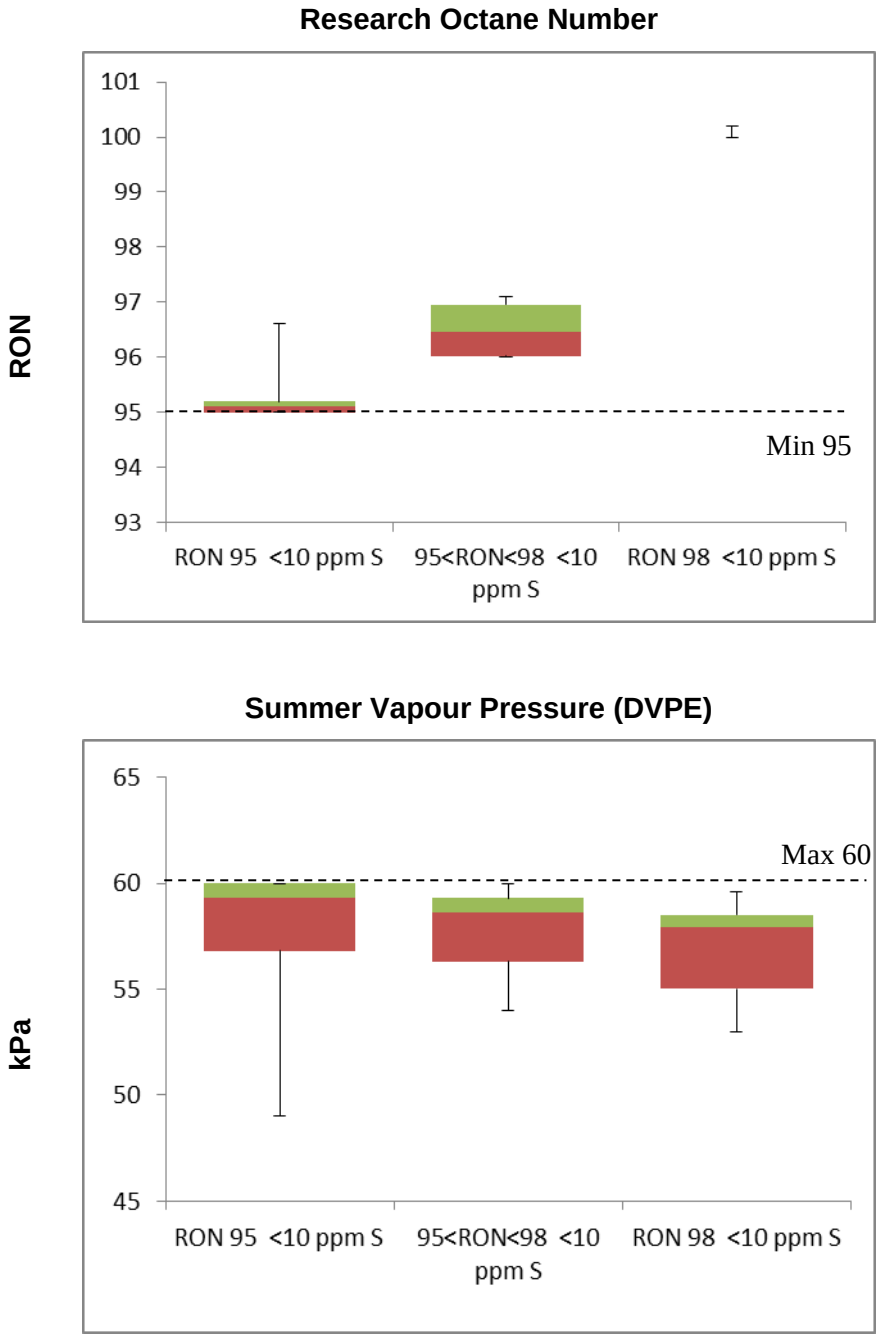
16.3.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. RON sample results show that the fuels come close to tolerance limits but do not exceed them, although

RON 98 samples were insufficient for providing the full statistics. No sample was tested for MON.

Summer vapour pressure analysis shows a wide distribution of samples, which are below the limit values. Only RON 98 and RON 95 come close to limit values, but no values exceeded the tolerance limit.

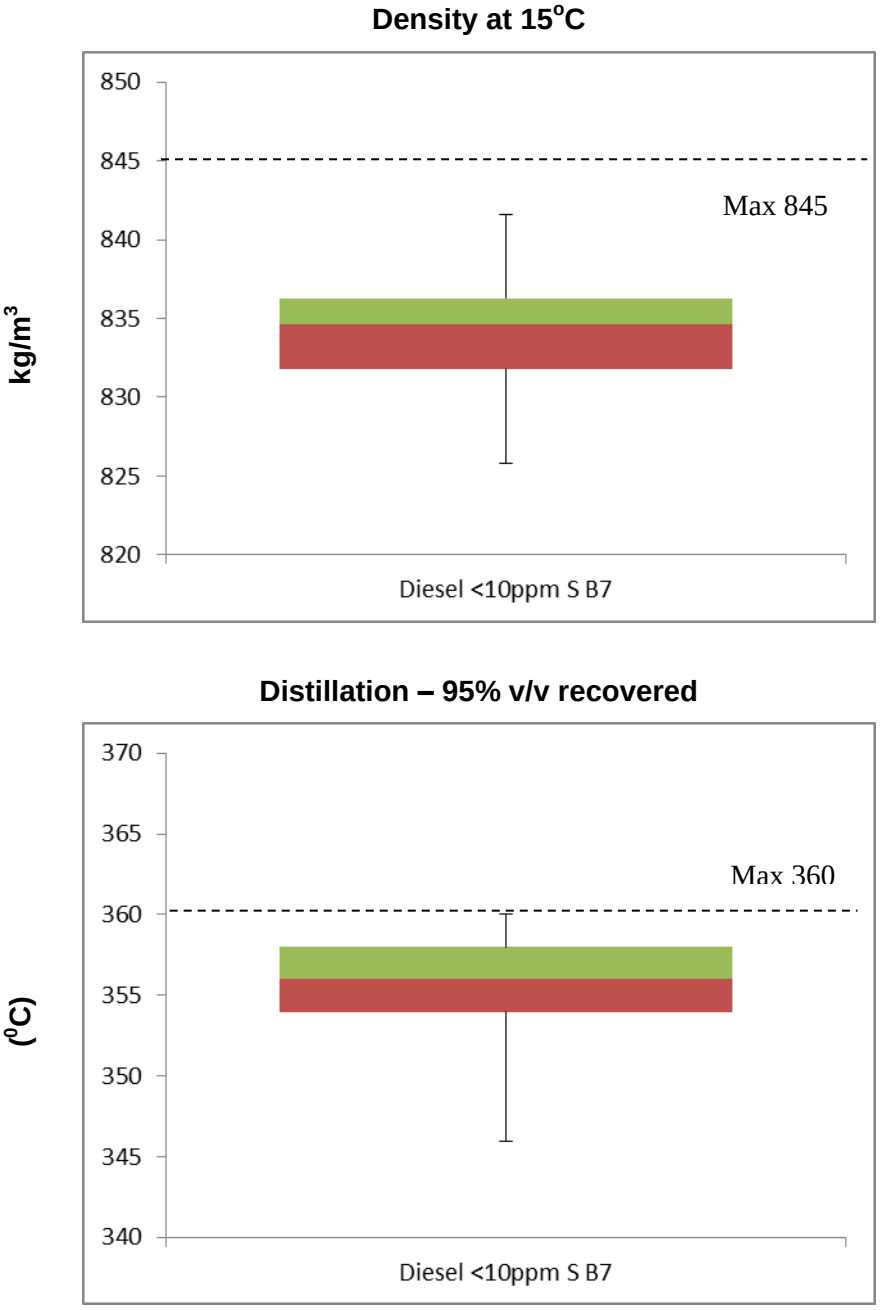
Figure 16-3: Petrol analysis



16.3.2 Diesel Analysis

The distribution of samples for Density and Distillation is fairly tight. There are some outliers in the Distillation analysis but none exceed limit values. The majority of samples remain comfortably within specification.

Figure 16-4: Diesel analysis



16.4 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Greece did not report MON because	• The 2013 report was received on

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
	the essential equipment is not available. • Manganese was not determined in the samples because manganese additive (MMT) is not added to petrol by the Greek refineries. However, Greece has stated its intention to measure manganese in petrol samples in the future.	the 25th June, so before the 30th June deadline.
2012	• Greece has not complied with the minimum sampling requirements for petrol or diesel fuel grades. Only samples taken at service station locations can be used to fulfil the minimum sampling requirement. • Oxygenated substances in petrol such as Methanol, Iso-propyl alcohol, Tert-butyl alcohol, Iso-butyl alcohol are not detected by the mid-IR method used. • The number of samples over limit values have not been documented, which would improve future FQMS submissions.	• The 2012 report was received on the 28th June, before the 30th June deadline.
2011	• Greece has not complied with the minimum sampling requirements for petrol or diesel fuel grades. Only samples taken at service station locations can be used to fulfil the minimum sampling requirement. • Greece did not report parameter results for Manganese for all petrol fuel grades in 2011.	• The 2011 report was submitted within member state deadline.

17 Hungary

17.1 Fuel Availability 2013

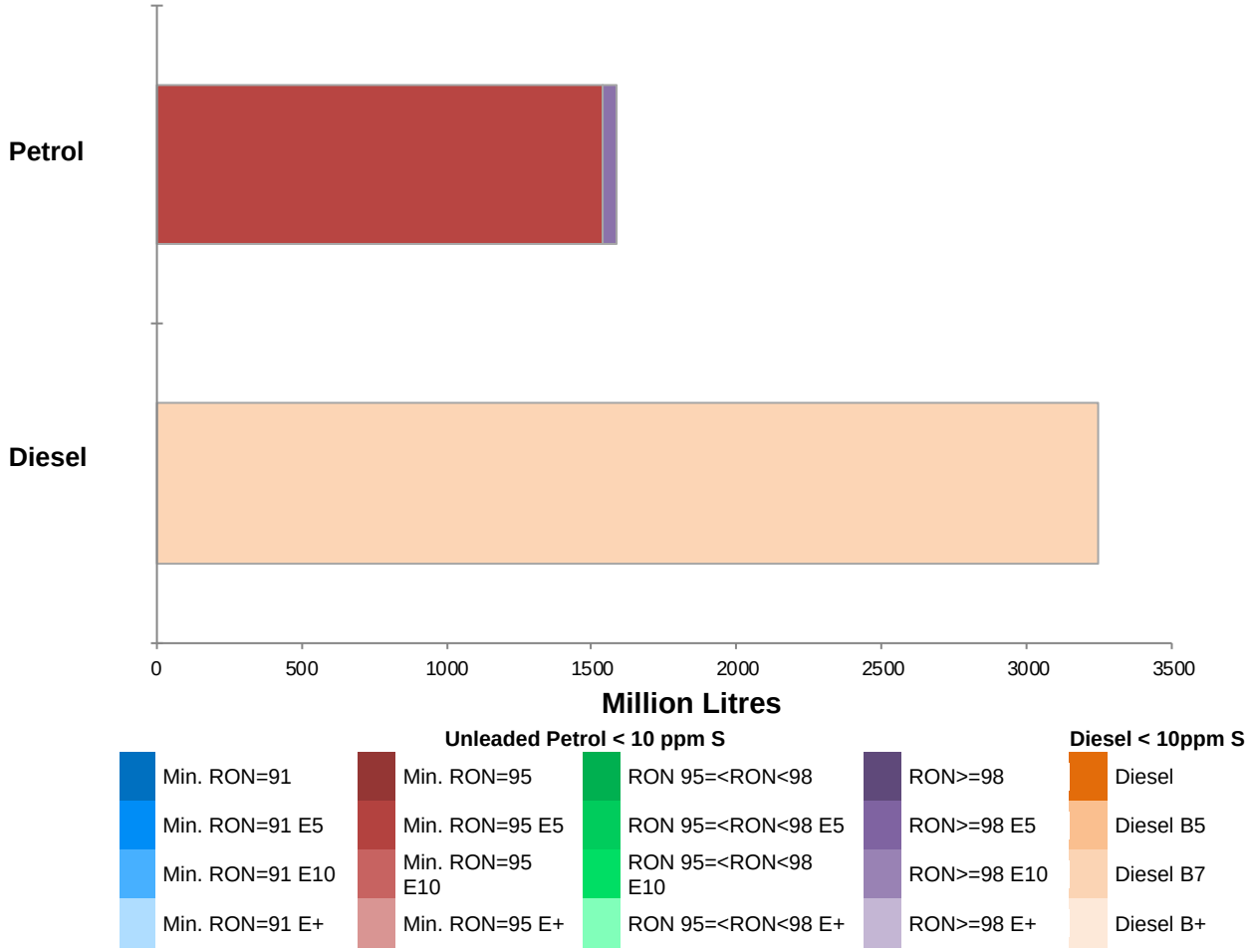
The following table lists the fuels that were reported to be available nationally in 2013.

Table 17-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	ESZ-95
Unleaded petrol (minimum RON >= 98) E5	ESZ-98
Diesel fuel B7	Diesel

17.1.1 Sales, sampling and reporting

Figure 17-1: Fuel Sales proportions by fuel type



During 2013 diesel fuel sales in Hungary were more than double that of petrol fuel sales amounting to 3,244 million litres. All diesel fuel sold in Hungary was reported to contain up to a maximum of 7% biofuels. Petrol fuel grades RON 95 (with maximum 5% biofuel) and RON 98 (with up to 5% biofuel content) comprised 1,585 million litres in 2013, with proportions on fuel grades split as 97% sales of RON 95 and 3% RON 98 petrol.

Table 17-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales	Sales	Samples (1)			Separate	Param's measured (4)	Add. Notes
	(Million litres)	% total of fuel type	S	W	TR (2)	S/W(3)		
Unleaded petrol min. RON=95 (<10 ppm S)	1,537	97%	50	50	100	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S)	48	3%	10	10	4	Yes	19 of 19	
Total Petrol	**1,585**	**100%**	**60**	**60**	**104**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur)	3,244	100%	60	60	100	Yes	6 of 6	
Total Diesel	**3,244**	**100%**	**60**	**60**	**100**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.

17.1.1.1 *Petrol Samples*

Hungary has complied with minimum sampling requirements for petrol fuel grade RON 95 E5 with all samples taken from service stations (fuel dispensing sites). Samples for fuel grade RON 98 also complied with minimum requirements as fuel sales are less than 10% of the total petrol market, meaning the sampling requirement is reduced.

17.1.1.2 *Diesel Samples*

Diesel fuel samples tested in 2013 complied with the total minimum requirement of samples to be collected from service stations.

17.2 Fuel Quality Monitoring 2013

17.2.1 Description of System

Responsible organisation(s)	ÁMEI Petroleum Products Quality Inspection Company Limited By Shares
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model C
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Service stations
Time/frequency of sampling	Samples have been taken 5 months in the year 2013 for petrol and 5 months of the year for diesel.
Specification of test methods	The quality of petrol sold in Hungary is equivalent to the standard (EN 228), ethanol concentration is max. 5%, some petrol (mainly with octane number >=98) contains bioETBE (concentration is max. 15%) and the petrol fulfils the oxygen content requirement (max. 2.7%).
Collection of sales data	Sales volumes have been collected from the National Tax and Customs Administration (NAV) in 2013.
Other details	

17.2.2 Fuel Quality Monitoring System

17.2.2.1 *Sampling*

The organisation responsible for sampling, analysis and reporting is AMEI Petroleum Products Quality Inspection Company, which is in contract with the Ministry of National Development. Samples were taken from refuelling stations. Refuelling stations to be sampled randomly selected from the list of refuelling stations (there were 1980 refuelling stations in Hungary). The list was made by National Tax and Customs Administration (NAV).

The Hungarian system is equivalent of system proposed by CEN. On evaluating the system all parameters were determined, as requested by Directive (including manganese content).

There were 14 outlier samples (total sample number is 240), 1 of them is distillation (% (V/V) recovered at 100°C), 13 of them are aromatics content but the deviations are within tolerance limits, except one sample.

17.2.2.2 *FQMS administration*

In Hungary the Ministry of National Development is responsible for managing and implementing the FQM Directive. Fuel sampling has been managed and carried out by AMEI Petroleum Products Quality Inspection Company.

AMEI Petroleum Products Quality Inspection Company provides annual data for the Ministry by 31st March.

The public body responsible for taking action where non-complaint samples are discovered is AMEI who have to inform the Ministry; the National Custom and Tax Administration and Hungarian Authority for Consumer Protection.

There is 1 refinery and 17 distribution terminals in Hungary. Because the "private" import is remarkable, the sampling was carried out in the filling stations only.

17.2.2.3 *National Legislation that transposed the FQD*

There is a decree on the quality requirements of fuels in Hungary (30/2011. NFM), valid from 28/06/2011. This decree is based on the Directive.

17.2.2.4 *Reporting periods*

Summer – 1st May – 30th September

Winter – 15th November – 28th February

In Hungary the transition periods are: from 1st March to 30th April, and from 1st October to 14th November. During these periods no samples are taken.

17.2.3 Compliance with Fuel Quality Limit Values

Table 17-3: Petrol Fuel Grades

Unleaded petrol (minimum RON = 95) E5 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Aromatics, % V/V	35	36	36.8	1	1%
Member State notes Hungarian Petroleum Association was informed.					
Unleaded petrol (minimum RON >= 98) E5 - Details of samples that exceed tolerance limits:					
No samples found to be outside tolerance limits					

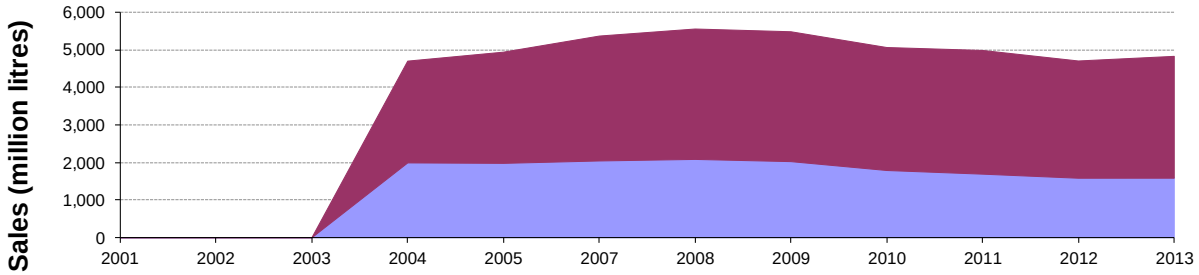
Table 17-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:
No samples found to be outside tolerance limits

17.3 Temporal Trends

Figure 16-2 shows the trend in total fuel sales since 2004. While Diesel and Petrol fuel sales in Hungary were in decline in previous years, in 2013 Diesel sales in Hungary increased by 0.1% compared to 2012 sales figures. Also Petrol fuel sales have increased by 3.9% in the period between 2012 and 2013. Overall and compared to sales figures reported in 2004, diesel fuel sales have risen by 19.7% (from 2,710 million litres in 2004 to 3,244 million litres in 2013). Petrol fuel sales figures have, in contrast, decreased by 20.4% in the same period, falling from 1,992 million litres in 2004 to 1,585 million litres in 2013.

Figure 17-2: Temporal trends in national sales of petrol and diesel (million litres)



17.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

Fuel sampling in Hungary in 2013 recorded only one test result out of specification with limits. The analysis charts for petrol (Figure 17-3) and diesel (Figure 17-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

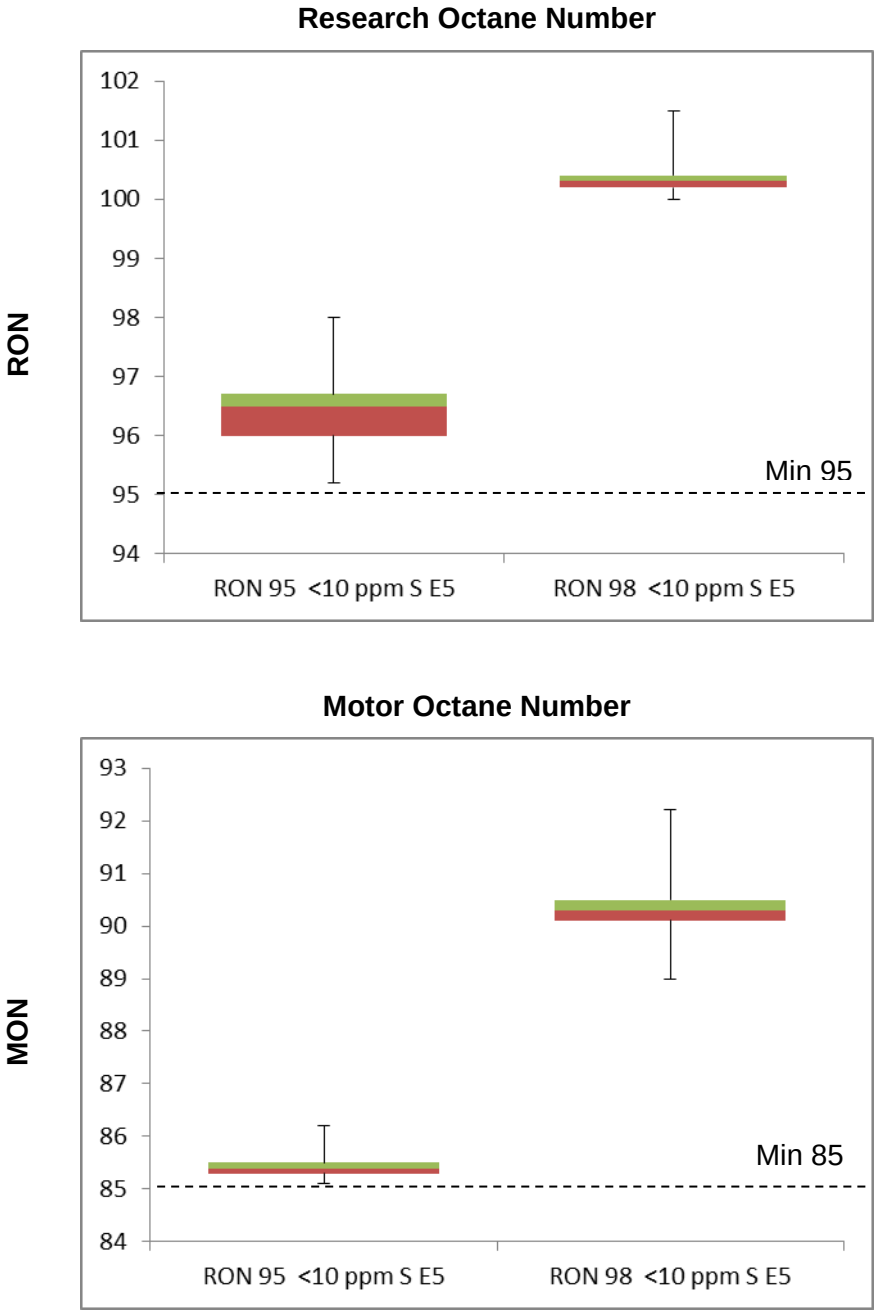
- Density at 15^{o}C
- Distillation – 95% v/v recovered

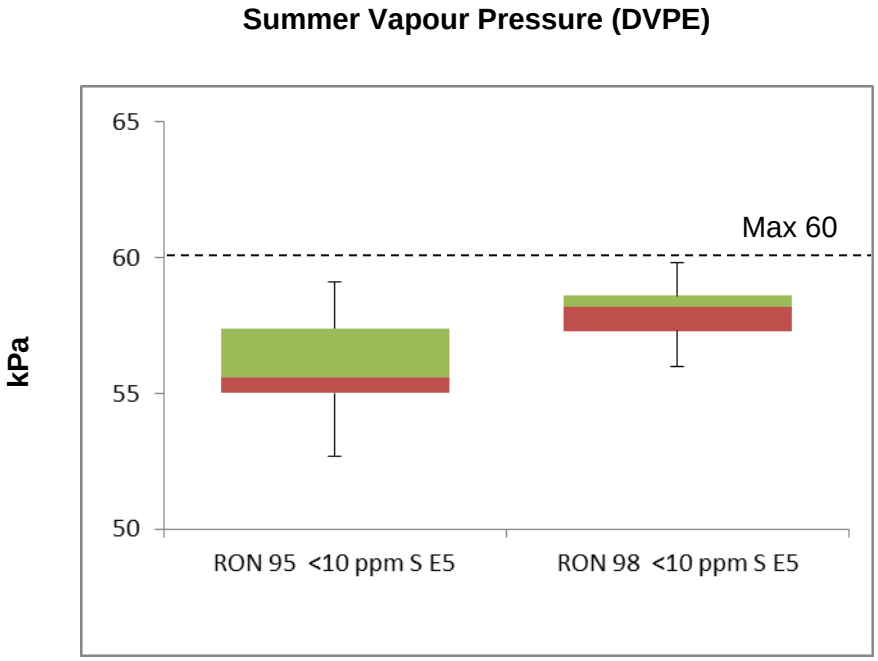
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

17.4.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. No samples for either fuel exceeded the tolerance limits for RON, MON or Summer Vapour pressure according to Directive specifications.

Figure 17-3: Petrol analysis

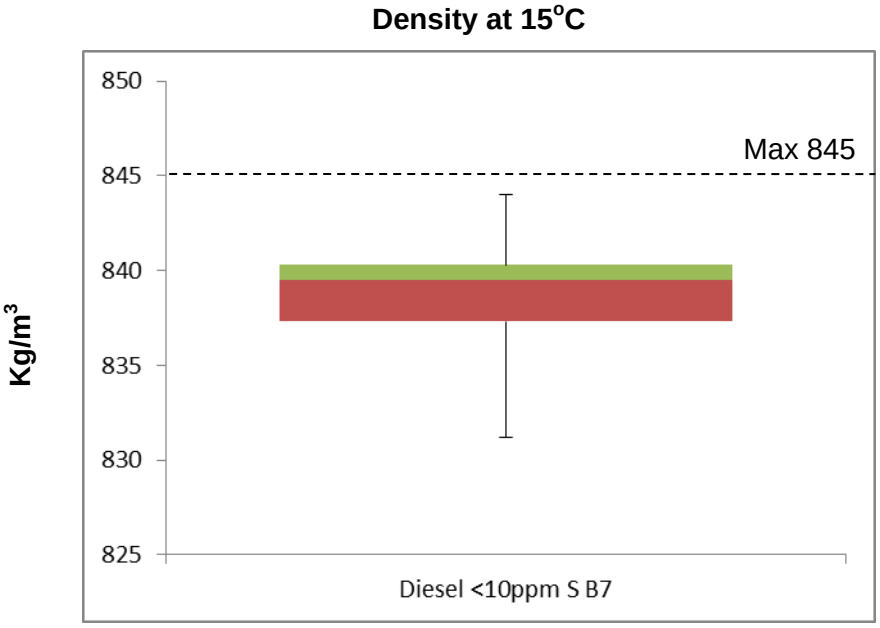


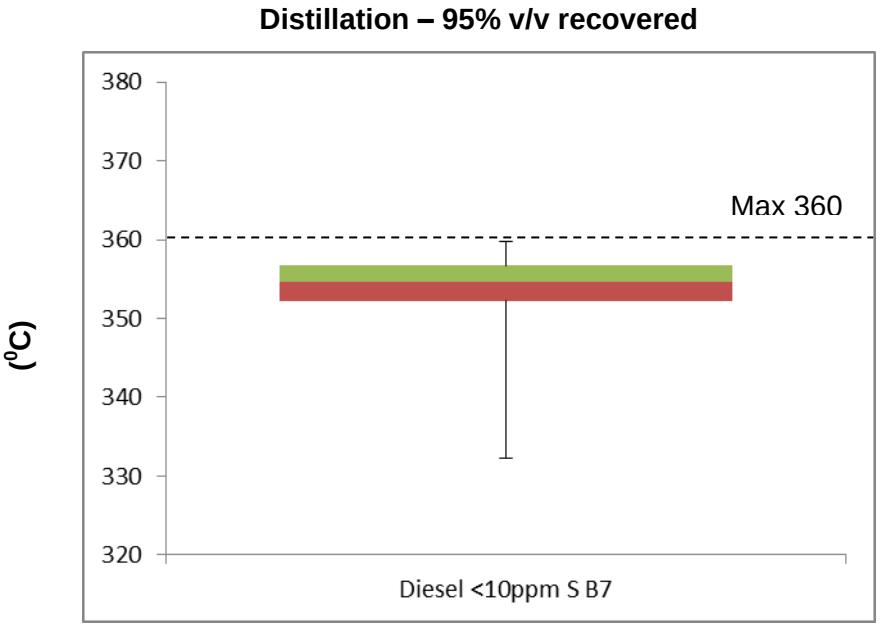


17.4.2 Diesel Analysis

Diesel sample results for Density at 15°C show little variation in samples - all samples in 2013 remained within limit values. Results for Distillation also demonstrated narrow banding of the bulk of samples.

Figure 17-4: Diesel analysis





17.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• No comments	• The report was received within the submission deadline and in the 2013 reporting template.
2012	• No comments	• The report was received within the submission deadline and in the 2012 reporting template.
2011	• Hungary did not report parameter results for Manganese for all petrol fuel grades in 2011 as alternative monitoring suggests there are no metallic additives in petrol fuels sold in Hungary. • Sample quantities meet the requirements of EN 14274 statistical model C for a small country.	• The report was received within the submission deadline and in the 2011 reporting template.

18 Ireland

18.1 Fuel Availability 2013

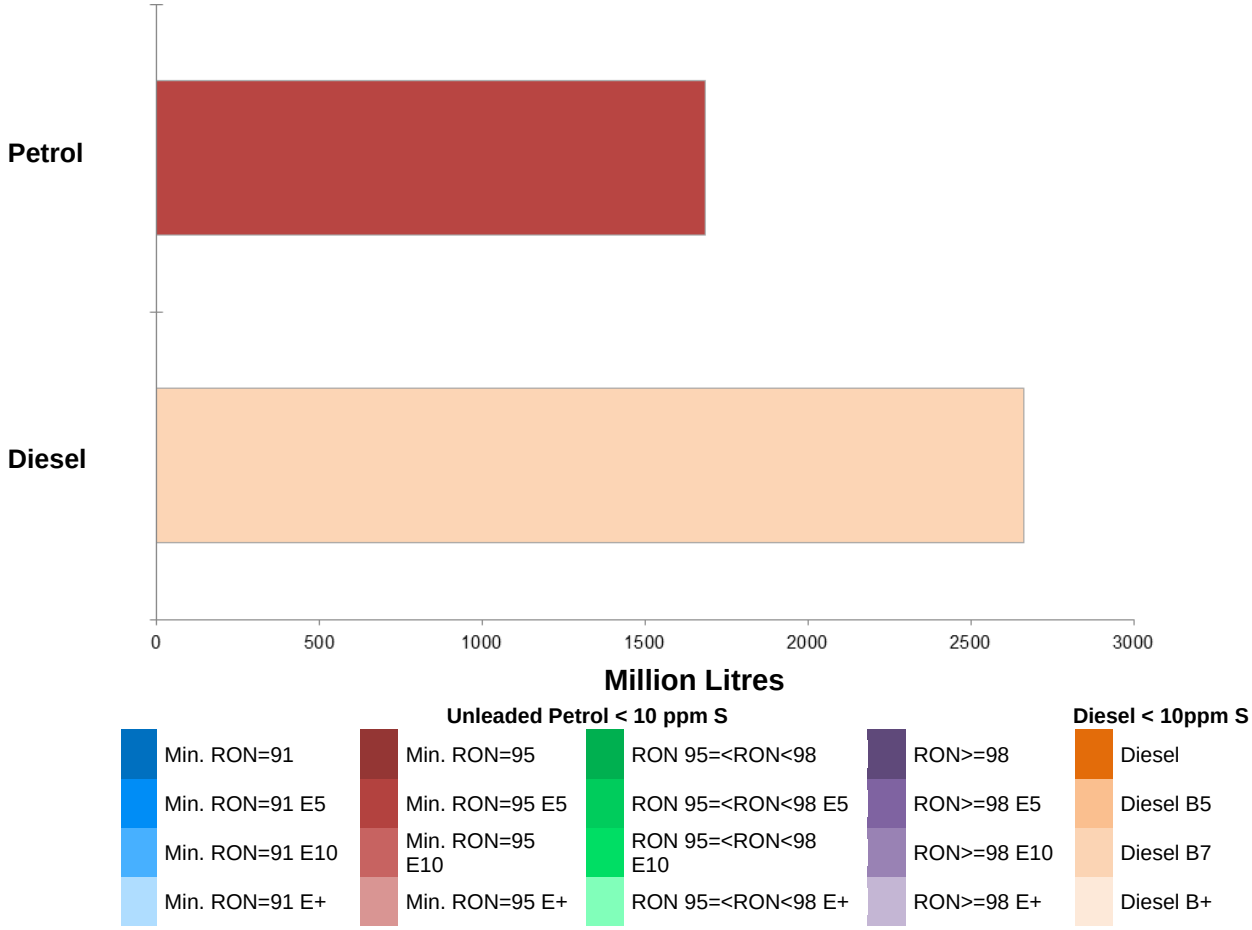
The following table lists the fuels that were reported to be available nationally in 2013.

Table 18-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	RON 95
Diesel fuel B7	Diesel

18.1.1 Sales, sampling and reporting

Figure 18-1: Fuel Sales proportions by fuel type



During 2013, diesel sales exceeded sales of petrol fuel grades. Over 2,600 million litres of diesel B7 was sold in comparison to less than 1,700 million litres of petrol fuel sales (petrol grade RON 95 E5).

Table 18-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S)	1,684	100.00%	92	107	100	Yes	18 of 19	(a)
Total Petrol	**1,684**	**100.00%**	**92**	**107**	**100**	**Yes**	**18 of 19**	
Diesel (<10 ppm sulphur)	2,661	100.00%	92	107	100	Yes	6 of 6	
Total Diesel	**2,661**	**100.00%**	**92**	**107**	**100**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a) Additional Notes:	Ireland did not report manganese.

18.1.1.1 *Petrol Samples*

Ireland has exceeded minimum sampling requirements for petrol fuel but it did not report Manganese analysis.

18.1.1.2 *Diesel Samples*

Sampling quantities of diesel exceeded the minimum requirement of 50 samples per fuel grade per summer and winter period for a small country monitoring using EN 14274 statistical models C.

18.2 Fuel Quality Monitoring 2013

18.2.1 Description of System

Responsible organisation(s)	Department of Environment, Community and Local Government
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model C
Country Size	Small
Summer Period	Arctic
Location(s) of sampling	Service stations
Time/frequency of sampling	Petrol and diesel fuel samples were taken during August for the summer period and during December and May for the winter period.
Specification of test methods	For Petrol samples, test methods used were as specified in either EN228:2004 or EN228:2008 with the following exceptions: • 55 RON samples of the 154 samples taken were analysed by an FTNIR method, • 99 MON samples of the 198 samples taken were also analysed by an FTNIR method. For diesel samples, test methods used were as specified in either EN590:2004 or EN590:2009
Collection of sales data	Sales figures for petrol and diesel are supplied by the Department of Communications, Energy and Natural Resources The Oil returns that come to the Department from Oil Companies & Consumers are rated as unleaded 95.

Other details

Under Commission Decision of 15.6.2011 on the request from Ireland for a derogation pursuant to Article 3(4) and (5) of Directive 98/70/EC, as amended by Directive 2009/30/EC, Ireland is permitted to place on the market (during the summer period) petrol with a maximum vapour pressure of 70kPa (derogation) until the end of 2020.

In 2013 the Department contracted an independent company to undertake sampling of fuel at forecourts around the country. Ireland has moved away from relying partly on Revenue samples which are collected at terminals and have moved towards increased independent sampling from forecourts.

18.2.2 Fuel Quality Monitoring System

18.2.2.1 *Sampling*

Samples of petrol and diesel are taken by the Office of the Revenue Commissioners, SGS Ireland Ltd and Inspection Services Ltd. Samples are analysed by the State Laboratory and SGS Ireland Limited. Reporting is the responsibility of the Department of Environment, Community, and Local Government. Samples are taken from refineries, terminals and

refuelling stations. Selection of sampling points is on a random basis and is carried out throughout the year. For Petrol samples, test methods used were as specified in either EN228:2004 or EN228:2008 with the following exceptions 55 RON samples of the 154 samples taken were analysed by an FTNIR method, 99 MON samples of the 198 samples taken were also analysed by an FTNIR method. For diesel samples, test methods used were as specified in either EN590:2004 or EN590:2009 .

18.2.2.2 *FQMS administration*

Department of Environment, Community and Local Government have responsibility for managing and implementing the FQM Directive. Fuel sampling is carried out by both the Office of the Revenue Commissioners, a public body, and by Inspection Services Ltd and SGS Ireland both contracted privately. Annual data is provided by SGS Ireland Ltd for the winter period in January of each year and for the summer period in September of each year. Annual data is provided by Inspection Services Ltd and the Office of the Revenue Commissioners once they have been analysed by the State Laboratory. When non-compliant samples have been discovered it is the responsibility of the Department of Environment, Community and Local Government to report, manage and monitor the non-compliance. The Department writes to the Fuel Company involved asking them to explain the non-compliance. All non-compliances are reported on the annual Fuel Quality Data Report and follow up action also reported. Ireland uses EN 14274 statistical model C as a small country. Whitegate Oil Refinery in Co Cork is Ireland's only refinery. There are five distribution terminals in Ireland. There are no reasons why the annual Fuel Quality Monitoring data report cannot be provided by the annual deadline of 30th June.

18.2.2.3 *National Legislation that transposed the FQD*

European Communities Act, 1972 (Environmental Specifications for Petrol, Diesel Fuels and Gas Oils for use by non-road mobile machinery, including waterway vessels, agricultural and forestry tractors, and recreational craft) Regulations 2011 (S.I. No 155 of 2011)

18.2.2.4 *Reporting periods*

Summer period is June, July and August. Winter period is from September to May. An Arctic derogation has been granted.

18.2.3 Compliance with Fuel Quality Limit Values

Table 18-3: Petrol Fuel Grades

RON 95 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Research Octane Number (RON)	95	94.6	94.2	1	0.6%
Vapour Pressure, DVPE kPa	70	71.9	72.3	15	16%
Olefins, % v/v	18	19.5	21.2	1	0.5%
Sulphur content mg/kg	10	11.8	36	1	0.5%

Member State notes

- MON: The Department wrote to the company involved to date no reply has been received.
- DVPE: The Department wrote to the companies involved. They noted that the

samples involved were drawn between the 1st and 7th August and tested in late September through to October. The time delay may be a possible basis for the elevated readings. They also supplied results for samples which were drawn from retail sites around the same period all of which are within the tolerance limit.

- Olefins: The Department wrote to the company involved to date no reply has been received. A reminder letter has been issued.
- Sulphur: The Department wrote to the company involved. The company have requested that internal investigation be completed to establish what has happened and will revert back to the Department as soon as possible.

Table 18-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Sulphur Content	10	11.8	27	3	1.55%

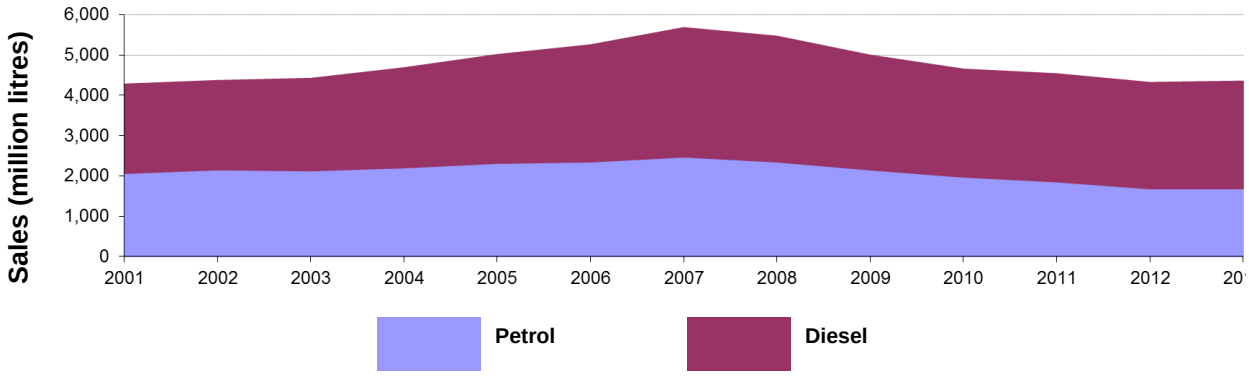
Member State notes
Sulphur: The Department wrote to the companies involved. One of the companies has requested that an internal investigation be completed to establish the cause of exceedance will revert back to the Department you as soon as possible. The Department has yet to receive a reply from the other company.

18.3 Temporal Trends

Figure 17-2 shows the trend in total fuel sales since 2001. Fuel sales in Ireland have fluctuated, with both fuel types peaking in 2007. In 2013 petrol sales were 18.4% lower than in 2001 and 31.8% lower than in 2007, but there has been no variation compared to 2012.

Diesel sales in 2013 were instead 20.6% higher than in 2001 but 31.8% lower than in 2007, and only had a small increase (1.2%) compared to 2012.

Figure 18-2: Temporal trends in national sales of petrol and diesel (million litres)



18.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range

- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

The analysis charts for petrol (Figure 18-3) and diesel (Figure 18-4) detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

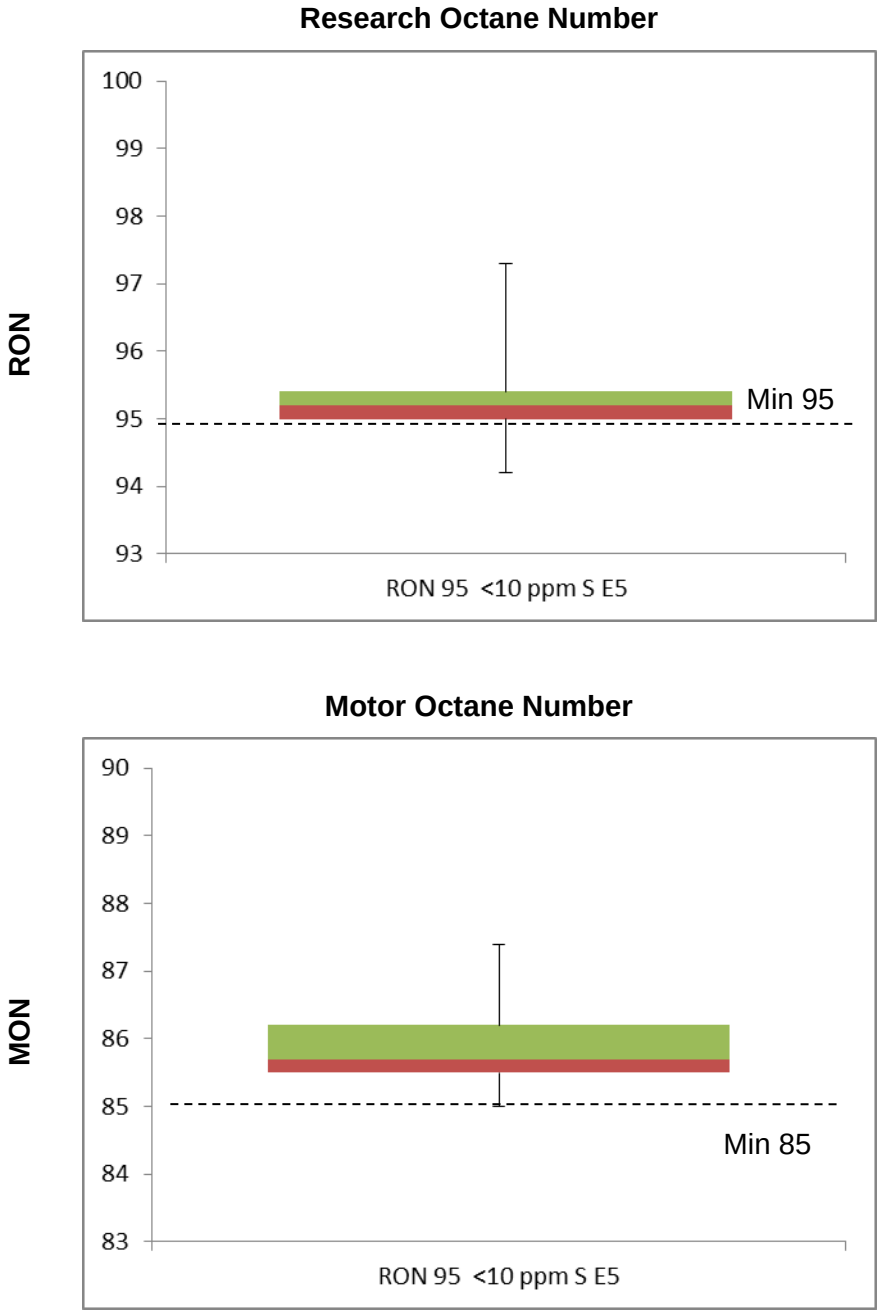
18.4.1 Petrol Analysis

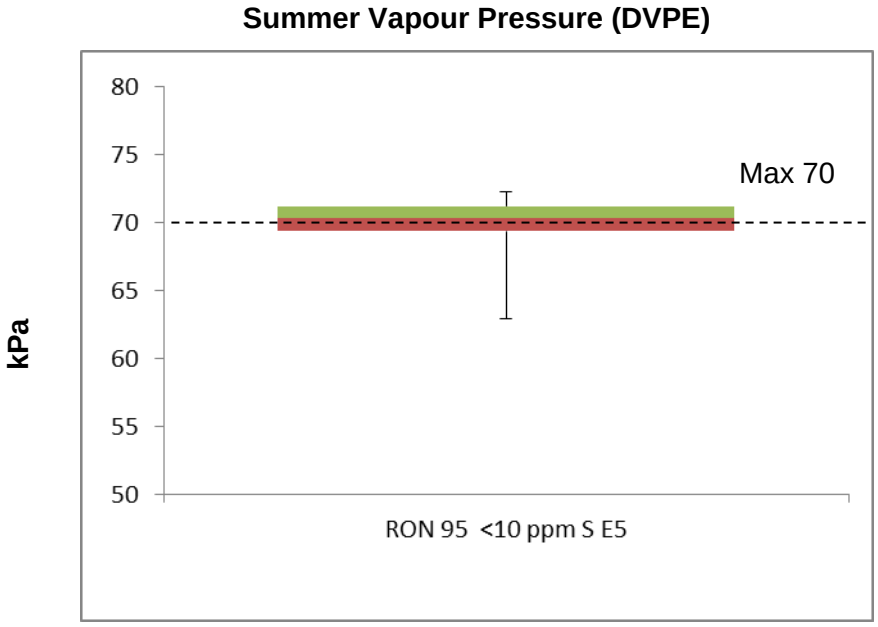
Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results.

Research Octane Number and Motor Octane Number results show that petrol sold in Ireland has little variation in RON – whilst remaining close to specifications (only 1 value below tolerance limit).

