

Reprint
as at 2 October 2017



Engine Fuel Specifications Regulations 2011

(SR 2011/352)

Jerry Mateparae, Governor-General

Order in Council

At Wellington this 3rd day of October 2011

Present:

His Excellency the Governor-General in Council

Pursuant to section 35 of the Energy (Fuels, Levies, and References) Act 1989, His Excellency the Governor-General, acting on the advice and with the consent of the Executive Council, makes the following regulations.

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Note

Changes authorised by subpart 2 of Part 2 of the Legislation Act 2012 have been made in this official reprint.
Note 4 at the end of this reprint provides a list of the amendments incorporated.

These regulations are administered by the Ministry of Business, Innovation, and Employment.

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Regulations

1 Title

These regulations are the Engine Fuel Specifications Regulations 2011.

2 Commencement

These regulations come into force on 1 December 2011.

Part 1
Preliminary

3 Outline

- (1) These regulations prescribe different specifications for certain types of engine fuel that is supplied, or available or intended for supply, according to—
 - (a) the type of engine fuel; and
 - (b) whether the supply is, or is intended to be, by way of retail sale or not.
- (2) These regulations also contain general provisions relating to matters such as labelling, sampling, and offences.
- (3) This regulation is only a guide to the general scheme and effect of these regulations.

4 Application of regulations

These regulations apply to all petrol, diesel, biodiesel, and ethanol, and blends of these, that are supplied, or available or intended for supply, for use in an internal combustion engine, other than—

- (a) as an aviation fuel; or
- (b) for motor vehicle racing; or
- (c) for powerboat racing; or
- (d) as a fuel for jet boats.

5 Interpretation

- (1) In these regulations, unless the context otherwise requires,—

additive means a substance added to fuel in trace or small quantities in order to bring about specific benefits

Auckland and Northland means the area contained within the Auckland Council and Northland Regional Council boundaries

autumn means, in Schedule 1, 1 April to 31 May (inclusive)

biodiesel means fatty acid methyl esters, whether or not containing additives, intended for use as a fuel in compression-ignition internal combustion engines, at 100% concentration or as a blending component with diesel

biofuel means any gaseous or liquid fuel produced from biomass that can be used as a fuel for engines

diesel—

- (a) means a refined petroleum distillate, or other liquid hydrocarbon fuel, having a viscosity and distillation range that is intermediate between those of kerosene and light lubricating oil, whether or not it contains additives, and that is intended for use as fuel in compression-ignition internal combustion engines; and
- (b) includes diesel containing up to 5% biodiesel by volume

DVPE means dry vapour pressure equivalent

engine fuel means any gaseous or liquid fuel that can be used as a fuel for engines, and includes biofuel, diesel, petrol, synthetic fuel, and blends of these

ethanol means ethyl alcohol or the chemical component C_2H_5OH , whether or not it contains additives, intended for blending with petrol for use as a fuel in spark-ignition internal combustion engines

fuel ethanol E85 means a blend of petrol and ethanol, containing not less than 70% ethanol by volume and not more than 85% ethanol by volume, intended for use in dedicated E85 spark-ignition internal combustion engines

marine use means the use or intended use of diesel on a boat or ship

methanol means methyl alcohol or the chemical component CH_3OH , whether or not it contains additives, intended for blending with petrol for use as a fuel in spark-ignition internal combustion engines

methyl tertiary butyl ether means an organic compound with the chemical component $(CH_3)_3COCH_3$ intended for blending with petrol for use as a fuel in spark-ignition internal combustion engines

oxygenate means an organic compound that contains oxygen (for example, an alcohol or an ether)

petrol—

- (a) means a refined petroleum distillate, or other liquid hydrocarbon fuel, normally boiling within the limits of $15^{\circ}C$ to $220^{\circ}C$, whether or not it contains additives, that is intended for use as a fuel in spark-ignition internal combustion engines; and
- (b) includes petrol containing up to 10% ethanol by volume

petroleum has the same meaning as it has in section 2(1) of the Crown Minerals Act 1991

polycyclic aromatic hydrocarbon means the total aromatic hydrocarbon content of the engine fuel less the mono-aromatic content, both as determined by the prescribed test method IP 391 (as referred to in the third column of Schedule 2)

pool average is determined in accordance with regulation 19

premium grade petrol means petrol supplied as having a research octane number of 95.0 or higher

regular grade petrol means petrol supplied as having a research octane number of at least 91.0 but less than 95.0

retail sale means a sale to an end user who has no written supply agreement or written contract with the supplier in respect of the sale; and **non-retail sale** has an opposite meaning