A significant proportion (over half) of samples tested for summer vapour pressure exceeded the limit value (70 kPa) for the parameter in a country with arctic climatic conditions derogation with, 16% of samples tested exceeding 71.4 kPa tolerance limit.

Figure 18-3: Petrol analysis

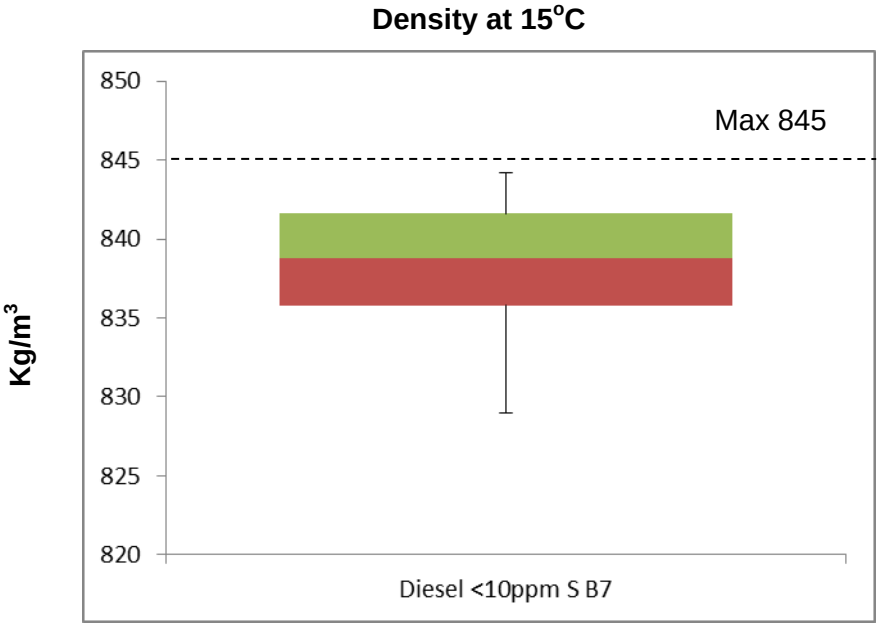


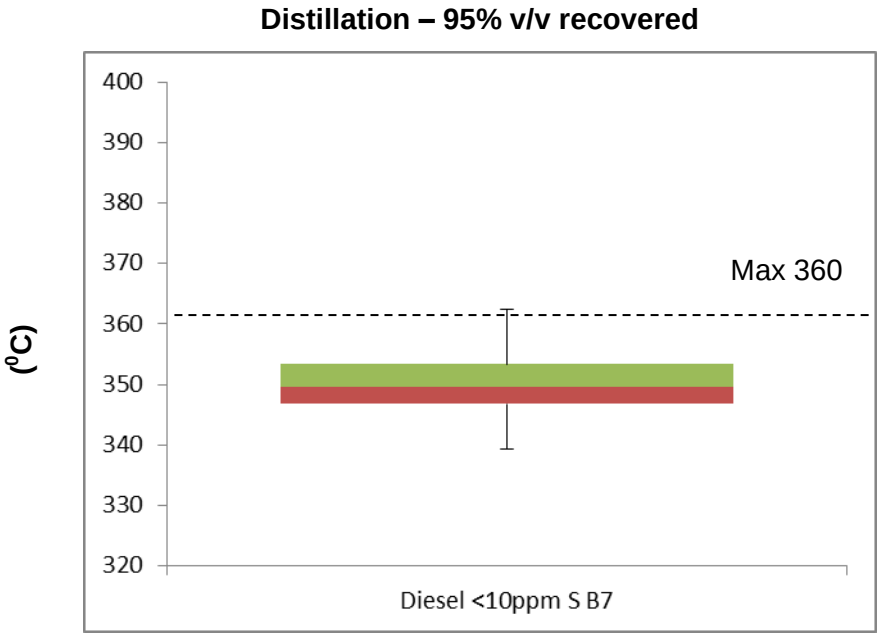


18.4.2 Diesel Analysis

Density and distillation analysis shows fairly normal distributions, with distillation skewed towards limit values (but not above tolerance threshold). Most of density results are instead at safe distance from the limit, with only outliers getting closer to it.

Figure 18-4: Diesel analysis





18.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Petrol analysis should include Manganese.	• The report from Ireland was received on time on the 30th of June and in the correct reporting template.
2012	• Sample quantities for summer are required to increase to 100.	• The report from Ireland was received on time and in the requested template.
2011	• Sample quantities are almost compliant; however a minimum of 50 samples should be taken per fuel grade per period at service stations in order to fully comply with the Directive requirements for the statistical model chosen. Ireland did not achieve this level of service station sampling (although they were very close). • Ireland did not report parameter results for Oxygen content for petrol	• The report from Ireland was received on time and in the requested template.

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**
fuel grade RON 95 in 2011.	

19 Italy

19.1 Fuel Availability 2013

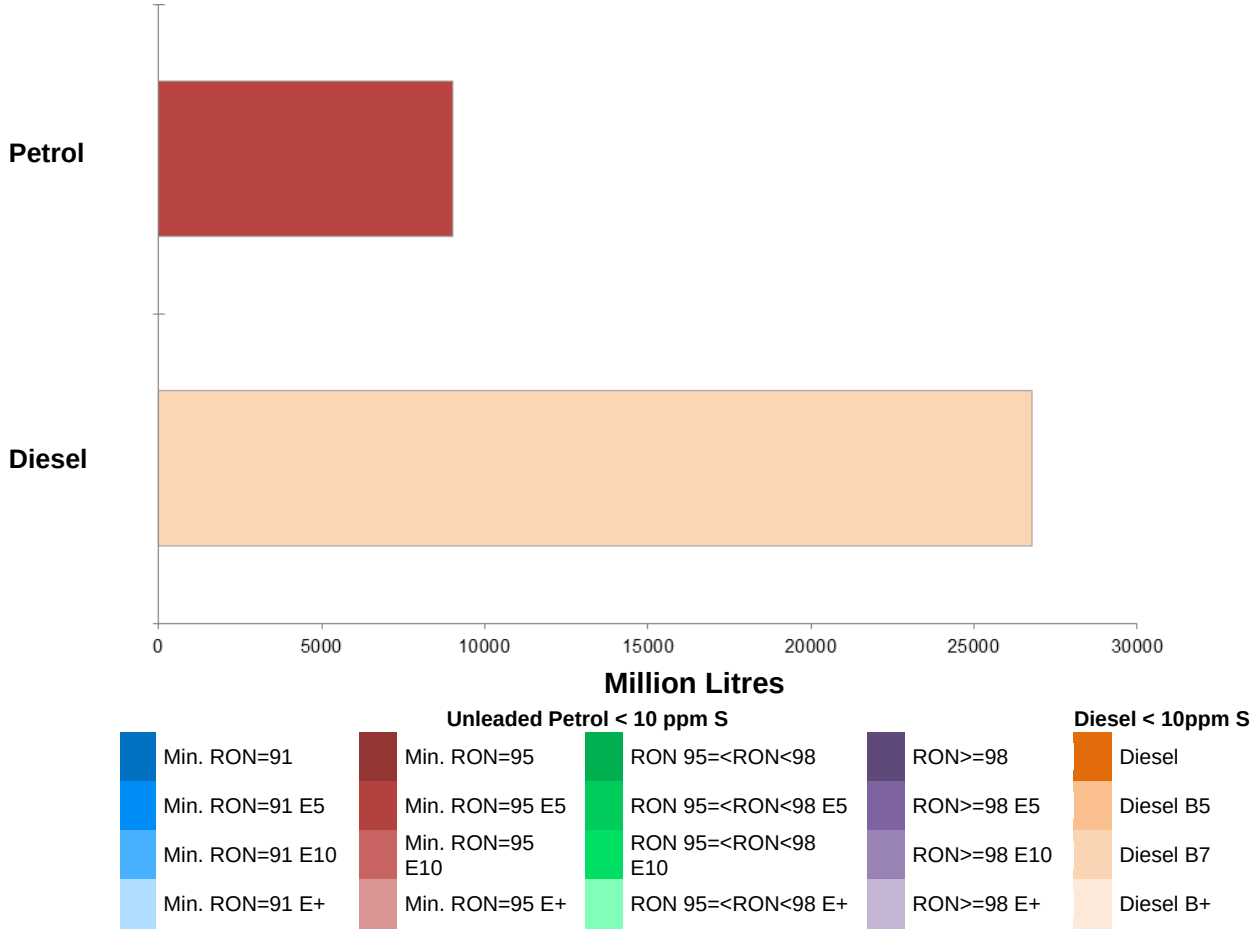
The following table lists the fuels that were reported to be available nationally in 2013.

Table 19-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	Unleaded petrol
Diesel fuel B7	Diesel

19.1.1 Sales, sampling and reporting

Figure 19-1: Fuel Sales proportions by fuel type



During 2013 diesel sales recorded far exceeded petrol sales. Over 26,755 million litres of diesel was sold in comparison to 9,015 million litres of petrol fuel sales (petrol grade RON 95).

Table 19-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E5	9,015	100.00%	100	100	200	Yes	19 of 19	
Total Petrol	**9,015**	**100.00%**	**100**	**100**	**200**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	26,755	100.00%	100	100	200	Yes	6 of 6	
Total Diesel	**26,755**	**100.00%**	**100**	**100**	**200**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.

19.1.1.1 *Petrol Samples*

- Petrol fuel samples tested in 2013 complied with the total minimum requirement.

19.1.1.2 *Diesel Samples*

- Diesel fuel samples tested in 2013 complied with the total minimum requirement.

19.2 Fuel Quality Monitoring 2013

19.2.1 Description of System

Responsible organisation(s)	Ministry of Environment, Territory and Sea
Fuel Quality Monitoring System (FQMS)	Statistical Model A
Country Size	Large
Summer Period	Normal
Location(s) of sampling	Service stations
Time/frequency of sampling	Samples have been taken in seven months of the year.
Specification of test methods	Italy established a fuel quality monitoring system, in accordance with the requirements of the European

	standard EN 14274:2003, by decree 3 February 2005.
Collection of sales data	Sales data in 2013 was collected by Ministry of Industry through an electronic questionnaire compiled by oil companies.

Other details:

- The national legislation (D.LGS. 31/03/2011 n. 55) specifies that fuels with MMT content should be labelled at the pump with the words: "Contiene additivi metallici. Solo per veicoli compatibili".
- An appropriate label shall be attached at sale outlets where petrol with a maximum ethanol content of 10% is made available to consumers. Moreover in the official web site of Italian Ministry of Environment, Territory and Sea is available the updated list of vehicles which are compatible with such petrol.

19.2.2 Fuel Quality Monitoring System

19.2.2.1 *Sampling*

Samples were taken monthly in each Winter and Summer period (Summer period for petrol: 1st May to 30th September). The 2013 monitoring system was set up using the statistical model A of EN 14274 (large country framework, five macro-regions). 200 petrol samples and 200 diesel fuel samples were analysed. The distribution of samples throughout the national territory was: 27.75% North-West, 16.75% North-East, 28.25% Centre, 15.75% South and 11.50% Islands.

The test methods required for fuel quality monitoring were performed by laboratories that regularly participate in one or more national inter-laboratory proficiency testing schemes, and that are accredited according to EN ISO 17025 or certified according to ISO 9000 standards. The proficiency testing schemes include all test methods listed in the FQMS. According to the requirements of EN 14274, analytical results for petrol and diesel fuel were reported separately for each season and for each grade.

19.2.2.2 *FQMS administration*

Italy established a fuel quality monitoring system, in accordance with the requirements of the European standard EN 14274:2003, by decree 3 February 2005. The 2013 national report had been drawn up on the base of a monitoring system at sale outlets distributed throughout the Italian territory. The monitoring system (sampling and measurements) was carried out by independent supervisory bodies.

19.2.2.3 *National Legislation that transposed the FQD*

The Fuel Quality Directive was transposed by the Legislative Decree on 21 March 2005, n. 66 to the national law.

19.2.2.4 *Reporting periods*

Summer: 1st May – 30th September

Winter: 16th November – 15th March

19.2.3 Compliance with Fuel Quality Limit Values

Table 19-3: Petrol Fuel Grades

Unleaded Petrol RON 95 - E5- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance**	**Max/Min value**	**No samples**	**% samples**

		Limit* (TL)	of samples tested	outside TL	outside TL
RON	95	94.6	93.8	4	2%

Member State notes
Details of which actions have been taken in regard to fuel samples above tolerance limits: it's been claimed from the National Union Oil to strengthen quality control on petrol and diesel fuels sold on the network to prevent a recurrence of the problem.

In the survey next year the controls on this parameter will be intensified and carried out on a larger number of samples to determine whether the phenomenon is episodic or if it needs more extensive investigation.

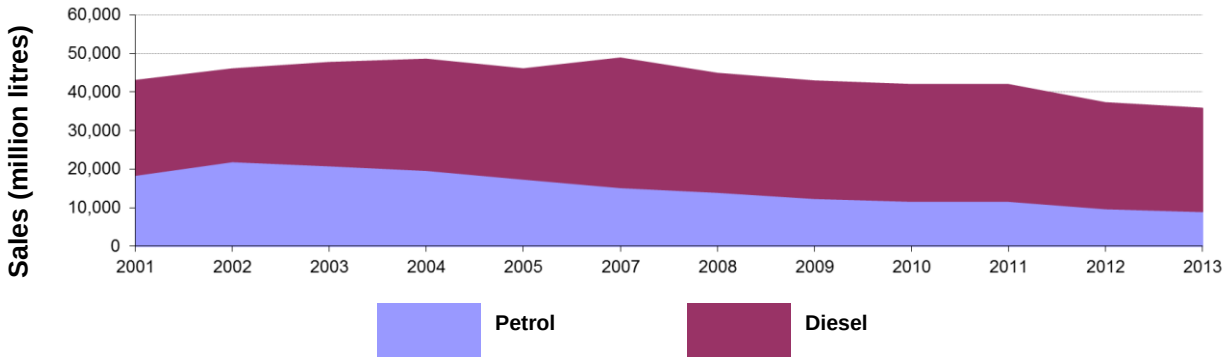
Table 19-4: Diesel Fuel Grades

Diesel Fuel B7- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
No sample exceeded tolerance limits					

19.3 Temporal Trends

Figure 18-2 shows the overall trend in total fuel sales for Italy since 2001. Overall, sales of petrol have been decreasing since 2002 (-58.9%); the trend has continued in the past year, with a reduction of 735 million litres. Diesel sales have peaked in 2007 and have been regularly decreasing since; in 2013 they were 20.3% lower than in 2007, and 2.5% lower than in 2012.

Figure 19-2: Temporal trends in national sales of petrol and diesel (million litres)



19.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see section 4.

Fuel sampling in Italy in 2011 recorded no test results out of specification with limits. The analysis charts for petrol (Figure 19-3) and diesel (Figure 19-4) detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

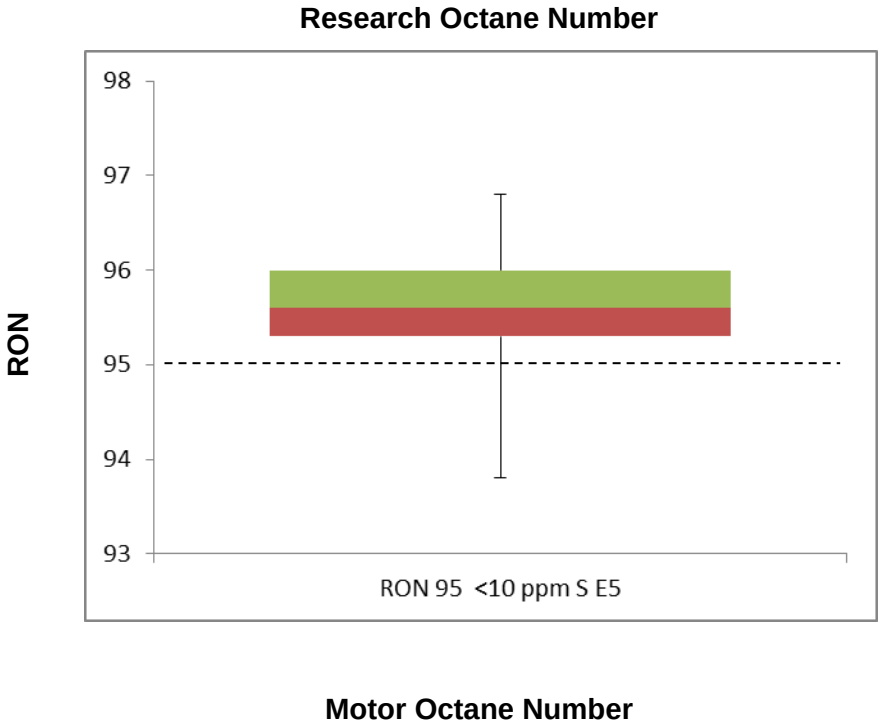
- Density at 15°C
- Distillation – 95% v/v recovered

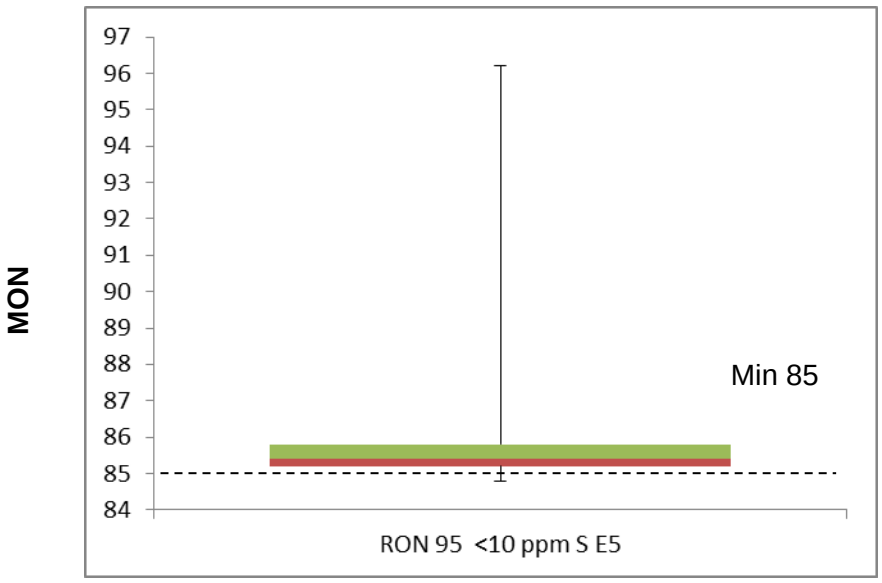
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

19.4.1 Petrol Analysis

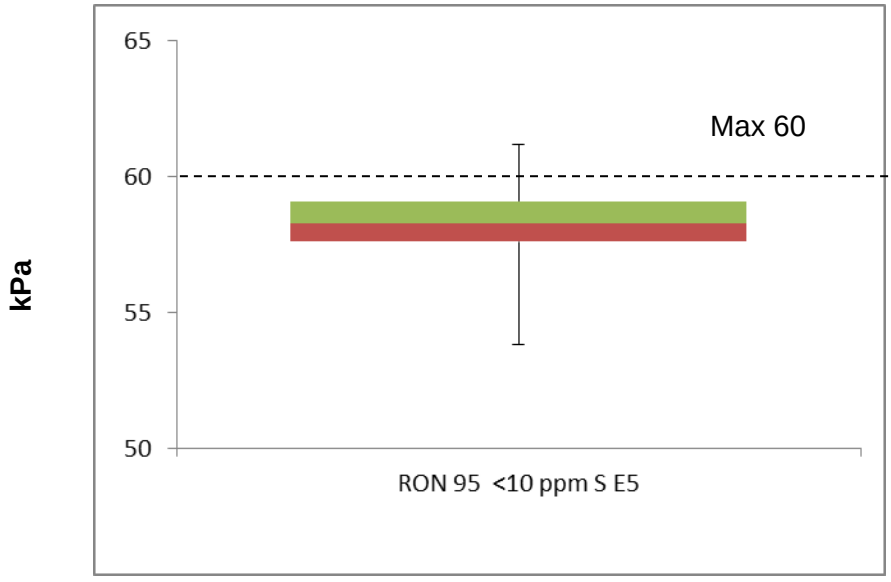
Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. RON and MON sample results show that the fuels available in Italy have reasonably small variation in Octane levels, and the majority of samples are within limit values, although 4 samples exceeded the tolerance limit for RON and the maximum recorded MON is substantially higher than the average. Summer Vapour pressure results show very little variation between samples and are within tolerance values.

Figure 19-3: Petrol analysis





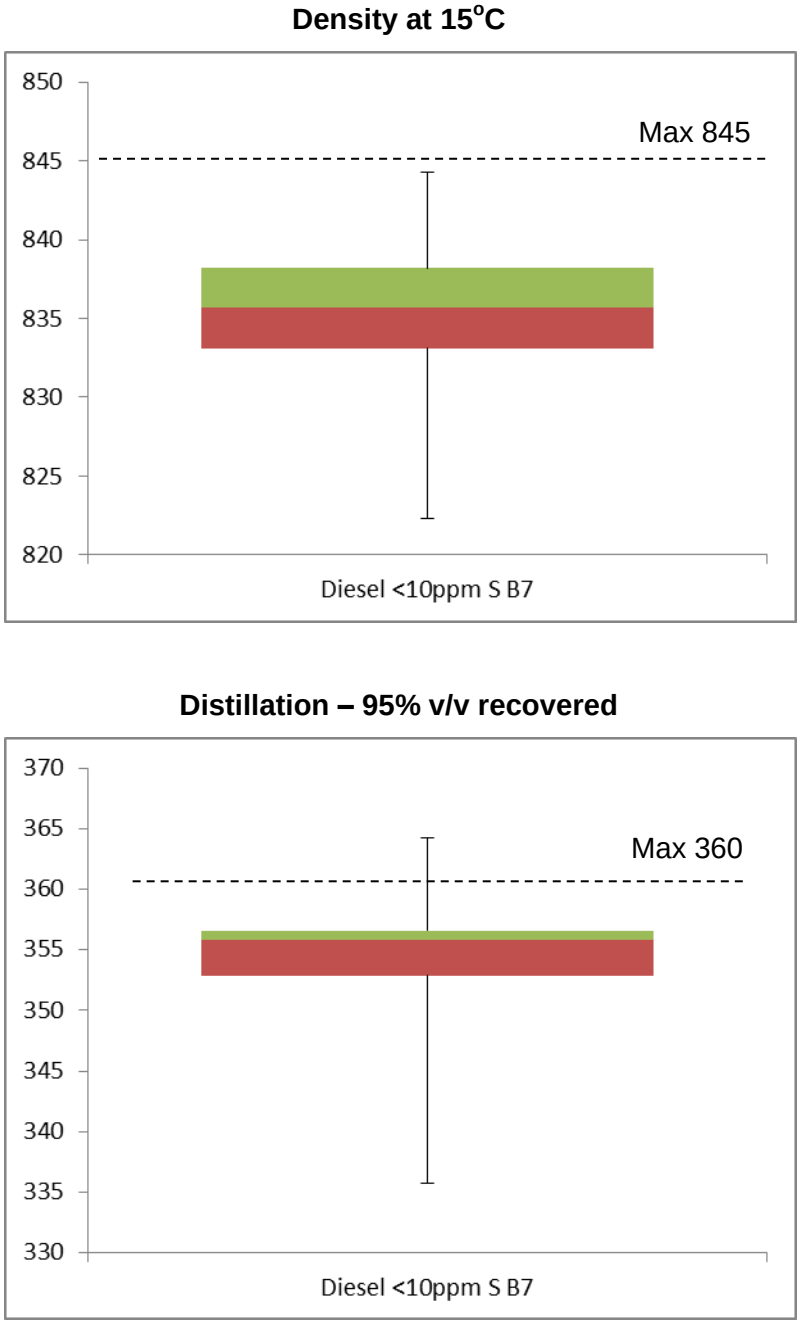
Summer Vapour Pressure (DVPE)



19.4.2 Diesel Analysis

Results for density and distillation show an even distribution of samples, with only distillation samples showing majority distribution near to the tolerance levels but all within tolerance limit.

Figure 19-4: Diesel analysis



19.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Further details of manganese, lead content, methanol, ethanol, iso-propyl alcohol, tert-butyl alcohol, iso-butyl alcohol and other oxygenates analysis would benefit future reports.	The 2013 report was submitted on the 24th of June, within the reporting deadline.
2012	• Italy did not report parameter results for Iso-propyl alcohol, Tert-butyl alcohol, Iso-butyl alcohol for petrol fuel grade RON 95 in 2012.	The 2012 submission was delivered on the 3rd July; received after the 30th June deadline.
2011	• Italy did not report parameter results for Methanol, Iso-propyl alcohol, Tert-butyl alcohol, Iso-butyl alcohol, other oxygenates, Lead Content or Manganese for petrol fuel grade RON 95 in 2011.	The 2011 report was submitted within the reporting deadline.

20 Latvia

20.1 Fuel Availability 2013

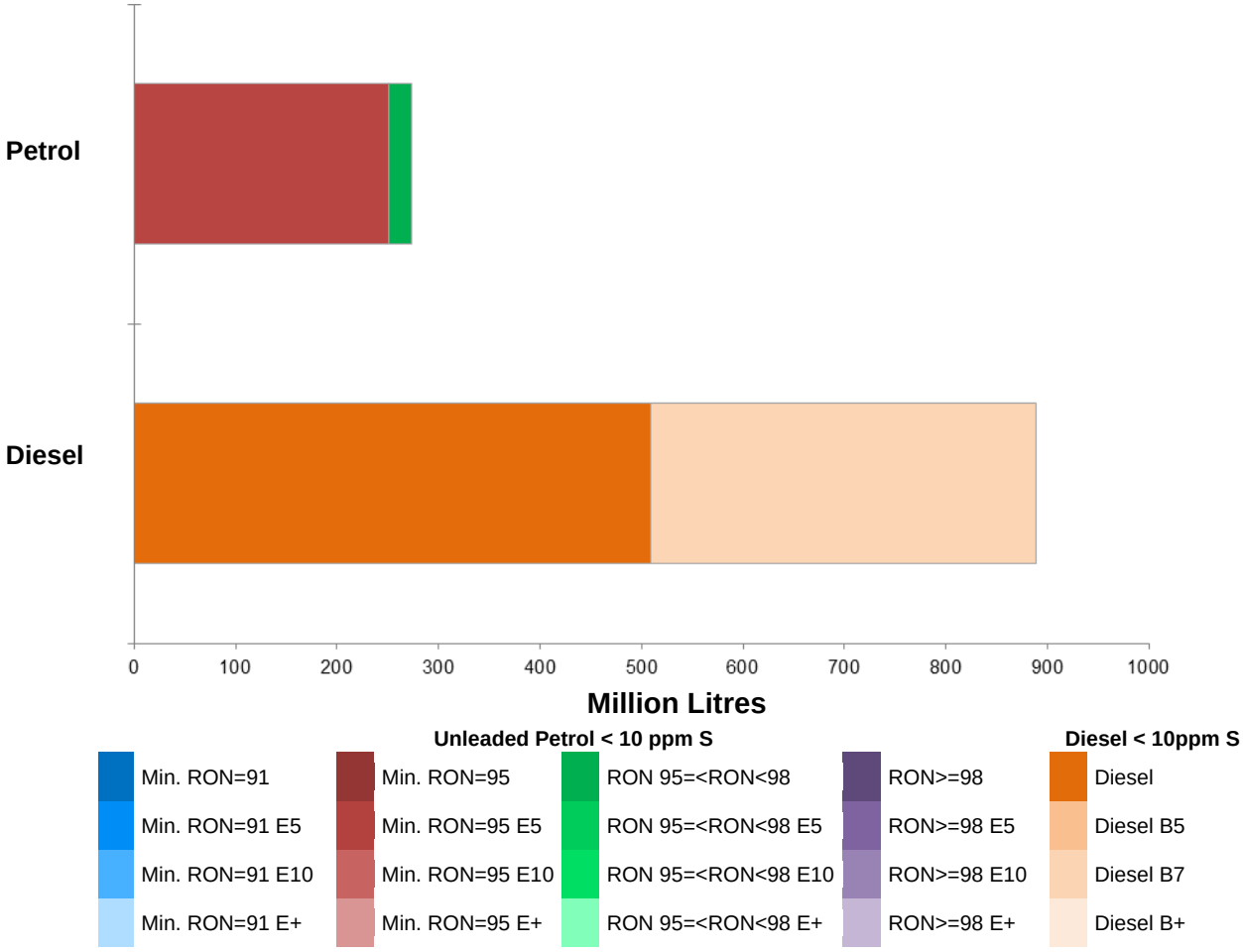
The following table lists the fuels that were reported to be available nationally in 2013.

Table 20-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	A-95 E5
Unleaded petrol (minimum RON = 95) E+	E85
Unleaded petrol (minimum 95 =< RON < 98)	A-98
Diesel fuel	DD
Diesel fuel B7	DD B5

20.1.1 Sales, sampling and reporting

Figure 20-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Latvia were dominated by diesel fuel sales; 889 million litres of diesel (all diesel grades combined) was sold in comparison to 273 million litres of petrol fuel sales (all petrol grades combined). 92.6% of petrol fuel sales were comprised of fuel grade

RON 95. Diesel fuel sales were split relatively evenly between Diesel with no FAME content (57%) and Diesel B7 (43%).

Table 20-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E5	250.6	91.73%	19	44	(100)	Yes	19 of 19	
Unleaded petrol min. RON=95 (<10 ppm S) E+	0.1	0.03%	0	0	n/a	n/a	n/a	(a)
Unleaded petrol 95=<RON<98 (<10 ppm S)	22.5	8.24%	10	18	(10)	Yes	19 of 19	
Total Petrol	**273**	**100.00%**	**29**	**62**	**(110)**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur)	509	57.22%	3	77	(50)	Yes	6 of 6	(b)
Diesel (<10 ppm sulphur) B7	380	42.78%	43	30	(100)	Yes	6 of 6	
Total Diesel	**889**	**100.00%**	**46**	**107**	**(150)**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters. Latvia has reported results for all parameters in all fuel grades.
(a)	Additional Notes	No samples were taken or statistics reported – E85.
(b)	Additional Notes	Diesel without FAME can be sold in Latvia only in winter period (1st November to 31st March). The three samples taken in summer period were from terminals.

20.1.1.1 *Petrol Samples*

Latvia uses a national monitoring system, which however it is supposed to comply at least with statistical model C and require at least 50 samples per summer and winter period each taken from petrol stations. The number of RON 95 petrol samples was not compliant for summer and for winter period.

20.1.1.2 *Diesel Samples*

Latvia uses a national monitoring system, which however it is supposed to comply at least with statistical model C and require at least 50 samples per summer and winter period each

for both diesel fuel grades (because they amount to above 10% of parent fuel sales) taken from petrol stations. The number of diesel samples was not compliant for both diesel grades.

20.2 Fuel Quality Monitoring 2013

20.2.1 Description of System

Responsible organisation(s)	Ministry of Economics of the Republic of Latvia
Fuel Quality Monitoring System (FQMS)	National system
Country Size	Small
Summer Period	Arctic
Location(s) of sampling	In 2013, 92 fuel samples (31 A-95 E5 samples, 14 A-98 samples, 28 DD and 19 DD B5) have been collected from service stations and 152 fuel samples (32 A-95 E5 samples, 14 A-98 samples, 52 DD and 54 DD B7) have been collected from terminals.
Time/frequency of sampling	Samples have been taken in every month throughout the year.
Specification of test methods	In compliance with Directive 98/70/EC. The fuel circulation supervision institutions supervise the fuel conformity according to the test methods specified in the standards EN 228:2013 „Automotive fuels - Unleaded petrol - Requirements and test methods" and EN 590+A1:2011 „Automotive fuels - Diesel - Requirements and test methods" as well as the requirements of Cabinet Regulation No 332.
Collection of sales data	State Revenue Service of Latvia.
Other details	

Latvia has been using petrol with a vapour pressure of 70kPa historically and such petrol is currently in use. The Commission raises no objection to the notification from the Republic of Latvia to permit the placing on the market during the summer period of petrol with a maximum vapour pressure of 70kPa (derogation) until the end of 2020.

20.2.2 Fuel Quality Monitoring System

20.2.2.1 *Sampling*

Organisation(s) responsible for sampling, analysis and reporting: Ministry of Economics of the Republic of Latvia and the State Revenue Service.

Location(s) of sampling: terminals and refuelling stations.

Time/frequency of sampling: samples have been taken in every month throughout the year.

Test methods: in compliance with Directive 98/70/EC.

20.2.2.2 *FQMS Administration*

The Ministry of Economics of the Republic of Latvia is responsible for managing and implementing the FQM Directive.

The State Revenue Service is responsible for supervision of the fuel market in accordance with article 24 of the Consumer Rights Protection Law, Article 15 of the Cabinet Regulation No 332 adopted on 26 September 2000 “Requirements for Conformity Assessment of Petrol and Diesel Fuel” and Article 27 of Cabinet Regulation No 772 adopted on 18 October 2005 “Regulations Regarding Requirements for Biofuel Quality, Conformity Assessment, Market Supervision and Procedures for Consumer Information”.

The fuel circulation supervision institutions supervise the fuel conformity according to the test methods specified in the standards EN 228:2013 ”Automotive fuels - Unleaded petrol - Requirements and test methods” and EN 590+A1:2011 “Automotive fuels - Diesel - Requirements and test methods”, as well as the requirements of Cabinet Regulation No 332.

Fuel circulation supervision institutions, which perform the supervision of the fuel market within their competence in accordance with regulatory enactments, shall submit to the State Revenue Service information regarding detected infringements once a month. If the State Revenue Service needs additional information for ensuring the supervision of fuel market, it shall be provided upon written request of the State Revenue Service.

The importer, producer, wholesaler or retailer shall present documents attesting conformity of fuel upon request of fuel circulation supervision institution.

20.2.2.3 *National Legislation that Transposed the FQD*

Republic of Latvia Cabinet Regulation No 332 Adopted 26 September 2000 Requirements for Conformity Assessment of Petrol and Diesel Fuel. This determines technical specifications, on health and environmental grounds, for fuels which are placed on the Latvian market to be used with spark and compression ignition engines of motor vehicles, non-road mobile machinery (including inland waterway vessels when not at sea), agricultural and forestry tractors, and recreational craft when not at sea, taking account of the technical requirements of those engines).

Republic of Latvia Cabinet Regulation No 772 Adopted 18 October 2005 Regulations Regarding Requirements for Biofuel Quality, Conformity Assessment, Market Supervision and Procedures for Consumer Information. This prescribes the quality requirements for biofuel, the procedures by which the conformity assessment of biofuel and the transfer thereof for processing shall be carried out; the procedures by which the production of biofuel and blending thereof with fossil fuel shall be controlled; the procedures by which biofuel not conforming to quality requirements shall be destroyed and the procedures by which consumers shall be informed regarding the content of biofuel present at points of sale and the conformity thereof with quality requirements.

Republic of Latvia Cabinet Regulation No 545 Adopted 5 July 2011 Regulation Regarding the Sustainability Criteria for Biofuels and Bio-liquids determines the mechanism for introducing thereof, and the procedure by which, they shall be supervised and monitored.

20.2.2.4 *Reporting Periods*

Summer Period: Arctic = 1st June to 31st August.

There is no the transition periods between summer and winter grade fuels. Samples have been taken in every month throughout the year.

20.2.3 Compliance with Fuel Quality Limit Values

Table 20-3: Petrol Fuel Grades

Petrol - Details of samples that exceed tolerance limits:
No samples found to be out of compliance with Directive specifications.

Table 20-4: Diesel Fuel Grades

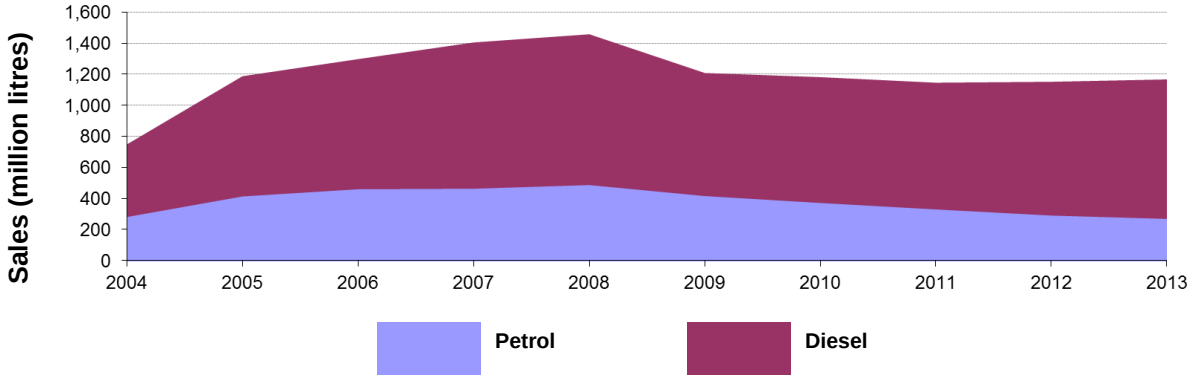
Diesel - Details of samples that exceed tolerance limits:

No samples found to be out of compliance with Directive specifications.

20.3 Temporal Trends

Figure 19-2 shows the trend in total fuel sales since 2004; total fuel sales rose until 2008 and then fell up to 2011. Petrol sales are now 4.4% lower than in 2004; in 2013 they have continued along the downward trajectory started in 2008 (22 million litres fewer than last year, 7.4% of petrol sales). Diesel sales, after the substantial drop in 2009, have been growing again since 2011 and now are 94% more respect to 2004 and 4.3% above 2012 sales.

Figure 20-2: Temporal trends in national sales of petrol and diesel (million litres)



20.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

Fuel sampling in Latvia in 2013 recorded no test results out of specification with limits. The analysis charts for petrol (Figure 20-3) and diesel (Figure 20-4) detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

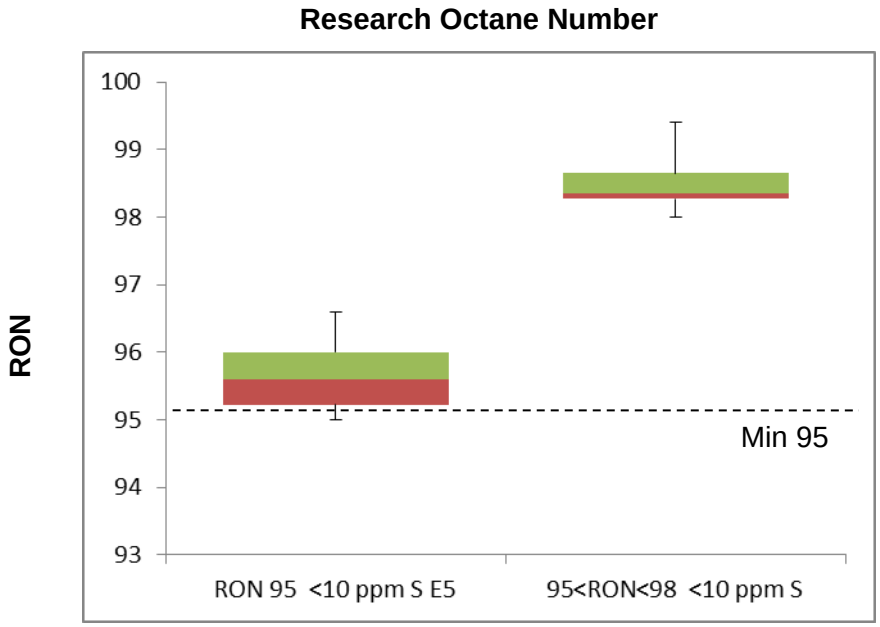
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

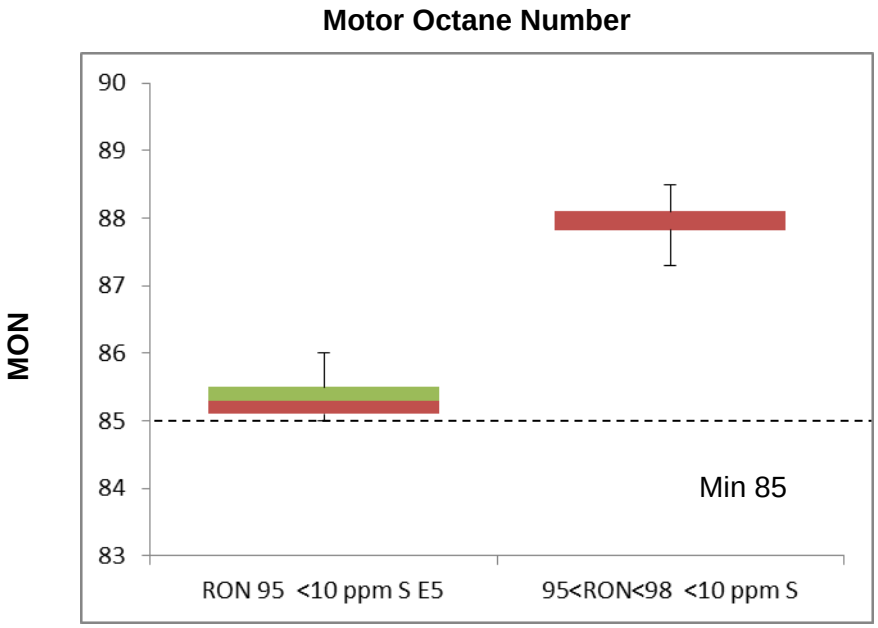
20.4.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. Analysis of octane levels shows that samples have relatively little variability for both the RON and MON tests. The spread of results is slightly wider and there are some samples of RON 95 which fall below limit values in the RON test, but these are within the tolerance threshold.

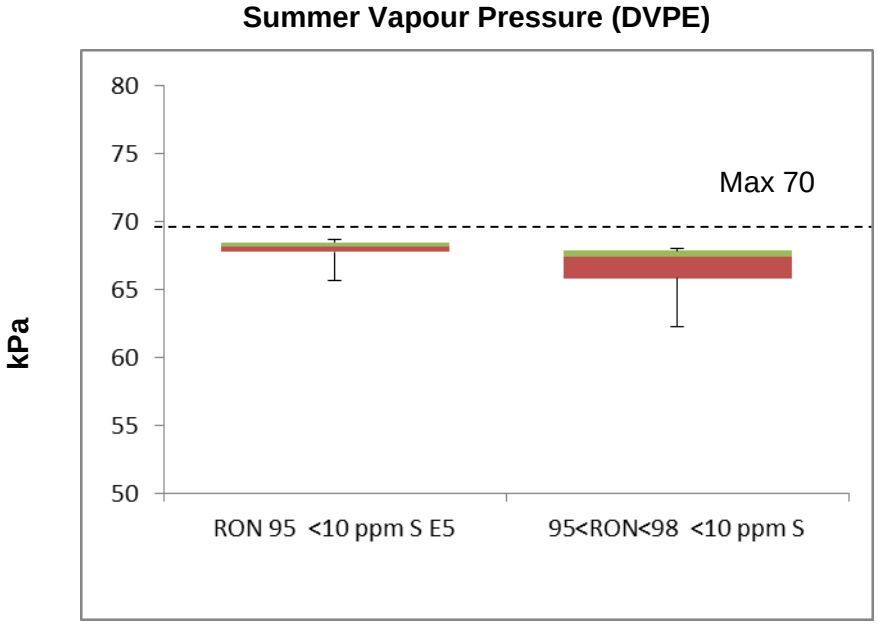
Latvia has been using petrol with a vapour pressure of 70kPa due to being classified as an arctic country. Analysis of samples for the summer vapour pressure tests shows an extraordinarily tight distribution considering the number of samples although both grades are near tolerance levels.

Figure 19-20-3: Petrol analysis





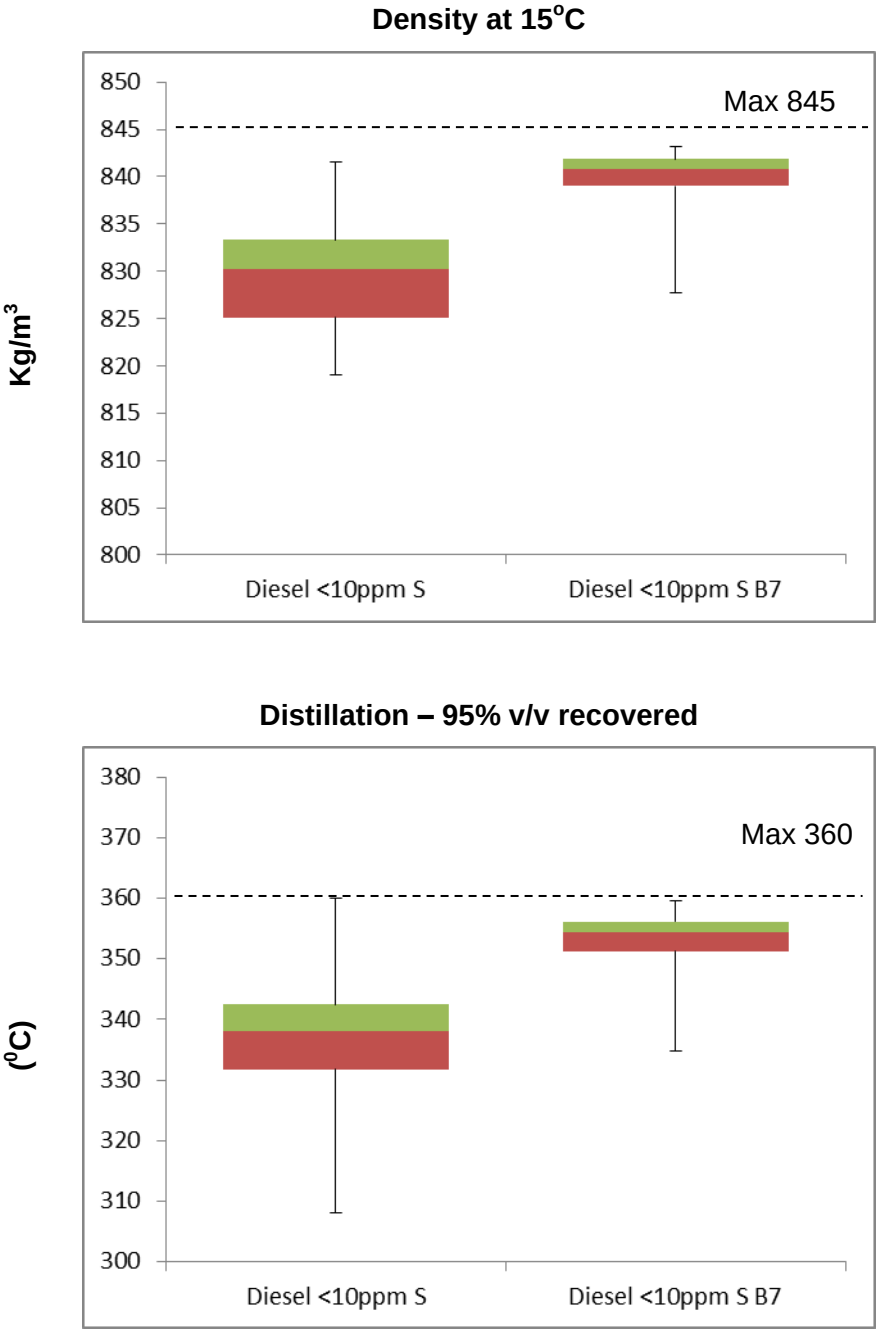
Note: Median and 75% of Sample Value equal 88.1 for MON for fuel grade 95<RON<98.



20.4.2 Diesel Analysis

Samples of diesel tested by the Density at 15°C and Distillation 95% v/v recovered, show a fairly normal distribution, with a wider spread for Distillation of B0 Diesel. Outliers remain close to limit values but within tolerance limits.

Figure 19-20-4: Diesel analysis



20.6 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
Year	**Monitoring**	**Reporting**
2013	• The number of samples did not meet minimum requirement so to comply with EN 14274; 50 samples are required, for RON 95 and both Diesel grades for each period, which Latvia did not provide.	• The 2013 report was received in the correct format on the 21st of July, after the 30th of June deadline.
2012	• The number of samples did not meet minimum requirement so to comply with EN 14274; 50 samples are required for each period, which Latvia did not provide.	• The file was received on the 3rd July, after the 30th June deadline.
2011	• No comment.	• The 2011 report was submitted within member state deadline.

21 Lithuania

21.1 Fuel Availability 2013

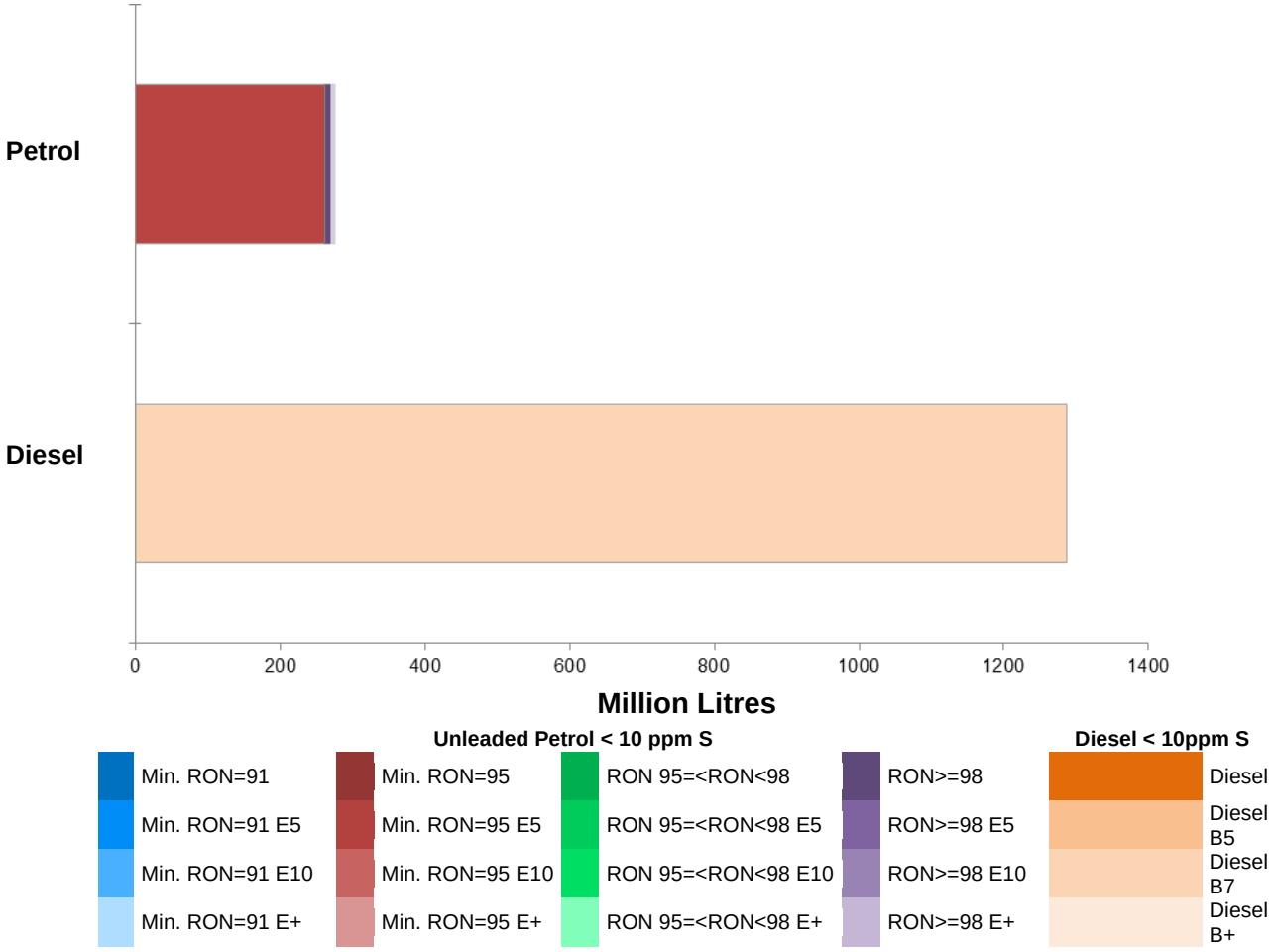
Table 20-1 lists the fuels that were reported to be available nationally in 2013.

Table 21-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95)	A-95 (RON 95)
Unleaded petrol (minimum RON >= 98)	A-98 (RON 98)
Unleaded petrol (minimum RON >= 98) E+	A-98 (RON 98)
Diesel fuel	Diesel

21.1.1 Sales, sampling and reporting

Figure 21-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Lithuania were dominated by diesel fuel sales. Nearly 1,300 million litres of diesel was sold in comparison to just over 270 million litres petrol fuel sales (all petrol grades combined). Petrol fuel sales were mainly comprised of fuel grade RON 95 with a small proportion (2.9%) of RON 98 and RON 98 E+ (2.4%).

Table 21-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S)	262	94.71%	50	50	100	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S)	8	2.88%	3	3	4	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S) E+	7	2.40%	0	0	n/a	n/a	n/a	(a)
Total Petrol	**277**	**100.00%**	**53**	**53**	**104**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	1,288	100.00%	50	50	100	Yes	6 of 6	
Total Diesel	**1,288**	**100.00%**	**50**	**50**	**100**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a) Additional Notes	No samples were taken or statistics reported - the petrol is blend of 85% pure petrol and 15% ethanol (E15).

21.1.1.1 *Petrol Samples*

Lithuania has fully complied with minimum sampling requirements for RON 95 petrol. A small country using statistical model C, Lithuania have taken 50 samples in both summer and winter periods for all fuels that exceed 10% total market share. Lithuania has taken 3 samples in both summer and winter period from petrol RON 98, which is sufficient to meet the minimum requirements of the petrol that has less than 10% total market share.

21.1.1.2 *Diesel Samples*

Diesel sampling comply with minimum sampling requirements for a small country using statistical model C.

21.2 Fuel Quality Monitoring 2013

21.2.1 Description of System

Responsible organisation(s)	Ministry of Energy of the Republic of Lithuania

Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical Model C
Country Size	Small
Summer Period	Normal – However, Lithuania report to 70kPa for summer vapour pressure which is more in line with an artic summer period. This has been agreed previously with the Commission. Lithuania has provided the derogation on summer vapor pressure limit of 70kPa, which they had received from the European Commission.
Location(s) of sampling	Samples of petrol RON 95 and of diesel were taken only at service stations; samples of RON 98 were taken both at service stations and at terminals.
Time/frequency of sampling	Monthly throughout the year, with the exception of fuel grade RON 98 which has been sampled six months out of the year, in February, March, May, July, September and November.
Specification of test methods	FQMS implementation is based essentially on test methods specified in international standards EN 228 and EN 590. Other FQMS test methods in Lithuania are not used. In Lithuania, the national standard LST EN 14274:2004, which has been fully taken over from the European standard EN 14274:2003, is in use.
Collection of sales data	Source of sales data for 2013 has not been specified.
Other details	
Vapour pressure waiver has been granted for Lithuania by the European Commission Directorate-General, Climate Action, CLIMA.C.2 - Transport and Ozone by the Note No. CLIMA/CPO/SS/nv Ares (2011).	

21.2.2 Fuel Quality Monitoring System

21.2.2.1 *Sampling*

The organisation responsible for sampling and analysis is the State Non Food Products Inspectorate under the Ministry of Economy. The organisation responsible for reporting is the Ministry of Energy.

FQMS implementation is based on test methods specified in international standards EN 228 and EN 590. Other FQMS test methods are not used in Lithuania. The national standard LST EN 14274:2004, which has been fully taken over from the European standard EN 14274:2003, is in use.

21.2.2.2 *FQMS administration*

The public body responsible for managing and implementing the FQM Directive is the Ministry of Energy. Fuel sampling is carried out by the State Non Food Products Inspectorate under the Ministry of Economy. The State Non Food Products Inspectorate under the Ministry of Economy is responsible for taking action where non-compliant samples have been discovered. The system has been designed using the model C from standard EN 14274. There is 1 national refinery and 23 distribution terminals in the country.

21.2.2.3 *National Legislation that transposed the FQD*

Standards of fuel EN 228 and diesel EN 590 are transposed to national legal acts. All acts are related to research of parameters of fuel and diesel samples and are fully transposed to the Lithuanian legislation. EN 14274:2003 corresponds to the LST EN 14274:2004; EN 14275:2003 corresponds to the LST EN 14275:2004; EN ISO 3170:2004 corresponds to the LST EN ISO 3170:2004; EN ISO 5164:2005 corresponds to the LSTEN ISO 5164:2006; EN ISO 5163:2005 corresponds to the LST EN ISO 5163:2006; EN 13016-1:2007 corresponds to the LST EN 13016-1:2007; EN ISO 3405:2011 corresponds to the LST EN ISO 3405:2011; EN ISO 22854:2008 corresponds to the LST EN ISO 22854:2009; EN 13132:2000 corresponds to the LST EN 13132:2001; EN ISO 20846:2011 corresponds to the LST EN ISO 20846:2012; EN 237:2004 corresponds to the LST EN 237:2004; EN 16135:2011 corresponds to the LST EN 16135:2012; EN 15195:2007 corresponds to the LST EN 15195:2007; EN 116:1997 corresponds to the LST EN :1999; EN 12916:2006 corresponds to the LST EN 12916:2006; EN 14078:2009 corresponds to the LST EN 14078:2010.

21.2.2.4 *Reporting periods*

Samples are also taken during transition periods as there are no filtering and cloud temperatures in provided reports and mentioned indicators are suitable for winter period too. Samples from 1st October – 30th of November and 1st March – 30th are also covered by data of winter period.

21.2.3 Compliance with Fuel Quality Limit Values

Table 21-3: Petrol Fuel Grades

Petrol A-95 - Details of samples that exceed tolerance limits:
No samples have exceeded specifications.
Petrol A-98 - Details of samples that exceed tolerance limits:
No samples have exceeded specifications.

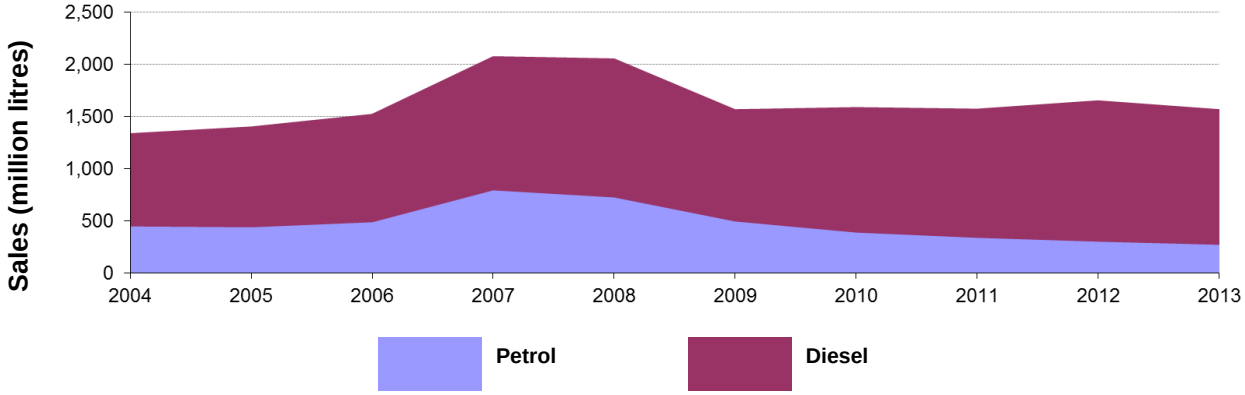
Table 21-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:
No samples have exceeded specifications.

21.3 Temporal Trends

Figure 20-2 shows the trend in total fuel sales since 2003. Diesel sales in Lithuania have fluctuated since 2006 and increased by 35% since 2001. However, they decreased by 4.1% (54 million litres) since 2012. Petrol fuel sales have reduced by 9.8% in the period between 2012 and 2013, with an overall reduction of 37.8% in the period 2004-2013.

Figure 21-2: Temporal trends in national sales of petrol and diesel (million litres)



21.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

Fuel sampling in Lithuania in 2013 recorded no test results out of specification with tolerance limits. The analysis charts for petrol (Figure 21-3) and diesel (Figure 21-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Only four samples have been taken for petrol grade RON 98 – as a result it is not possible to perform statistical analysis on this fuel grade, Figure 21-3 therefore only gives details for grade RON 95.

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

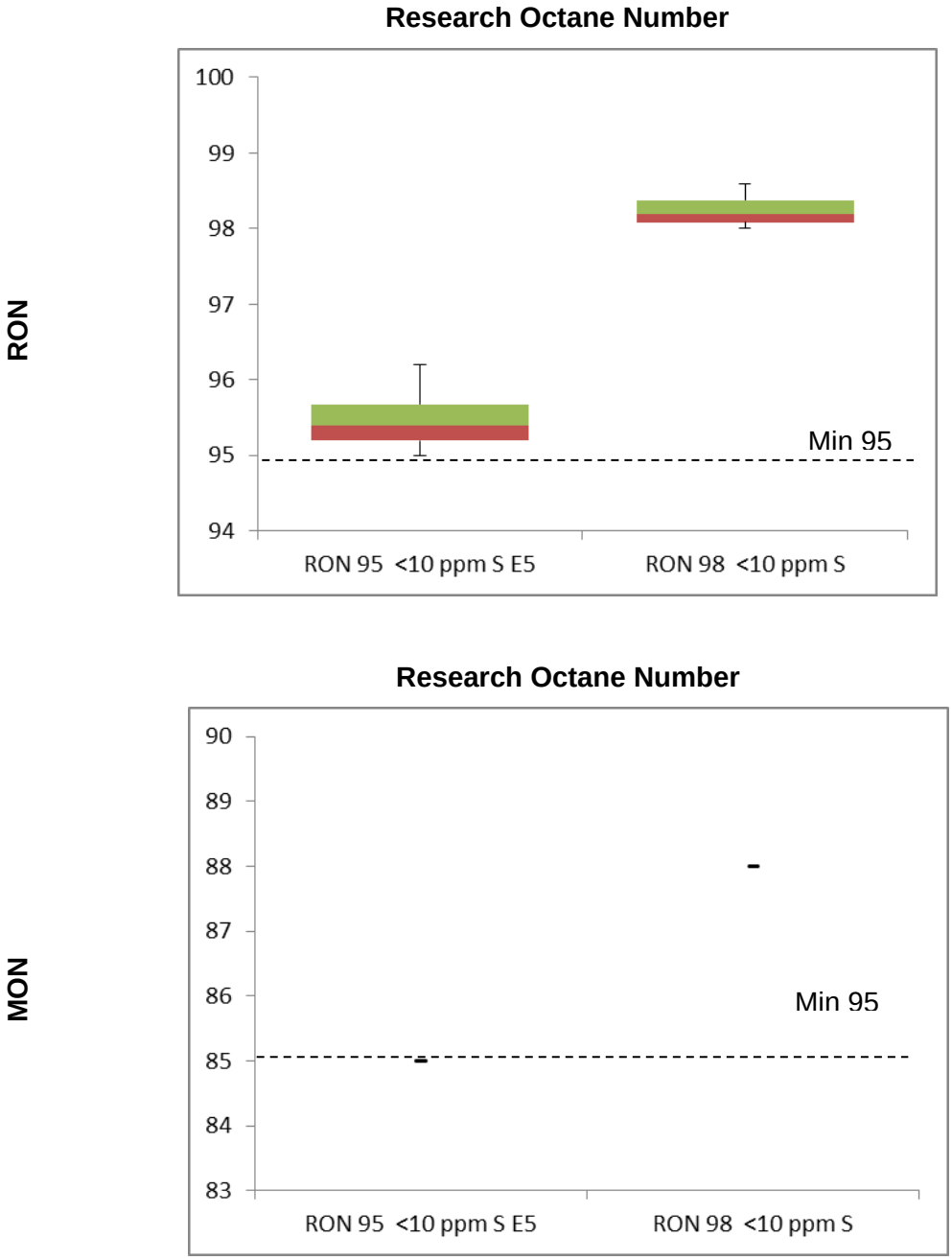
21.4.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results.

RON results show tight distributions at safe distance from limits, while MON results reported a single value for all the statistical figures (min, max, mean, 1st and 3rd quartile), which for RON 95 is exactly on the limit (95).

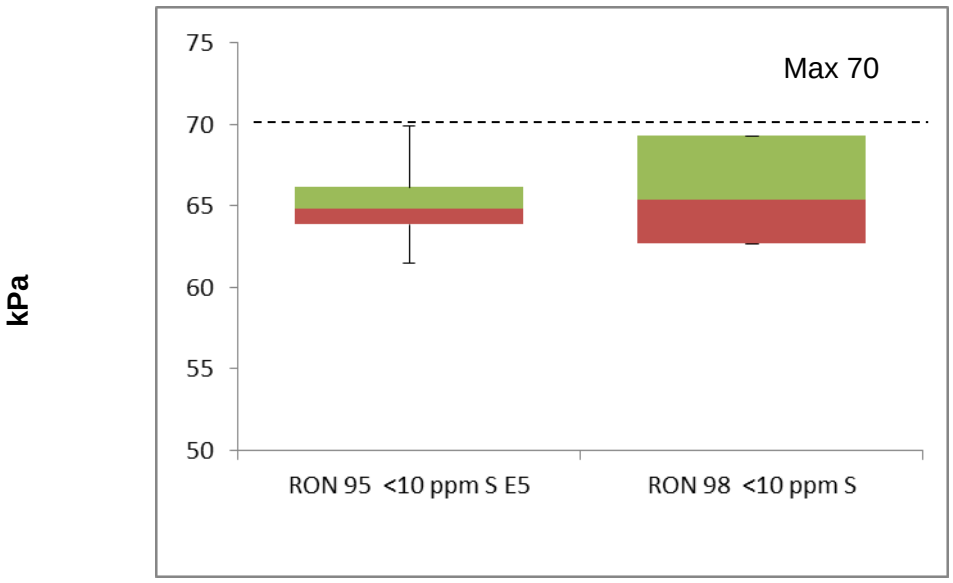
Lithuania reported using the maximum limit value of 70kPa for summer vapour pressure following receipt of derogation on summer vapour pressure limit from the Commission. Vapour pressure results show that most samples remain well within the 70kPa maximum tolerance limit with no outlying samples actually exceeding the limit values.

Figure 21-3: Petrol analysis



Note: MON distributions present the same values for min, max, mean, 1st and 3rd quartile for both petrol fuel grades

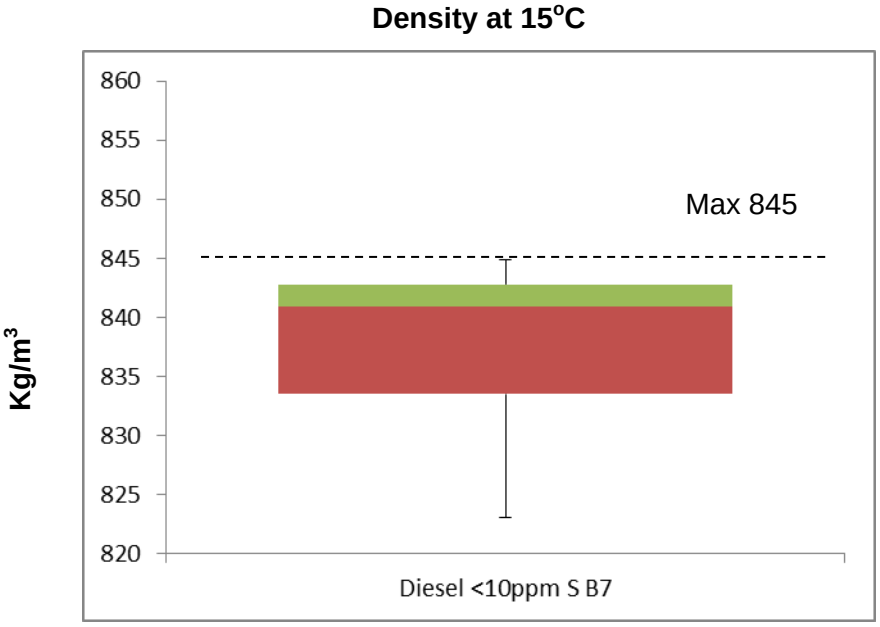
Summer Vapour Pressure (DVPE)

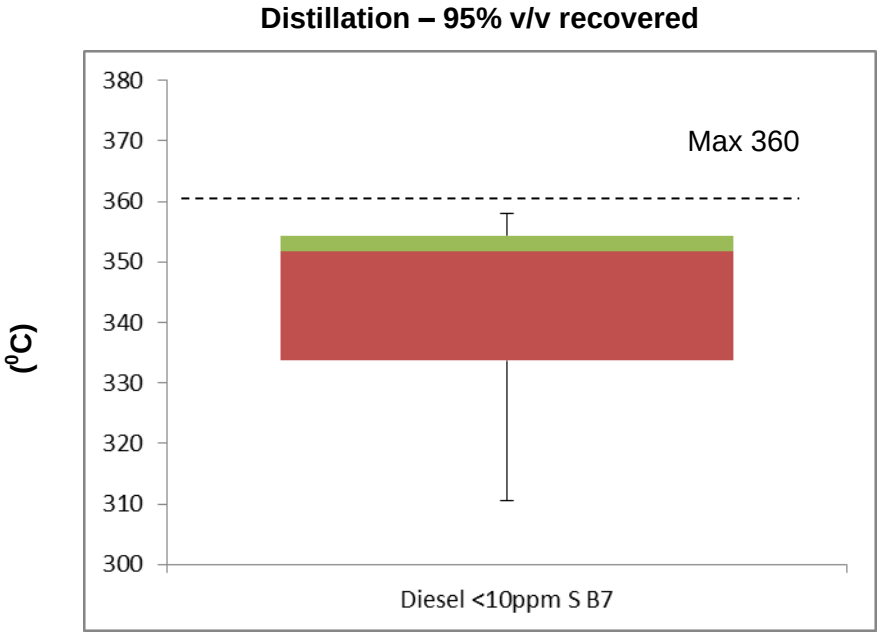


21.4.2 Diesel Analysis

All diesel sample results remained within the maximum limiting values for the two parameters analysed. Whilst the outliers – maximum and minimum values were tight to specification, the majority of samples reported remained comfortably within maximum limiting values.

Figure 21-4: Diesel analysis





21.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• E15 (blend of 15% ethanol and 85% pure petrol) is available on Lithuanian market.	• The report was received one the 25th of June, before the 30th of June deadline, and in the correct template.
2012	• As in 2010 and 2011, Lithuania is nearly fully compliant with sampling requirements, however take just short of the minimum number of required samples from service stations. Any samples taken in terminals or from refineries should be taken in addition to the minimum requirement from fuel dispensing sites (service stations). • The check of manganese has been started since November 2012. The manganese content in petrol has been checked in 11 samples. According to the directive 2009/30/EC until January 1, 2014	• Lithuania reported on the 7th June, well within the stipulated deadline of 30th June

	the permissive norm is 6 mg/l. The permissive norms haven‘t been exceeded.	
2011	• As in 2010, Lithuania is nearly fully compliant with sampling requirements, however take just short of the minimum number of required samples from service stations. Any samples taken in terminals or from refineries should be taken in addition to the minimum requirement from fuel dispensing sites (service stations). • Lithuania did not report parameter results for Manganese in any petrol grade in 2011.	• Only fuels with no biofuel content have been reported in Lithuania in 2011. • Lithuania has not reported any sampling or results for manganese in 2011.

22 Luxembourg

22.1 Fuel Availability 2013

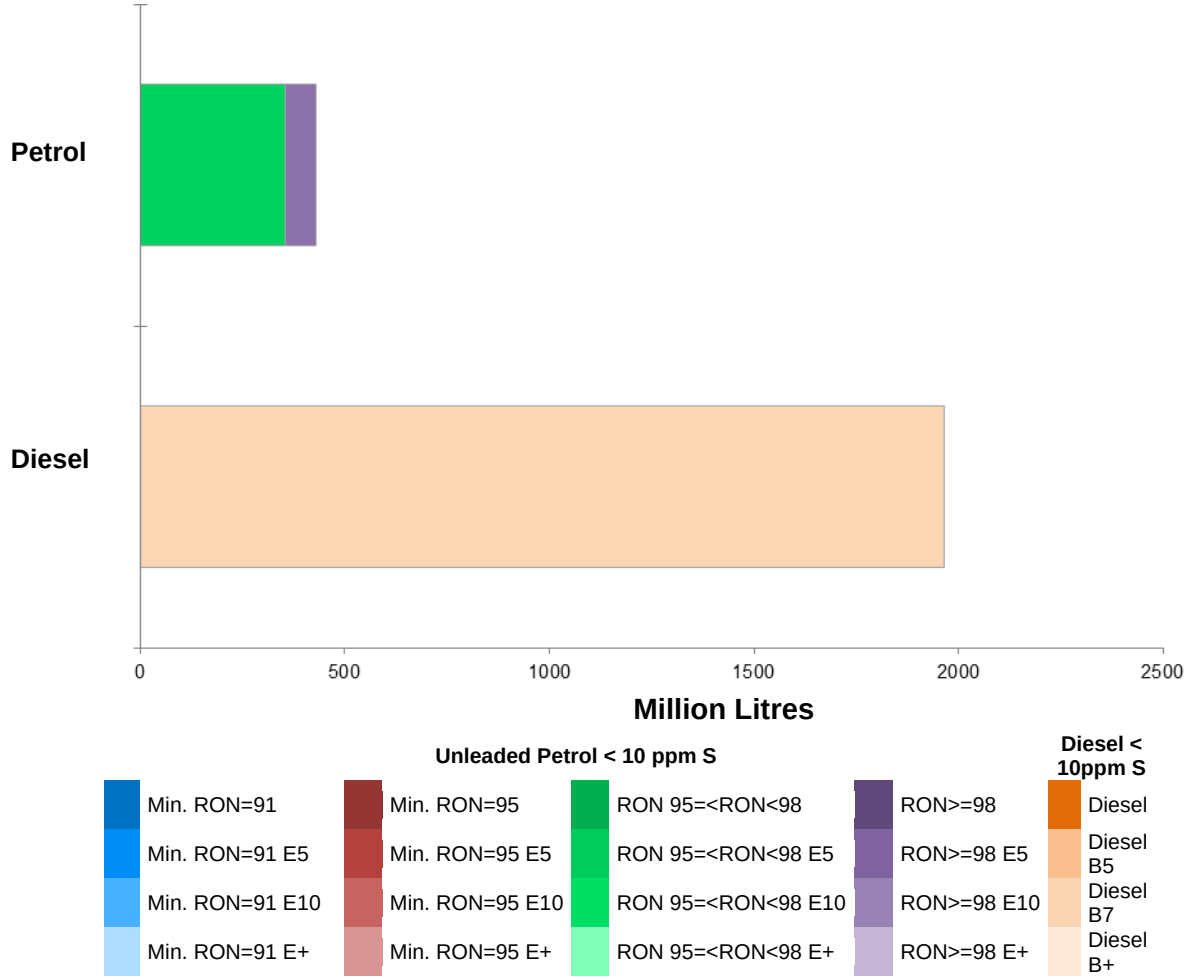
The following table lists the fuels that were reported to be available nationally in 2013.

Table 22-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	EURO 95
Unleaded petrol (minimum RON >= 98) E5	EURO 98
Diesel fuel B7	Diesel fuel

22.1.1 Sales, sampling and reporting

Figure 22-1: Fuel Sales proportions by fuel type



In 2013 fuel sales in Luxembourg were heavily dominated by diesel fuel sales. Just less than 2,000 million litres of diesel was sold in comparison to 430 million litres of petrol (all petrol grades combined). All fuels sold in Luxembourg in 2013 contained a maximum biofuel content of 5% and petrol fuel sales were mainly comprised of fuel grade 95=<RON<98 (82.3%).

Table 22-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E5	353	82.29%	30	24	(100)	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S) E5	76	17.71%	5	7	(100)	Yes	19 of 19	
Total Petrol	**429**	**100.00%**	**35**	**31**	**(200)**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur)	1,964	100.00%	43	43	(100)	Yes	6 of 6	
Total Diesel	**1,964**	**100.00%**	**43**	**43**	**(100)**	**Yes**	**6 of 6**	

(1) Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2) TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3) Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4) Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.

22.1.1.1 *Petrol Samples*

Luxembourg did not comply with the equivalent minimum sampling requirements in 2013. For a Member State classified as 'small' (with fuel sales of less than 15 million tonnes) using a National system with no regional sampling breakdown, to demonstrate statistical equivalence with EN 14274 requirements, there should be a minimum of 50 samples tested and reported for each fuel grade with a market share of over 10% per summer and winter period. The Luxembourg national monitoring system has not demonstrated equivalence in sampling quantity for any of the fuel grades sold in 2013.

22.1.1.2 *Diesel Samples*

Diesel fuel samples taken in the summer period did not comply with the minimum sampling requirement to demonstrate equivalence with EN14274 standards.

22.2 Fuel Quality Monitoring 2013

22.2.1 Description of System

Responsible organisation(s)	Administration de l'environnement (The Luxembourg Environmental Administration)
Fuel Quality Monitoring System (FQMS)	National Model
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Mainly service stations, some terminal sampling

Time/frequency of sampling	Samples of petrol 95=<RON<98 and of diesel B7 were taken during the whole year except for February and March (transition period). Samples of petrol RON98 were taken only during 8 months.
Specification of test methods	Test methods are those specified in EN 228 and EN 590.
Collection of sales data	The source of sales data in 2013 has not been provided.

Other details

Model C of the EN 14274 requires that small countries should take at least 50 samples for each grade of petrol and 50 samples for diesel. In total, Luxembourg must therefore take at least 250-300 samples per year (depending on the outcome of the calculation method). In 2009, the Luxembourgish Environmental Administration worked out, in collaboration with the Austrian Federal Environment Agency, a concept to improve sampling, and respectively established a national fuel quality monitoring system. A two day workshop was held with the intention to bring all stakeholders together and to discuss different proposals as well as to create a possible way forward. Beside the project partners, various representatives (from the mineral oil industry, fuels laboratories or other EU countries where a FQMS was already established) attended the meeting.
The main outcome was:

- It is possible to reduce the number of samples for diesel to a minimum amount of 86 samples a year instead of 100 (EN 14274);
- It is possible to reduce the number of samples for petrol grades to a minimum amount of 66 samples instead of 2 x 100 (EN 14274) without degrading the informative value and quality of the monitoring system.

Special circumstances allow Luxembourg to lower the amount of samples required by the EN 14274. The following points shall help to comprehend the reasoning of how the total amount of only 152 samples, instead of 250-300, can be obtained.

22.2.2 Fuel Quality Monitoring System

22.2.2.1 *Sampling*

Fuels have to fulfil the requirements of the FQD, annex I to III. Test methods are those specified in EN 228 and EN 590. The samples have to be taken in accordance to the methods described in the European standards:

- EN 14275, if taken at the fuel station and
- EN ISO 3170, if taken at the terminal.

The number of samples is determined by a national system in an approach to the European standard EN 14274.
Every company or laboratory willing to take samples or willing to analyse the fuel samples need to be accredited by the Environmental Administration. A list of all these companies can be found on the website of the Administration.

22.2.2.2 *FQMS administration*

The Environment Administration (Administration de l'environnement), technical department of the Ministry of Sustainable Development and Infrastructures sets up the national FQMS and is in charge of the fuel quality monitoring.

22.2.2.3 *National Legislation that transposed the FQD*

The grand-ducal ordinance 16 March 2012 *on the quality of petrol and diesel fuels used and sustainable use of biofuels* transposes the FQD in national law. (Règlement grand-ducal du

16 mars 2012 *concernant la qualité de l'essence et des carburants diesel et l'utilisation durable des biocarburants*, Mém. A - 55 du 26.03.2013, p. 626, www.legilux.lu)

22.2.2.4 *Reporting periods*

Article 9 of the ordinance requires that fuel suppliers introduce for the 1st March at the latest of each year a report containing the total volume of each type of fuel put on the market between the 1st January and 31st December of the previous year, including the point(s) of purchase as well as the origin of the products. Article 15 additionally requires that suppliers report on an annual basis all the fuel stations they supplied and, within the realms of possibility, give information about the chain of supply of these fuel stations.

Summer period: 1st May – 15th September

Winter period: 1st October – 15th April

During the transition period no sample was taken nor tested.

22.2.3 Compliance with Fuel Quality Limit Values

Table 22-3: Petrol Fuel Grades

95<RON<98 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.3	61.9	1	2%
Sulphur content	10	10.6	10.8	1	2%
Member State notes With regard to samples found to be out of compliance with specifications, an item of written command had to be delivered by the operating company. The exceedance in sulphur content was due to the same vehicle being used for the transport of diesel fuel.					

RON98 Petrol - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.3	69.4	1	20%
Member State notes With regard to samples found to be out of compliance with specifications, an item of written comment had to be delivered by the operating company.					

Table 22-4: Diesel Fuel Grades

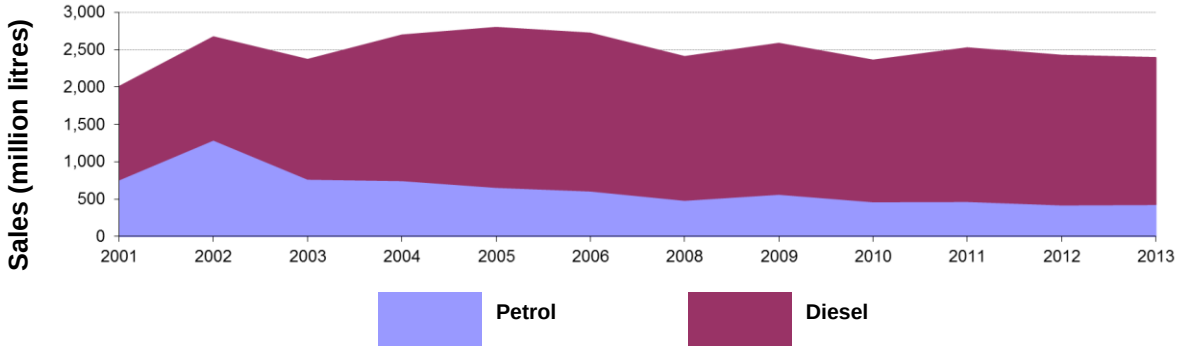
Diesel - Details of samples that exceed tolerance limits:
No non compliances were found in samples taken.

22.3 Temporal Trends

Figure 21-2 shows the trend in total fuel sales in Luxembourg since 2001. Sales of both petrol and diesel have marginally decreased in the period 2012 to 2013, with 1.4% fewer sales of petrol (6 million litres) and a 1.8% decrease of diesel sold (17 million litres). Since

2001, diesel sales have increased by 717 million litres, whilst petrol sales have decreased significantly by 319 million litres (43.5%).

Figure 22-2: Temporal trends in national sales of petrol and diesel (million litres)



22.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4.

Fuel sampling in Luxembourg in 2013 recorded relatively few test results out of specification with limits – non-compliance percentages are relatively high due to the low number of samples taken. The analysis charts for petrol (Figure 22-3) and diesel (Figure 22-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

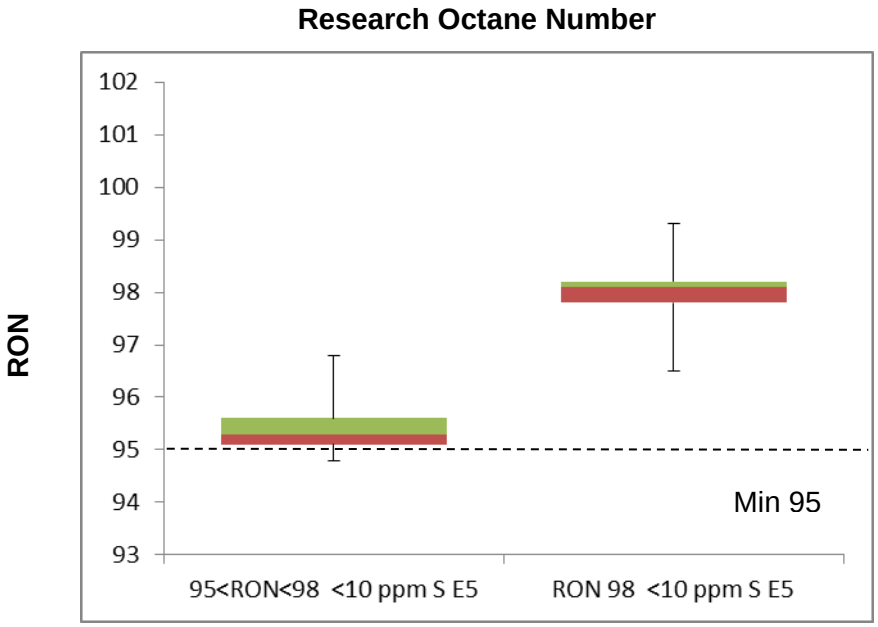
22.4.1 Petrol Analysis

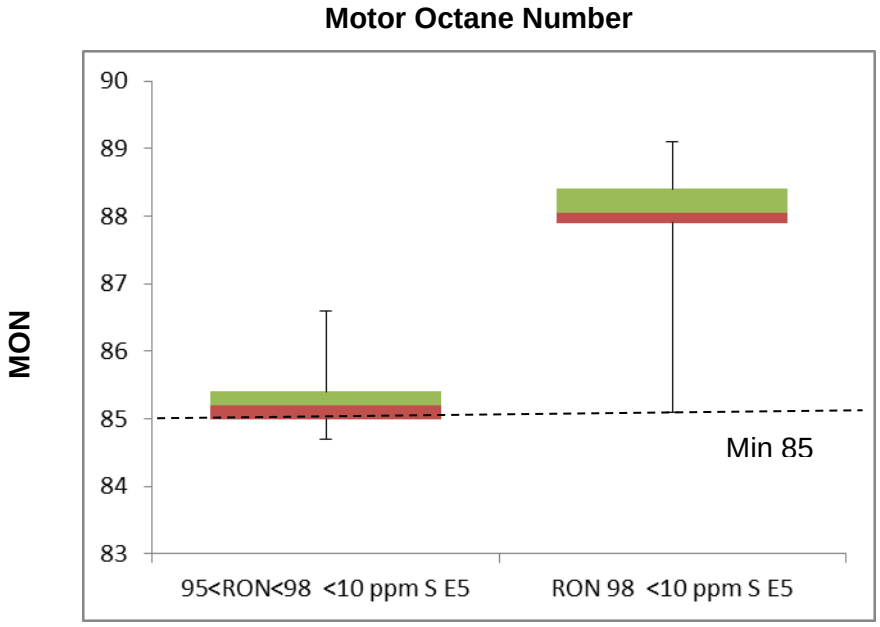
Sample results reported for 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of results.

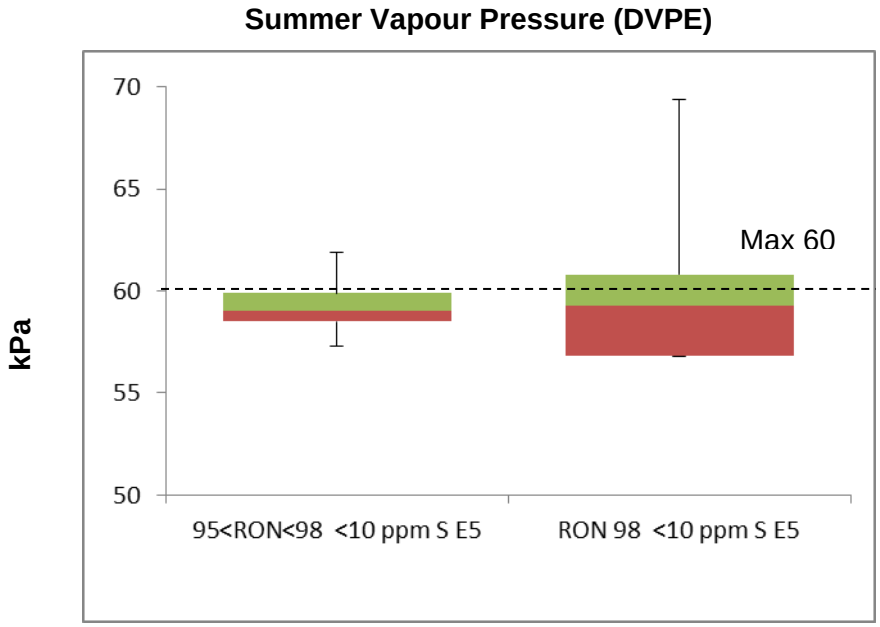
RON and MON sample results show that the fuels available in Luxembourg have reasonably small variation in Octane levels and no sample exceeded tolerance limit in 2013.

Luxembourg reports according to 'normal' climactic conditions and therefore Summer Vapour limit value is 60 kPa. RON 98 fuel grade demonstrated a rather wide distribution, exhibited by the widely spread coloured bands at the 25 and 75 quartile, and one non-compliant sample for the parameter.

Figure 22-3: Petrol analysis



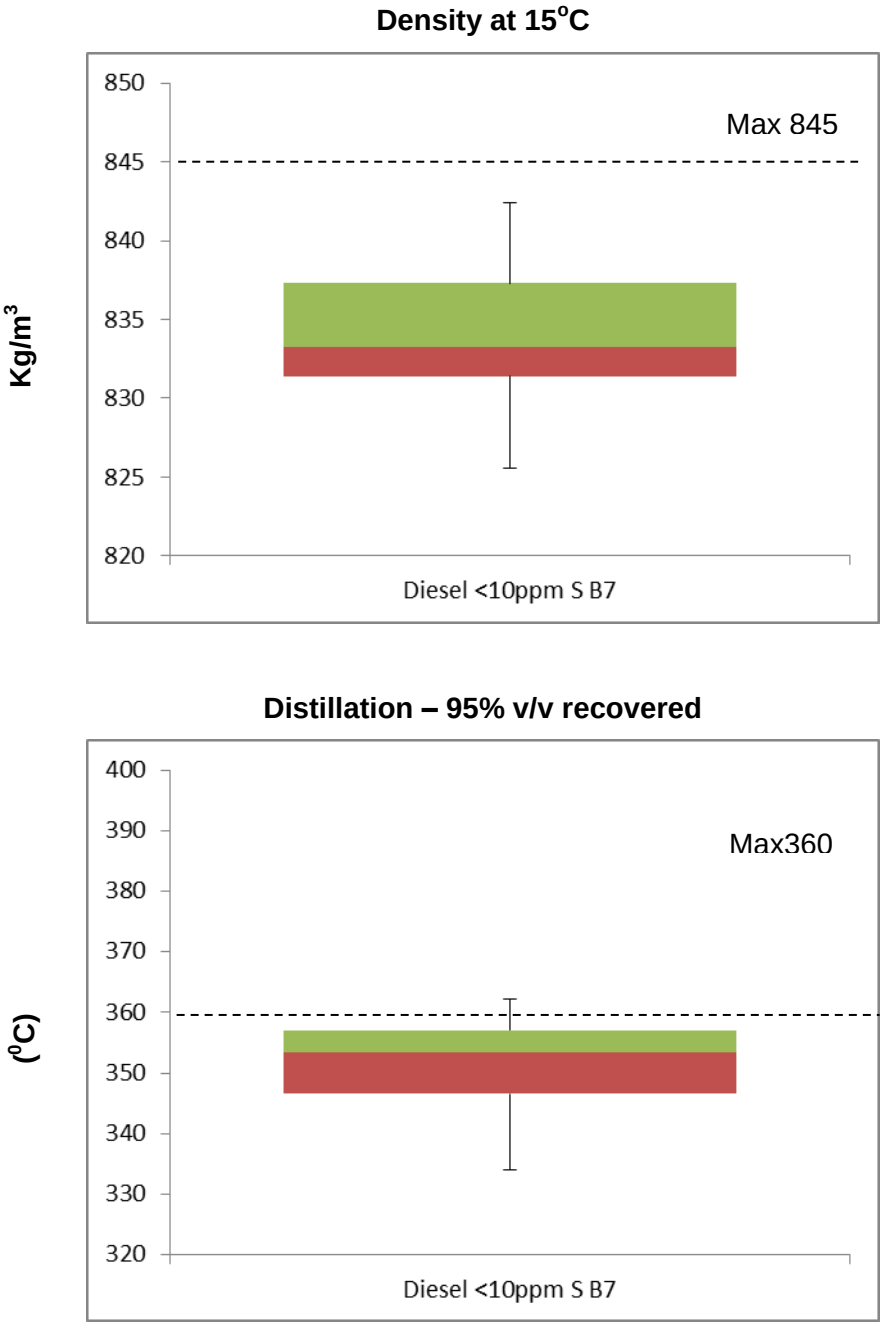




22.4.2 Diesel Analysis

Diesel sample results for Density and Distillation show a slightly wider variation in density, exhibited by the widely spread coloured bands at the 25 and 75 quartile – in comparison to the tight bands shown in the petrol analysis box plots. Distillation samples were very close to maximum limit, even though no value exceeded it.

Figure 22-4: Diesel analysis



22.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Not enough samples were taken of both petrol fuel grades and of diesel. Luxembourg however informs that they are looking forward to adapt their national system in order to conform to the FQD.	• The report was received on the 15th of May, well before the deadline of the 30th June and in the correct format.
2012	• Too few samples were taken for all fuel grades, which may be improved. • Manganese in petrol fuel grades is recommended to be reported upon.	• The report was received on the 25th June, before the deadline of the 30th June.
2011	• Luxembourg have not broken sampling down by region and therefore to demonstrate equivalence with models outlined in EN 14274 a minimum of 50 samples should be taken per summer and winter period for all fuel grades that exceed 10% market share. Too few samples have been taken in 2011. • Luxembourg did not report parameter results for Manganese in petrol fuel grades for RON 98 in 2011.	• The Luxembourg report contains some inconsistent data – which has had to be queried with the member state to ensure accuracy of reporting and analysis. • Full details of the Luxembourg monitoring system have been reported to the Commission previously – however details have not been provided for the purposes of this monitoring report which hinders an assessment of compliance.