Secretary has the same meaning as it has in section 1B of the Energy (Fuels, Levies, and References) Act 1989

spring means, in Schedule 1, 1 September to 30 November (inclusive)

summer means,—

- (a) in Schedule 1, 1 December to 31 March (inclusive); and
- (b) in Schedule 2, 15 October to 14 April (inclusive)

total oxygen, in relation to a fuel, means the sum (expressed as weight percentage oxygen in the fuel) of the oxygen contribution from all of the individual oxygenates that are blended in the fuel

winter means,—

- (a) in Schedule 1, 1 June to 31 August (inclusive); and
- (b) in Schedule 2, 15 April to 14 October (inclusive).

- (2) In these regulations, a reference to a test method with an acronym listed in the left-hand column in the following table means a standard, or a test method related to an organisation, that is listed opposite the relevant acronym in the right-hand column of that table:

Test method	Standard or organisation
ASTM	ASTM International, which replaced the American Society for Testing and Materials
BS	British Standard
EN	European Standard
IP	Energy Institute, which replaced the Institute of Petroleum, London
ISO	International Organization for Standardization

- (3) In these regulations, the letter **D** and a series of numerals, or a series of numerals immediately following a test method referred to in subclause (2), means the latest version of the document identified by that serial number.
- (4) If a test method prescribed in these regulations provides for alternative methods, each of the alternative methods has equal standing, and any of those methods may be used.

Regulation 5(1) **DVPE**: inserted, on 2 October 2017, by regulation 4(1) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Regulation 5(1) **fuel ethanol E85**: inserted, on 2 October 2017, by regulation 4(1) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Regulation 5(1) **methanol**: inserted, on 2 October 2017, by regulation 4(1) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Regulation 5(1) **methyl tertiary butyl ether**: inserted, on 2 October 2017, by regulation 4(1) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Regulation 5(1) **other oxygenates**: revoked, on 2 October 2017, by regulation 4(2) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Regulation 5(1) **oxygenate**: inserted, on 2 October 2017, by regulation 4(1) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Regulation 5(1) **oxygenates**: revoked, on 2 October 2017, by regulation 4(2) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Regulation 5(1) **total oxygen**: inserted, on 2 October 2017, by regulation 4(1) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Part 2

Retail sales

6 Application of Part

This Part applies to all engine fuel referred to in regulation 4 that is supplied, or available or intended for supply, by way of retail sale.

7 Requirements relating to petrol sold by retail sale

Petrol must—

- (a) be fit for common purposes; and
- (b) have properties that conform to the limits specified in Schedule 1 when tested by the methods specified in that schedule.

8 Requirements relating to petrol/ethanol blends sold by retail sale

- (1) This regulation applies to petrol that is blended with ethanol.
- (2) The petrol must contain a corrosion inhibitor.
- (3) The ethanol component of the petrol—
 - (a) must be no greater than the maximum percentage by volume set out in Schedule 1; and

- (b) must contain denaturant, which must be unleaded petrol with the following characteristics:
 - (i) end point as required by Schedule 1; and
 - (ii) sulphur as required by Schedule 1; and
 - (iii) appearance as required by Schedule 4; and
- (c) must have properties that conform to the limits specified in Schedule 4 when tested by the methods specified in that schedule.

Regulation 8: replaced, on 2 October 2017, by regulation 5 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

8A Requirements relating to petrol/methanol blends sold by retail sale

- (1) This regulation applies to petrol that is blended with methanol.
- (2) The petrol must contain a corrosion inhibitor and a co-solvent (such as ethanol).
- (3) The methanol component must be no greater than the maximum percentage by volume set out in Schedule 1.

Regulation 8A: inserted, on 2 October 2017, by regulation 5 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

8B Requirements relating to fuel ethanol E85 sold by retail sale

- (1) The petrol component of fuel ethanol E85 must conform to the limits in Schedule 1 when tested by the methods specified in that schedule.
- (2) Fuel ethanol E85 must have properties that conform to the limits specified in Schedule 1A when tested by the methods specified in that schedule.

Regulation 8B: inserted, on 2 October 2017, by regulation 5 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

9 Requirements relating to diesel sold by retail sale

Diesel must—

- (a) be fit for common purposes; and
- (b) have properties that conform to the limits specified in Schedule 2 when tested by the methods specified in that schedule.