23 Malta

23.1 Fuel Availability 2013

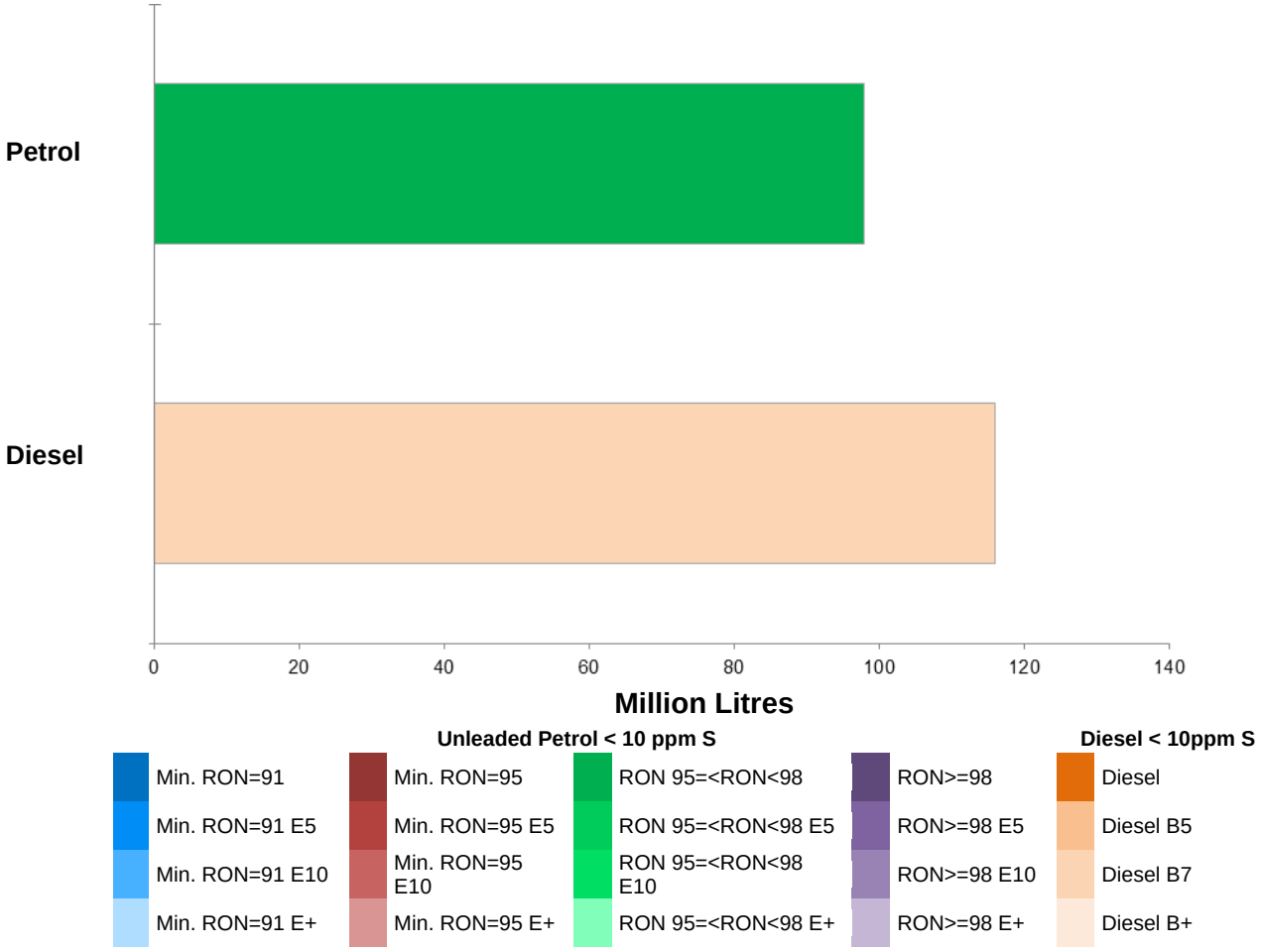
The following table lists the fuels that were reported to be available nationally in 2013.

Table 23-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum 95 =< RON < 98)	EN 228
Diesel fuel B7	EN 590

23.1.1 Sales, sampling and reporting

Figure 23-1: Fuel Sales proportions by fuel type



Fuel sales in Malta were split relatively evenly between diesel and petrol fuel sales. In 2013, 116 million litres of diesel were sold in comparison to 98 million litres petrol fuel sales. Petrol fuel sales were comprised only of fuel grade RON 95=<RON<98 with no ethanol content and of diesel with up to 7% FAME content.

Table 23-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol 95=<RON<98 (<10 ppm S)	98	100.00%	20	24	(100)	Yes	19 of 19	
Total Petrol	**98**	**100.00%**	**20**	**24**	**(100)**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur)	116	100.00%	19	24	(100)	Yes	6 of 6	
Total Diesel	**116**	**100.00%**	**19**	**24**	**(100)**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
	Additional Information	Malta currently reports the number of samples for petrol and diesel as indicated in the Twinning Report mentioned in section 23.2.1.

23.1.1.1 *Petrol Samples*

Although Malta uses a national system, and as such has no minimum sampling requirements, it should undertake equivalent sampling to the EN 14274 recommended statistical models. As a small country with low fuel sales, Malta should report 50 samples per fuel grade, per period in order to demonstrate equivalence with EN 14274 requirements.

This National FQMS was adopted following the recommendation in the Mission Report of the Twinning Project between Germany and Malta in 2009 entitled: Strengthening the Capacity of the Malta Resources Authority in the Implementation of the Liberalisation of the Petroleum Market with Reference Number MT2006-IB-OT-07 TL (07.9262.2 – 002.00). Activity 4A of the Twinning Project, focused on the development and establishment of petroleum market monitoring mechanisms.

The report recommended that 30 samples per grade per year should be taken in Malta.

Although the sample size is lower than the minimum required by Model C, it is nonetheless statistically significant giving a 95% confidence level for the small number of dispensing tanks. This sample size is sufficiently robust meeting the requirements of European standard EN 14274:2013.

23.1.1.2 *Diesel Samples*

The number of samples taken by Malta is low. As above, diesel fuels should be sampled 50 times in each summer and winter period in order to demonstrate equivalence with EN 14274. See above for details on samples requirements according to the national system.

23.2 Fuel Quality Monitoring 2013

23.2.1 Description of System

Responsible organisation(s)	Malta Resources Authority (MRA)
Fuel Quality Monitoring System (FQMS)	National System
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Petroleum Filling Stations and terminals
Time/frequency of sampling	Samples for petrol and diesel are taken throughout the year.
Specification of test methods	Malta reports according to test methods EN 228 for petrol and EN 590 for diesel fuels. During the design and implementation, the small size of the country and throughput of fuel has been taken into consideration. This is coupled with the small number of petrol stations (around 80) on the archipelago. This National System was established by the Mission Report of the Twinning Project between Germany and Malta entitled: STRENGHTENING THE CAPACITY OF THE MRA IN THE IMPLEMENTATION OF THE LIBERALISATION OF THE PETROLEUM MARKET with reference number MT2006-IB-OT-07 TL (07.9262.2-002.00) in 2009.
Collection of sales data	The data on fuel sold inland is extracted from the monthly oil balance reports submitted to the National Statistics Office and as required by the Eurostat. This monthly report consists of aggregated data on the importation, stock position and sales carried out by each of the authorized importers/wholesalers during the particular month. This individual data is subsequently aggregated and validated using a number of verification checks.
Other details	
Samples are taken and tested during the transition period. These are reported and not excluded but marked as transitional. Transitional samples are reported in the summer or winter sheets on the template according to the date when samples were actually lifted.	

23.2.2 Fuel Quality Monitoring System

23.2.2.1 *Sampling*

The organisation responsible for sampling and reporting is the MRA. Analysis is carried out by a local laboratory which is independent and commissioned by the MRA.

Sampling is carried out from refuelling stations only (there are no refineries in Malta). However import certificates are also requested from the suppliers and these are included in the report. The frequency of sampling is distributed evenly throughout the year. The

selection of sampling points is by random sampling and based on the places where fuel is dispensed to vehicles.

The sample size is representative of the population of dispensing sites at the 95 % confidence level as established in Annex Section A.2 of EN 14274:2013. The test methods used to sample the different parameters are as requested in the Directive or proven to be exactly equivalent to the standard quoted in this template.

23.2.2.2 *FQMS administration*

The Malta Resources Authority has the responsibility for managing and implementing the FQM Directive.

MRA's Compliance Officers lift samples from the petroleum filling stations. The annual data includes the Fuel Quality Certificates from the suppliers. This annual data required is usually provided by the Importers within the first 60 days of the following (new) year. The MRA is responsible for taking action when non-compliant samples have been discovered. The MRA has a procedure in place so that all non-compliances are investigated and actioned well. The Police Force assists the MRA in the investigations and in Court.

During the design and implementation, the small size of the country and throughput of fuel has been taken into consideration. This is coupled with the small number of petrol stations (around 80) on the archipelago. This National System was established by the Mission Report of the Twinning Project between Germany and Malta entitled: Strengthening the capacity of the MRA in the implementation of the liberalisation of the petroleum market with reference number MT2006-IB-OT-07 TL (07.9262.2-002.00) in 2009.

There are two distribution terminals and no national refineries.

23.2.2.3 *National Legislation that transposed the FQD*

The Quality of fuels in Malta is regulated through the Quality of Fuels Regulations, LN 44 of 2008 as amended.

These regulations reflect the Articles of Directive 98/70/EC and 1999/32/EC, as respectively amended. These regulations specify:

- the environmental specifications of petrol and diesel,
- the sulphur content of gas oil and fuel oil and,
- the sulphur content and sampling procedures in the marine fuel sector.
-

23.2.2.4 *Reporting periods*

Malta uses Normal seasonal periods. Samples are occasionally lifted and tested also during the transition period. Samples taken during the transition period are reported within the annual fuel quality report and a reason of seasonality is given if there is a non-conformance. This fuel is usually used up within two weeks of the changeover dates.

23.2.3 Compliance with Fuel Quality Limit Values

Table 23-3: Petrol Fuel Grades

Unleaded Petrol RON 95 ≤ RON <98(EN 228)- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour	60	61.8	62.7	7	35%

pressure, kPa					

Member State notes
One value of winter spec. fuel was found in Summer (i.e. Transitional). Six values were at most just 1.4 kPA above the maximum tolerance limit. No action was taken as the laboratory confirmed that a retest cannot be done on the remaining sample. It was also noted that there were no non-compliances in the case of the Winter vapour pressure fuel.

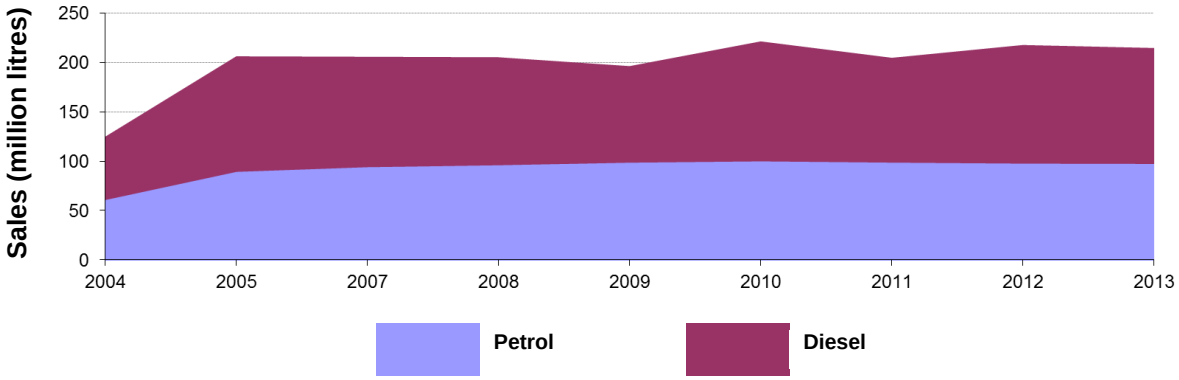
Table 23-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
No sample exceeded tolerance limits					

23.3 Temporal Trends

Figure 22-2 shows the trend in total fuel sales since 2004. Diesel fuel sales have decreased by 2.3% from 119 million litres to 116 million litres in the period 2012 to 2013. Petrol fuel sales have remained substantially the same (98 million litres). Although the small decrease in overall fuel sales in 2013, current figures are 85.2% (diesel) and 59.5% (petrol) greater than first reported in 2004.

Figure 23-2: Temporal trends in national sales of petrol and diesel (million litres)



23.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

The following parameters are tested.

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

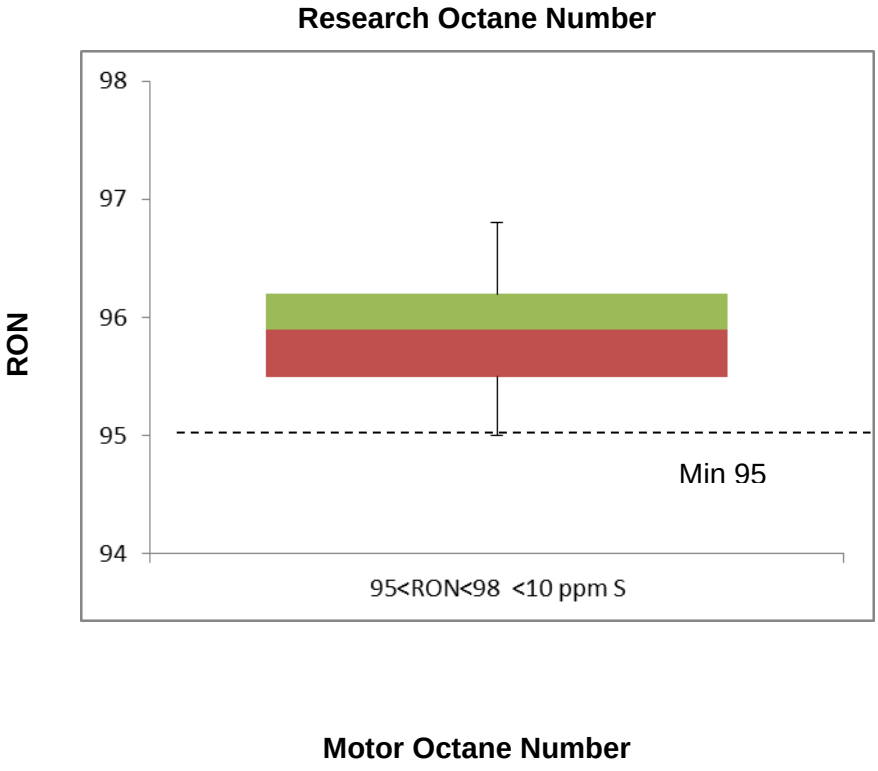
- Density at 15°C
- Distillation – 95% v/v recovered

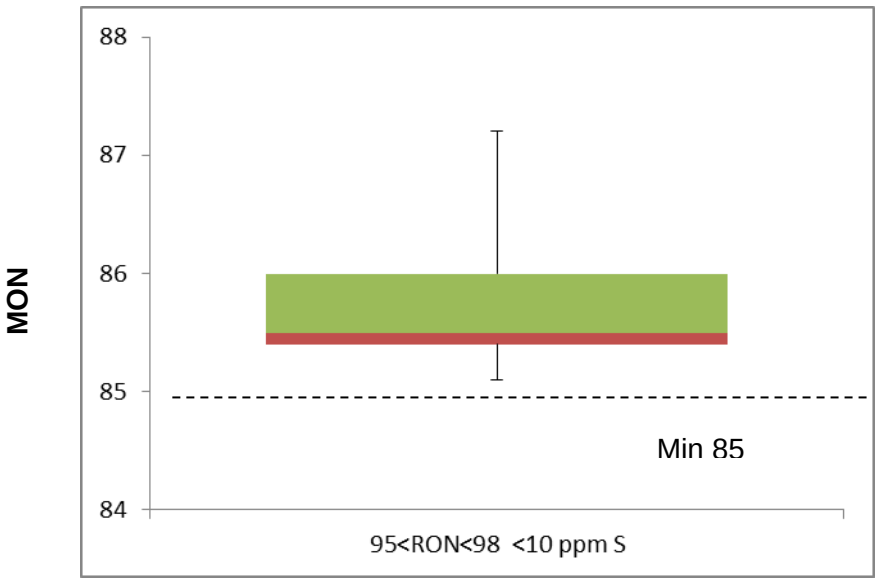
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

23.4.1 Petrol Analysis

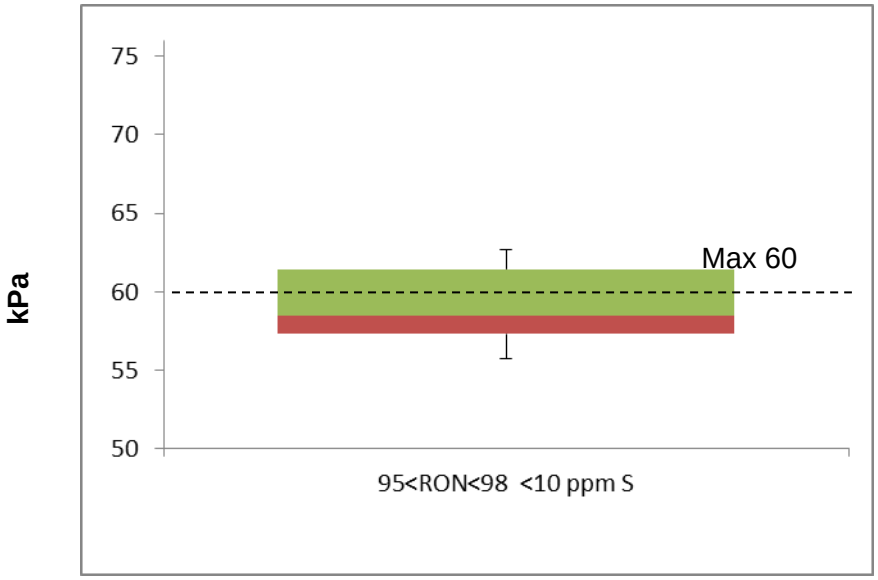
Sample results show that even with relatively small sample number the RON, MON and Summer Vapour pressure results show little variance. RON and MON have no samples that have exceeded tolerance limits whilst summer Vapour Pressure has 7 samples above tolerance limits; although a high percentage of samples exceeded the tolerance limit (35%), no action were taken because 1 sample was collected during the transition period from winter to summer and the remaining 6 were within 1.4 kPa.

Figure 23-3: Petrol analysis





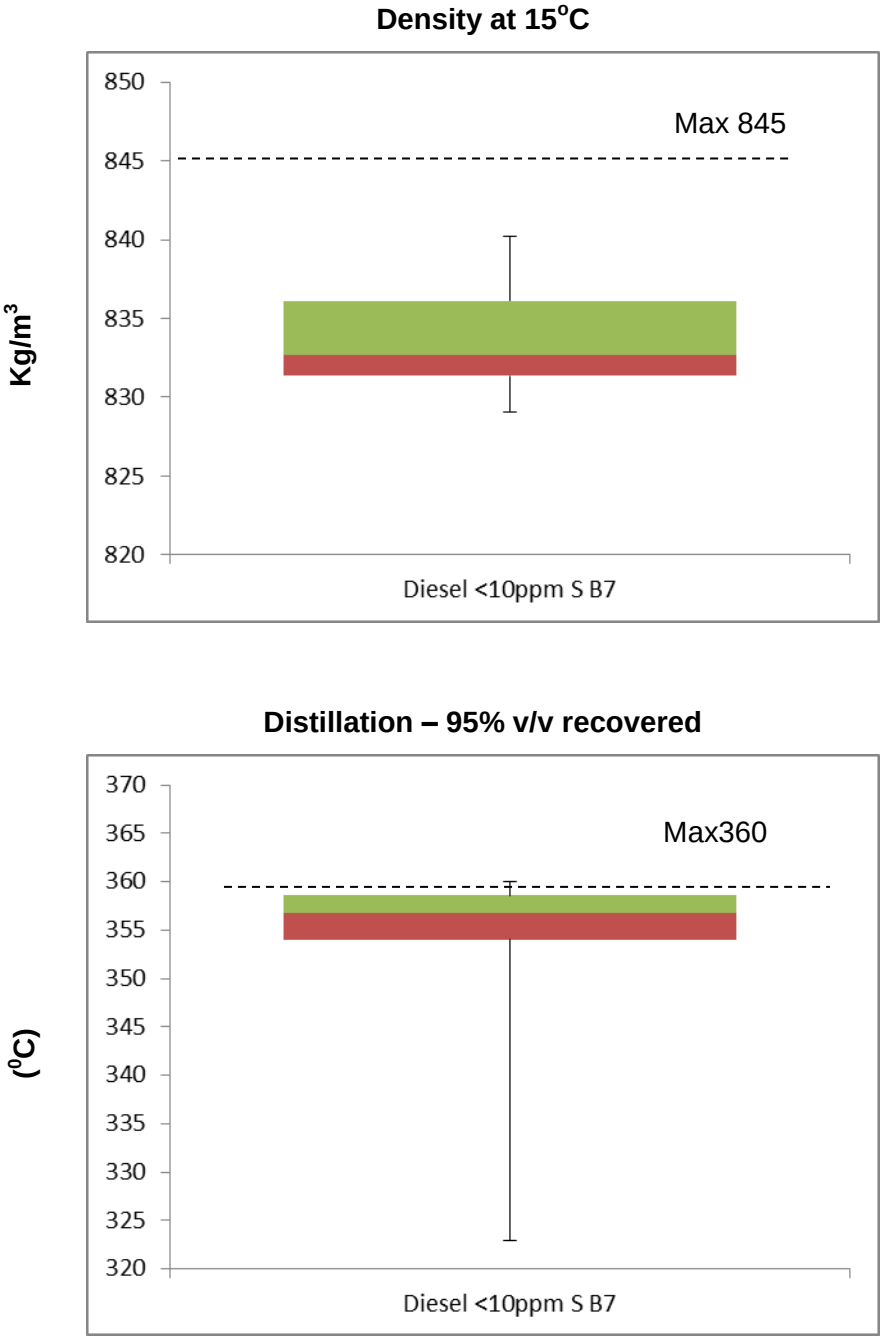
Summer Vapour Pressure (DVPE)



23.4.2 Diesel Analysis

Diesel sample results show a rather tight distribution, with all samples within safe distance of the limit for Density. The distribution of samples in regard to distillation is much closer to the maximum allowed value, but also has minimum value rather distant from the average; however only 1 sample resulted above the limit, but it was still within the tolerance threshold and therefore not recorded as an exceedance.

Figure 23-4: Diesel analysis



23.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)

	Monitoring	Reporting
2013	• Very low sample quantities do not demonstrate equivalence with statistical models detailed in EN 14274. Malta has advised that the Mission Report entitled FQMS Activity A4 under the Twinning Light Project: Strengthening the Capacity of the MRA in the implementation of the liberalisation of the petroleum Market REF MT 2006-IB-OT-07 TL (07.9262.2-002.00) demonstrates Malta's equivalence with EN 14274. • The number of useful samples towards compliance with according to EN 14274 is further reduced by the fact that 10 petrol and 11 diesel samples were collected at terminals rather than service stations.	• The report was received on the 16 June, well in advance of the deadline, and in the correct format.
2012	• Very low sample quantities do not demonstrate equivalence with statistical models detailed in EN 14274. Malta has advised that the Mission Report entitled FQMS Activity A4 under the Twinning Light Project: Strengthening the Capacity of the MRA in the implementation of the liberalisation of the petroleum Market REF MT 2006-IB-OT-07 TL (07.9262.2-002.00) demonstrates Malta's equivalence with EN 14274. • These small sample size reflect badly on the non-compliances, which are high in comparison to sample size. • Malta have reported cetane index – not Cetane Number again in 2012. Malta has advised that this is due to no laboratories in Malta offering the service to test for Cetane number and thus a Cetane index according to EN 590 is reported.	• The report was received early on the 14 June, in the correct format.
2011	• Very low sample quantities do not demonstrate equivalence with statistical models detailed in EN 14274. Malta has advised that the Mission Report entitled FQMS Activity A4 under the Twinning Light Project: Strengthening the Capacity of the MRA in the implementation of the liberalisation of the petroleum Market REF MT 2006-IB-OT-07 TL (07.9262.2-002.00) demonstrates	• Report was received before the 30th June submission deadline and was received in the updated 2011 reporting format.

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**
Malta's equivalence with EN 14274. • All non-compliant samples found at fuel dispensing sites (service stations) which could indicate contamination in the supply chain. • Malta have reported cetane index – not Cetane Number again in 2011. Malta has advised that this is due to no laboratories in Malta offering the service to test for Cetane number and thus a Cetane index according to EN 590 is reported. • Malta did not report parameter results for Manganese for petrol fuel grades in 2011.	

24 Netherlands

24.1 Fuel Availability 2013

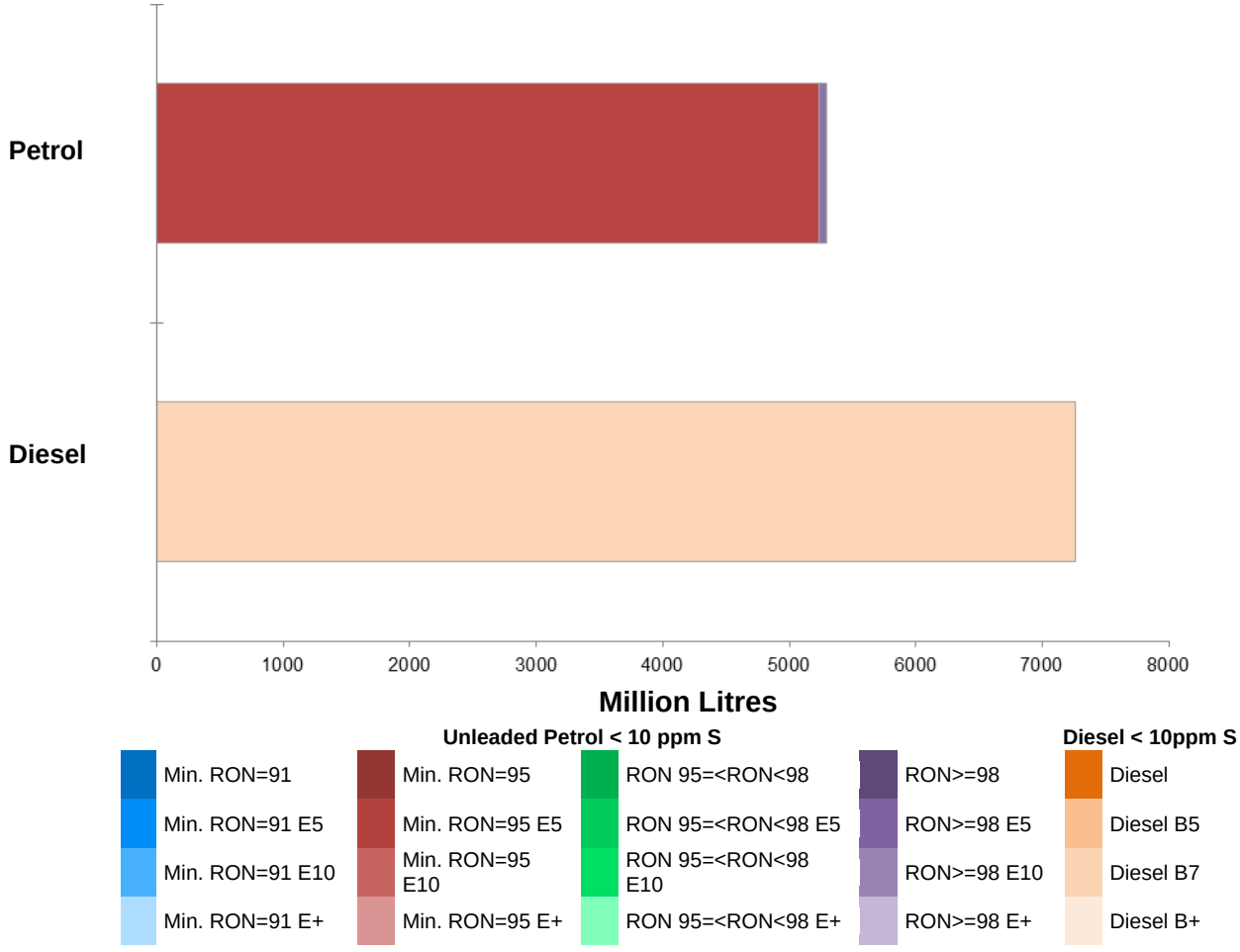
The following table lists the fuels that were reported to be available nationally in 2013.

Table 24-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	Euro 95
Unleaded petrol (minimum RON >= 98) E5	Super plus
Diesel fuel B7	Diesel

24.1.1 Sales, sampling and reporting

Figure 24-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in The Netherlands were predominately led by diesel fuel sales. Petrol fuel sales were weighted heavily towards Euro 95 (RON 95) fuel sales with only 1.1% of Super Plus (RON 98) fuel sales.

Table 24-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E5	5,239	98.91%	50	50	(100)	Yes	15 of 19	(a)
Unleaded petrol RON >= 98 (<10 ppm S) E5	58	1.09%	0	0	(2)	No	N/A	
Total Petrol	**5,495**	**100.00%**	**50**	**50**	**(102)**	**Yes**	**15 of 19**	
Diesel (<10 ppm sulphur) B7	7,264	100.00%	50	50	(100)	Yes	6 of 6	
Total Diesel	**7,512**	**100.00%**	**50**	**50**	**(100)**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a)	Additional notes	Parameters RON, MON, Manganese and Lead content were not sampled for petrol analyses.

Additional information: The Netherlands has 12 provinces. It was decided to take samples at fuel service stations from various oil companies. Samples have been taken in each province at bases of the population and the number of fuel stations of each province. This had been resulted in a total of 100 checks divided between summer and winter.

24.1.1.1 *Petrol Samples*

The Netherlands have not taken any samples of fuel grade Euro Super. This fuel grade represents less than 10% share of the market and should be sampled in reduced quantities according to EN 14274. In this instance, with a 1.09% share of the market, samples should have totalled 2 for the full year.

Samples for Euro 95 have complied with minimum sampling requirements in 2013, but it is still not compliant with requirements because 4 parameters have not been tested (RON, MON, Manganese and Lead content).

24.1.1.2 *Diesel Samples*

Diesel fuel samples tested in 2013 have complied with the total minimum requirement.

24.2 Fuel Quality Monitoring 2013

24.2.1 Description of System

Responsible organisation(s)	Human Environment and Transport Inspectorate
Fuel Quality Monitoring System (FQMS)	National System
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Service stations
Time/frequency of sampling	Both petrol and diesel samples have been taken in only 3 months of the year: May and June during the summer period and November for the winter period. No samples have been taken or tested for petrol fuel grade Super Plus.
Specification of test methods	No information has been provided about test methods.
Collection of sales data	The sales of fuels in the Netherlands are been registered by the 'Centraal Bureau voor de Statistiek' (www.cbs.nl), an official Office of the Dutch Government.

Other details: Biofuels are only available for consumers as a component in the regular petrol and gasoil.

24.2.2 Compliance with Fuel Quality Limit Values

Table 24-3: Petrol Fuel Grades

Petrol RON 95- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.3	95.4	N/A	N/A
Distillation-- evaporated at 100°C (%v/v)	46	43.6	43.1	N/A	N/A
At least one sample exceeded minimum distillation and one sample severely exceeded summer vapour pressure. No details on the number of exceeding samples or actions taken were provided by The Netherlands in the reporting template.					

Table 24-4: Diesel Fuel Grades

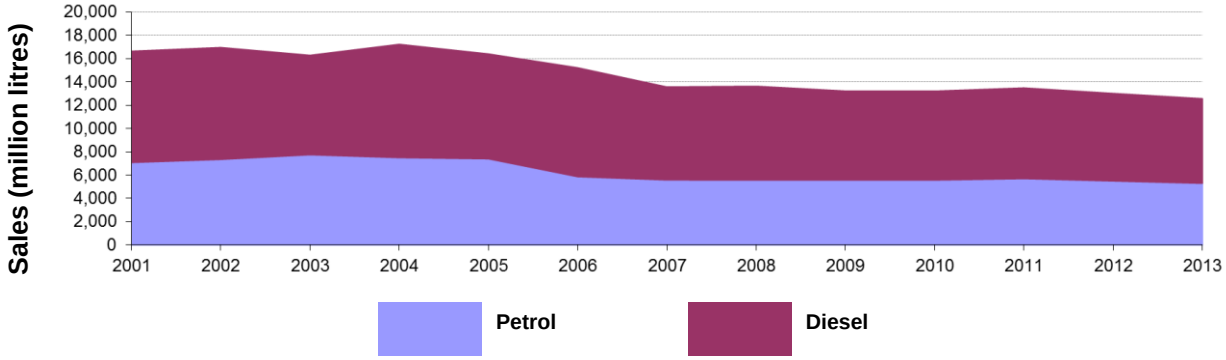
Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Distillation -- 95% Point	360	365.9	388	N/A	N/A
At least one sample exceeded Distillation -- 95% Point. No details on the number of exceeding samples or actions taken were provided by The Netherlands in the reporting					

template.

24.3 Temporal Trends

Figure 23-2 shows the trend in total fuel sales in the Netherlands from 2001. Since 2006 petrol sales have been slowly decreasing and are now 25% lower than in 2001 (fewer 1,786 million litres sold). Diesel sales have fluctuated, and in 2013 amounted to 7,264 million litres, 2,287 million litres fewer than in 2001 (24%). The Netherlands explains that fewer sales in in 2013 compared to the previous years can be explained by (for example) less transport companies (bankruptcies), the economic recession and the encouraging by the Dutch Government for using electric- and hybrid cars.

Figure 24-2: Temporal trends in national sales of petrol and diesel (million litres)



24.4 Statistical Analysis

From 2010 the Commission have requested that member states provide some additional information to enable further statistical analysis of fuel quality reported by Member States. In order to carry out further analysis, the member states have been asked to provide the following details for each parameter;

- Sample minimum
- Lower 25% range (from 2010)
- Middle 50% range
- Median (from 2009)
- Upper 25% range (from 2010)
- Maximum

This information is then used to generate box diagrams which can help to display fuel conditions within individual member states – and in comparison to other member states within EU-wide summary sections of this report). For a full explanation of the information presented in a Box Plot diagram, please see section 4.

Parameters selected by the Commission for further analysis were:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15°C
- Distillation – 95% v/v recovered

However, the Netherlands has not provided all the necessary additional information (only minimum, maximum and mean provided) to include the statistical analysis.

24.4.1 Petrol and Diesel Analysis

Fuel sampling in The Netherlands in 2013 recorded at least 3 test results out of specification with tolerance limits. The Netherlands has not provided all the necessary additional detail (only minimum, maximum and mean values provided) requested for in 2013 reporting template to enable further analysis.

24.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
Year	**Monitoring**	**Reporting**
2013	• The Netherlands have not taken any samples of fuel grade Euro Super. This fuel grade represents less than 10% share of the market – however fuels with a less than 10% share should be sampled in reduced quantities according to EN 14274. In this instance, with a 1.1% share of the market, samples should have totalled 2 for the full year. • The Netherlands did not provide tests for 4 parameters for petrol analysis, including rather fundamental tests such as RON and MON. • The Netherlands did not fully complete (only minimum, maximum and mean values provided) the statistical results section of the template and hence no statistical analysis charts for petrol or diesel are available to detail the distribution of sample results for the selected parameters. While this reporting element is not mandatory, additional information was requested by the Commission in order to enhance comparability and assessment of EU-wide FQM results. • Data on the number of exceeding	• The 2013 report was submitted on the 11th June, before the 30th June deadline. It was submitted in the reporting template, but several fields were incomplete or missing.

	samples, the exceedances and actions taken in the reporting template would benefit the future analysis.	
2012	• The Netherlands only collected samples during winter period in 2012 • The Netherlands did not complete the statistical results section of the template and hence no statistical analysis charts for petrol or diesel are available to detail the distribution of sample results for the selected parameters. While this reporting element is not mandatory, additional information was requested by the Commission in order to enhance comparability and assessment of EU-wide FQM results. • The Netherlands were asked to confirm the National sales total amounts, however no further information has been provided. • The Netherlands have not taken any samples of fuel grade Euro Super. This fuel grade represents less than 10% share of the market – however fuels with a less than 10% share should be sampled in reduced quantities according to EN 14274. In this instance, with a 1.2% share of the market, samples should have totalled 2 for the full year.	• The 2012 report was submitted on 2nd July just after the legal deadline 30th June.
2011	• The Netherlands did not complete the statistical results section of the template and hence no statistical analysis charts for petrol or diesel are available to detail the distribution of sample results for the selected parameters. While this reporting element is not mandatory, additional information was requested by the Commission in order to enhance comparability and assessment of EU-wide FQM results. • The Netherlands were asked to confirm the National sales total amounts, however no further information has been provided. • The Netherlands have not taken any	• The 2011 report was submitted within member state deadline. • The specification of test methods has not been provided for 2011. • The collection source of sales data for 2011 has not been provided.

samples of fuel grade Euro Super. This fuel grade represents less than 10% share of the market – however fuels with a less than 10% share should be sampled in reduced quantities according to EN 14274. In this instance, with a 1.2% share of the market, samples should have totalled 2 for the full year.

- The Netherlands did not report parameter results for Manganese for petrol fuel grades or FAME content for diesel fuel grades in 2011.

25 Poland

25.1 Fuel Availability 2013

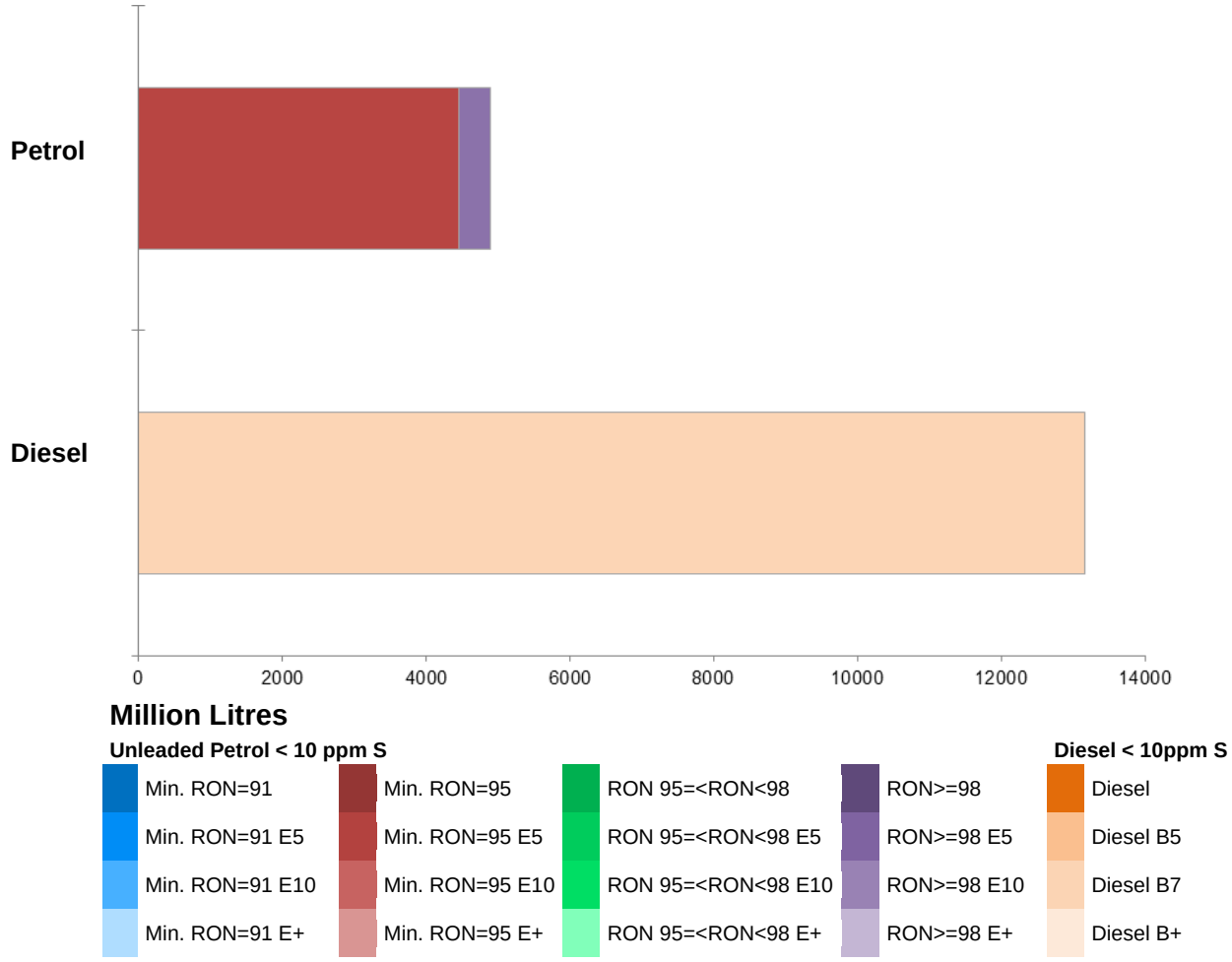
The following table lists the fuels that were reported to be available nationally in 2013.

Table 25-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	RON 95
Unleaded petrol (minimum RON>=98) E5	RON 98
Diesel fuel B7	Diesel

25.1.1 Sales, sampling and reporting

Figure 25-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Poland were dominated by diesel fuel sales. More than 13,159 million litres of diesel was sold in comparison to 4,892 million litres of petrol (all petrol grades combined). Petrol fuel sales were mainly comprised (91%) of fuel grade RON 95.

Table 25-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Parameters measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E5	4,464	91.3%	215	202	200	Yes	18 of 19	(a)
Unleaded petrol RON>=98 (<10 ppm S) E5	428	8.7%	62	60	20	Yes	18 of 19	(a)
Total Petrol	**4,892**	**100.00%**	**277**	**262**	**220**	**Yes**	**18 of 19**	
Diesel (<10 ppm sulphur) B7	13,159	100.00%	204	202	200	Yes	6 of 6	
Total Diesel	**13,159**	**100.00%**	**204**	**202**	**200**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a)	Additional Notes	Petrol fuel sample testing did not include Manganese content in 2013.

25.1.1.1 *Petrol Samples*

Poland has complied with minimum sampling requirements for petrol fuel grade RON 95 with all samples taken from service stations. Samples for fuel grade RON 98 have also complied with minimum requirements as fuel sales are less than 10% of the total petrol market, meaning the sampling requirement is reduced.

25.1.1.2 *Diesel Samples*

Diesel fuel samples tested in 2013 complied with the total minimum requirement of samples to be collected from service stations.

25.2 Fuel Quality Monitoring 2013

25.2.1 Description of System

Responsible organisation(s)	Office of Competition and Consumer protection
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model B
Country Size	Small
Summer Period	Normal (e.g. ambient summer temperature) Summer Period Start: 1st May - End: 30th September Winter Period Start: 1st October - End: 30th April
Location(s) of sampling	Service stations
Time/frequency of sampling	Samples have been taken and tested for 12 months of the year.
Specification of test methods	As per Directive 98/70/EC - Poland uses the EN 14274 norm for the interpretation of the analyses.
Collection of sales data	Collection of sales data was provided by The Energy Regulatory Office and the Energy Market Agency (Urząd Regulacji Energetyki oraz Agencję Rynku Energii S.A.) for 2013.

Other details

The tasks associated with the administration of the system are carried out by the Trade Inspection, which carries out inspections of fuel quality. Poland adopted a fuel quality monitoring system defined in the standard EN 14 274 Automotive fuels - Assessment of petrol and diesel - Fuel Quality Monitoring System (FQMS) - Model B - with special reference to the Polish.

In accordance with the Regulation on the monitoring, the minimum number of samples to monitor is 100 for each fuel type.

Due to the low level of sales of unleaded petrol RON 98, the minimum number of samples for this fuel type for each monitoring period is 30, not 100, as specified in EN 14 274.

25.2.2 Fuel Quality Monitoring System

25.2.2.1 *Sampling*

The president of the Office of Competition and Consumer Protection is responsible for the system monitoring and control of fuel quality management. The tasks associated with the administration of the system are carried out by the Trade Inspectorate, which carries out inspections of fuel quality. The analysis of fuel quality is conducted by laboratories accredited by the Polish Accreditation Centre, which reviews methods used. To so control activities, specifically in relation to information provided to the European Commission about the quality of fuels, the section of existing fuel quality work that relates to the FQM Directive is called "European part of the system for monitoring and controlling the quality of fuel", which relates to the control of:

- 98 RON unleaded petrol, unleaded petrol RON 95, diesel oil and ester forming pure fuel (B100).

- Liquid fuels such as diesel oil containing 20% acetic acid (B20) and ester forming pure fuel (B100).
- Fuel supplied by; Petrol stations and companies.
- The sampling of fuel to European EN 14 274 standard.
- All the quality parameters set out in the Directive on the quality of petrol and diesel fuels and some parameters of the so-called supplied list in the Regulation on quality requirements (listed in PN-EN 228 Automotive fuels - Unleaded petrol - Requirements and test methods, and EN 590 Automotive fuels - Diesel fuel - Requirements and test methods).
- All the quality parameters specified in the Regulation on quality requirements for biofuels (listed in the standard EN 14 214 Automotive fuels - Fatty acid methyl esters (FAME) for diesel engines - Requirements and test methods).

25.2.2.2 *FQMS administration*

President of the Office of Competition and Consumer Protection is responsible for the system monitoring and control of fuel quality management. The tasks associated with the administration of the system are carried out by the Trade Inspection, which carries out inspections of fuel quality. Poland adopted a fuel quality monitoring system defined in the standard EN 14 274 (Automotive fuels - Assessment of petrol and diesel) and Fuel Quality Monitoring System (FQMS) Model B, with special reference to the Polish.

In accordance with the Regulation on the monitoring, the minimum number of samples to monitor is 100 for each fuel type.

25.2.2.3 *National Legislation that transposed the FQD*

The legal basis for the functioning of the monitoring and controlling the quality of fuels in Poland are:

- Act of 25 August 2006 on the monitoring and control of fuel quality (Journal of Laws No. 169, item. 1200, as amended.) Herein after referred to as "the Act", carrying the provisions of Directive 98/70/EC of the European Parliament and of the Council of October 13, 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EC (OJ. Communities L 350 of 28.12.98, p.58; Acts. Gazette. Polish special edition, rust. 13, vol 23, p 182) as amended by Directive 2003/17/EC of the European Parliament and of the Council of 3 March 2003 (OJ. L 76, 22.3.2003, p 10, Coll. machines. Polish special edition, rust. 13, vol 31, p 160), and Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol and diesel fuels and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC (OJ. Union L 140 of 05.06.2009, p 88), hereinafter referred to as "the Directive",
- Act of 15 December 2000 on the Trade Inspection (Journal of Laws of 2009 No. 151, item. 1219, as amended.) And issued on the basis of implementing acts,
- Regulation of the Minister of Economy of 21 September 2007 concerning the methods of monitoring the quality of liquid fuels, liquid fuels, and design reports for these fuels and liquefied petroleum gas (LPG) and compressed natural gas (CNG) (Journal of Laws No. 189, pos. 1354), hereinafter "Regulation on the monitoring",
- Regulation of the Minister of Economy of 9 December 2008 on the quality requirements for liquid fuels (Journal of Laws No. 221, item. 1441, as amended.), Hereinafter "Regulation on quality requirements",
- Regulation of the Minister of Economy of 25 March 2010 on the methods of testing the quality of liquid fuels (Journal of Laws No. 55, item. 332), hereinafter "Regulation on the methods for testing the quality of liquid fuels",

- Regulation of the Minister of Economy of 22 January 2009 on the quality requirements for liquid biofuels (Journal of Laws No. 18, item. 98),
- Regulation of the Minister of Economy of 22 April 2010 on the methods of testing the quality of liquid biofuels (Journal of Laws No. 78, item. 520), hereinafter "Regulation on the methods for testing the quality of liquid fuels." The Act of 25 August 2006, transferred to the Polish legislation the provisions of the following Directives:
- 98/70/EC of the European Parliament and of the Council of 13 October 1998 the quality of petrol and diesel fuels and amending Council Directive 93/12/EC (OJ. L 350, 28.12.98, p.58), as amended by Directive 2003/17/EC of the European Parliament and of the Council of 3 March 2003. (OJ. L 76, 22.3.2003, p 10)
- Council 1999/32/EC of 26 April 1999 relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC (OJ. L 121 11.05.1999, p 13).
- 2005/33/EC of the European Parliament and of the Council of 6 July 2005 amending Directive 1999/32/EC as regards the sulphur content of marine fuels (OJ. EU L 191, 22.07.2005, p 59).
- Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol and diesel fuels and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32 / EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC (OJ. EU L 140, 05.06.2009, p 88). Directive 2009/30/EC has been partially transposed into Polish law by the Law of 27 May 2011 amending the law on monitoring and controlling the quality of fuel and other acts (Journal of Laws No. 153, item. 902). Currently, legislative work is leading towards full implementation of the above Directive.

25.2.2.4 *Reporting periods*

In accordance with the Regulation on the monitoring, monitoring and quality control of fuels have been divided into two periods of the year: summer and winter. The summer period, in relation to petrol, runs from May 1 to September 30 (in relation to diesel from April 16 to September 30). The winter period, in relation to petrol, lasts from October 1 to April 30 (with respect to diesel from 1 October to 15 April).

25.2.3 Compliance with Fuel Quality Limit Values

Table 25-3: Petrol Fuel Grades

Unleaded 95 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Research Octane Number	95	94.5	90	4	0.96%
Motor Octane Number	85	84.5	82.9	1	0.24%
Summer vapour pressure, kPa	60	61.3	75.4	7	3.25%
Oxygen content, % (m/m)	2.7	2.9	4.23	1	0.25%
Methanol, % V/V	3	3.2	5.3	1	0.25%
Member State notes For samples outside of tolerance limits a notification was sent to the President of the Energy					

Regulatory Office, and also a notification was sent to the Public Prosecutor's Office.

Unleaded 98 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Summer vapour pressure, kPa	60	61.3	63	1	1.61%
Sulphur content (mg/kg)	10	11.8	15	1	0.89%
Member State notes For samples outside of tolerance limits a notification was sent to the President of the Energy Regulatory Office, and also a notification was sent to the Public Prosecutor's Office.					

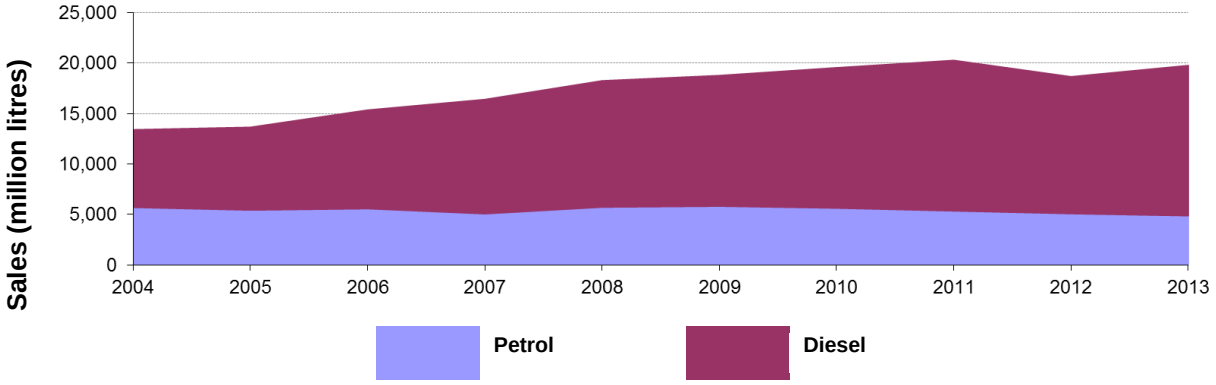
Table 25-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Density at 15 ^{o}C	845	845.7	848.4	1	0.25%
Distillation – 95% Point	360	365.9	391.5	6	1.48%
Sulphur Content	10	11.3	13	1	0.26%
FAME Content	7	7.3	23	8	1.97%
Member State notes For samples outside of tolerance limits a notification was sent to the President of the Energy Regulatory Office, and also a notification was sent to the Public Prosecutor's Office.					

25.3 Temporal Trends

Figure 24-2 shows the trend in total fuel sales since Poland started to report Fuel Quality Monitoring in 2004. The graph shows a gradual increase of fuel sales; with proportionate increase in diesel sales with relatively consistent sales of petrol. Sales of diesel have increased by 28.6% since 2004 (increase of 5,482 million litres), with sales dropping in the period of 2012 to 2013 by 2.9% (396 million litres). Sales of petrol have decrease by 14.5% (832 million litres) since 2004, with a fall in sales in the 2012 to 2013 period of 4.1% (210 million litres).

Figure 25-2: Temporal trends in national sales of petrol and diesel (million litres)



25.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see section 4.

Fuel sampling in Poland in 2013 recorded relatively few test results out of specification with limits.

The analysis charts for petrol (Figure 25-3) and diesel (Figure 25-4) detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

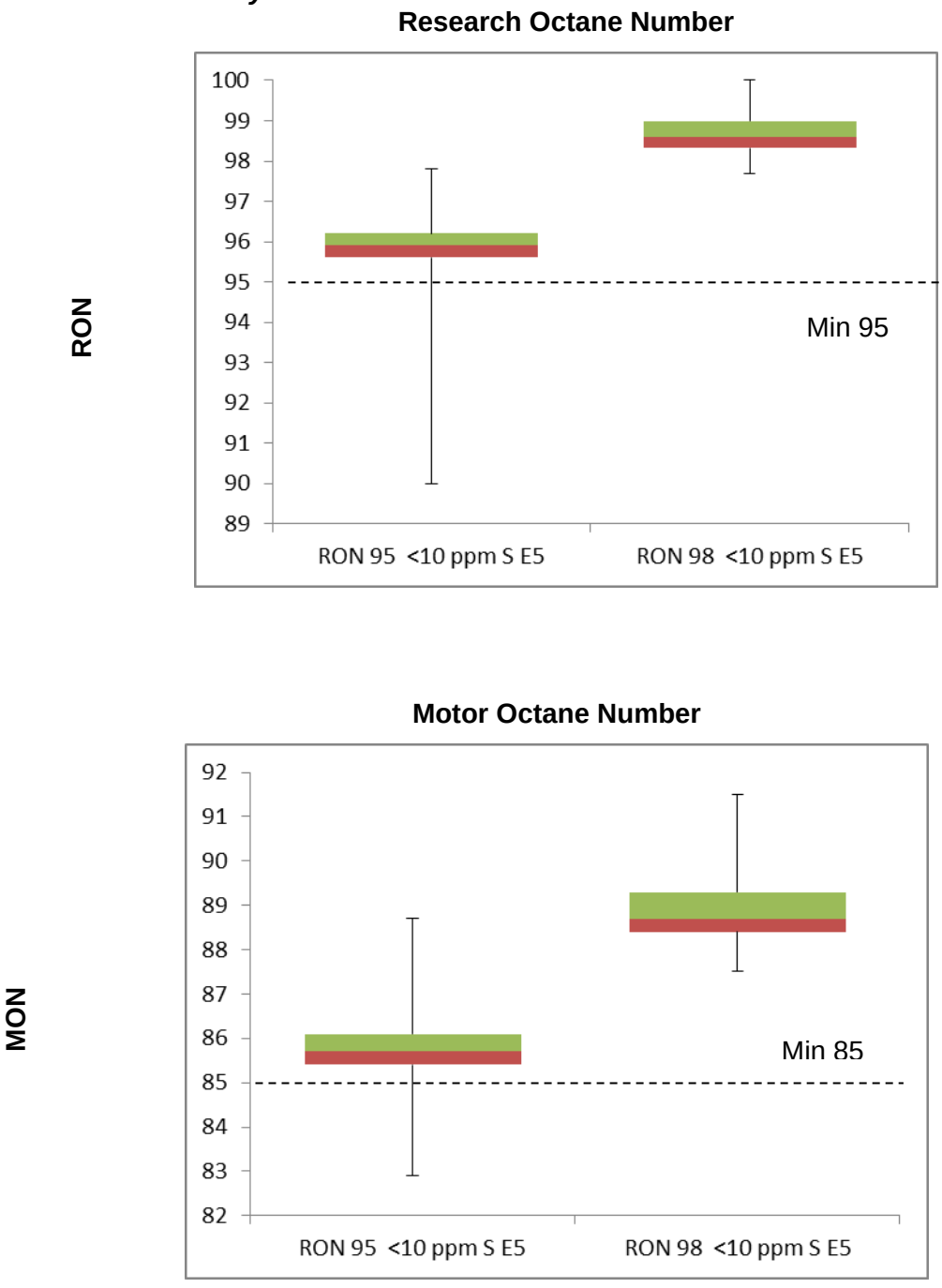
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

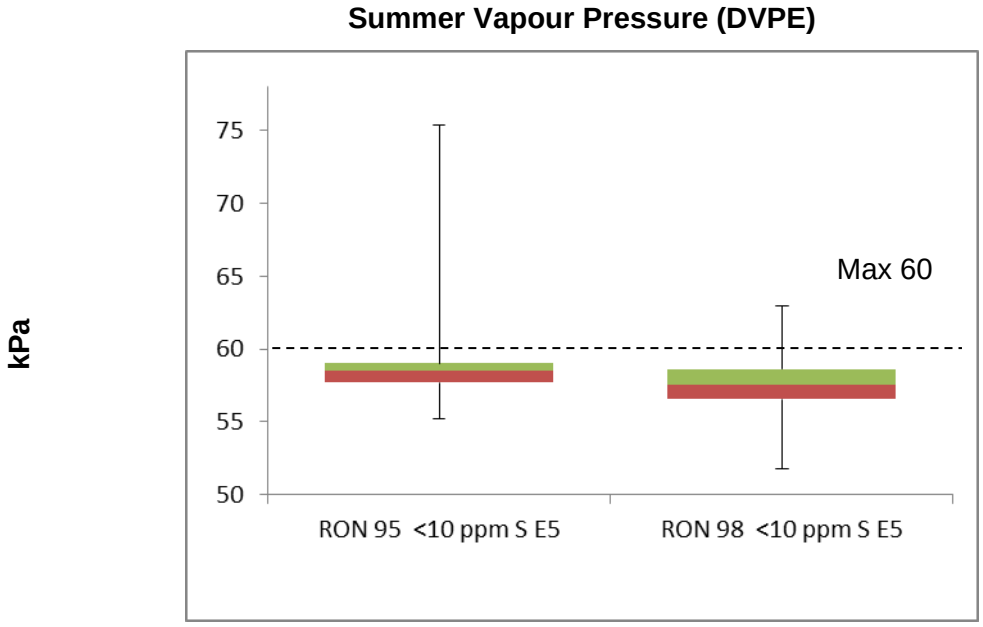
25.4.1 Petrol Analysis

Both fuel types show tight distributions; this is to be expected for RON 95 as there were many samples tested, however for RON 98 this shows that the fuel grade is consistent in Octane and DVPE sample results. RON 95 fuel type shows a distribution close to tolerance

levels with a few samples exceeding tolerance limits for Octane and Summer Vapour Pressure. RON 98 has a few samples that exceed Summer Vapour Pressure.

Figure 25-3: Petrol analysis

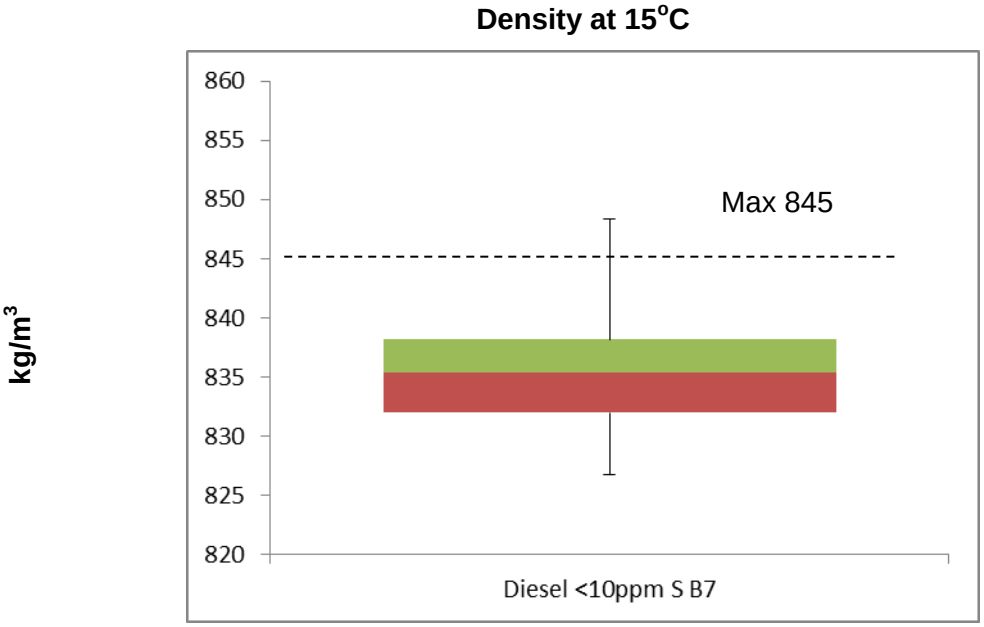


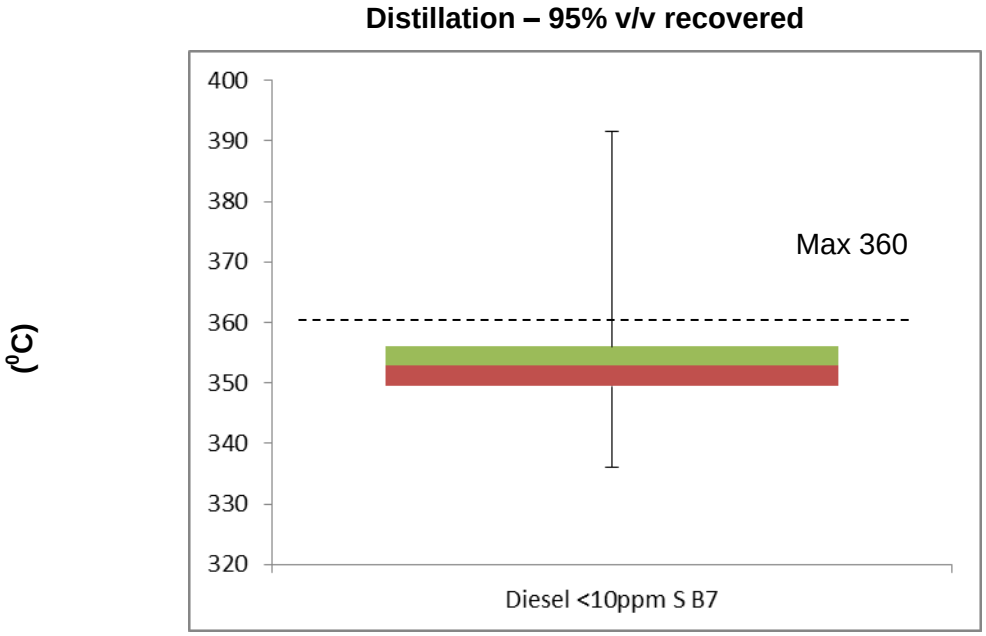


25.4.2 Diesel Analysis

Density at 15°C analysis shows an even tight distribution which is far from tolerance limits. Distillation 95% v/v has a tight distribution close to tolerance limits, however only 6 diesel samples exceeded tolerance limits.

Figure 25-4: Diesel analysis





25.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Manganese was not reported.	• The report was received on 10th June, earlier than the 30th June deadline.
2012	• Poland did not provide sufficient samples for a country classed as 'Large' for either petrol or diesel samples. • Manganese was not reported.	• The report was received on the 17 June, earlier than the 30 June deadline
2011	• Poland did not complete the statistical results section of the template and hence no statistical analysis charts for petrol or diesel are available to detail the distribution of sample results for the selected parameters. While this reporting element is not mandatory, additional information was requested by the	• The 2011 report was received on time. • No information has been provided about test methods for 2011. • The source of sales data for 2011 has not been provided. • Poland did not use the EC approved

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**
Commission in order to enhance comparability and assessment of EU-wide FQM results. • Numbers of exceedances cannot be determined due to insufficient detail provided regarding sample numbers which fall outside of tolerance limits. • Fuel sales are again over 15 Million tonnes and so Poland should be sampling and reporting as a 'Large' country according to EN 14274. Poland stated that they clarified this matter to the European Commission in 2012. • If they were classified as a large country, Poland did not report sufficient sample quantities for fuel grades that comprised less than 10% of the petrol or diesel market in 2011 to comply with the Directive. • Poland did not report parameter results for Manganese for petrol fuel grades in 2011. • Poland did not report parameter results for Distillation 95% or Polycyclic aromatic hydrocarbons for diesel B100 in 2011.	template for their submission. They were one of only two Member States not to use the template in the 2011 reporting year.

26 Portugal

26.1 Fuel Availability 2013

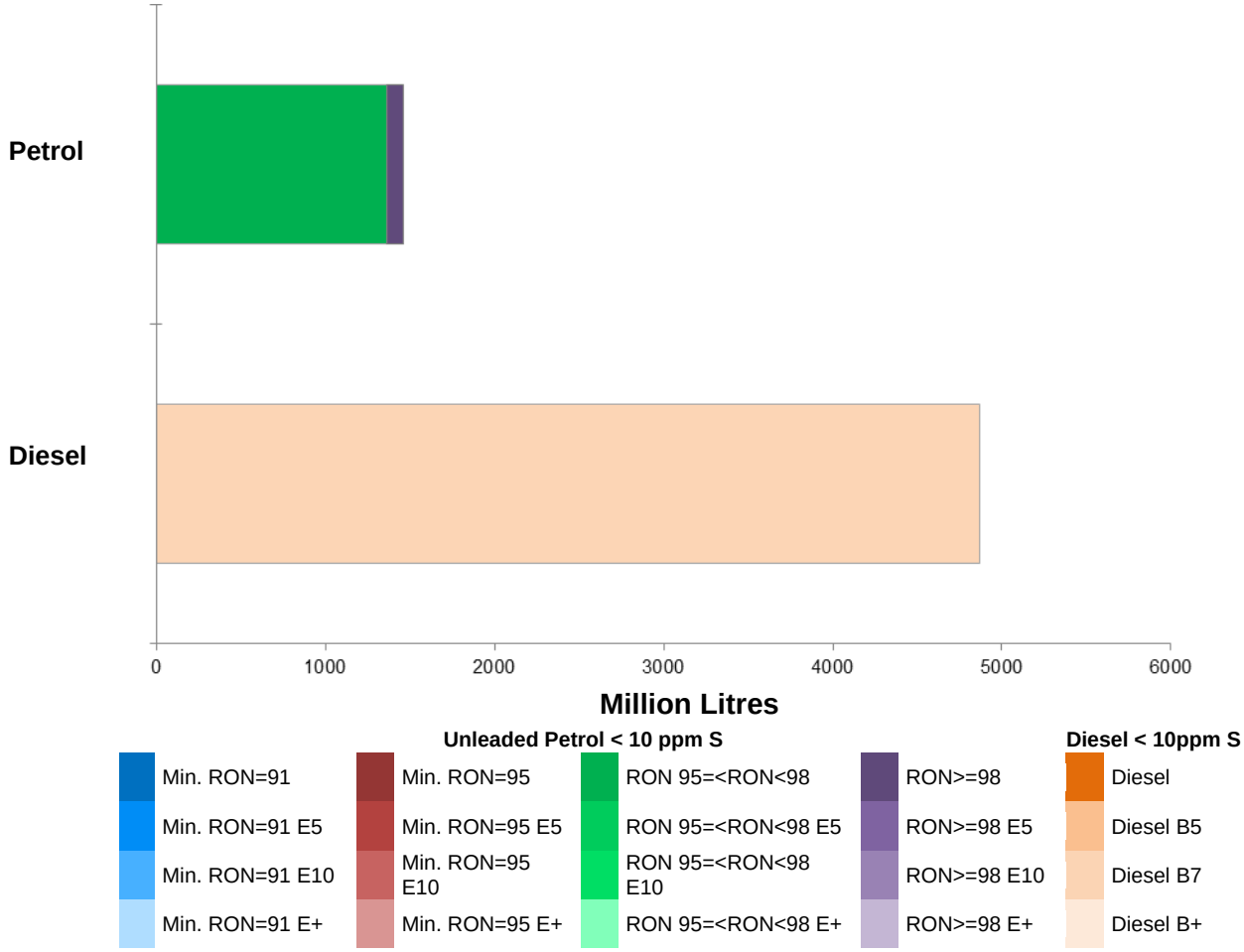
The following table lists the fuels that were reported to be available nationally in 2013.

Table 26-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum 95 =< RON < 98)	Euro super
Unleaded petrol (minimum RON >= 98)	Super plus
Diesel fuel B7	Gasóleo

26.1.1 Sales, sampling and reporting

Figure 26-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Portugal were largely dominated by diesel fuel sales. 4,867 million litres of diesel was sold in comparison to 1,463 million litres of petrol fuel sales (all petrol grades combined). Petrol fuel sales were mainly comprised (93%) of fuel grade 95<RON<98.

Table 26-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol 95=<RON<98 (<10 ppm S)	1,360	92.93%	54	58	100	Yes	18 of 19	(a)
Unleaded petrol RON>=98 (<10 ppm S)	103	7.07%	13	18	8	Yes	18 of 19	(a)
Total Petrol	**1,464**	**100.00%**	**67**	**76**	**108**	**Yes**	**18 of 19**	
Diesel (<10 ppm sulphur) B7	4,867	100.00%	61	51	100	Yes	6 of 6	
Total Diesel	**4,867**	**100.00%**	**61**	**51**	**100**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a)	Additional notes	Portugal did not report any parameter results for Manganese for any of their petrol fuel grades.

26.1.1.1 *Petrol Samples*

Portugal have not complied with minimum sampling requirements from service stations for 95<RON<98 but exceeded requirements for RON98. According to Statistical model C, Portugal should have taken at least 100 samples from refuelling stations for 95<RON<98, while it collected the majority of samples from refineries.

26.1.1.2 *Diesel Samples*

Diesel fuel samples tested in 2013 did not complied with the total minimum requirement because only 12 samples were taken from service stations.

26.2 Fuel Quality Monitoring 2013

26.2.1 Description of System

Responsible organisation(s)	Ministry of Environment, Spatial Planning and Energy, the Directorate General for Energy and Geology

Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical Model C
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Service stations and refineries.
Time/frequency of sampling	Samples have been taken in 10 months throughout the year 2013 (April and October excluded as they are transition periods)
Specification of test methods	Test methods are those specified in Directive 98/70/EC.
Collection of sales data	According to national legislation the companies report their sales to the Directorate General for Energy and Geology (DGEG) on monthly basis.

Other details

In 2013, due to fiscal restraint measures, the entities that had the responsibility of implementing the system, found themselves in the impossibility of full implementation.

Also, the contract with the entity responsible for collecting and analysing fuel samples had expired.

Due to this fact the number of samples in service stations, in 2013, was less than the minimum required. The Portuguese Administration is making all the efforts in order to launch a new tender for quality control during 2014.

The report contains 255 samples (31 - RON98, 112 - 95<RON<98 and 112 - diesel).

The minimum number of analyses to be performed to 95<RON<98 gasoline fell from 100/year to 8, due to reduced sales of this product (less than 10% of the total fuel sold within the country).

26.2.2 Fuel Quality Monitoring System

26.2.2.1 *Sampling*

The bodies performing sampling and analysis are selected through a public tender held by the Ministry responsible for the Energy Sector.

Sampling sites are located across the country and the samples are collected in most months across the winter and summer periods. The selection of filling stations is made by government authorities. Beyond this, sampling is conducted at refineries and terminals.

The methods of analysis used are in accordance with Directive 2009/30/EC. The method used for each parameter can be found in the "Test methods and analyses" tables of Reporting Results tables, where the number of values exceeded and their values are indicated.

26.2.2.2 *FQMS administration*

The body responsible at national level for the FQMS is the Ministry responsible for the Energy Sector. The General Directorate for Energy and Geology is responsible for coordinating, preparing and submitting the annual reports.

Sampling and analysis are performed by entities selected through public tender.

The introduction in the consumption or marketing of fuels that do not meet the specifications in force constitutes an infraction punishable by fine, which involves reporting to the

responsible authority for the prosecution, so non-compliant samples detected are reported to the Food Safety and Economic Authority (ASAE).

There are two refineries that supply the market, one of them in the north and the other in the south.

26.2.2.3 *National Legislation that transposed the FQD*

The transposition of FQMS is set out in Articles 13º and 14º of Decree-Law nº 142/2010 of 31 December.

26.2.2.4 *Reporting periods*

Seasonal period:

Summer period - 1st May to 30th September (normal).

Winter period – 1st November to 31 March

Transition period - April and October

Analysis is performed occasionally at filling stations in transitional periods; not considered for the purposes of FQMS. In refineries and terminals analysis is performed monthly throughout the year but transitional periods are not considered for the purposes of FQMS.

26.2.3 Compliance with Fuel Quality Limit Values

Table 26-3: Petrol Fuel Grades

Petrol 95<RON<98- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Ethers with ≥5 carbon atoms / molecule	22	22.5	29	1	0.8%

Member State notes

All the results of lead content analysis were expressed as < 0.001g/l or <0,003g/l. For purposes of calculation these values were regarded as exact figures, which mean that the true values are smaller than the reported. For purpose of calculation all the results of methanol, ethanol and other oxygenates expressed as < 0.10%(v/v), <0,2%(v/v) and <0,8%(v/v) were considered as exact figures. That means that the true values are smaller than reported. As defined in EN 14274:2003 fuel samples taken during transition periods are not included in the FQMS.

The introduction in the consumption or marketing of fuels that do not meet the specifications in force constitutes an infraction punishable by fine, which involves reporting to the responsible authority for the prosecution.

Petrol RON 98 - Details of samples that exceed tolerance limits:
No parameter exceeded limit values

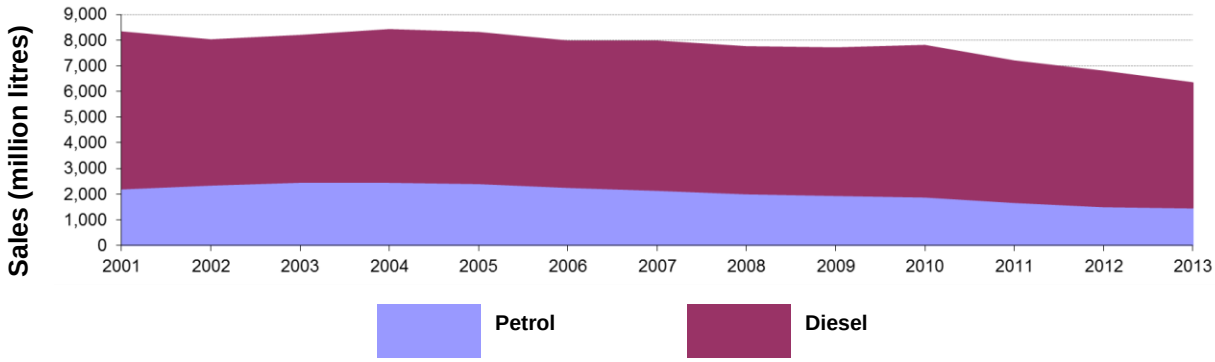
Table 26-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:
No parameter exceeded limit values

26.3 Temporal Trends

Figure 25-2 shows the trend in total fuel sales since 2001. Fuel sales grew and fluctuated before gradually decreasing from 2004. Both diesel and petrol sales have fallen since 2001 by respectively 20.3% (1,240 million litres) and 33.7% (743 million litres). In the period 2012 to 2013 diesel and petrol sales have fallen by 7.6% (401 million litres) and 3.3% (50 million litres) respectively.

Figure 26-2: Temporal trends in national sales of petrol and diesel (million litres)



26.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see section 4.

Fuel sampling in Portugal in 2013 recorded only one test result out of specification with limits. The analysis charts for petrol (Figure 26-3) and diesel (Figure 26-4) detail the distribution of sample results for the 5 selected parameters:

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

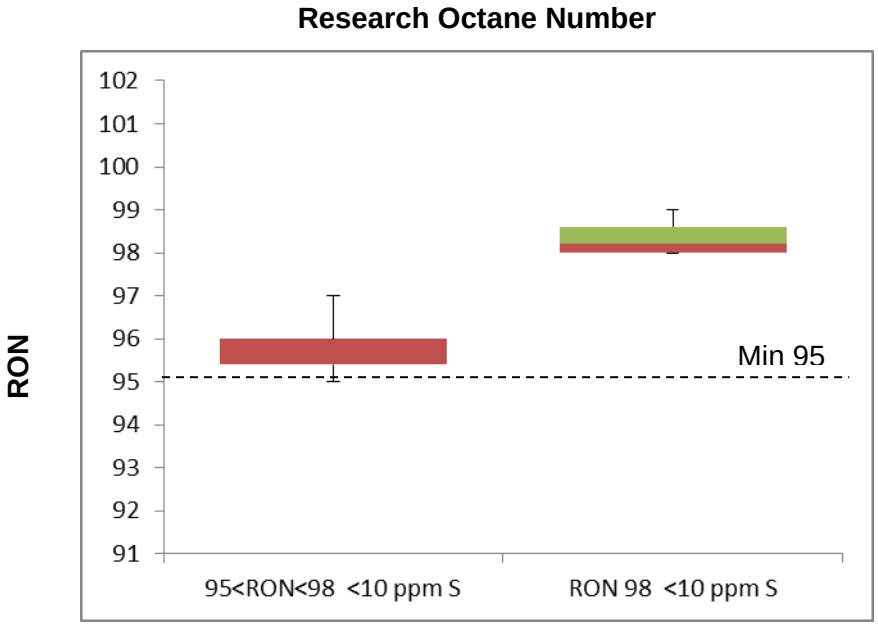
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

26.4.1 Petrol Analysis

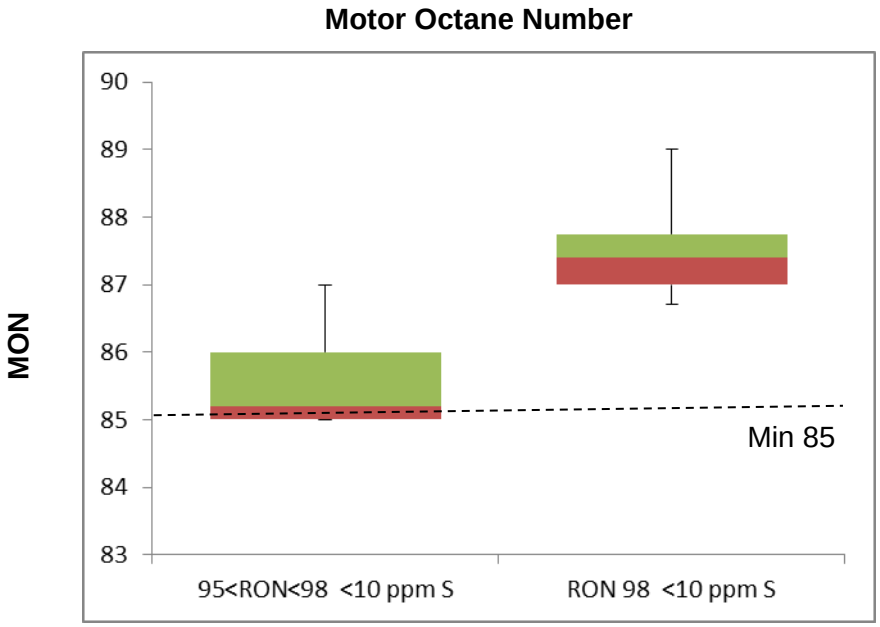
Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results. The analysis of RON shows a tight distribution of results from samples taken, with all values within tolerance limits for both petrol fuel grades. The MON test has a much wider distribution, with 95<RON<98 being skewed towards tolerance limits.

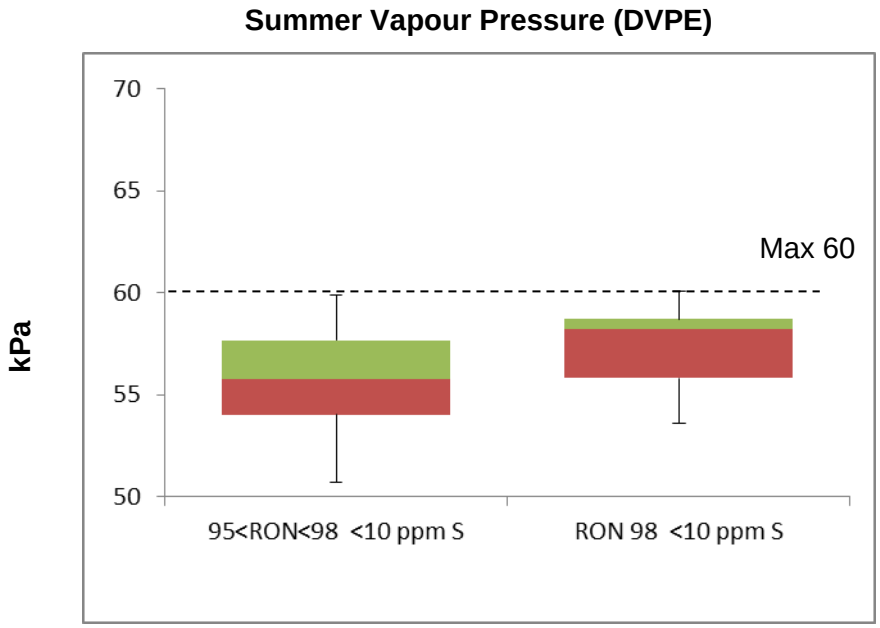
The analysis of summer vapour pressure shows again a wide distribution, but all samples are within tolerance limits, with only outliers being very close to limits.

Figure 26-3: Petrol analysis



**median and 75% of samples match for 95<RON<98*

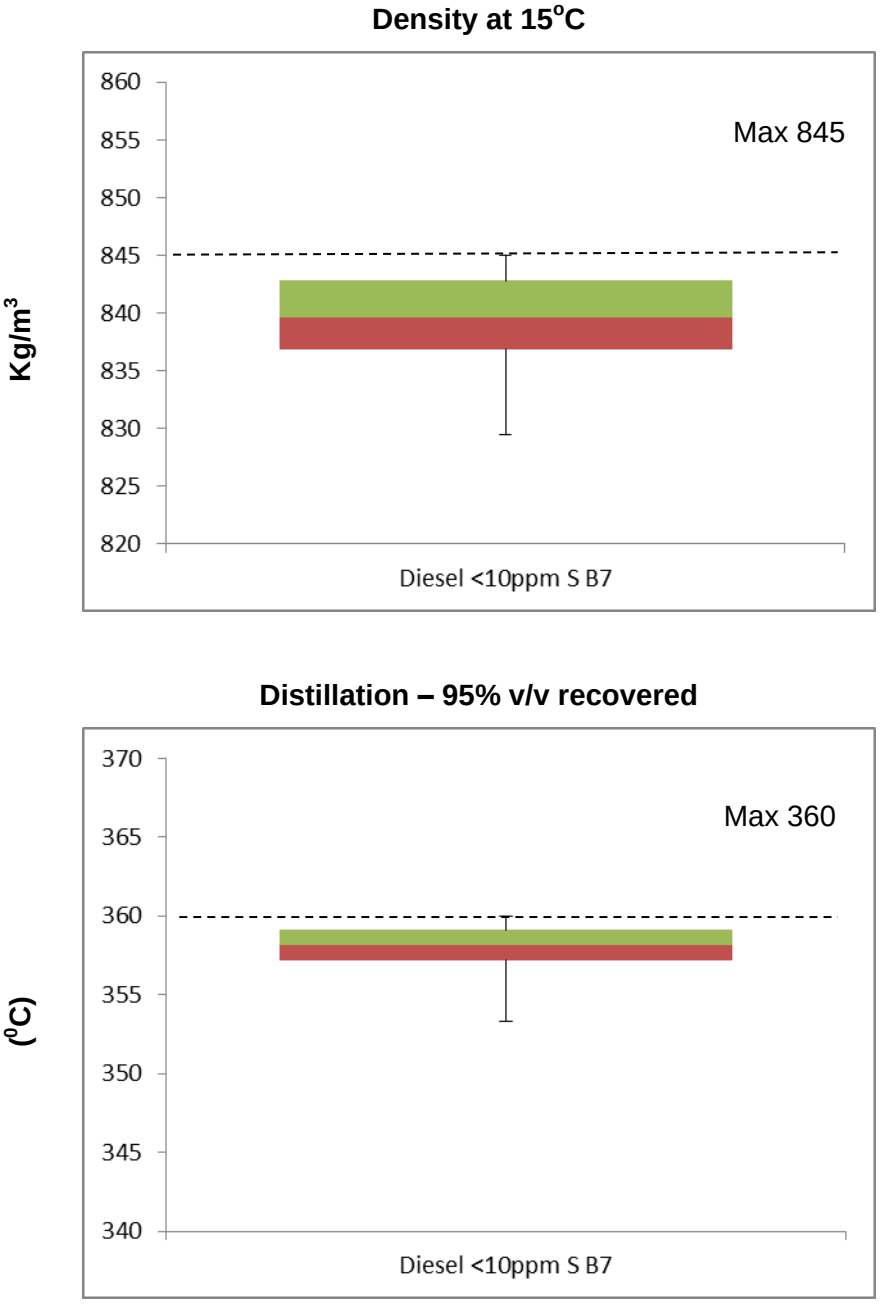




26.4.2 Diesel Analysis

Distillation and Density analysis of diesel samples reveal a skewed distribution close to tolerance limits, but no outliers exceeded them.

Figure 26-4: Diesel analysis



26.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• The number of samples taken from service stations is very low.	• The report was submitted on time on the 30th of June and in the correct

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
	Portugal acknowledges the insufficient number, due to expiry of the contract with the entity responsible for collecting the samples. The Portuguese Administration is making all the efforts in order to launch a new tender for quality control during 2014. • Portugal did not report any parameter results for Manganese for any of their petrol fuel grades in 2013.	template.
2012	• Further details for the non-compliance regime are required especially in regards to summer vapour pressure and sulphur content in petrol fuel grades. • Portugal did not report any parameter results for Manganese for any of their petrol fuel grades in 2012.	• The report was received on the 28th June, before the 30th June deadline.
2011	• Location of sampling could benefit from further clarification. • Portugal did not report any parameter results for Manganese for any of their petrol fuel grades in 2011.	• The 2011 report was submitted on time.

27 Romania

27.1 Fuel Availability 2013

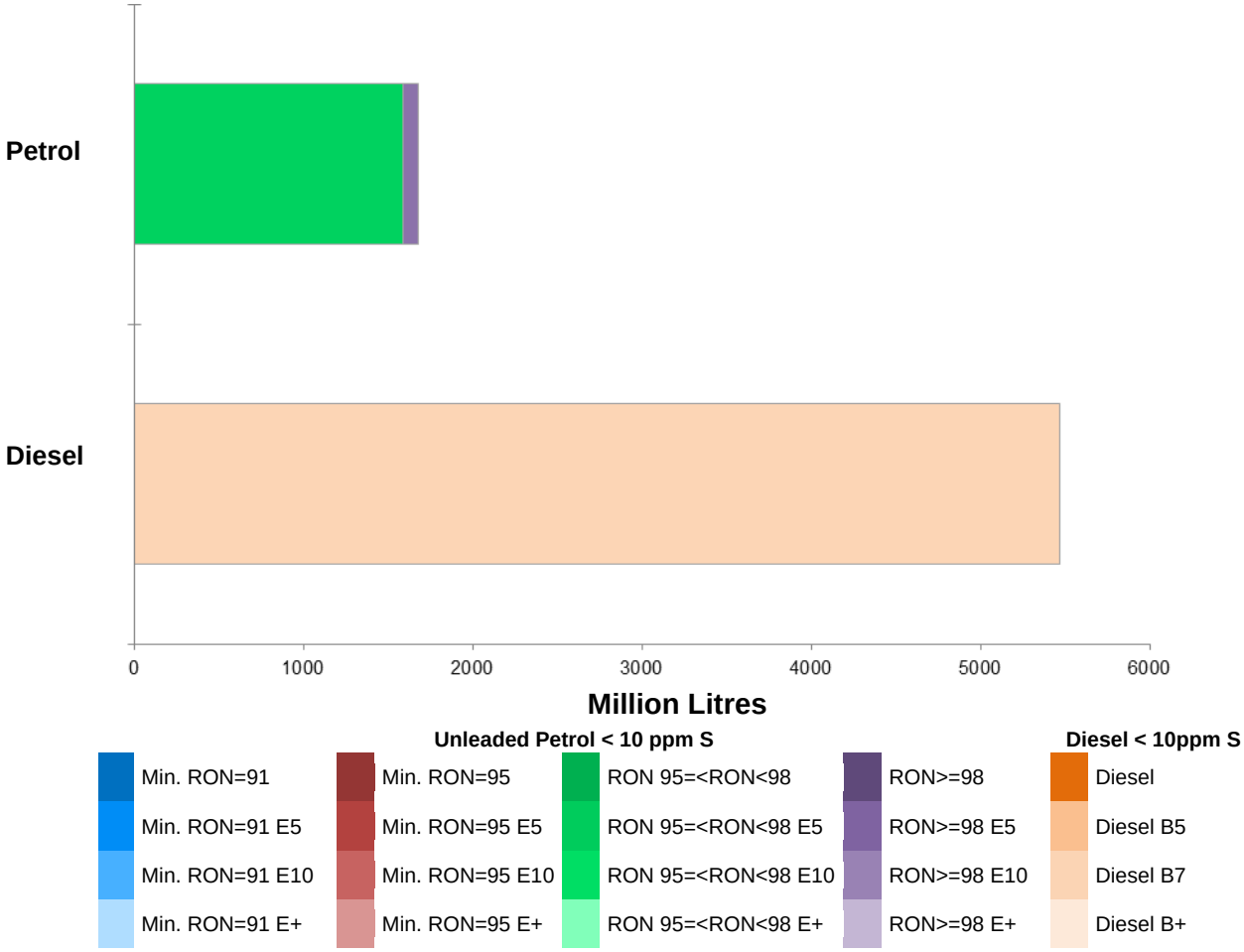
The following table lists the fuels that were reported to be available nationally in 2013.

Table 27-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum 95 =< RON < 98) E5	RON 95
Unleaded petrol (minimum RON >= 98) E5	RON 98
Diesel fuel B7	Diesel

27.1.1 Sales, sampling and reporting

Figure 27-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Romania were dominated by diesel fuel sales; 5,469 million litres of diesel was sold in comparison to 1,676 petrol fuel sales (all petrol grades combined). 94.6% of petrol fuel sales were comprised of unleaded petrol 95=<RON<98 E5.

Table 27-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol 95=<RON<98 (<10 ppm S) E5	1,585	94.59%	0	64	200	Yes	18 of 19	(a)
Unleaded petrol RON>=98 (<10 ppm S) E5	91	5.41%	0	28	12	Yes	18 of 19	(a)
Total Petrol	**1,676**	**100.00%**	**0**	**92**	**212**	**Yes**	**18 of 19**	**(a)**
Diesel (<10 ppm sulphur) B5	5,469	100%	0	72	200	Yes	6 of 6	
Total Diesel	**5,469**	**100.00%**	**0**	**72**	**200**	**Yes**	**6 of 6**	

(1) Samples — The actual number of samples taken by the Member State in the summer (s) and winter (w) periods

(2) TR — Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.

(3) Separate S & W? — Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.

(4) Parameters measured — Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.

(a) Additional notes — Summer Vapour Pressure parameter not measured for any petrol fuel grades.

27.1.1.1 *Petrol Samples*

Petrol fuel samples tested in 2013 did not comply with the minimum requirement because no samples were taken during the summer period. Also the total number of samples taken for 95=<RON<98 is insufficient.

27.1.1.2 *Diesel Samples*

Petrol fuel samples tested in 2013 did not comply with the minimum requirement because no samples were taken during the summer period and the total number of samples is below the required number (200 for the whole year).

27.2 Fuel Quality Monitoring 2013

27.2.1 Description of System

Responsible organisation(s)	Ministry of Economy, Trade and Business Environment
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical model B

Country Size	Small
Summer Period	Normal
Location(s) of sampling	Romania is divided in 8 regions. Samples were taken at filling stations that deliver fuel to private and commercial users; fuel was provided to the stations by oil companies (local, national and international). Therefore samples were taken randomly over the identified regions.
Time/frequency of sampling	Samples have been taken only in two months during the winter period.
Specification of test methods	Tests are performed according SR EN 228:2008 and SR EN:2013 and SR EN 590+A1:2010 methods (reference norms valid during 2013). According to Order no.2459/2012 in the monitoring system of petrol and diesel, work sampling is done at least two bodies.
Collection of sales data	Details of who provided sales data have not been provided.

Other details

In the process of transposing EU legislation in national legislation was adopted the Government Decision no.928/2012 regarding the establishment of marketing of gasoline and diesel, modified and completed by Government Decision no.1308/2012 and Government Decision no.1121/2013. The qualitative and quantitative monitoring system for petrol and diesel, sold by service stations, is approved by Order of Ministry of Economy, Trade and Business Environment no.2459/2012, who replaced Order.no.742/2004 and Order no.58/2006.

27.2.2 Fuel Quality Monitoring System

27.2.2.1 *Sampling*

Sampling and analysis of petrol and diesel is done by testing laboratories, which are recognized for this purpose by the Ministry; recognition is made after a trial assessment, based on the criteria set forth in Annex 1 of the Order no.2459/2012:

- be accredited for testing, field / certification schemes on the quality of petrol and diesel;
- to have liability insurance;
- to demonstrate its own sampling capability, equipped with appropriate equipment to perform tests according to the methods stipulated in Government Decree nr.928/2012, amended and supplemented.

Sampling is performed according to SR EN 14275 - Sampling from retails site pumps and commercial site fuel dispensers - and Ministry Order no.2459/2012 approving system of monitoring quality fuels.