10 Biodiesel component of diesel/biodiesel blends sold by retail sale

The biodiesel component of any blend of diesel and biodiesel must have properties that conform to the limits specified in Schedule 3 when tested by the methods specified in that schedule except that—

- (a) the maximum viscosity at 40°C is 6.0 mm² per second; and
- (b) the minimum cetane number is 47; and
- (c) the minimum oxidation stability is 10.0 hours.

11 Engine fuel sold by retail sale that is advertised with superior or additional properties

Engine fuel that is advertised as having properties that are superior or in addition to the regulated limits must conform to those advertised properties when tested by the test methods specified in the schedules or, in the case of an additional property, by a suitable and recognised international method.

**Part 3
Non-retail sales****12 Application of Part**

This Part applies to all engine fuel referred to in regulation 4 that is supplied, or available or intended for supply, by way of non-retail sale.

13 Requirements relating to petrol sold by non-retail sale

Petrol must have properties in respect of vapour pressure, sulphur, lead, benzene, total aromatic compounds, total oxygen, olefins, manganese, and phosphorus that conform to the limits specified in Schedule 1 when tested by the methods specified in that schedule.

Regulation 13: amended, on 2 October 2017, by regulation 6 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

14 Requirements relating to petrol/ethanol blends sold by non-retail sale

- (1) Any blend of petrol and ethanol must contain a corrosion inhibitor.
- (2) The petrol component of any blend of petrol and ethanol must conform with the requirements in regulation 13.
- (3) The ethanol component of any blend of petrol and ethanol must—
 - (a) contain denaturant, which must be unleaded petrol with the following characteristics:
 - (i) end point as required by Schedule 1; and
 - (ii) sulphur as required by Schedule 1; and
 - (iii) appearance as required by Schedule 4; and
 - (b) have properties that conform to the limits specified in Schedule 4 when tested by the methods specified in that schedule.
- (4) Fuel ethanol E85 is not required to comply with subclause (2) or (3)(a)(iii) or (b).

Regulation 14: replaced, on 2 October 2017, by regulation 7 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

14A Requirements relating to petrol/methanol blends sold by non-retail sale

- (1) The petrol component of any blend of petrol and methanol must conform with the requirements in regulation 13.
- (2) Any blend of petrol and methanol must contain a corrosion inhibitor and a co-solvent (such as ethanol).

Regulation 14A: inserted, on 2 October 2017, by regulation 7 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

14B Requirements relating to fuel ethanol E85 sold by non-retail sale

- (1) The petrol component of fuel ethanol E85 must have properties in respect of sulphur, lead, benzene, total aromatic compounds, total oxygen, olefins, manganese, and phosphorus that conform to the limits specified in Schedule 1 when tested by the methods specified in that schedule.
- (2) Fuel ethanol E85 must have properties that conform to the limits specified in Schedule 1A when tested by the methods specified in that schedule.

Regulation 14B: inserted, on 2 October 2017, by regulation 7 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

15 Requirements relating to diesel sold by non-retail sale

- (1) Diesel must have properties in respect of sulphur and polycyclic aromatic hydrocarbon compounds that conform to the limits specified in Schedule 2 when tested by the methods specified in that schedule.
- (2) However, any diesel that is a blend of diesel and kerosene that has been blended for the purpose of improving the fuel's performance in diesel engines in cold conditions may be supplied to an end user, and may have sulphur content that exceeds the 10 (mg/kg) limit specified in Schedule 2, provided that the following conditions are satisfied—
 - (a) the sulphur content is no more than 500 (mg/kg) when tested by the methods specified in that schedule; and
 - (b) the sulphur content of greater than 10 mg/kg is specifically provided for in the written supply agreement, or written contract in respect of the sale, between the supplier and the end user; and
 - (c) the end user is specifically notified—
 - (i) that the sulphur content of the diesel is higher than ordinarily required by these regulations; and
 - (ii) of the potential vehicle and engine compatibility risks associated with using the diesel.

16 Requirements relating to biodiesel sold by non-retail sale

Biodiesel must have properties that conform to the limits specified in Schedule 3 when tested by the methods specified in that schedule.