Tests are performed according SR EN 228:2008 and SR EN:2013 and SR EN 590+A1:2010 methods (reference norms valid during 2013).

According to Order no.2459/2012 in the monitoring system of petrol and diesel, work sampling is done by at least two bodies.

The list containing the two above mentioned organizations recognizes for the sampling activity of petrol and diesel is approved by Ministerial Order no.527/2006, and the bodies are SC ROMPETROL QUALITY CONTROL SRL and SC ROMCONTROL SA, both accredited EN ISO/CEI 17025 to perform physic-chemical testing and analysis for fuels..

Romania is divided in 8 regions. Samples were taken at filling stations that deliver fuel to private and commercial users; fuel was provided to the stations by oil companies (local, national and international). Therefore samples were taken randomly over the identified regions. Since the total amount of petrol and diesel fuel used in Romania was below 15 million tonnes in 2013, Romania is regarded as a small country (European Standard EN 14274:2003, paragraph 3.2). In November 2012, was approved the Order of the minister of economy, trade and business environment no.2458/2012 for the approval of form of presentations of information regarding total quantities of petrol and diesel placed on the market, detailed on types and development regions of Romania, by the producers, importers and distributors of petrol and diesel.

27.2.2.2 *FQMS administration*

The Ministry of Economy has responsibility for managing and implementing the FQM Directive. Fuel sampling is contracted privately and Ministry of Economy sets the minimum annual number of samples, the place and moment of sampling and the recognized body which carried out sampling. The National Authority for Consumer Protection and National Tax Administration are responsible for taking action where non-compliant samples have been discovered. Monitoring fuel quality is now implemented by Order of the minister of economy, trade and business environment no.2459/12.11.2012. It was applied EN 14274 model B according the dimension and fuel consumption of country; Number of national refineries is 10 and 2547 fuel stations.

27.2.2.3 *National Legislation that transposed the FQD*

- Government Decision no.928/12.09.2012 establishing the conditions for the marketing of gasoline and diesel and introducing a mechanism to monitor and reduce emissions of greenhouse gases;
- Government Decision no.935/11.10.2011 on the promotion of biofuels and bioliquids: Both of the Government Decision were modified by Government Decision no.1308/27.12.2012 and Government Decision no.1121/18.12.2013;
- Order of minister of economy, trade and business environment no.2458/12.11.2012 approving the form of presentation of information regarding the gasoline and diesel quantities on the market, detailed types and Romanian development regions, by producers, importers and final distributors of gasoline and diesel;
- Order of minister of economy, trade and business environment no.2459/12.11.2012 approving monitoring system of gasoline and diesel quality.

27.2.2.4 *Reporting periods*

For the year 2013 sampling covered only winter period, because the procedures of organisation of Department for Energy which was established by the Government Decision no.429/10.07.2013 regarding organisation and functioning of Department of Energy.

27.2.3 Compliance with Fuel Quality Limit Values

Table 27-3: Petrol Fuel Grades

Unleaded petrol (min 95 =< RON < 98) E5- Details of samples that exceed tolerance limits:					
No samples exceeded tolerance limits.					
Unleaded petrol (min RON >= 98) E5- Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**

Research Octane Number	95	90.6	90	1	3.5%
Motor Octane Number	85	84.5	81.5	1	3.5%
Hydrocarbon analysis – Aromatics (% v/v)	35	36	36.5	1	3.5%
Member State notes: Penalty					

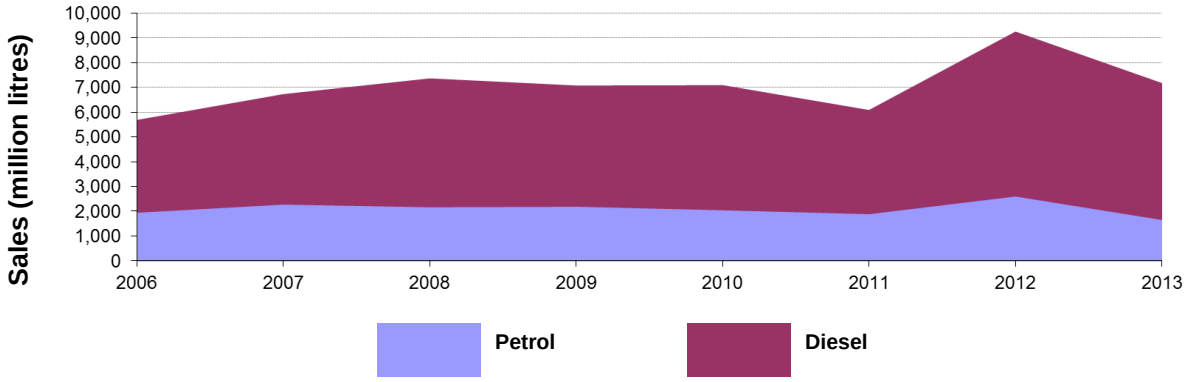
Table 27-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
No samples exceeded tolerance limits.					

27.3 Temporal Trends

Figure 26-2 shows the trend in total fuel sales since 2006. Fuel sales rose from 2006 to 2008, declined up to 2011 and had another peak in 2012. Since 2006 petrol sales have decreased by 14.9% (292 million tonnes) and diesel sales have increased by 48.2% (1,779 million litres). Between 2012 and 2013 petrol sales have decreased by 36% (947million tonnes), whilst diesel sales have decreased by 17.2% (1,132 million tonnes). 2013 has seen fuel sales return to a level more in line with the historical progression after 2012 saw an unprecedented growth.

Figure 27-2: Temporal trends in national sales of petrol and diesel (million litres)



27.4 Statistical Analysis

From 2010 the Commission have requested that member states provide some additional information to enable further statistical analysis of fuel quality reported by Member States. In order to carry out further analysis, the member states have been asked to provide the following details for each parameter;

- Sample minimum
- Lower 25% range (from 2010)
- Middle 50% range

- Median (from 2009)
- Upper 25% range (from 2010)
- Maximum

This information is then used to generate box diagrams which can help to display fuel conditions within individual member states – and in comparison to other member states within EU-wide summary sections of this report). For a full explanation of the information presented in a Box Plot diagram, please see section 4.

Parameters selected by the Commission for further analysis were;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

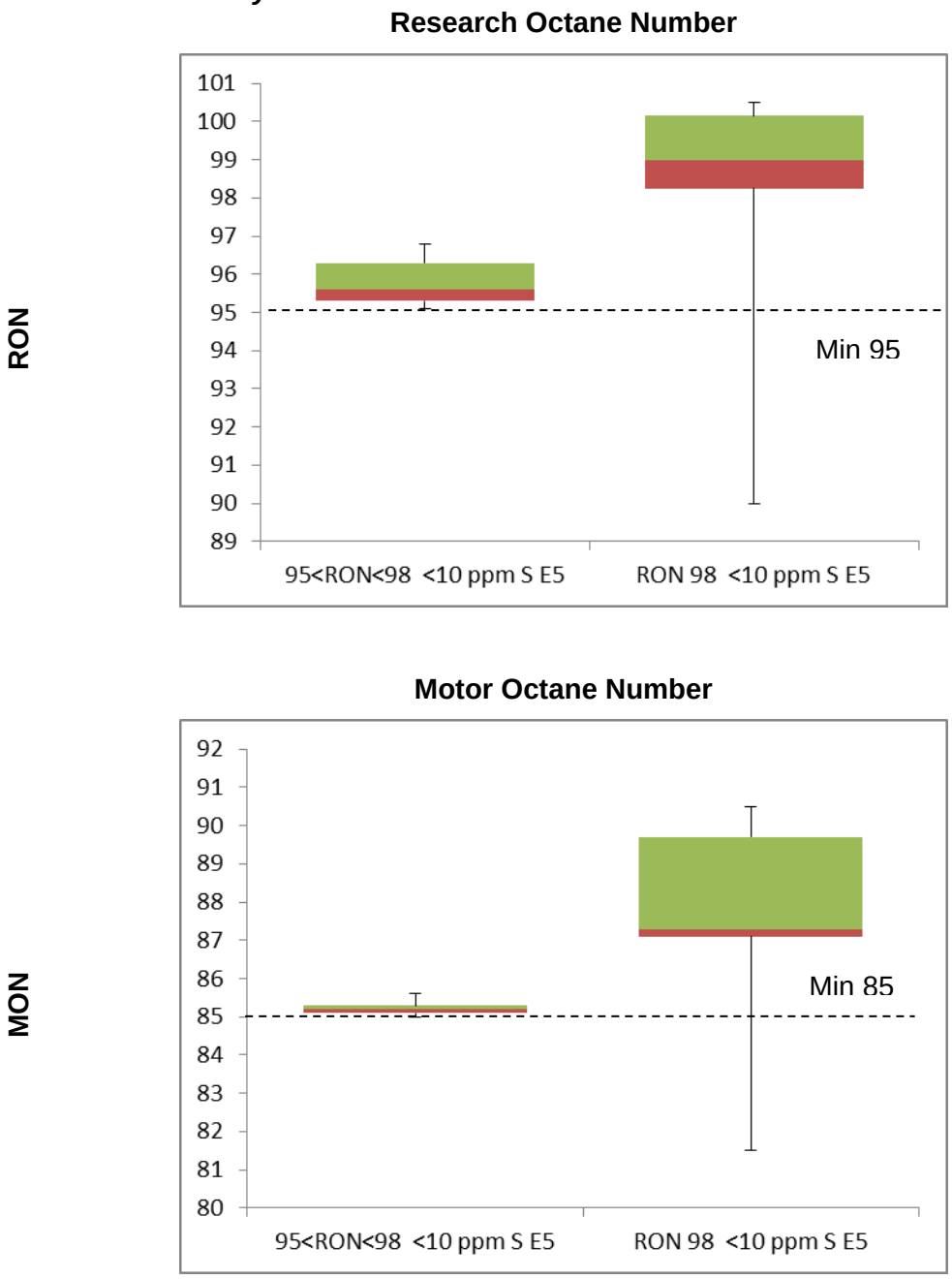
- Density at 15^{o}C
- Distillation – 95% v/v recovered

Summer vapour pressure analysis is not included because Romania did not provide any sample collected in the summer.

27.4.1 Petrol Analysis

95<RON<98 and RON 98 fuels shows very different distributions. Even though twice as many samples were collected for 95<RON<98, the distribution of results is much tighter than in respect to RON 98 and no samples exceeded limits. The RON and MON minimum of RON 98 fuel is much lower than the average, which may suggest that one or two samples are the exception. However, the number of sample collected, below minimum requirement, does not allow assessing reliably how much fuel is effectively below limits. As no samples were taken for summer vapour pressure, no statistical analysis charts for petrol are available to detail the distribution of sample results for the selected parameter.

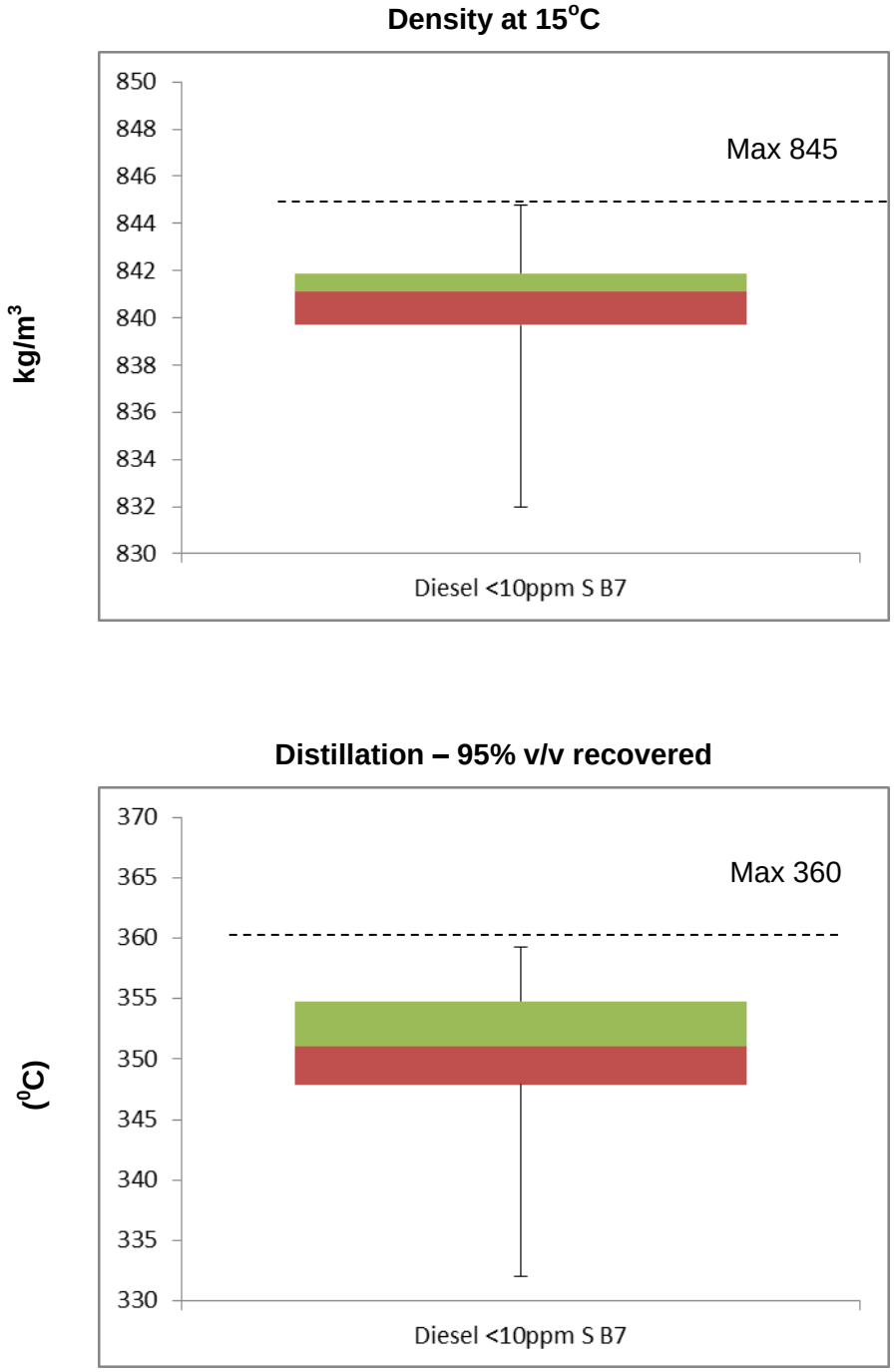
Figure 27-3: Petrol analysis



27.4.2 Diesel Analysis

Density at 15°C and Distillation 95% analysis shows a tight distribution which is close to tolerance limits, but no exceedances were recorded.

Figure 27-4: Diesel analysis



27.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)

	Monitoring	Reporting
2013	• All samples for both petrol and diesel were collected in just two months in winter. • Samples were taken over a limited number of months. • The number of samples was below the required number for both petrol fuel grades and for diesel. • Summer Vapour Pressure parameter not measured for any petrol fuel grades.	• The 2013 report was submitted on time on the 30th of June.
2012	• Petrol grade fuel samples were under the minimum requirement for the summer period • Samples were taken over a limited number of months. • Romania did not complete the statistical results section of the template and hence no statistical analysis charts for petrol or diesel are available to detail the distribution of sample results for the selected parameters. While this reporting element is not mandatory, additional information has been requested by the Commission in order to enhance comparability and assessment of EU-wide FQM results. • Romania did not report parameter results for Manganese for any petrol fuel grade.	• The 2012 report was submitted on the 2nd July, after the 30th June deadline.
2011	• Romania did not complete the statistical results section of the template and hence no statistical analysis charts for petrol or diesel are available to detail the distribution of sample results for the selected parameters. While this reporting element is not mandatory, additional information has been requested by the Commission in order to enhance comparability and assessment of EU-wide FQM results. • Petrol fuel samples tested in 2011 only complied with the total minimum requirement for summer samples for	• The 2011 report was submitted on time.

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**
RON 95 E5; winter samples were less than the 100 required under EN14274. • Diesel fuel samples tested in 2011 complied with the total minimum requirement for summer samples only. Winter sample numbers for diesel were not compliant with minimum requirements. • Romania did not report parameter results for Manganese for any petrol fuel grade in 2011.	

28 Slovakia

28.1 Fuel Availability 2013

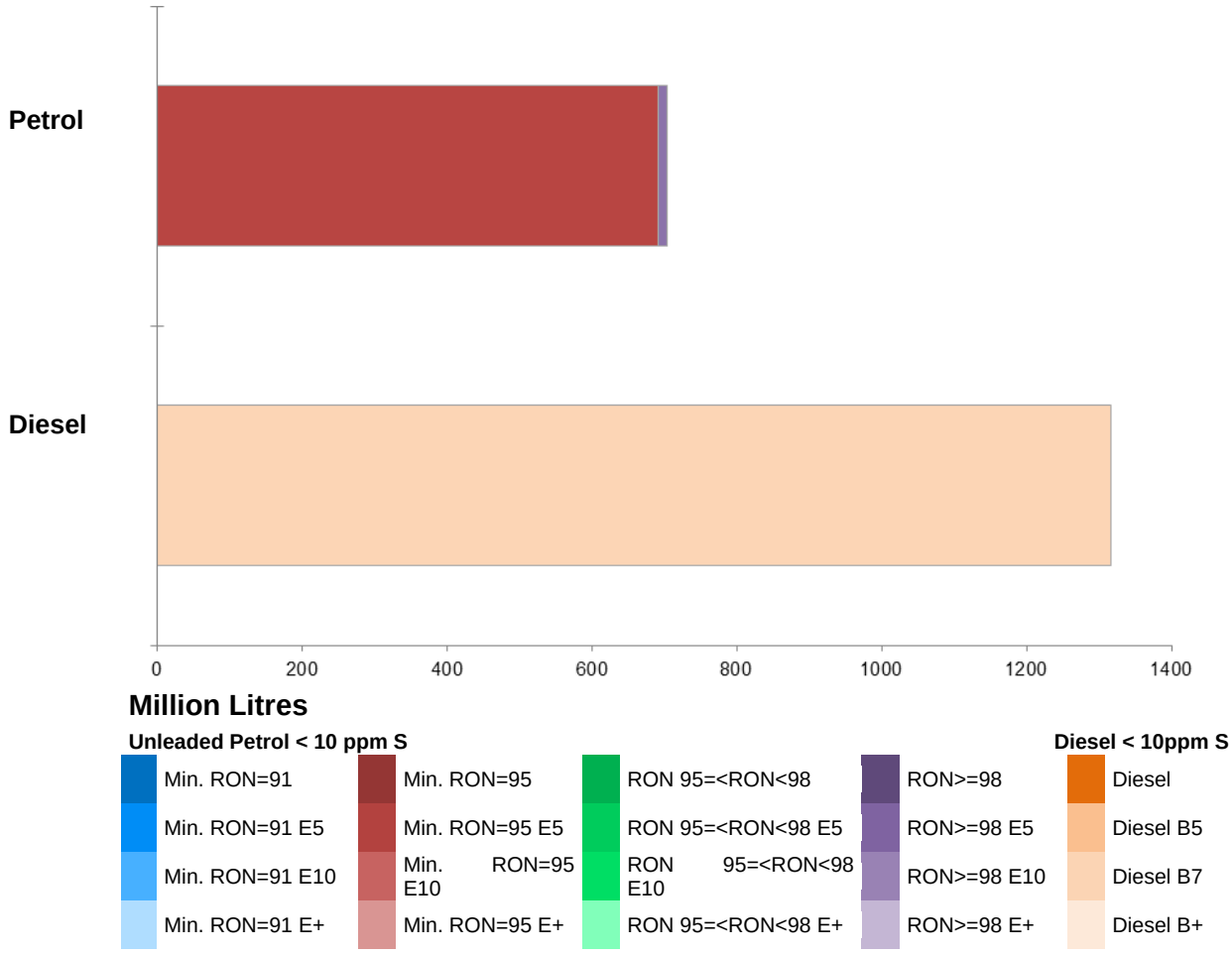
The following table lists the fuels that were reported to be available nationally in 2013.

Table 28-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	Super 95
Unleaded petrol (minimum RON >= 98) E5	SuperPlus 98
Diesel fuel B7	Diesel

28.1.1 Sales, sampling and reporting

Figure 28-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Slovakia were again dominated by diesel fuel sales; 1,317 million litres of diesel was sold in comparison to 704 million litres of petrol fuel sales (all petrol grades combined). Petrol fuel sales were mainly comprised (98.1%) of fuel grade RON 95 with up to 5% biofuel content with the remaining 1.9% petrol fuel sales of RON>98 with up to 5% biofuel content.

Table 28-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E5	691	98.15%	62	58	100	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S) E5	13	1.85%	15	16	2	Yes	19 of 19	
Total Petrol	**704**	**100.00%**	**77**	**74**	**102**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	1,317	100.00%	64	58	100	Yes	6 of 6	
Total Diesel	**1,317**	**100.00%**	**64**	**58**	**100**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.

28.1.1.1 *Petrol Samples*

Slovakia has complied with minimum sampling requirements for all petrol fuel grades. RON>98 E5 has less than 10% share and therefore requires a smaller number of samples.

28.1.1.2 *Diesel Samples*

Diesel fuel samples have exceeded the minimum requirement for a small country monitoring and reporting using EN 14274 statistical model C which requires 50 samples to be taken per fuel per period.

28.2 Fuel Quality Monitoring 2013

28.2.1 Description of System

Responsible organisation(s)	VÚRUP, a.s. (Accredited Testing Laboratories & Accredited Inspection Body)

Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical Model C
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Service Stations
Time/frequency of sampling	Sampling of all fuel grades and types takes place in 9 months of the year – during 4 months in winter, and 5 in summer.
Specification of test methods	For petrol, test methods specified in 2009/30/EC or EN228:2008 and for Diesel, test methods specified in 98/70/EC or EN590: 590 have been used in 2013.
Collection of sales data	The institute VÚRUP received the sale data from Ministry of Environment (sales data is provided directly from fuel dispensing sites).

Other details

Besides the required analyses, the density of each petrol sample had been determined. This data was used for recalculation of the litres sold to tonnes of each petrol grade.

Petrol sold contained bio-components (ethanol and ETBE) according to EN 228. Diesel fuel contained FAME up to 7% V/V.

28.2.2 Fuel Quality Monitoring System

28.2.2.1 *Sampling*

- The organisation responsible for sampling, analysis and reporting is VÚRUP, (Accredited Testing Laboratories & Accredited Inspection Body, www.snas.sk).
- Types of locations at which sampling is carried out: refuelling stations only.
- Frequency of sampling and selection of sampling points: during summer and winter period, selection of sampling points is made by management of Testing Laboratories from database of refuelling stations.
- The applied monitoring system is equivalent of the CEN system.

28.2.2.2 *FQMS administration*

Public bodies responsible for managing and implementing of the FQM Directive: Ministry of Environment and Slovak Inspection of Environment.

Fuel sampling is carried out by contracted institution (VÚRUP) accredited according to EN ISO/IEC 17020 and EN ISO/IEC 17025 selected by public competition. The annual data concerning the sale of petrol and diesel is provided by Ministry of Environment. When non-compliant samples are discovered the Slovak Inspection of Environment is responsible for taking action (financial punishment). In Slovakia the EN 14274 model C was applied from August 2004. Number of National refineries: 1 (Bratislava), number of distribution terminals: 2 (SLOVNAFT). The Annual Fuel Quality Monitoring data report is provided every year by the deadline (30th June).

28.2.2.3 *National Legislation that transposed the FQD*

The Fuel Quality Directive has been transposed into Slovak national law system in the form of Ministerial Decree No. 362/2010 establishing fuel quality requirements and keeping records of fuel. This Decree fully transposed the Directives: 98/70/EC, 2003/17/EC, 1999/32/EC, 2005/33/EC and 2009/30/EC.

28.2.2.4 *Reporting periods*

- The fuel samples are not taken and tested during the transition period, the fuel samples are taken and tested only during summer period (from 1st May to 30th September) and only winter period (from 15th November to 28/29th February).
- Therefore only the results of fuel samples taken during the summer and the winter periods are reported within this annual fuel quality report.

28.2.3 Compliance with Fuel Quality Limit Values

Table 28-3: Petrol Fuel Grades

Super 95 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Research Octane Number	95	94.6	93.7	2	1.7%
Motor Octane Number	85	84.5	82.3	2	1.7%
Vapour Pressure	60	61.3	65.3	1	1.6%
Olefins	18	19.5	26.1	1	0.8%
Aromatics	35	36	36.3	1	0.8%
Member State notes For all non-compliant samples, the dealer was penalised by the Slovak Inspection of Environment (S.I.E).					
SuperPlus 98 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Vapour Pressure	60	61.3	62.9	2	13%
Member State notes For all non-compliant samples, the dealer was penalised by the Slovak Inspection of Environment (S.I.E).					

Table 28-4: Diesel Fuel Grades

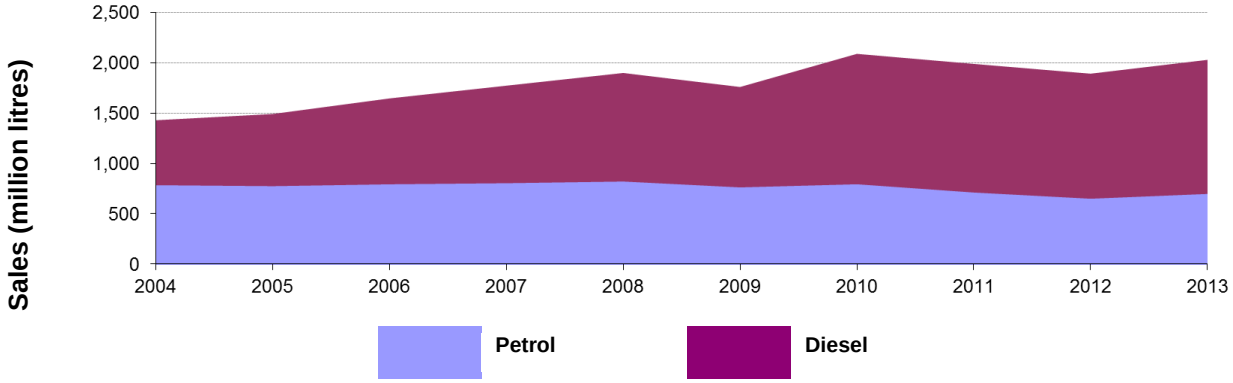
Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Distillation – 95-%-Point, ^{o}C	360	365.9	383	1	0.82%
Sulphur content, mg/kg	10	11.3	16.8	1	0.82%
Member State notes For all non-compliant samples, the dealer was penalised by the Slovak Inspection of Environment (S.I.E).					

28.3 Temporal Trends

Figure 28-2 shows the overall trend in total fuel sales for Slovakia since 2004. Since 2008 there has been a gradual decrease in the amount of petrol fuel grade sold, whilst diesel sales have grown but fluctuated. Petrol sales have fallen by 10.93% since 2004 (decrease of 86

million litres), but between 2012 and 2013 have increased by 7.3% (48 million litres). Diesel sales have more than doubled since 2004 (109% increase, equivalent to extra 687 million litres), and in the past year have grown by 7.3% (90 million litres).

Figure 28-2: Temporal trends in national sales of petrol and diesel (million litres)



28.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

Fuel sampling in Slovakia in 2013 recorded relatively few test results out of specification with limits (with 6% of petrol samples and 1.6% of diesel samples reported to be out of compliance). The analysis charts for petrol (Figure 28-3) and diesel (Figure 28-4) detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

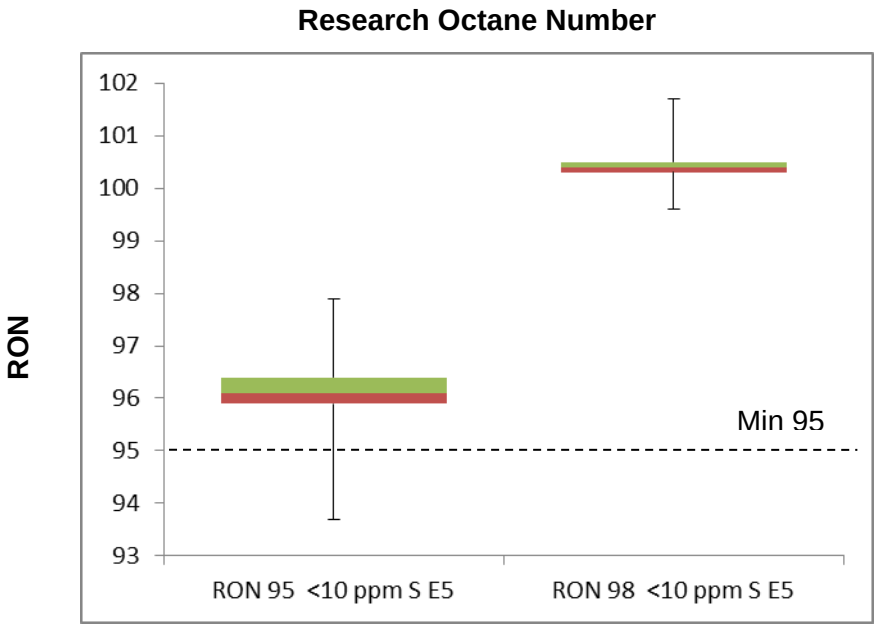
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

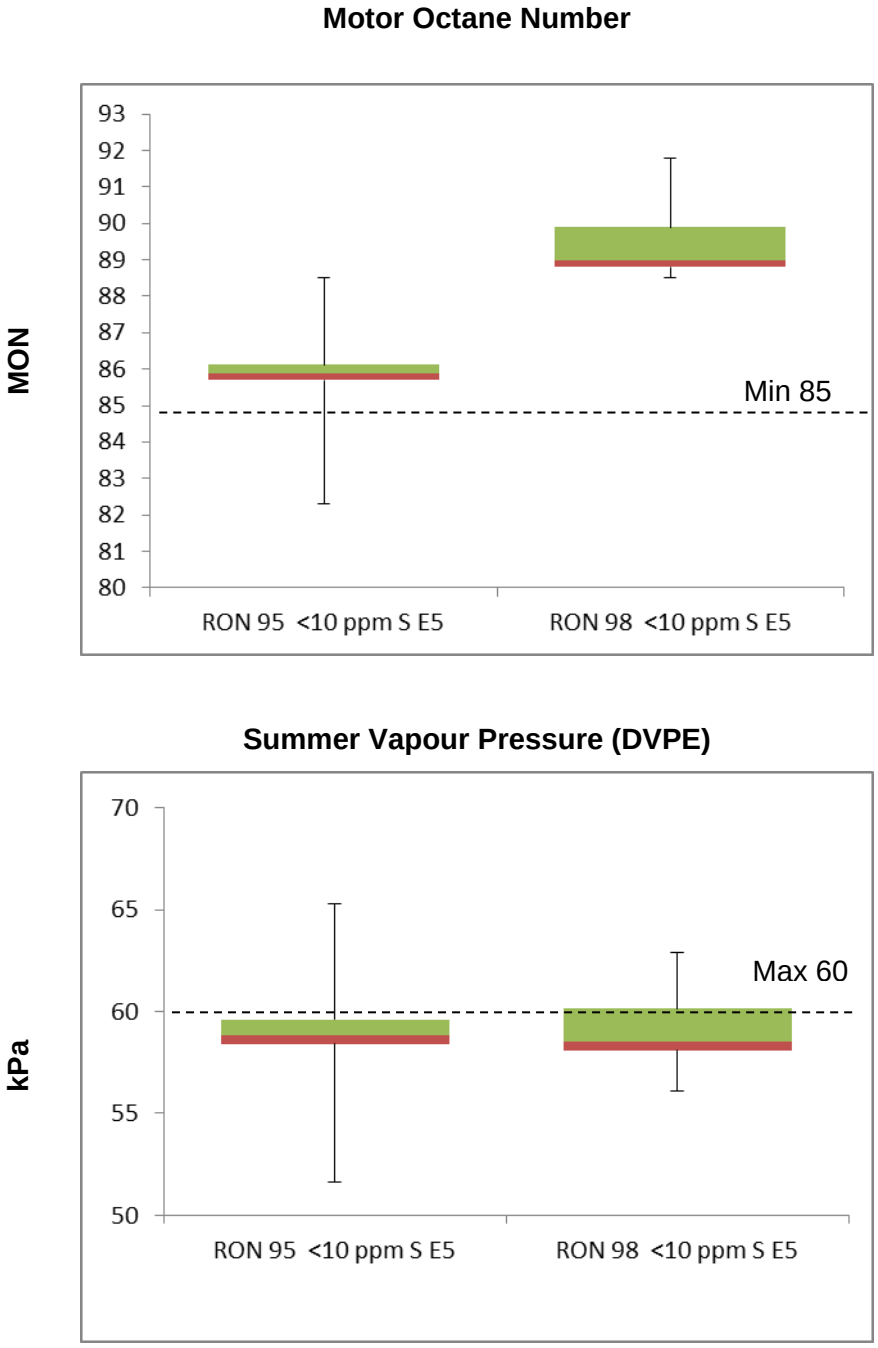
28.4.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of results. RON and MON sample results show that the fuels available in Slovakia have reasonably small variation in Octane levels, with RON 98 showing greater variability in the MON test due to the sample size. RON 98 has no non-compliant samples, whilst RON 95 is close to tolerance limits and has a few outliers on both the octane tests which were non-compliant.

Summer Vapour pressure results also show a tight distribution, again with a wider distribution for RON 98 due to sample size, but there are more outliers. RON 98 has 2 non-compliant samples and RON 95 has 1 non-compliant sample using method EN 13016-1.

Figure 28-3: Petrol analysis



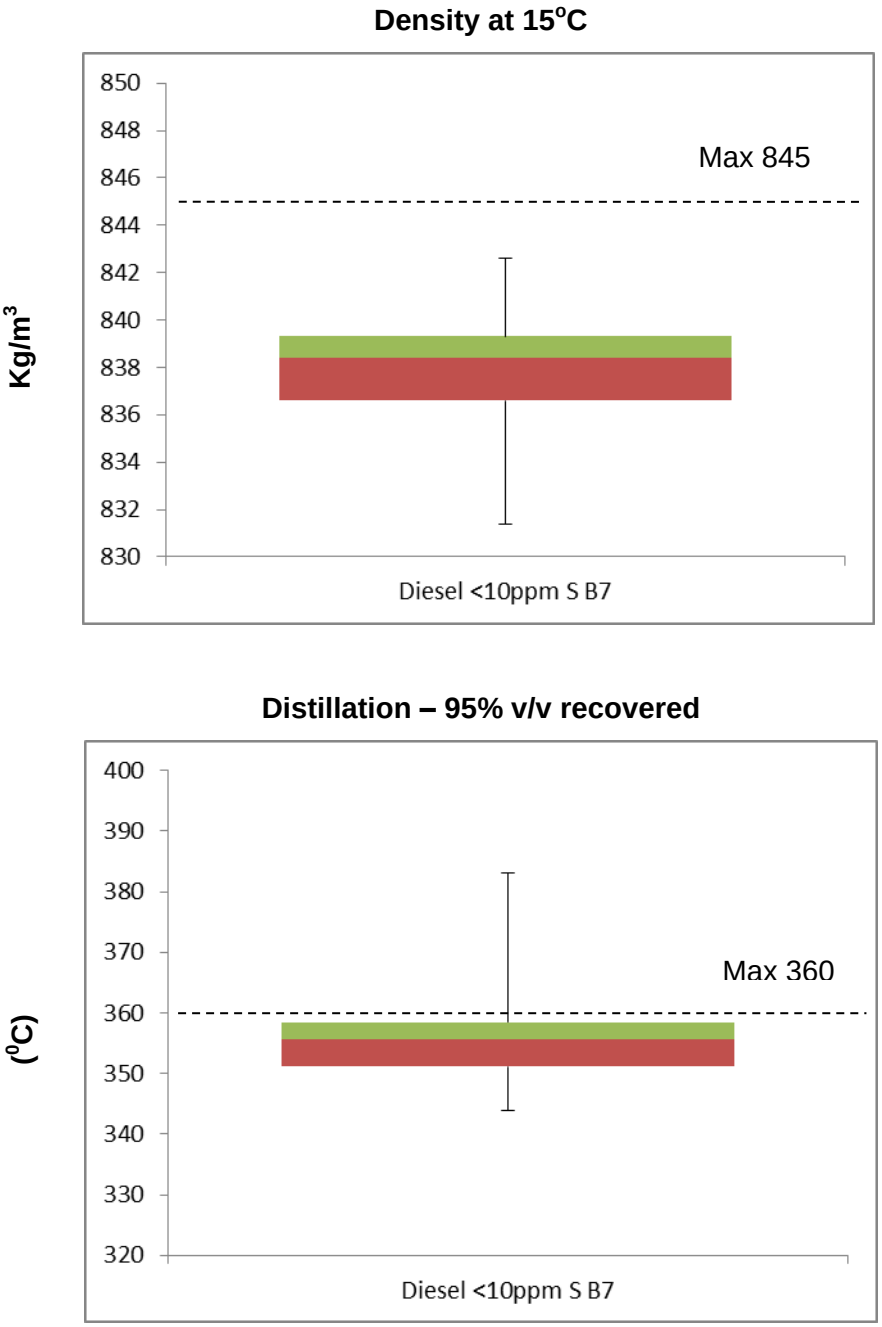


28.4.2 Diesel Analysis

Density at 15°C shows that the majority of results for diesel are tightly distributed. There are some significant outliers, but no results exceeded tolerance limit.

Distillation similarly gives a much more skewed distribution, close to tolerance limits, with a number of outliers exceeding tolerance limits.

Figure 28-4: Diesel analysis



28.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
Year	**Monitoring**	**Reporting**
2013	• As in previous years, Slovakia has	• Report was received on time and all

	used EN 14274 Statistical Model C; however Model A may be more appropriate as outlined in EN 14274.	information was provided.
2012	• As in previous years, Slovakia has used EN 14274 Statistical Model C; however Model A may be more appropriate as outlined in EN 14274.	• The report was received on the 25th June, before the 30th June deadline.
2011	• As in previous years, Slovakia has used EN 14274 Statistical Model C; however Model A may be more appropriate as outlined in EN 14274. • Slovakia did not report parameter results for Manganese for any petrol grades in 2011.	• Report was received on time and all information was provided.

29 Slovenia

29.1 Fuel Availability 2013

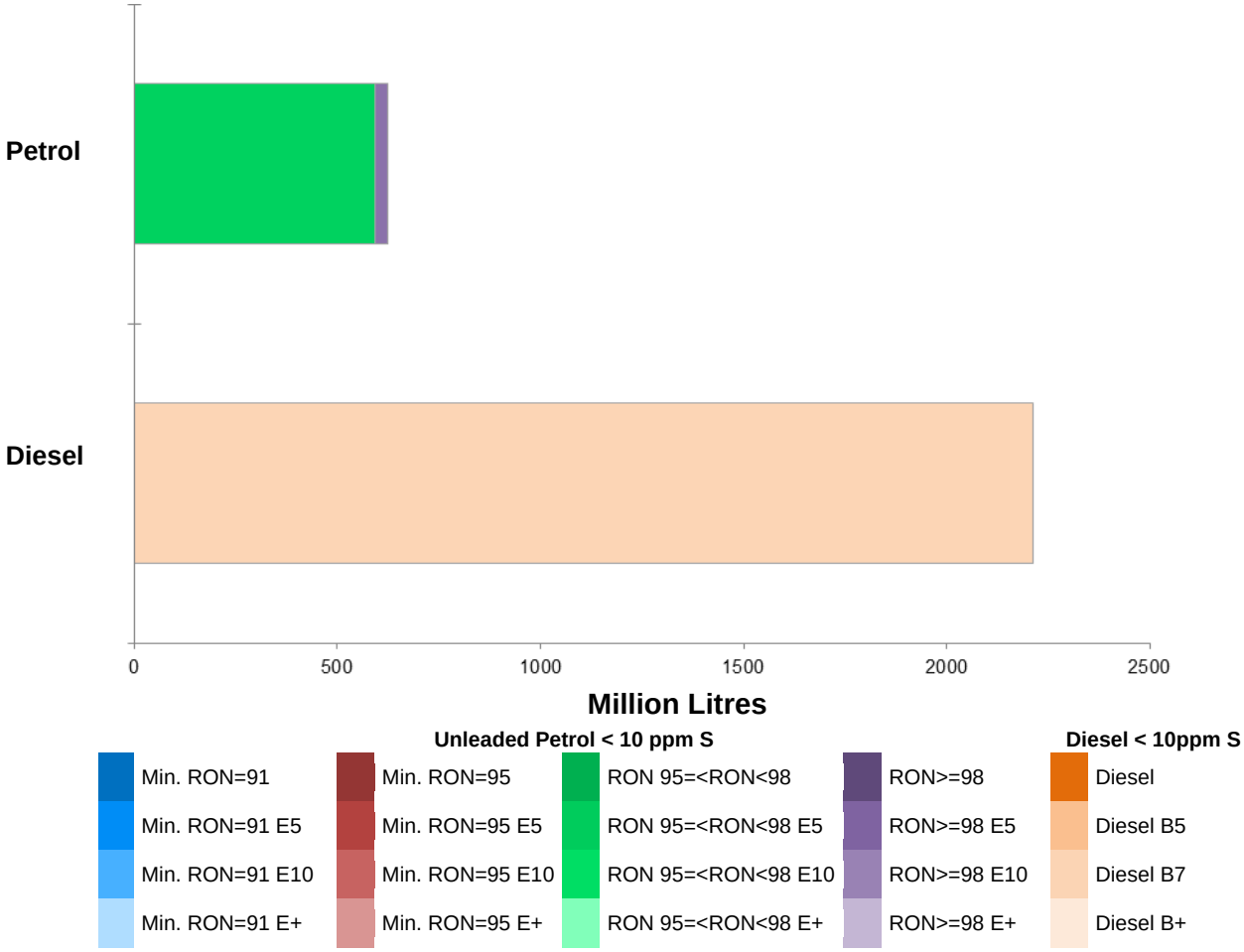
The following table lists the fuels that were reported to be available nationally in 2013.

Table 29-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum 95 =< RON < 98) E5	NMB 95
Unleaded petrol (minimum RON >= 98) E5	NMB 98
Diesel fuel B7	B7

29.1.1 Sales, sampling and reporting

Figure 29-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Slovenia were dominated by diesel fuel sales; 2,213 million litres of diesel was sold in comparison to 623 million litres of petrol fuel sales (all petrol grades combined). 94% of petrol fuel sales were comprised of fuel grade Unleaded petrol (minimum 95 =< RON < 98) E5.

Table 29-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol 95=<RON<98 (<10 ppm S) E5	591	94.88%	42	77	100	Yes	18 of 19	(a)
Unleaded petrol RON>=98 (<10 ppm S) E5	32	5.12%	11	16	6	Yes	18 of 19	(a)
Total Petrol	**623**	**100.00%**	**53**	**93**	**106**	**Yes**	**18 of 19**	
Diesel (<10 ppm sulphur) B5	2,213	100.00%	64	101	100	Yes	6 of 6	
Total Diesel	**2,213**	**100.00%**	**64**	**101**	**100**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a)	Additional notes	Manganese content was not reported in petrol samples.

29.1.1.1 *Petrol Samples*

For small Member States using statistical model C, the minimum sampling quantity per period is 50. Slovenia therefore met the minimum sampling requirements for 95<RON<98. Slovenia also complied with minimum sampling requirements for RON 98 as fuel with less than 10% market share.

29.1.1.2 *Diesel Samples*

Diesel fuel samples tested in 2013 exceeded the total minimum requirement of 50 samples per summer and winter period.

29.2 Fuel Quality Monitoring 2013

29.2.1 Description of System

Responsible organisation(s)	Slovenian Environment Agency
Fuel Quality Monitoring System (FQMS)	EN 14274 Statistical Model C
Country Size	Small
Summer Period	Normal
Location(s) of sampling	Service stations for petrol, service stations and terminals for diesel.
Time/frequency of sampling	Samples have been taken throughout the year for diesel and petrol.
Specification of test methods	The fuel quality monitoring system in Slovenia is based on the European Standard EN 14274:2003, utilising statistical model C (small country). The test methods were in compliance with the Directive specifications, except for determination of cetane number. Validation and traceability of the cetane number method was provided according to EN ISO/IEC 17025:2005. All parameters except manganese (MMT) which were specified in Directive 98/70/EC 1998 relating to the quality of petrol and diesel fuels, and last amended by Directive 2009/30/EC, were analysed in petrol and diesel fuels samples. According to the annual reports of monitoring bodies NO exceedances of Directive 2009/30/EC limit values were observed in 2013, the maximum values found were still inside a measuring uncertainty of the method applied.
Collection of sales data	Sales data collection for 2013 was provided by Slovenian Environment Agency, a part of the Ministry of Agriculture and the Environment that receives annual reports from fuel distributors as well as a summary for all distributors from two accredited agencies (Monitoring bodies) responsible/nominated for quality control and reporting of these data. Each Monitoring body and selected distributors are connected by contracts according to national legislation.

29.2.2 Fuel Quality Monitoring System

29.2.2.1 *Sampling*

The fuel quality monitoring system in Slovenia is based on the European Standard EN 14274:2003, utilising statistical model C (small country).

Environment Agency of the Republic of Slovenia 3-monthly and annual reports from two independent inspection bodies, which are responsible for the sampling plan, carrying the sampling and analysis of fuel samples out, and collecting and processing the data. They are accredited by the Slovenian Accreditation as an inspection body according to EN ISO/IEC

17020:2004. The analyses of samples are carried out by testing laboratories accredited according to EN ISO/IEC 17025:2005.

The test methods were in compliance with the Directive specifications, except for determination of Cetane number. Validation and traceability of the Cetane number method was provided according to EN ISO/IEC 17025:2005.

In 2013 MMT was still not included in monitoring of quality of liquid fuel. Amendments of the Slovenian Decree on fuel quality are expected in 2014.

29.2.2.2 *FQMS administration*

The Ministry of Agriculture, the Ministry of the Environment and the Environment Agency are responsible for the administration of FQMS.

29.2.2.3 *National Legislation that transposed the FQD*

The Fuel Quality Directive have been transposed to Slovenian legislation in 2011 and implemented from October 1st, 2011 by the Decree on Physico-chemical properties of Liquid Fuels (Official Gazette of the Republic of Slovenia, No. 74/23, 9. 2011).

29.2.2.4 *Reporting periods*

Seasonal periods in Slovenia are as follows: Summer: from May the 1st to September the 30th; winter: from October the 1st to April the 30th. No Arctic (and any other) derogation have been granted so far. Samples were taken and tested regardless to the transition periods and analysis results were reported throughout the year according to the national legislation.

29.2.3 Compliance with Fuel Quality Limit Values

Table 29-3: Petrol Fuel Grades

MNB95 (RON (min 95 =< RON < 98) E5)- Details of samples that exceed tolerance limits:
No parameters exceeded tolerance limits
NMB98 (Unleaded petrol (minimum RON >= 98) E5)- Details of samples that exceed tolerance limits:
No parameters exceeded tolerance limits

Table 29-4: Diesel Fuel Grades

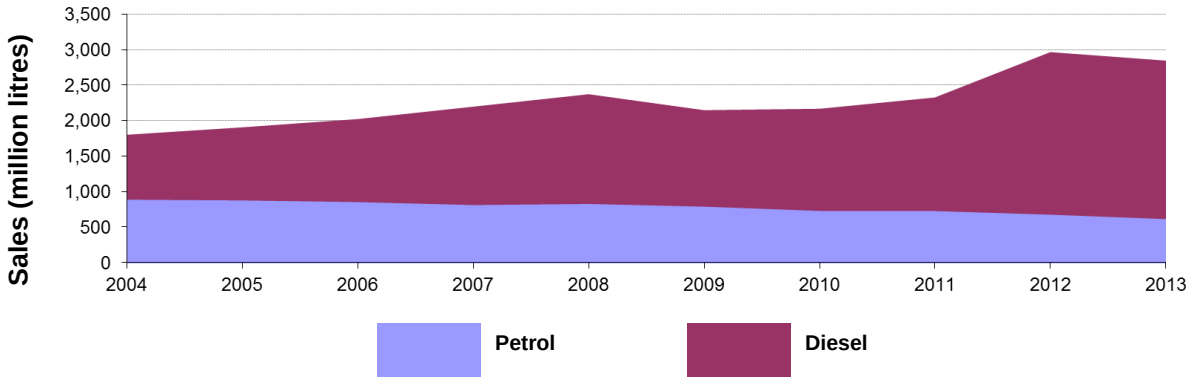
Diesel - Details of samples that exceed tolerance limits:
No parameters exceeded tolerance limits

29.3 Temporal Trends

Figure 29-2 shows the trend in total fuel sales since 2004. Diesel sales in Slovenia have fluctuated since 2004 and have had a record increase in 2012 (increase of 43.6% between 2011 and 2012); in 2013 diesel sales fell by 2.5% compared with previous year, 153% increase from 2004 sales (1,319 million litres).

Petrol sales have instead steadily decreased since 2004. In 2013 they were 30.5% lower than in 2004 and 9.1% lower than 2012 sales.

Figure 29-2: Temporal trends in national sales of petrol and diesel (million litres)



29.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

The analysis charts for petrol Figure 29-3 and diesel Figure 29-4 detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

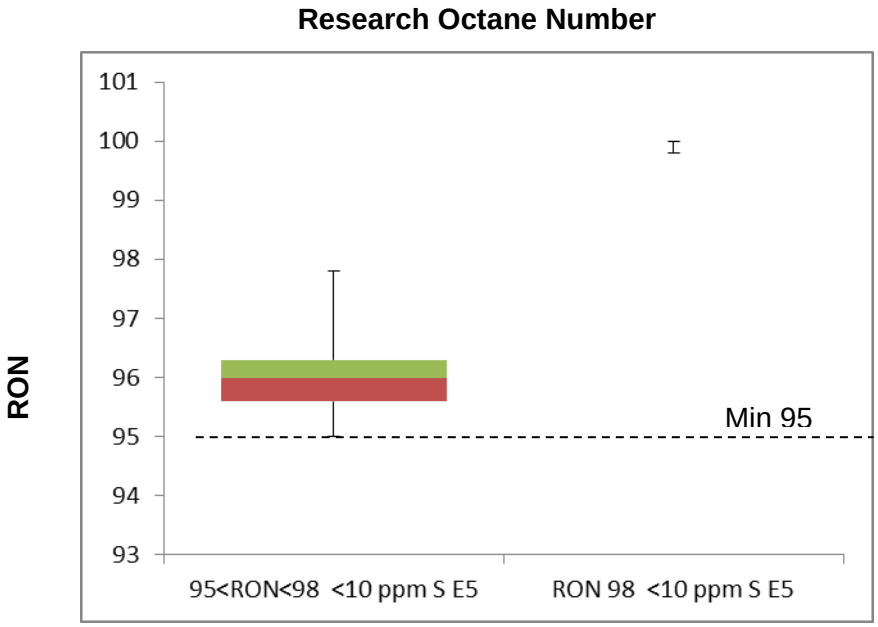
29.4.1 Petrol Analysis

Analysis of the samples for octane levels through the RON analysis show an even spread for 95<RON<98, whilst minimum, median, 25% and 75% of samples all reported a value of 99.8 for RON 98 petrol.

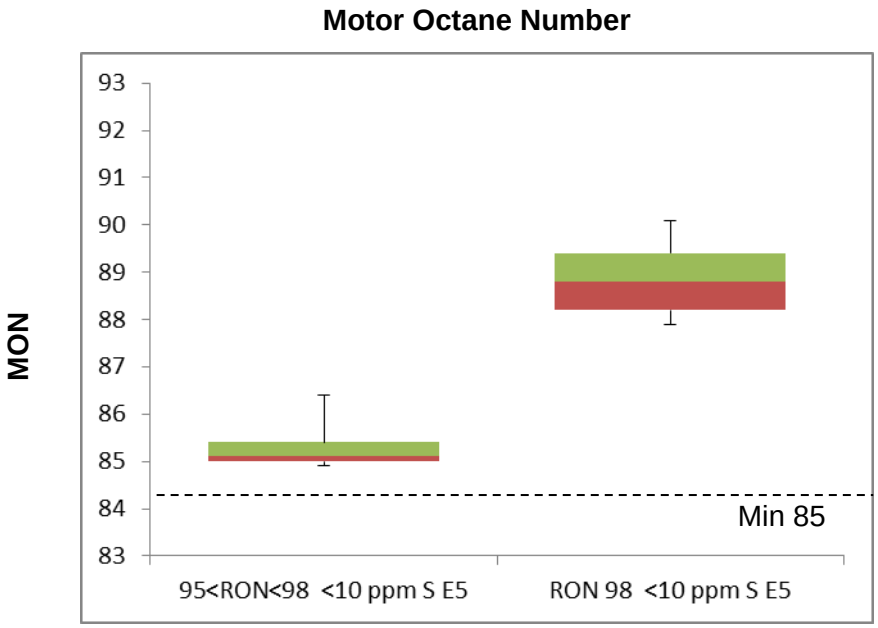
MON analysis shows a skew of results away from tolerance limits. 95<RON<98 remains close the tolerance limits for MON, whilst for RON 98 the spread is wider but far from tolerance limits.

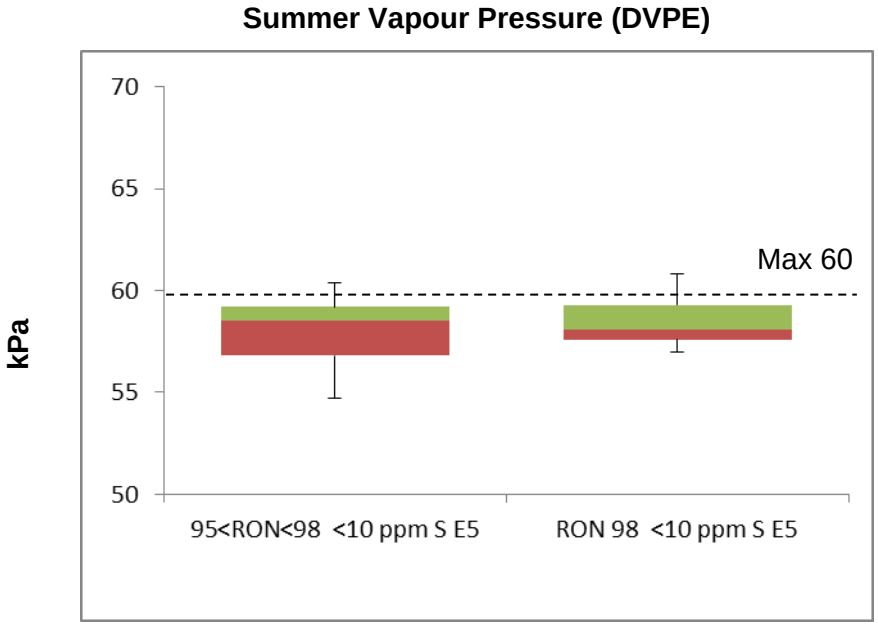
There is a fairly even distribution of summer vapour pressure samples, with only a few outliers exceeding limits.

Figure 29-3: Petrol analysis



Note: RON 98 minimum, median, 25% and 75% of samples overlap.

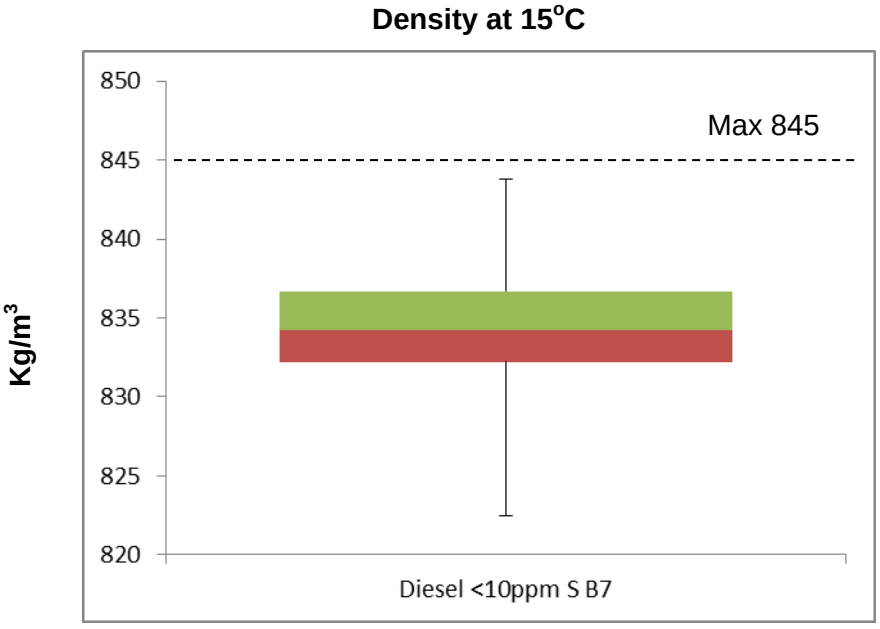


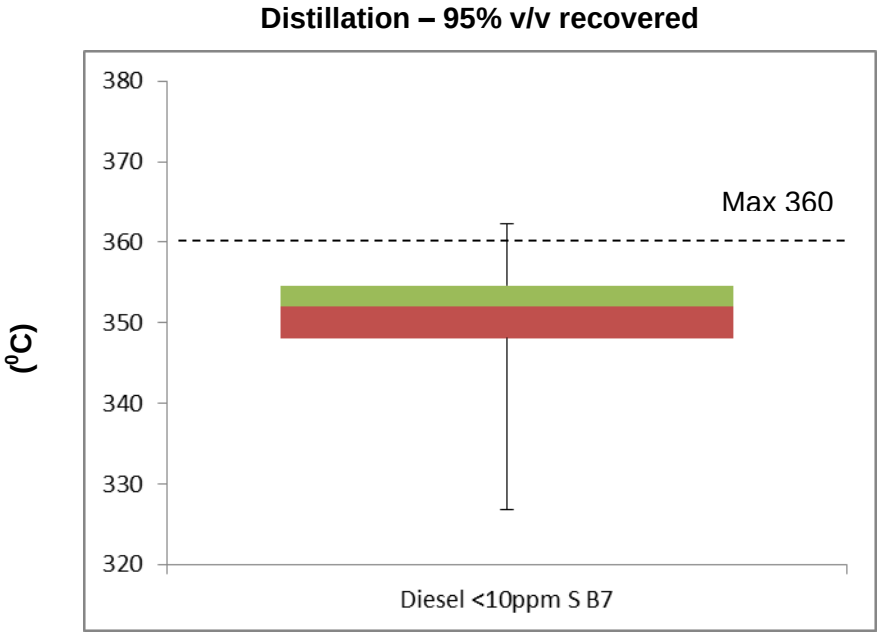


29.4.2 Diesel Analysis

Diesel samples for density are distributed rather evenly, with only a few outliers close to tolerance limits. Distillation results are closer to limits and a few outliers even above them, but still within tolerance thresholds.

Figure 29-4: Diesel analysis





29.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Slovenia did not report parameter results for Manganese content for petrol samples in 2013.	• The 2013 report was received on the 17th of June, ahead of the 30 June deadline. It was submitted in the correct format.
2012	• Slovenia did not report parameter results for Manganese content for petrol samples in 2012. • Slovenia did not report sufficient sampling quantities for petrol RON>=98 E5.	• The 2012 report was received on the 25th of June, well before the deadline of 30th June.
2011	• Slovenia did not report parameter results for Manganese content for petrol samples or FAME content for diesel fuel samples in 2011. • Slovenia did not report sufficient sampling quantities for petrol RON>=98 E5.	• The 2011 report was submitted within the member state deadline.

30 Spain

30.1 Fuel Availability 2013

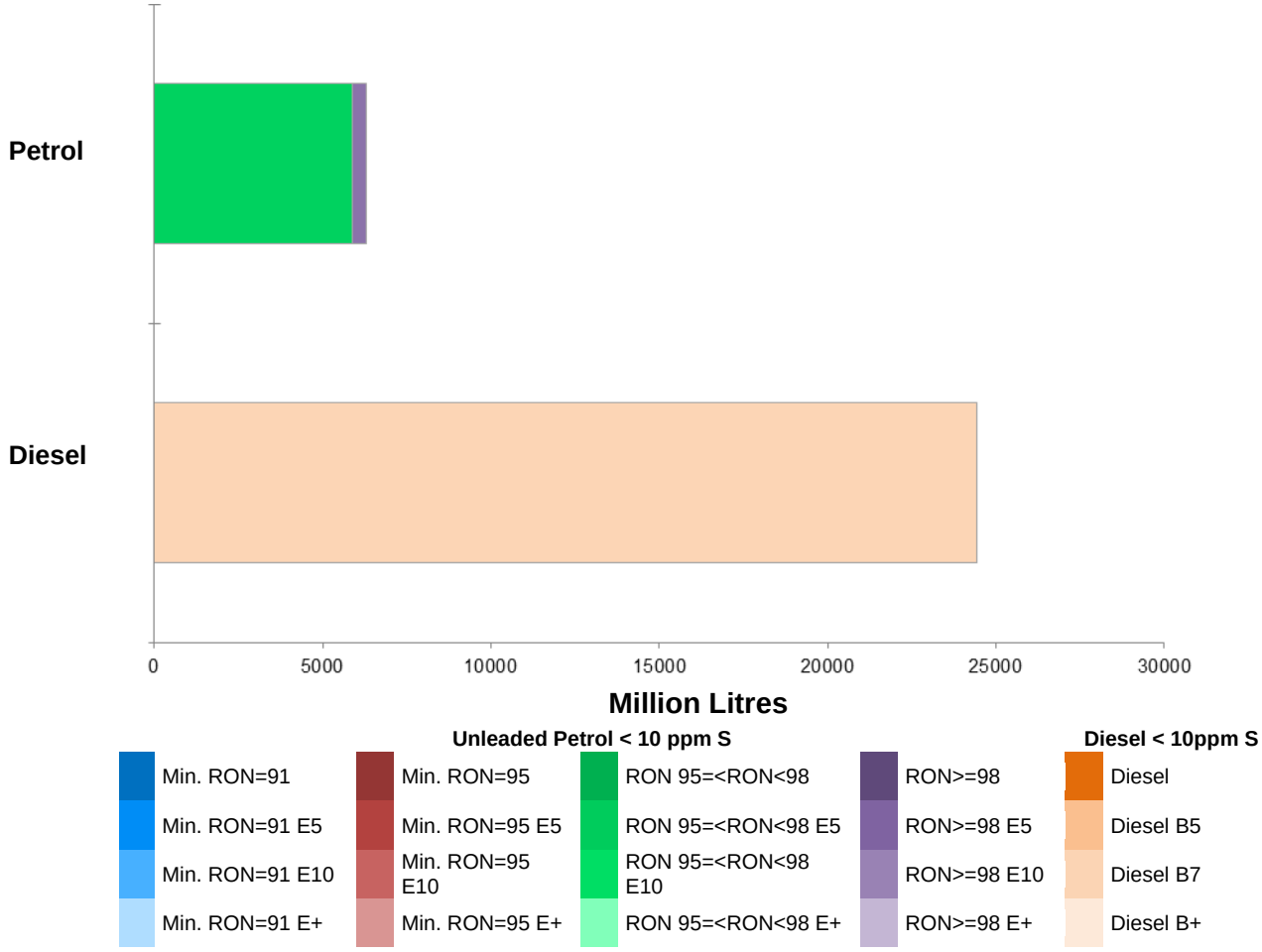
The following table lists the fuels that were reported to be available nationally in 2013.

Table 30-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum 95 =< RON < 98) E5	Gasolina 95
Unleaded petrol (minimum RON >= 98) E5	Gasolina 98
Diesel fuel B7	Gasóleo A

30.1.1 Sales, sampling and reporting

Figure 30-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Spain were heavily dominated by diesel fuel sales; 24,411 million litres of diesel with up to 7% biofuel content was sold in comparison to fewer than 6,300 million litres of petrol fuel sales (all petrol grades combined). Petrol fuel sales were mainly comprised of fuel grade 95=<RON<98 (with up to 5% biofuel content) with only 7.3% of petrol fuel sales RON 98 (with up to 5% biofuel content).

Table 30-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol 95=<RON<98 (<10 ppm S) E5	5,872	93.27%	100	100	200	Yes	19 of 19	
Unleaded petrol RON>=98 (<10 ppm S) E5	424	6.73%	100	100	14	Yes	19 of 19	
Total Petrol	**6,296**	**100.00%**	**200**	**200**	**214**	**Yes**	**19 of 19**	
Diesel (<10 ppm sulphur) B7	24,411	100.00%	100	100	200	Yes	6 of 6	
Total Diesel	**24,411**	**100.00%**	**100**	**100**	**200**	**Yes**	**6 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters. Spain has reported results for all parameters in all fuel grades.

30.1.1.1 *Petrol Samples*

Spain has collected the exact number of samples required for petrol 95=<RON<98, and well above the minimum sample number required for RON 98. However, only 84 95=<RON<98 fuel samples and only 42 RON 98 samples were taken at service stations, which indicates non-compliance with minimum requirements of statistical model A. Spain however explains that according to Article 8.2 of Directive 98/70/EC the use of an alternative fuel quality monitoring system may be permitted provided that such a system ensures results of equivalent confidence. Spain considers that the national monitoring system fulfils this requirement due to the use of samples at service stations and in terminals, while the latter ones belong to an integrated network operated by one single company with stringent quality requirements. Spain however expresses their strong commitment to increase the number of samples taken at service stations in next submissions.

30.1.1.2 *Diesel Samples*

Spain has collected the exact number of samples required for a large country using statistical model A. However, only 99 samples were taken at service stations, which indicates non-compliance with minimum requirements of statistical model A. See further section 29.1.1.1 for Spain perceptions on meeting the requirements.

30.2 Fuel Quality Monitoring 2013

30.2.1 Description of System

Responsible organisation(s)	Directorate General for Energy Policy and Mines. Ministry of Industry, Energy and Tourism
Fuel Quality Monitoring System (FQMS)	EN14274 Statistical model A.
Country Size	Large
Summer Period	Normal
Location(s) of sampling	Samples taken at terminals: taken from storage tanks at atmospheric pressure according ISO 3170:2004 at or near atmospheric pressure. Samples have been taken from around 30 terminals covering the whole country. Samples taken at service stations: Samples have been taken from service stations from different regions of the country.
Time/frequency of sampling	As an average, around 30 samples are taken for product and month. Samples have also been taken during the transition periods of the current year. So, Spain's 2013 report will include this data.
Specification of test methods	Spain have since confirmed that all test methods in all samples have been those in EN:228. The only exception is the test for hydrocarbon content because the test specified in EN:228 (EN 14517) is obsolete, so for these tests, the actualised method EN 22854 has been used.
Collection of sales data	Oil Operators are obliged to provide monthly sales data to the Spanish Administration on the domestic market according to the procedure and forms approved by Resolution from the Directorate General for Energy Policy and Mining, dated 29th May 2007. This information is analysed, checked and compiled for two main purposes: verifying compliance with the Spanish regulations, namely emergency oil stocks and statistics. Statistics are also published with information about the exact sales for each month and consolidated for each year.

Other details: Spain employs differing summer and winter periods for petrol and diesel fuels. The periods for gasoline are: summer from May 1 through September 30 and winter from October 1 through April 30. The periods for diesel are summer from April 1 through September 30 and winter from 1 October to 31 March.

It is mandatory for fuels that contain metallic additives to be labelled at the pump in Spain. According to the RD 1088/2010 of September 3; "if you incorporate these gasoline additives, it shall be labelled indicating "Contains metallic additives". " as per the requirement in the Directive.

In the case of gasoline with more than 5 per cent by volume of ethanol and more than 2.7 per cent by mass of oxygen, retailers are required to inform the consumer with the following signage: "Before using this product make sure it is suitable for your engine". In the case of fuels with more than 7 per cent by volume biodiesel, the percentage of biodiesel contained in the product should be indicated, plus the following signage: "Before using this product make sure it is suitable for your engine."

30.2.2 Fuel Quality Monitoring System

30.2.2.1 *Sampling*

Samples are taken at terminals and service stations (point of delivery to final consumers). Samples are taken from around 30 terminals covering the whole country. Samples are taken from storage tanks at atmospheric pressure according ISO 3170:2004 at or near atmospheric pressure. Samples are taken from service stations from different regions of the country.

30.2.2.2 *FQMS administration*

The Ministry of Industry, Energy and Tourism is responsible for FQMS administration. The Autonomous Regions participate in the FQMS as responsible for sampling and analysing the fuels. The pipe network and the majority of fuel storages are jointly operated under TPA regime. The products are commingled to optimise the physical flows. This procedure enhances reliability and coherence in methodology and reporting, and is fully compliant with article 8.2 of Directive 98/70/EC.

30.2.2.3 *National Legislation that transposed the FQD*

Fuel Quality specification is transposed into Spanish law in Real Decrero RD 61/2006 and RD 2088/2010

Sampling and analysis transposed in Art. 7 of RD 61/2006.

30.2.2.4 *Reporting periods*

Spain employs differing summer and winter periods for petrol and diesel fuels:

Diesel: winter from 01-10 to 31-03. Summer from 01-04 to 30-09.

Gasoline: winter from 01-10 to 30-04. Summer from 01-05 to 30-09

30.2.3 Compliance with Fuel Quality Limit Values

Table 30-3: Petrol Fuel Grades

Gasolina 95 and Gasolina 98 – Details of samples that exceed tolerance limits:
No samples were found to be out of compliance.

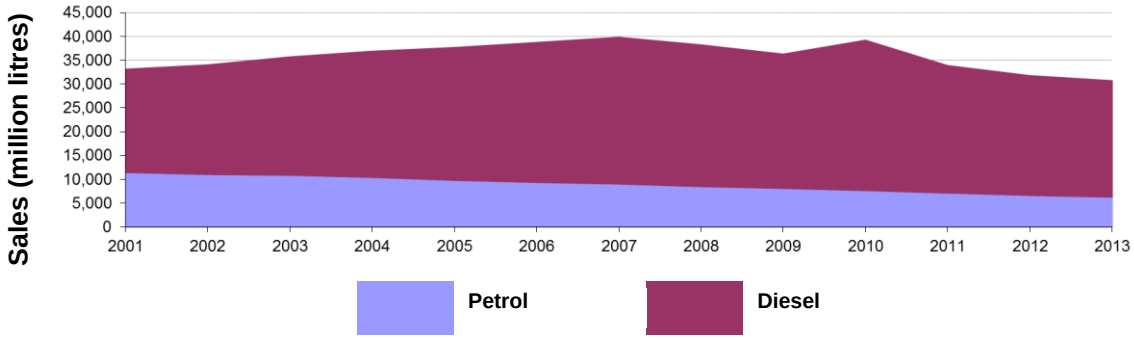
Table 30-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:
No samples were found to be out of compliance.

30.3 Temporal Trends

Figure 30-2 shows the trend in total fuel sales since 2001. Diesel sales have fluctuated from 2001 to 2013; overall they have increased by 2,770 million litres (12.8%), but they have decreased by 700 million litres (2.8%) compared with 2012. Petrol sales have gradually decreased by 5,186 million litres (45.2%) in the period 2001 to 2013 and decreased by 362 million litres (5.4%), compared with 2012.

Figure 30-2: Temporal trends in national sales of petrol and diesel (million litres)



30.4 Statistical Analysis

The charts intended for this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4.

Fuel sampling in Spain in 2013 recorded no test results were found to be out of specification with limit values. The analysis charts for petrol (***Figure 30-3***) and diesel (***Figure 30-4***) detail the distribution of sample results for the 5 selected parameters;

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

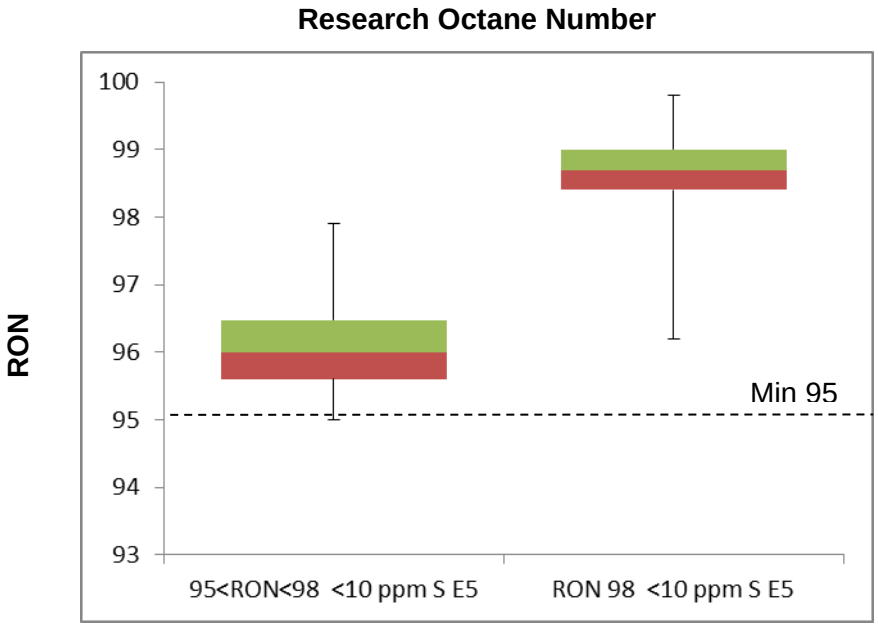
30.4.1 Petrol Analysis

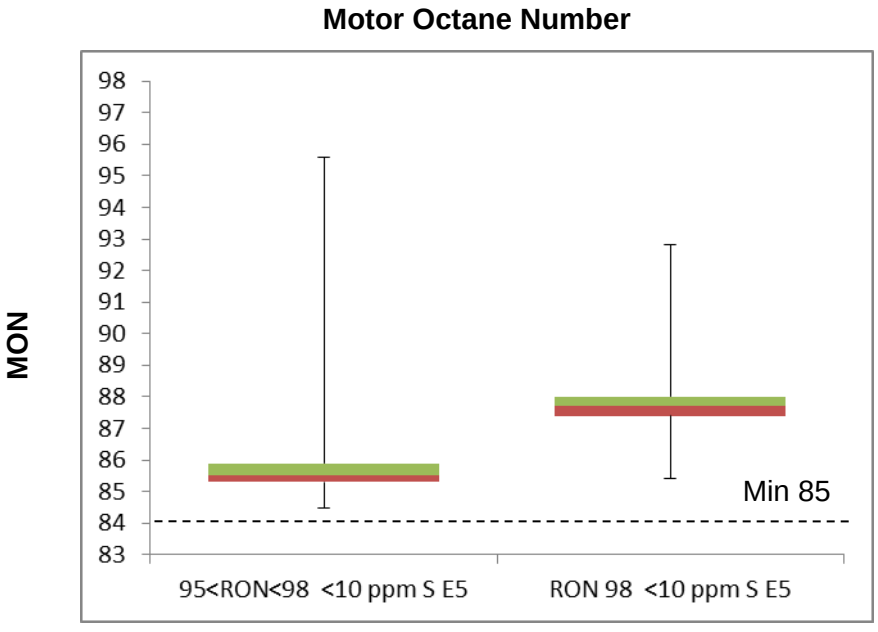
Sample results for 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of sample results.

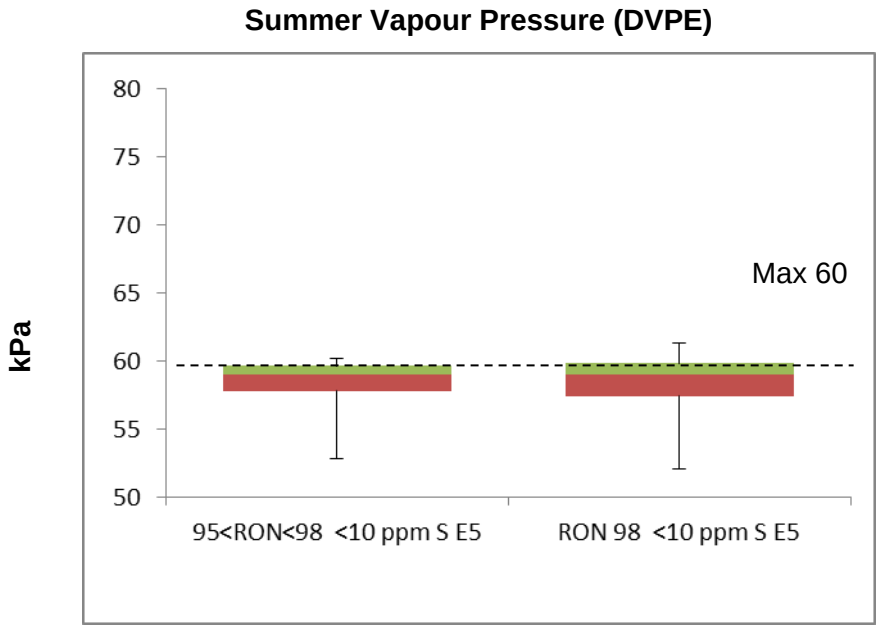
All RON, MON and DVPE samples remained within tolerance limits for the parameters analysed. Typically, RON remains fairly tight to specification (particularly RON 95 petrol) with narrow bands showing where the majority of samples lie and small variation in outliers. Outliers in the MON tests show instead a higher variation.

Summer Vapour pressure results show a tighter distribution, are skewed close to specifications with the majority (75%) of samples close or above the 60kPa limit value for the parameter (no value exceeded tolerance limits).

Figure 30-3: Petrol analysis



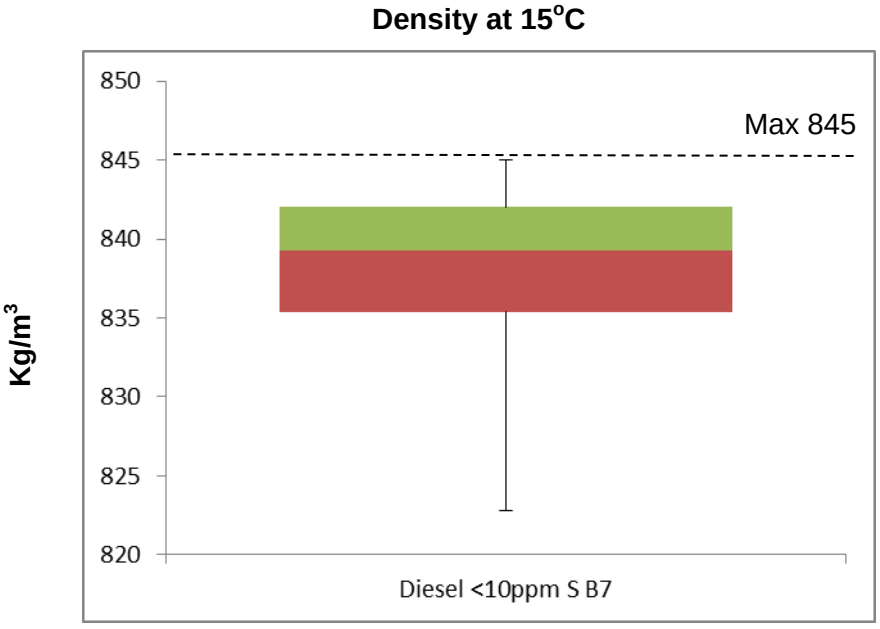


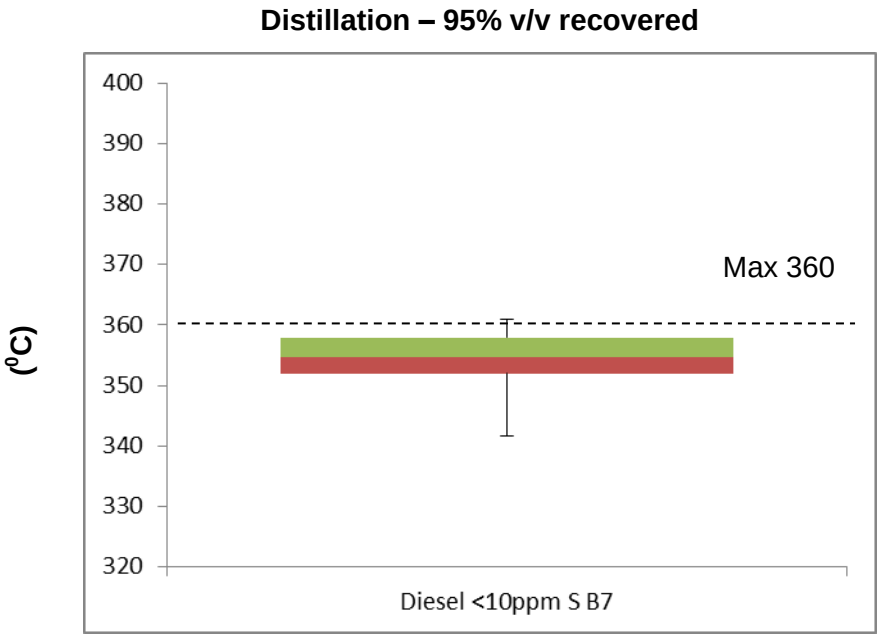


30.4.2 Diesel Analysis

No samples reportedly exceeded tolerance limits for the parameters; and both sets of values remained within limit values for the parameters analysed. Similar to petrol fuel results reported for Spain in 2013, parameter test results are tight to specifications.

Figure 30-4: Diesel analysis





30.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Samples numbers in each summer and winter period should demonstrate equivalence with samples required for a large country in EN 14274; a minimum of 100 samples from service stations per summer period and per winter period. • While Spain considers them meeting the requirements, it has not been possible to determine the compliance based on the information provided so that any issues of contamination in the supply chain are highlighted. Spain expresses their strong commitment to increase the number of samples taken at service stations in next submissions.	• The report was received on the 22nd of July, after the 30 June deadline. It was submitted in the correct format.
2012	• No comments	• The report was received on the 1

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
		August, after the 30 June deadline.
2011	• No detail has been provided about whether test methods comply with those specified in the Directive. • No additional detail has been provided about the collection of sales data in 2011.	• Report was received on time and all information was provided.

31 Sweden

31.1 Fuel Availability 2013

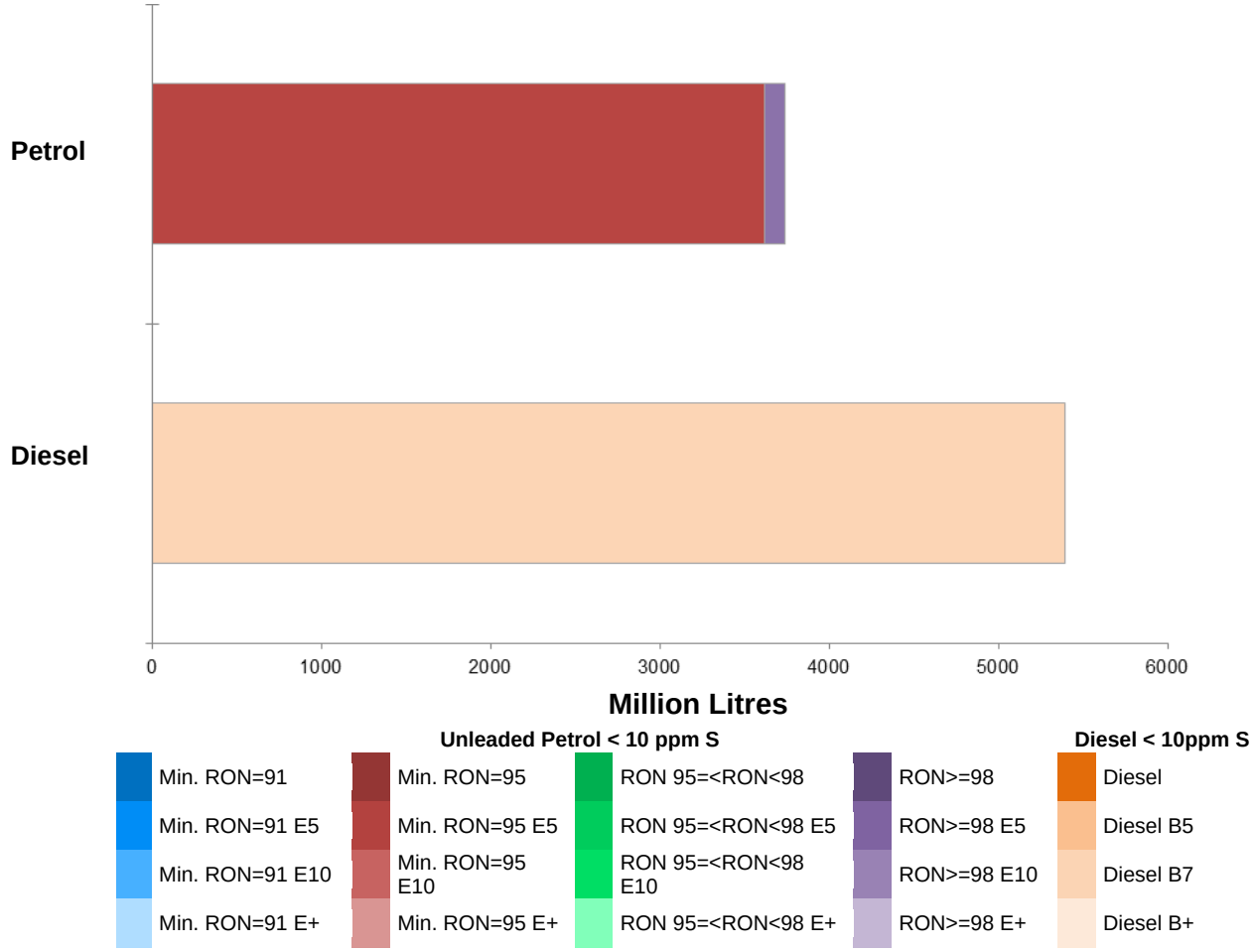
The following table lists the fuels that were reported to be available nationally in 2013.

Table 31-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	Blyfri 95
Unleaded petrol (minimum RON >=98) E5	Blyfri 98
Diesel fuel B7	Diesel Mk1/MK3

31.1.1 Sales, sampling and reporting

Figure 31-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in Sweden were predominantly led by diesel fuel sales; 5,394 million litres of diesel was sold in comparison to 3,735 million litres of petrol fuel sales (all petrol grades combined). Petrol fuel sales were mainly comprised (96.9%) of fuel grade RON 95.

Table 31-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E5	3,619	96.9%	257	282	(100)	Yes	12 of 19	(a)
Unleaded petrol min. RON >=98) (<10 ppm S) E5	116	3.1%	41	22	(4)	Yes	13 of 19	(a)
Total Petrol	**3,735**	**100.00%**	**298**	**304**	**(104)**	**Yes**	**13 of 19**	
Diesel (<10 ppm sulphur) B5	5,394	100.00%	390	386	(100)	No	5 of 6	(b)
Total Diesel	**5,394**	**100.00%**	**390**	**386**	**(100)**	**No**	**5 of 6**	

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters.
(a)	Additional notes	For petrol fuel grades, sample tests were not reported on parameters methanol, ethanol (for RON 95 only), iso-propyl alcohol, tert-butyl alcohol, iso-butyl alcohol and other oxygenates.
(b)	Additional notes	For diesel fuel grades, sample tests were not reported on parameter FAME content. This is because FAME is added at the gantry. Sweden has the same quality for diesel fuel the whole year around. There are no winter and summer periods for diesel and no transition periods between winter and summer. The reported data for diesel are therefore an administrative allocation to facilitate comparison between MS.

31.1.1.1 *Petrol Samples*

Sweden did the required number of samples for all petrol fuel grades for a country classified as 'small'. However, Sweden did not fully comply with the requirements because all its samples were taken at terminals rather than at service stations.

31.1.1.2 *Diesel Samples*

Sweden did the required number of samples for the diesel fuel grade for a country classified as 'small'. However, Sweden did not fully comply with the requirements because all its samples were taken at terminals rather than at service stations.

31.2 Fuel Quality Monitoring 2013

31.2.1 Description of System

Responsible organisation(s)	The Swedish Petroleum and Biofuels Institute
Fuel Quality Monitoring System (FQMS)	National System
Country Size	Small
Summer Period	Arctic
Location(s) of sampling	Terminals
Time/frequency of sampling	As in previous years, sampling has been carried out in both the summer and winter periods.
Specification of test methods	SS-EN 14274:2003 and SS-EN 14275:2003
Collection of sales data	Sales data come from national statistics.

Other details

Please see 31.2.1.1 - 4

31.2.1.1 *Sampling*

The Swedish fuel quality monitoring model is based on a National System. The Swedish Petroleum and Biofuels Institute compiles the data for this annual Fuel Quality Monitoring Report. The Swedish Transport Agency sends the report to the European Commission. The quality assessment system consists of compilation of quality data of all batches produced in Sweden and also all import batches for the Swedish market. The reported data represents more than 98 % of the sales of petrol and diesel in Sweden.

In 2013, the Swedish Transport Agency, as an assessment of the national monitoring system's equivalency to the CEN system, carried out tests by an accredited test laboratory. The tests included subsequent analysis of the samples according to the same test methods as in this Excel template and to what is required in SS-EN 14274:2003 and SS-EN 14275:2003. The sampling from the fuel dispensing sites showed good conformity for both petrol and diesel with this report based upon quality data of the deliveries to the depots in 2013. The Swedish Transport Agency plans to do a similar follow-up assessment in the autumn of 2014 to also verify the 2014 FQMS Report.

31.2.1.2 *FQMS Administration*

The Swedish Transport Agency is responsible for managing and implementing most parts (including fuel quality) of the FQD except for the parts of the directive dealing with Greenhouse gas emission reductions and Sustainability criteria for biofuels (i.e. Article 7a-7d). The Swedish Energy Agency is responsible for Article 7a-7d of the FQD. This FQMS Report is under the responsibility of The Swedish Transport Agency. The Swedish Petroleum and Biofuels Institute assists The Swedish Transport Agency in compilation of quality data for the annual FQMS Report. Sampling and subsequent analysis for the additional assessment of the national monitoring is carried out by accredited test laboratories.

The Swedish Transport Agency verified the reliability of The Swedish Petroleum and Biofuels Institutes compilation for the FQMS 2013 Report. The sampling from the fuel dispensing sites showed good conformity for both petrol and diesel to the CEN system. A follow-up assessment is planned for in the autumn of 2014 to also verify the 2014 FQMS Report. From authority side we are confident that The Swedish Petroleum and Biofuels Institutes annual compilation of quality data for the FQMS Report gives a correct picture of the fuel quality situation in the country. There are no indications that the fuel quality would be a problem. Another reason for Sweden to choose this system is the considerable costs associated with the extensive sampling in a large, sparsely populated MS like ours with long geographical distances. There are also substantial annual costs associated with the analysis of the large number of samples per fuel grade required by the statistical model in question according to the European Standard EN 14274:2003.

Fuels and fuel quality are managed through the national Swedish legislation; "Drivmedelslag (2011:319) the law" and "Drivmedelsförordning (2011:3146) the regulation". According to 14 § in Drivmedelsförordning (2011:3146) The Swedish Transport Agency exercise the supervision over most parts of the national fuel regulation including fuel quality and is thereby the authority responsible for taking action where non-compliant samples have been discovered.

The number of National refineries in Sweden, producing automotive fuels, is 3. The number of distribution terminals is 32.

31.2.1.3 *National Legislation that Transposed the FQD*

The Swedish Transport Agency is responsible for managing and implementing most parts (including fuel quality) of the FQM except for the parts of the directive dealing with Greenhouse gas emission reductions and Sustainability criteria for biofuels (i.e. Article 7a-7d) which is a responsibility of The Swedish Energy Agency.

The specific fuel quality legislation of the Fuel Quality Directive 98/70/EC has in Sweden been transposed into the national law (Drivmedelslag (2011:319)), the national regulation (Drivmedelsförordning (2011:346)) and regulations from The Swedish Transport Agency (TSFS 2011:66, Transportstyrelsens föreskrifter och allmänna råd om informationskrav avseende tillsatser i drivmedel).

The Swedish Energy Agency is, as previously mentioned, responsible for Article 7a-7d of the FQM Directive. There is a national law and national regulation about Sustainability criteria for biofuels (Lagen (2010:598) om hållbarhetskriterier för biodrivmedel och flytande biobränslen respectively Förordning (2011:1088) om hållbarhetskriterier för biodrivmedel och flytande biobränslen). There is also the authority regulation STEMFS 2011:2, Statens Energimyndighets föreskrifter om hållbarhetskriterier för biodrivmedel och flytande biobränslen. The law contains the fuel specifications (Article 3 and 4 in the FQM Directive 98/70/EC) and standard references among them SS-EN 228:2008 in 6§ e. The environmental classes for petrol are found in 4-6 §§.

In Sweden there are two environmental classes for petrol (bensin) specified in 4-6 §§. Petrol environmental class 1, in the law, equals the formal national standard SS 155422. SS 155422 is now included as a national Appendix of EN 228. Under the headline Bensin i miljöklass 2 (Petrol in Environmental class 2) is petrol that equals EN 228 and ANNEX 1 of 98/70/EC defined. In Sweden there are also three environmental classes of diesel. Environmental class 1 and 2 for diesel equals the national standard SS 155435, defined in 8-10 §§. Diesel Environmental class 3 in the law, equals EN 590 and ANNEX II of the latest amendment to 98/70/EC.

The specific regulation about this annual FQMS Reporting (Article 8 in the FQD is found in 19 § of the national law (Drivmedelslag (2011:319) and in 7§ of the national regulation (Drivmedelsförordning (2011:346).

The authority regulations from The Swedish Transport Agency contain regulations regarding information to customers about additives (especially ethanol content in Article 3.3 and metallic additives in Article 8a of The Fuel Quality Directive).

31.2.1.4 *Reporting Periods*

Sweden by definition in Article 2.5 of the FQM Directive 98/70/EC belongs to the Member States with low ambient summer temperatures and have also applied for and been granted a vapour pressure derogation for the placing on the market of petrol with a maximum vapour pressure of 70 kPa during the summer period according to Article 3.5 in the Directive.

Transition periods for petrol between summer and winter grade differ depending on if it is the north or south part of Sweden. The summer and winter periods are regulated in the national law (Drivmedelslag (2011:319) and the transition periods are taken into account for in this annual Fuel Quality Monitoring Report.

Sweden has the same quality for diesel fuel the whole year around. There are no winter and summer periods for diesel and no transition periods between winter and summer. The reported data for diesel are therefore an administrative allocation to facilitate comparison between MS.

31.2.2 Compliance with Fuel Quality Limit Values

Table 31-3: Petrol Fuel Grades

Petrol Fuel Grades
No samples were found to be out of compliance when using summer vapour pressure of 70 as the limit value.

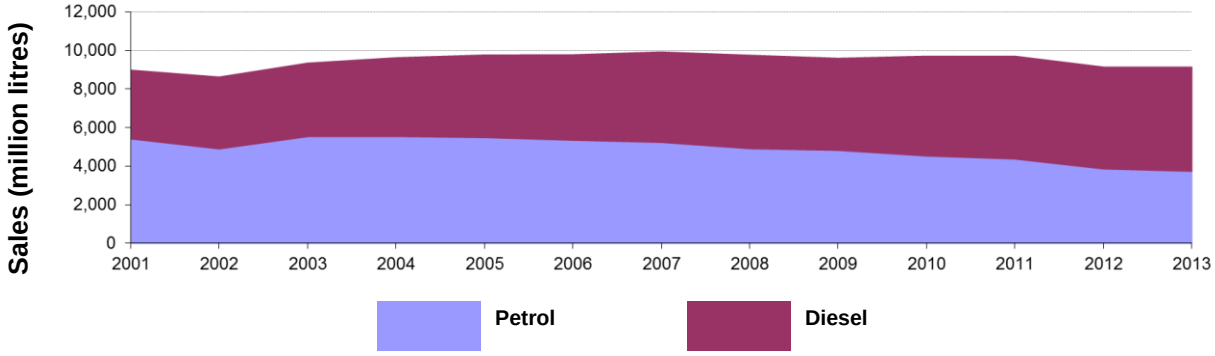
Table 31-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits
No samples were found to be out of compliance.

31.3 Temporal Trends

Figure 31-2 shows the trend in total fuel sales since 2001; diesel sales have increased by 1,838 million litres (51.7%), whilst petrol sales have decreased by 1,683 million litres (31%). Since 2012 diesel sales have increased by 122 million litres (2.3%), whilst petrol sales have decreased by 128 million litres (3.3%).

Figure 31-2: Temporal trends in national sales of petrol and diesel (million litres)



31.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15^{o}C
- Distillation – 95% v/v recovered

Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

31.4.1 Petrol and Diesel Analysis

Sweden has not provided the additional detail requested for 2013 reporting to enable further analysis.

31.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
2013	• Samples should be taken from service stations and not terminals. • Parameter results for methanol, ethanol, iso-propyl alcohol, tert-butyl alcohol, iso-butyl alcohol and other oxygenates, for petrol, should be provided. • Parameter results for FAME, for diesel, should be provided. • The analysis would benefit from the	• The 2013 report was received on the 26th June, before the 30th June deadline.

Key Areas for Improvement (3 years)		
	Monitoring	**Reporting**
	results of several statistical analyses (Standard Deviation, Number of samples outside 95% tolerance limit, 25% of Sample Value, 75% of Sample Value).	
2012	• Samples should be taken from service stations and not terminals. • Parameter results for methanol, ethanol, iso-propyl alcohol, tert-butyl alcohol, iso-butyl alcohol and other oxygenates, for petrol samples provided. • Parameter results for FAME, for diesel samples provided.	• Provision of statistical analysis for parameter values. • The 2012 report was received on the 28th June, before the 30th June deadline.
2011	• Sweden has not provided details regarding the frequency of sampling in 2011. • Diesel grade samples not reported in summer or winter (there is no seasonal change to the diesel quality in Sweden) and therefore it is not possible to determine compliance against minimum sampling requirements (although based on the overall sample numbers it seems likely that Sweden met the requirements). • Sweden did not report parameter results for oxygen content, methanol, ethanol, iso-propyl alcohol, tert-butyl alcohol, iso-butyl alcohol, other oxygenates or manganese for petrol fuel grades in 2011. • Sweden did not report parameter results for FAME content for diesel fuel grades in 2011. • Sweden did not complete the statistical results section of the template and hence no statistical analysis charts for petrol or diesel are available to detail the distribution of sample results for the selected parameters. While this reporting element is not mandatory, additional information was requested by the	• The 2011 report was submitted within member state deadline. • No details have been provided in 2011 for specification of test methods or collection of sales data.

Key Areas for Improvement (3 years)	
Monitoring	**Reporting**
Commission in order to enhance comparability and assessment of EU-wide FQM results.	

32 UK

32.1 Fuel Availability 2013

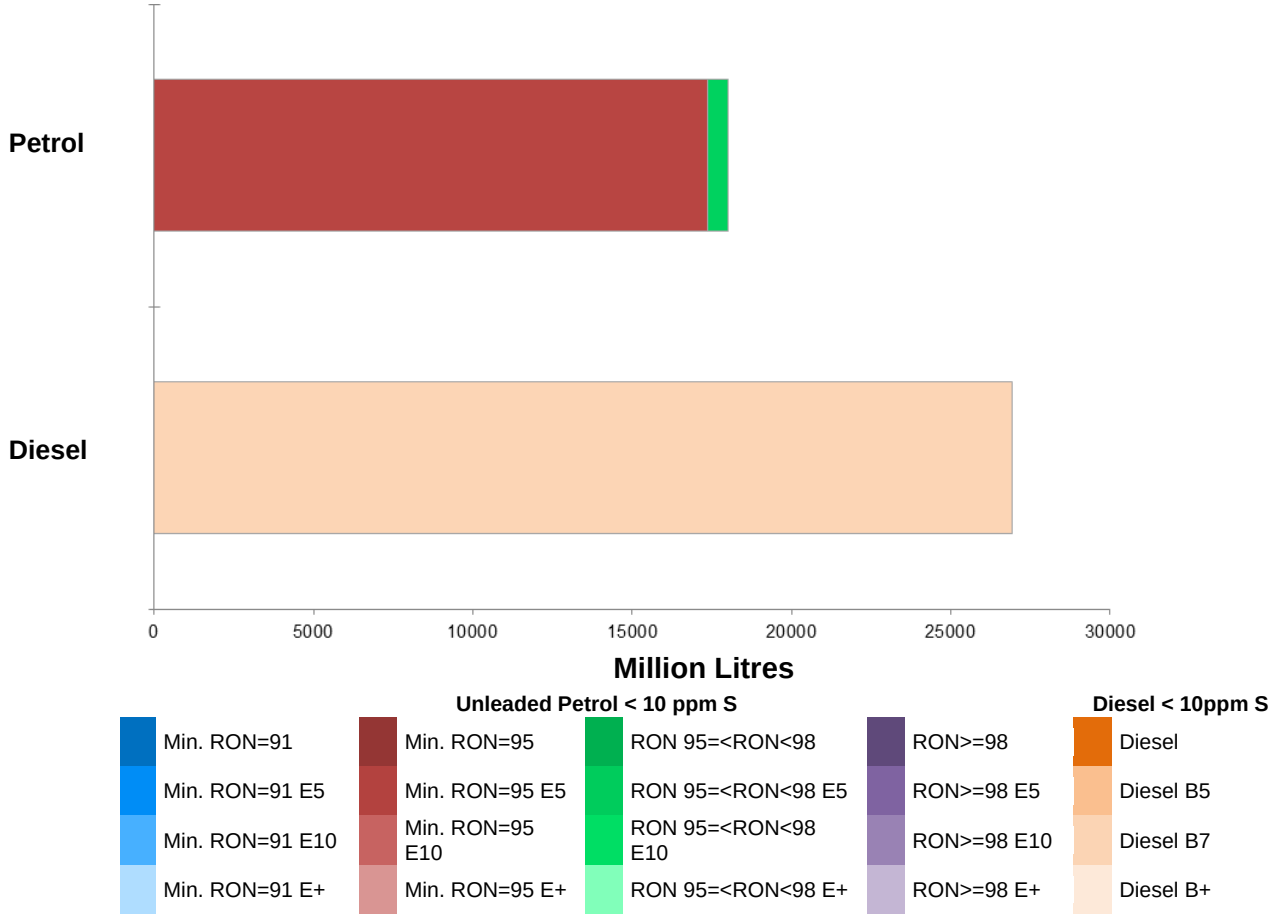
The following table lists the fuels that were reported to be available nationally in 2013.

Table 32-1: National fuel grade

Fuel grade	National fuel grade
Unleaded petrol (minimum RON = 95) E5	Premium
Unleaded petrol (minimum 95 =< RON < 98) E5	Super
Diesel fuel B7	Diesel

32.1.1 Sales, sampling and reporting

Figure 32-1: Fuel Sales proportions by fuel type



During 2013 fuel sales in UK were dominated by diesel fuel sales; 26,904 million litres of diesel was sold (60% of total sales) in comparison to 18,020 million litres of petrol fuel sales (all petrol grades combined). Petrol fuel sales were mainly comprised of fuel grade RON 95 E5.

Table 32-2: Fuel sales and sampling

Fuel type (Parent Grade)	Sales (Million litres)	Sales, % total of fuel type	Samples (1) S	Samples (1) W	Samples (1) TR (2)	Separate S/W(3)	Param's measured (4)	Add. Notes
Unleaded petrol min. RON=95 (<10 ppm S) E5	17,370	96.39%	242	746	(200)	No	19 of 19	(a)
Unleaded petrol 95=<RON<98 (<10 ppm S) E5	650	3.61%	65	209	(8)	No	19 of 19	(a)
Total Petrol	**18,020**	**100.00%**	**307**	**955**	**(208)**	**No**	**19 of 19**	(a)
Diesel (<10 ppm sulphur) B7	26,904	100.00%	524	1585	(200)	No	6 of 6	(a)
Total Diesel	**26,904**	**100.00%**	**524**	**1585**	**(200)**	**No**	**6 of 6**	(a)

(1)	Samples	The actual number of samples taken by the Member State in the summer (s) and winter (w) periods
(2)	TR	Total requirement per summer and winter period according to EN 14274. Brackets () show where a national model is being used, and the requirement is indicative to demonstrate equivalence with EN14274.
(3)	Separate S & W?	Yes indicates separate summer & winter reporting, and No indicates full year sample results reporting only.
(4)	Parameters measured	Currently 19 petrol parameters should be tested and reported by the Member States and 6 diesel parameters. The UK reported on all parameters for all fuel grades.
(a)	Additional notes	No breakdown of summer and winter sampling provided and only minimum detail provided about manganese, lead content, Iso-propyl alcohol, Tert-butyl alcohol and Iso-butyl alcohol analysis.

32.1.1.1 *Petrol Samples*

The UK has exceeded the minimum sampling requirements for all petrol fuel grades, for a large country. Every batch of fuel imported into the country is sampled in addition to sampling on forecourts, samples taken include; 473 at forecourts, 494 at terminals and 295 at refineries. The UK's national system demonstrates equivalence with EN14274 by virtue of the large number of samples taken. Full compliance with the standard, however, would require the breakdown of summer and winter samples which is not given.

32.1.1.2 *Diesel Samples*

The UK has exceeded the minimum sampling requirements for all diesel fuel grades, for a large country. Samples taken in the UK for Diesel include; 280 at forecourts and 1829 at refineries. It is unclear as to whether diesel fuel samples tested in 2013 complied with the total minimum requirement, as there is no summer or winter breakdown of sample results provided. However, given the very high sample quantities it is likely that the minimum requirement was met.

32.2 Fuel Quality Monitoring 2013

32.2.1 Description of System

Responsible organisation(s)	Department for Transport (DfT)
Fuel Quality Monitoring System (FQMS)	National system
Country Size	Large
Summer Period	Arctic
Location(s) of sampling	The UK fuel quality monitoring system makes use of industry quality analyses on batches of fuel produced in, or imported into, the UK, plus samples taken at distribution terminals and forecourts (to check for contamination in the distribution network). Due to the very large number of samples involved, this approach provides an equivalent or greater, degree of confidence to EN 14274. The UK have reported a total of 3371 samples, of which 753 samples are taken from retail stations, 494 samples from terminals and 2124 from refineries.
Time/frequency of sampling	Samples have been taken every month throughout the year. The UK has reported extremely varied sample numbers for both summer and winter periods.
Specification of test methods	All of the samples were tested against BS EN228 (Petrol) and BS EN590 (Diesel) which fully meet the FQD standards.
Collection of sales data	The source of sales data in the United Kingdom is DECC Energy Statistics data.

32.2.2 Fuel Quality Monitoring System

32.2.2.1 *Sampling*

Sampling is done at refineries, terminals and refuelling stations. Samples are done routinely throughout the year and across all regions of the UK; the numbers for each month are shown in the Petrol and Diesel sheets showing the test results. The test methods used are in accordance with EN 228 & EN 590.

32.2.2.2 *FQMS administration*

The Department for Transport manages the Fuel Quality system for the UK. The UK fuel quality monitoring system makes use of industry quality analyses on batches of fuel produced in, or imported into the UK, plus samples taken at distribution terminals and forecourts (to check for contamination in the distribution network). Due to the very large number of samples involved, this approach provides an equivalent or greater degree of confidence to EN 14274. There are 7 operational fuels refineries within the UK and approximately 50 distribution terminals.

32.2.2.3 *National Legislation that transposed the FQD*

The Fuel Quality Directive is transposed in UK law under the Motor Fuel (Composition and Content) Regulations 1999 (SI No.3107) with amendments in 2001, 2003, 2007, 2010 & 2012.

32.2.2.4 *Reporting periods*

The summer period for petrol is from 1st June to 31st August. The UK is classified as Arctic country therefore the maximum vapour pressure of fuel during the summer period is 70 kPa.

32.2.3 Compliance with Fuel Quality Limit Values

Table 32-3: Petrol Fuel Grades

Premium Unleaded BS EN:228 2008 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Research Octane Number	95	94.587	94.2	1	0.1%
Vapour Pressure, DVPE (kPa)	70	71.9	79.8	18	4.9%
Aromatics, % v/v	35	36	36.4	1	0.1%
Member State notes Sample taken at a service station. Vapour pressure exceedances mostly recorded during transition period from winter to summer					

Super Unleaded BS7800 - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
Vapour Pressure (kPa)	70	71.9	81.9	4	4.3%
Aromatics, % v/v	35	37.2	36.9	2	2%
Oxygen content (% m/m)	2.7	2.9	3.2	2	0.76%
Member State notes Sample taken at a service station. Vapour pressure highest value was recorded during transition period from winter to summer					

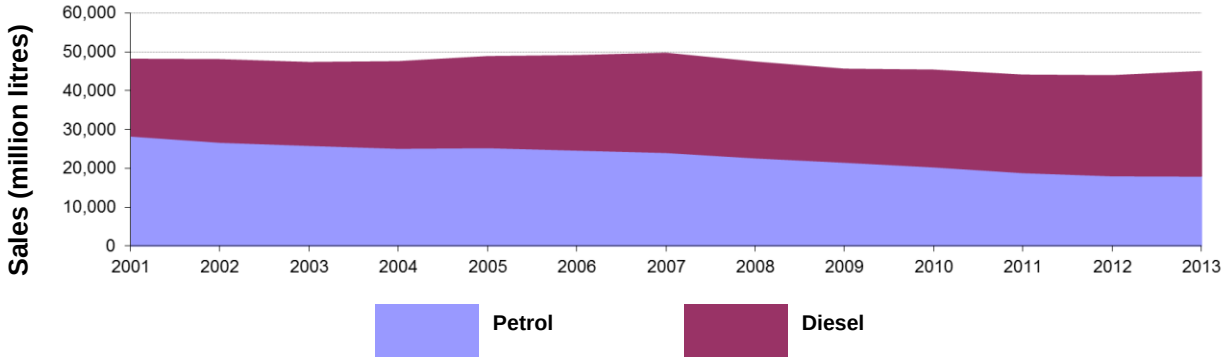
Table 32-4: Diesel Fuel Grades

Diesel - Details of samples that exceed tolerance limits:					
Parameter	**Limit Value**	**Tolerance Limit* (TL)**	**Max/Min value of samples tested**	**No samples outside TL**	**% samples outside TL**
FAME content (%v/v)	7	7.3	7.4	1	0.05%
Member State notes					
Sample taken at a service station.					

32.3 Temporal Trends

Figure 32-2 shows the trend in total fuel sales since 2001; fuel sales have gradually decreased with a large decrease in petrol sales of 10,323 million litres (-36.4%) and an increase of diesel sales of 7.170 million litres (36.3%). For the first time since 2007, total fuel sales have increased (+ 1,087 million litres), resulting from a decline of 88 million litres of petrol (-5%) and increase of 1,175 million litres of diesel (+4.6%).

Figure 32-2: Temporal trends in national sales of petrol and diesel (million litres)



32.4 Statistical Analysis

The following charts in this section are known as box-plots and they display the distribution of fuel characteristics per Member State by illustrating the:

- Sample minimum
- Lower 25% range
- Middle 50% range
- Median
- Upper 25% range
- Maximum

For a full explanation of the information presented in a Box Plot diagram, please see Section 4 of the wider report.

The analysis charts for petrol (Figure 32-3) and diesel (Figure 32-4) detail the distribution of sample results for the 5 selected parameters; though Summer Vapour Pressure has not been detailed as the UK has not provided a summer and winter breakdown for 2013.

Petrol:

- Research Octane Number
- Motor Octane Number
- Summer Vapour Pressure

Diesel:

- Density at 15°C
- Distillation – 95% v/v recovered

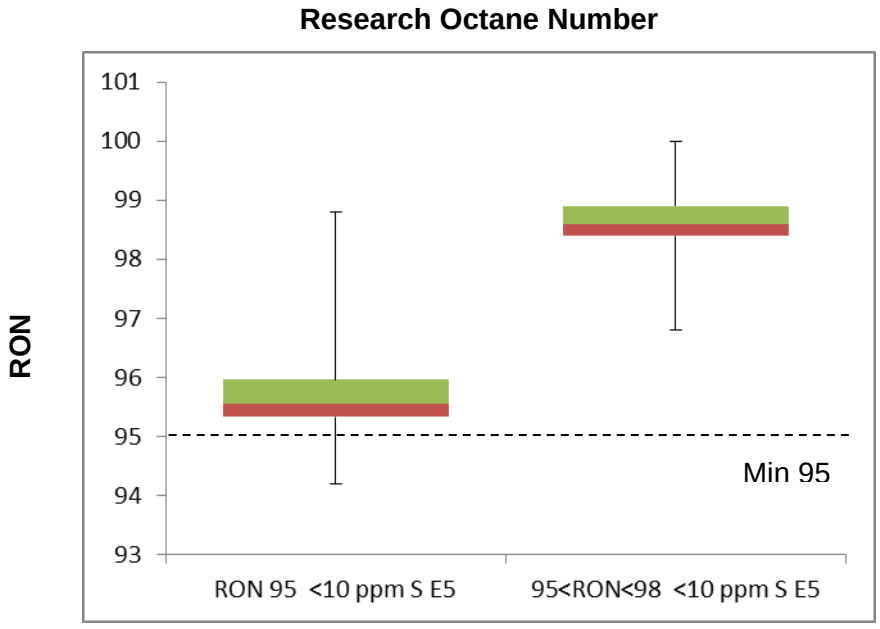
Sample results for these parameters have been depicted using box plots based on the reported sample minimum, lower quartile (Q1), median (Q2), upper quartile (Q3), and the maximum sample value.

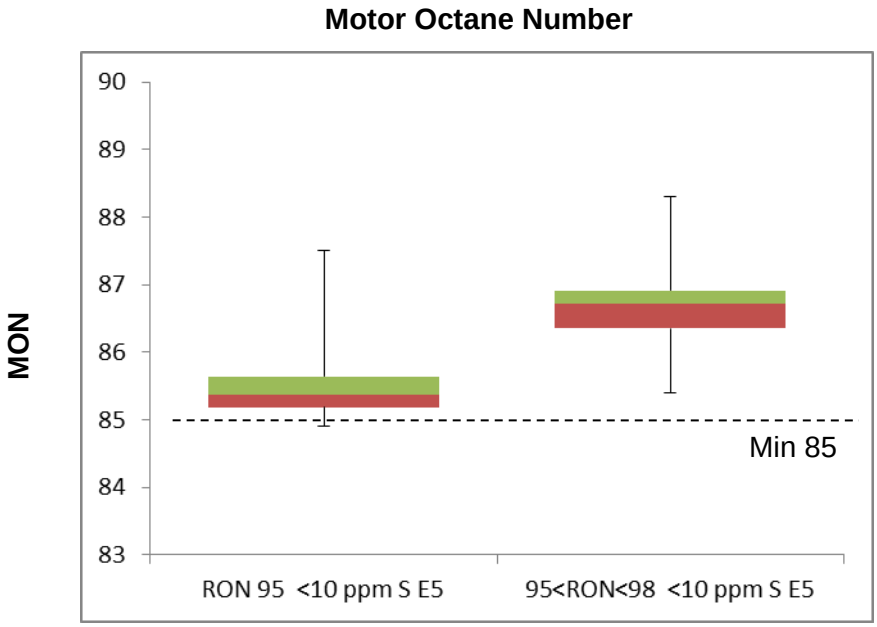
32.4.1 Petrol Analysis

Sample results in 2013 have been presented in the following figures with limit values for the parameter (maximum or minimum) to demonstrate the skew of results. RON and MON sample results show that the fuels available in the UK have reasonably small variation in Octane levels as the majority of results remained within tights bands. There are outlying samples which are not within specification for RON 95 in the research octane test, whilst the only sample below the MON minimum is still within tolerance limit.

The UK has provided full year data only for vapour pressure tests, so it is not possible to draw box plots for vapour pressure results during the summer period only; therefore the plot has been excluded to be consistent with other Member State reports.

Figure 32-3: Petrol analysis

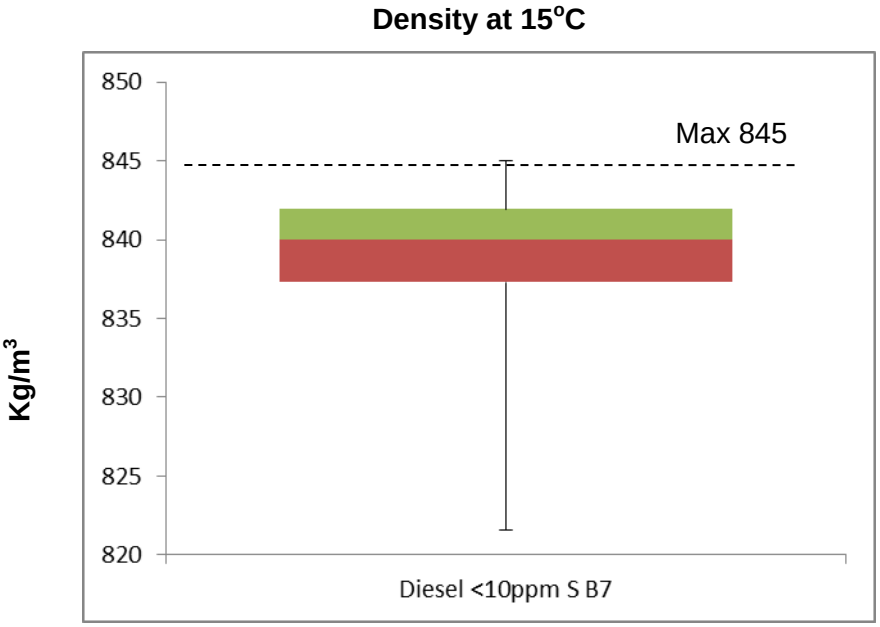




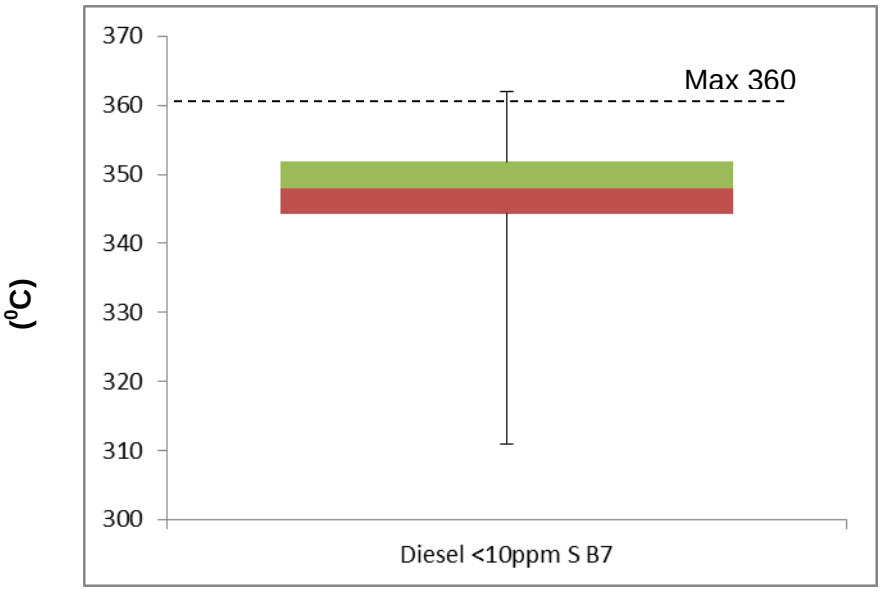
32.4.2 Diesel Analysis

Sample results for Density and Distillation show a slightly wider variation in density, exhibited by the widely spread coloured bands at the 25 and 75 quartile – in comparison to the tight bands shown in the petrol analysis box plots. Samples are shown to be within specification.

Figure 32-4: Diesel analysis



Distillation – 95% v/v recovered



32.5 Key Areas for Improvement

The following table summarises the main areas in which improvements could be made to the monitoring system, reporting or compliance with Directive limit values. The table includes key recommendations from the previous year to give an assessment of what action has been taken by the Member State to address any issues that may have been highlighted.

Key Areas for Improvement (3 years)		
Year	**Monitoring**	**Reporting**
2013	• Providing data for summer and winter period would improve analysis and help identify whether the UK is compliant with EN14274. • Providing data for summer and winter period would allow to report details of vapour pressure for the summer period only. • Further details of the manganese, lead content, Iso-propyl alcohol, Tert-butyl alcohol and Iso-butyl alcohol analysis would benefit future reports.	• The report was submitted on the 26th June, before the 30th June deadline.
2012	• Details of summer vapour pressure, for the summer period only would improve future FQMS submissions. • Details of the number of samples, which have exceeded limit values, would benefit future reports.	• The report was submitted on the 28th June, before the 30th June deadline.

	• Providing data for summer and winter period would improve analysis and help identify whether the UK is compliant with EN14274. • Further details of the manganese analysis would benefit future reports.	
2011	• The UK did not fully complete the statistical results section of the template and hence no statistical analysis charts for summer vapour pressure for petrol are available to detail the distribution of sample results for the selected parameters. However, the samples were taken across all areas of the UK including Wales, Scotland and Northern Ireland. While this reporting element is not mandatory, additional information was requested by the Commission in order to enhance comparability and assessment of EU-wide FQM results. • 138 samples were taken at retail sites, the remainder were from terminals and refineries. It is not clear whether the UK's national system demonstrates equivalence with EN14274, where more samples from retail sites would be required • It is also unclear whether the UK's monitoring regime demonstrates equivalence with EN14274 given there is no summer and winter breakdown of samples provided in 2011.	• The 2011 report was submitted within member state deadline. • All of the samples were tested against BS EN228 (Petrol) and BS EN590 (Diesel) which fully meet the FQD standards.

33 Discussion and Conclusion

33.1 Discussion

Key Messages

- Consistency of reporting is key to enable accurate temporal and national comparisons of fuel quality within the Community.
- Clear guidelines and a common format is required in order to ensure reporting obligations and timelines are understood and can be met.
- In 2012 there was a distinct improvement in the timeliness, coverage and quality of reporting by Member States, and in 2013 the submissions have improved further in all aspects. This has significantly improved the completeness, accuracy and punctuality of EU-wide reporting.

33.1.1 Reporting Submissions

33.1.1.1 *Completeness*

The original format for reporting Fuel Quality Monitoring was agreed with Member States was officially established with 'Commission Decision 2002/159/EC of 18 February 2002 on the common format for the submission of summaries of national fuel quality data'. This document specified that the first report be submitted to the European Commission by 30 June 2002 in both paper and electronic formats and this requirement remains in place. A reporting template has been developed using Microsoft Excel in order to facilitate analysis, ensure rapid assessment of the data and reduce the need to seek clarification from Member States. The Microsoft Excel template is appropriate for the numerical data contained within the report – with provision made for explanatory sections.

The completeness of submissions has improved over time. The majority of Member States now meet the deadline of 30 June and submit their reports in electronic format – all of the 28 Member States submitted their report in the dedicated 2013 template. Delays to the analysis can be caused if insufficient data is supplied, however this problem is minimised through use of the recommended reporting template.

33.1.1.2 *Fuel Quality Submission Database*

In addition to the preparation of this summary report, a Microsoft Access database is updated annually and contains the raw data and essential information provided by Member States. From 2010 onwards, the database has been further updated to make it more user-friendly. The database has been constructed to allow for easy selection of fields, storage/viewing of submission data, printable reports including, full reported data sets, as well as Member State and EU Summary Reports with a degree of basic analysis and graphical presentation of results and trends.

33.1.2 Reporting Format

Changes to the most recent reporting template have not increased the number of queries from Member States. Since 2010, the template had been locked to prevent re-structuring or formatting of the data presented by Member States. In previous years this had led to issues whereby additional parameters had been included, or even parameters reported in place of those required by the Directive, skewing the parameter results. On the whole, the approach has been effective, with far fewer inconsistencies and a more fluid analysis process. In

addition, fewer clarifications have been necessary as the majority of Member States have provided the full information requested.

It is apparent that clear guidelines on the reporting requirements and a recommended and specially designed template will ease reporting and subsequently the analysis and incorporation of new data into the EU Summary Report. Many reports have improved in terms of quality, accuracy and consistency in the period since the new template was introduced, sign that Member States have now more familiar with it and organise their data collection accordingly.

However during the template review and further clarification process with Member States, a few areas that may benefit from additional guidelines have emerged:

1. **Reporting of sales according to national fuel grades and bioethanol/FAME content:** The template requires Member States to provide sales figures according to fuel grades (4 grades for petrol and 1 for diesel) and bioethanol/FAME content (E5, E10, E+ for petrol and B7, B+ (7%<FAME<30%), B+ (FAME >30%). Inconsistencies however exist on allocation of fuel sales according to bioethanol/FAME content within the reporting template; this has been done variably according to maximum allowed bioethanol content (10%) or effective bioethanol content.
2. **Bioethanol/FAME content:** Similarly, the maximum bioethanol content in case of petrol and maximum FAME content in case of diesel must also be specified for every fuel grade in the reporting template. In some cases Member States have, however, referred to the maximum measured ethanol/FAME value.
3. **Biofuels:** There is inconsistency on Member States reporting of fuels with high bioethanol/ FAME blends (e.g. E85), as this type of fuel is not covered by the FQM Directive.
4. **National limits:** In cases Member States have counted the non-compliances based on national limits rather than the limits stipulated in Directive 98/70/EC.
5. **Minimum sensitivity:** There is inconsistency on reporting minimum sensitivity limits for certain parameters (e.g. Oxygenates). Some Member States have reported them as <*detection threshold*, while others have reported them at 0. Further, the Excel Reporting template cannot be analysed with values formatted in such way. For the future, it may be useful to indicate separately the detection threshold of each parameter and its minimum recorded value.

33.2 Conclusions and Recommendations

The improvement in the timeliness, coverage and quality of reporting by Member States seen in 2012 has also continued in 2013. This has significantly improved the completeness, accuracy and punctuality of EU-wide reporting. In addition, all Member States have used the Commission-approved template for reporting, which has greatly improved the consistency and quality of information.

Compared to 2012, in 2013 more Member States have monitored the last two parameters added to the monitoring requirements (lead and manganese), although some Member State are still not equipped to monitor them. Also, new fuels with higher bioethanol blend are resulting in challenges meeting certain parameters – particularly the higher ethanol blends and vapour pressure. The Commission have introduced a derogation to help Member States adapt to this specific issue.

It is difficult to draw definitive conclusions from the data given that temporal trends are subject to reports that have been missing over the years. In addition, a lack of clarity on how to treat particular areas (such as the transition period) creates inconsistencies between the Member State reports. In addition, the trends observed within National territories may be amplified or disguised when aggregating the data into EU-wide summaries – this could be

aided by a requirement for Member States to provide an assessment of changes to conditions within their National territory. For example, in 2010, some Member States bucked a historical trend of declining fuel sales (or vice versa) and the National assessment of why these changes occur could help to understand Community-wide patterns.

There are still some key areas to improve upon in future years and these will be monitored annually to further enhance the reliability of EU wide summary data.

Key areas for improvement

- Some Member States are unable to confirm sales figures at the time of submitting the original report and request updates to their report after the submission deadline date. These requests are honoured wherever possible; however Member States should endeavour to submit their complete and accurate reports by the 30th June.
- Reporting templates have been developed and disseminated to all Member States in order to enable accurate, consistent, replicable and comparable reporting. Member States are encouraged to provide their annual FQM report in the template provided to assist with the timely analysis and reporting of EU-wide results. The report template is also updated annually to reflect changes as new requirements superseded those outlined originally in Directive 98/70/EC.
- As in previous years, some Member States basic numerical data appears to be inconsistent when scrutinised for the analysis. Most inconsistencies are minor – for example contradictory sample numbers when comparing those in reporting sheets with those cited in the sales reporting table. These errors are not insurmountable but delay reporting and, in some cases, the correct number of samples has been impossible to determine, resulting in some anomalous figures.
- Many Member States did not report test results for all parameters covered under the Directive for each fuel grade marketed in their territory. In particular, many Member States are not yet testing for MMT. Many Member States have confirmed with fuel suppliers that MMT is not used in fuels sold in their territory but have not explicitly tested for it.
- The majority of Member States have submitted complete reports that contain all information requested for 2013 by the Commission. However, some have not provided additional statistical detail about sample results requested for 2013: number of samples exceeding the 95% tolerance limit, where the 25% of sample values and 75% of fuel sample values occur. This information has been requested in order to enable more complete statistical analysis of the sample results and EU-wide comparison of fuel quality between Member States (though it is not mandatory).
- Some Member States are not providing information about test methods, or the source of sales data, in their reporting. This makes it difficult to assess compliance with the Directive. Member States could include more information in future reporting.
- The test which revealed the largest number of samples exceeding tolerance limits was the summer vapour pressure limits test. Many Member States reported that exceedances were a result of service stations being slow to transition from summer to winter fuel grade, and vice-versa due to low sales volumes. Member States could be clearer about the transition periods during which time the winter/ summer fuel grades are replaced with the corresponding grades for the opposite season. If the Member States are reporting samples taken during the transition period, which are subsequently found to be out of specification, this should be made clearer.
- Some Member States are not fulfilling the minimum sampling requirement in summer and winter for some fuel grades, given the size of their country under EN 14274 and the statistical model they are using. Others report that sufficient samples were taken

Key areas for improvement

but do not provide the results of testing, so it is not possible to demonstrate compliance. Any sampling from terminals/ refineries should be taken and reported in addition to those at service stations, to highlight any issues of contamination in the supply chain, whilst still assessing fuels at point of use.

- Some Member States are using a statistical model that may not be the most appropriate for their country, or using a national model but not providing sufficient evidence to demonstrate equivalence with EN 14274 standards.

34 Glossary

<10 ppm fuels	See sulphur-free fuels
'Arctic' Seasonal Period	Seasonal period as outlined in European Specifications relating to countries that experience low ambient summer temperatures and for which the summer period spans 1st June to 31st August.
Cetane Number	Measure of fuel ignition characteristics. Like the octane number used for petrol, the higher the value, the better the fuel performance.
COM(2014) 617 final	Proposal for a COUNCIL DIRECTIVE on laying down calculation methods and reporting requirements pursuant to Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels
Commission Decision 2002/159/EC	Commission Decision of 18 February 2002 on a common format for the submission of summaries of national fuel quality data
Commission Recommendation 2005/27/EC	of 12 January 2005 on what, for the purposes of Directive 98/70/EC of the European Parliament and of the Council concerning petrol and diesel fuels, constitutes availability of unleaded petrol and diesel fuel with a maximum sulphur content on an appropriately balanced geographical basis
Directive 98/70/EC	of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC
Directive 2003/17/EC	of 3 March 2003 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels
Directive 2009/30/EC	of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC
EN 14274: 2003	Automotive fuels - Assessment of petrol and diesel quality - Fuel Quality Monitoring System (FQMS)
EN 228	European Standard EN 228:2004 which specifies requirements and test methods and limits for petrol fuel parameters.
EN 590	European Standard EN 590:2004 which specifies requirements and test methods and limits for diesel fuel parameters.
Euro standards	European Union emission regulations for new vehicles, e.g. Euro 3
Fuel Dispensing Sites	See *refuelling stations.*
FQMS	Fuel Quality Monitoring System
Large-size country	Country in which a total of 15 million tons or more of automotive fuel is dispensed per annum.
Low Sulphur Fuels	Petrol and diesel fuels that contain less than 50 mg/kg (ppm) of sulphur.
MON	Motor Octane Number (petrol vehicles, related to RON)

National fuel grade	Member States may, define 'national' fuel grades that must still, however, respect the specification of the *parent fuel grade*. For example, national fuel grades may comprise super unleaded petrol (RON > 98), lead replacement petrol, zero sulphur petrol, <50 ppm sulphur petrol, zero sulphur diesel, <50 ppm sulphur diesel, etc.
'Normal' seasonal period	The seasonal period as outlined in European Standards EN 590 and EN 228 whereby the summer period which spans 1st May until 30th September.
NRMM	Non-Road Mobile Machinery – this includes some farm machinery and construction and demolition vehicles.
Parent fuel grade	Directive 98/70/EC sets the environmental specifications for petrol and diesel fuel marketed in the EU. The specifications in the Directive can be thought of as 'parent fuel grades'. These include: (i) regular unleaded petrol (RON>91), (ii) unleaded petrol (RON>95) and (iii) diesel fuel.
PAH	Polycyclic Aromatic Hydrocarbons, also known as PAH, are chemical compounds formed by the incomplete combustion of hydrocarbons and also contained in small amounts in diesel, other fuels. Many of them are known or suspected carcinogens and are consequently restricted in content in diesel.
Refuelling Stations	Sites, retail or commercial, where fuel is dispensed into road vehicles for propulsion (as defined in EN 14274: 2003)
RON	Research Octane Number (petrol vehicles, related to MON). The octane number is a performance rating used to classify motor fuels by grading the relative antiknock properties of petrol grades.
Small-size country	Country in which a total of 15 million tons or less of automotive fuel is dispensed per annum.
Sulphur free fuels	Petrol and diesel fuels that contain less than 10 mg/kg (ppm) of sulphur (whether actual distinct national fuel grades, or simply marketed products meeting this criterion).
The Sulphur Review	'Consultation on the Need to Reduce the Sulphur Content of Petrol and Diesel Fuels Below 50 ppm: - A Policy Maker's Summary'. A report produced for the European Commission, DG Environment; George Marsh, Nikolas Hill and Jessica Sully, November 2000; AEA Technology Environment, UK. See: http://europa.eu.int/comm/environment/sulphur/summary.pdf
Zero sulphur fuels	See *sulphur free fuels*.

34.1 Member State Abbreviations

AT	Austria
BE	Belgium
BG	Bulgaria
HR	Croatia
CY	Cyprus
CZ	Czech Republic
DK	Denmark
EE	Estonia
FI	Finland
FR	France
DE	Germany
EL	Greece
HU	Hungary
IE	Ireland
IT	Italy
LV	Latvia
LT	Lithuania
LU	Luxembourg
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SK	Slovakia
SI	Slovenia
ES	Spain
SE	Sweden
UK	UK

35 Appendices

35.1 Details on Limit Values, Test Methods and Tolerance Limits

Directive 98/70/EC: Test Methods, Limit Values and Tolerance Limits*

*Based on information provided by the Belgium, the German Environmental Protection Agency, Italy, Irish EPA, UK DTI and CEN TC19

Petrol

Parameter	Unit	98/70/EC		Test specified in 2009/30/EC or EN 228:2008				
		Limit values		Method	Date	Reproducibility, R*	Tolerance limits (95% confidence)	
		Min.	Max.				Minimum	Maximum
Research Octane Number (RON)	--	95		EN-ISO 5164	2005	0.7	94.6	
(RON 91 fuel only)	--	91		EN-ISO 5164	2005	0.7	90.6	
Motor Octane Number (MON)	--	85		EN-ISO 5163	2005	0.9	84.5	
(RON 91 fuel only)	--	81		EN-ISO 5163	2005	0.9	80.5	
Vapour Pressure, DVPE								
--summer period **(normal)**	kPa		60.0	EN 13016-1	2007	2.2		61.3
-- Petrol with bioethanol content 0-2	kPa		66.0	EN 1601	1997	2.3		67.3
-- Petrol with bioethanol content 2-4	kPa		67.8	EN 1601	1997	2.3		69.2
-- Petrol with bioethanol content 4-6	kPa		68.0	EN 1601	1997	2.3		69.4
-- Petrol with bioethanol content 6-8	kPa		67.9	EN 1601	1997	2.3		69.2
-- Petrol with bioethanol content 8-10	kPa		67.8	EN 1601	1997	2.3		69.1
--summer period **(arctic or severe weather conditions)**	kPa		70	EN 13016-1	2007	2.3		71.4
Distillation *								
--evaporated at 100 °C	% V/V	46		EN-ISO 3405	2000	4.0	43.6	
-- evaporated at 150 °C	% V/V	75		EN-ISO 3405	2000	4.0	72.6	
Hydrocarbon analysis								
-- Olefins	% V/V		18.0	EN 15553	2007	6.4		21.8
				EN-ISO 22854	2008	2.6		19.5
*without oxygenates				EN 15553	2007	-		-
				EN-ISO 22854	2008	-		-
-- Olefins (RON 91 fuel only)***	% V/V		21.0	ASTM D1319	95a	5.1		24.0
-- Aromatics (from 2005)			35.0	EN-ISO 22854	2008	1.7		36.0
-- Benzene	% V/V		1.0	EN 12177	1998	0.10		1.06
				EN 238	1996	0.17		1.10
				EN-ISO 22854	2008	0.05		1.03
Oxygen content	% (m/m)		3.7	EN 1601	1997	0.41		3.9
			2.7	EN 1601	1997	0.41		2.9
Oxygenates								
-- Methanol	% V/V		3	EN 1601	1997	0.3		3.2
-- Ethanol	% V/V		10	EN 1601	1997	0.8		10.5
-- Iso-propyl alcohol	% V/V		12	EN 1601	1997	0.9		12.5
-- Tert-butyl alcohol	% V/V		15	EN 1601	1997	1		15.6
-- Iso-butyl alcohol	% V/V		15	EN 1601	1997	1		15.6
-- Ethers with 5 or more carbon atoms per molecule	% V/V		22	EN 1601	1997	1		22.6
-- other oxygenates	% V/V		15	EN 1601	1997	1		15.6
Oxygen content	% (m/m)		3.7	EN 13132	2000	0.3		3.9
			2.7	EN 13132	2000	0.3		2.9
Oxygenates								
-- Methanol	% V/V		3	EN 13132	2000	0.3		3.2
-- Ethanol	% V/V		10	EN 13132	2000	0.8		10.5
-- Iso-propyl alcohol	% V/V		12	EN 13132	2000	0.8		12.5
-- Tert-butyl alcohol	% V/V		15	EN 13132	2000	1		15.6
-- Iso-butyl alcohol	% V/V		15	EN 13132	2000	1		15.6
-- Ethers with 5 or more carbon atoms per molecule	% V/V		22	EN 13132	2000	1		22.6
-- other oxygenates	% V/V		15	EN 13132	2000	1		15.6
Oxygen content	% (m/m)		3.7	EN-ISO 22854	2008	0.4		3.9
			2.7	EN-ISO 22854	2008	0.4		2.9
Oxyginates								
-- Methanol	% V/V		3	EN-ISO 22854	2008	0.4		3.2
-- Ethanol	% V/V		10	EN-ISO 22854	2008	0.6		10.4
-- Iso-propyl alcohol	% V/V		12	EN-ISO 22854	2008	0.7		12.4
-- Tert-butyl alcohol	% V/V		15	EN-ISO 22854	2008	0.7		15.4
-- Iso-butyl alcohol	% V/V		15	EN-ISO 22854	2008	0.7		15.4
-- Ethers with 5 or more carbon atoms per molecule	% V/V		22	EN-ISO 22854	2008	0.9		22.5
-- other oxygenates	% V/V		15	EN-ISO 22854	2008	0.7		15.4
Sulphur content (sulphur free, from 2005)**	mg/kg		10	EN-ISO 14596	1998	5		13.0
				EN 24260	1994	1.0		10.6
				EN-ISO 20846	2004	2.7		11.6
				EN-ISO 20884	2004	3.1		11.8
Lead content	g/l		5	EN 237	2004	0.62		5.4
Manganese	mg/l		6	EN 16135	2011	1.53		6.90
				EN 16136	2011	1.76		7.04

* R values and limits are fixed precision statements provided by CEN, to be used in the absence of specific values from Member States. Member States may use and report their own defined R depending on their testing conditions.

**According to Directive amendment 2003/17/EC "By no later than 1 January 2009, Member States shall ensure that unleaded petrol may be marketed in their territory only if it complies with the environmental specification set out in Annex III except for the sulphur content which shall be a maximum of 10 mg/kg."

***RON91 is not covered by EN228:2008: MS who wish to sample and report Olefines for RON91 should:
a) use method ASTM D1319 as in previous years
b) report only the quantity of fuel sold

Diesel

Parameter	Unit	98/70/EC		Test specified in 2009/30/EC or EN 590:2009				
		Limit values		Method	Date	Reproducability, R*	Tolerance limits (95% confidence)	
		Min.	Max.				Minimum	Maximum
Cetane number	--	51.0	--	EN-ISO 5165	1998	4.3	48.5	
Density at 15 °C	kg/m^3		845	EN-ISO 3675	1998	1.2		845.7
				EN-ISO 12185	1996	0.5		845.3
Distillation -- 95% Point	°C		360	EN-ISO 3405	2000	10.0		365.9
Polycyclic aromatic hydrocarbons	% (m/m)		11	EN 12916	2006	1.9		12.1
Sulphur content (sulphur free, from 2005)	mg/kg		10	EN-ISO 20846	2004	2.2		11.3
				EN-ISO 20884	2004	3.1		11.8
FAME Content	% V/V		7	EN14078	2009	0.5		7.3

35.2 **Reporting template (2013)**

RICARDO-AEA

The Gemini Building
Fermi Avenue
Harwell
Didcot
Oxfordshire
OX11 0QR

Tel: 01235 75 3000
Web: www.ricardo-aea.com