17 Requirements relating to diesel/biodiesel blends sold by non-retail sale

- (1) The diesel component of any blend of diesel and biodiesel must conform with the requirements in regulation 15.
- (2) The biodiesel component of any blend of diesel and biodiesel must have properties that conform to the limits specified in Schedule 3 when tested by the methods specified in that schedule except that—
 - (a) the maximum viscosity at 40°C is 6.0 mm² per second; and
 - (b) the minimum cetane number is 47.
- (3) Any blend of diesel and biodiesel must—
 - (a) have properties in respect of cetane number, total contamination, colour, sulphur, lubricity, viscosity, and flash point that conform to the limits specified in Schedule 2 when tested by the methods specified in that schedule; and
 - (b) have an acid value maximum of $0.1 + X\%/250$ mg KOH/g when measured by ASTM D664 (where **X** is the percentage by volume of biodiesel in the blend); and
 - (c) have a water content maximum of $200 + 3X\%$ mg/kg when measured by IP 438 (where **X** is the percentage by volume of biodiesel in the blend).

Part 4

General provisions

18 Labelling requirements relating to retail containers and engine fuel pumps

- (1) Subclauses (2) to (4) apply to a dispensing pump or container used for delivering engine fuel by way of retail sale either into the consuming vehicle or into a container for subsequent use in an engine.
- (2) For petrol, the seller of the petrol must ensure that the dispensing pump or container is clearly marked with the grade designation, such as regular or premium, and with the minimum research octane number.
- (3) If petrol contains ethanol greater than 1% by volume, the seller of the petrol must ensure that the dispensing pump or container is clearly marked to display—
 - (a) the maximum percentage by volume of ethanol that the petrol contains (which must be no greater than the limit set out in Schedule 1); and
 - (b) the words “May not be suitable for all vehicles/engines. Check with the manufacturer before use.”
- (3A) If petrol contains methanol greater than 1% by volume, the seller of the petrol must ensure that the dispensing pump or container is clearly marked to display—

- (a) the maximum percentage by volume of methanol that the petrol contains (which must be no greater than the limit set out in Schedule 1); and
 - (b) the words “May not be suitable for all vehicles/engines. Check with the manufacturer before use.”
- (4) For diesel, the dispensing pump or container must be clearly marked as “diesel”.
- (4A) For a blend of diesel and biodiesel containing more than 5% by volume biodiesel, the seller of the blend must ensure that the dispensing pump or container is clearly marked to display—
- (a) the maximum percentage by volume of fatty acid methyl esters that the blend contains (which must be no greater than the limit set out in Schedule 2); and
 - (b) the words “May not be suitable for all vehicles/engines. Check with the manufacturer before use.”
- (5) In this regulation, **clearly marked** means having a label that is able to be easily seen by the person dispensing the engine fuel.

Regulation 18(3A): inserted, on 2 October 2017, by regulation 8(1) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Regulation 18(4A): inserted, on 2 October 2017, by regulation 8(2) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

19 Calculating pool averages

- (1) The pool averages specified in Schedule 1 for the purpose of the total aromatic compounds limit for petrol must be determined as set out in this regulation.
- (2) Pool averages must be calculated separately by each producer of petrol in New Zealand and by each petrol importer.
- (3) Monthly pool averages must be calculated based on,—
 - (a) for petrol produced in New Zealand, batch fuel quality, as indicated on the certificate of quality, and quantity and date of completion of loading, as indicated on the bill of lading; and
 - (b) for imported petrol, batch fuel quality, as indicated on the certificate of quality, and supplied quantity and date of completion of discharge into the first port storage at a New Zealand port, as indicated on the bill of lading or other appropriate documentation.
- (4) Each producer of petrol in New Zealand and each petrol importer must keep, for a period of not less than 3 years, records of the following with regard to total aromatic compounds that are regulated by pool averaging:
 - (a) the relevant fuel quality, for each individual batch; and
 - (b) the quantity of each individual batch, on a mass or volume basis as appropriate; and

- (c) the date of the batch, being either the date of completion of loading as referred to in subclause (3)(a) or the date of completion of discharge as referred to in subclause (3)(b); and
- (d) the monthly average, as calculated under subclause (6)(a) and (b); and
- (e) the monthly journal entry, as calculated under subclause (6)(c).
- (5) Each producer of petrol and each petrol importer must provide access in New Zealand to the records required to be kept under subclause (4) when requested, in writing, to do so by the responsible Minister of the Crown.
- (6) For total aromatic compounds in petrol, for each calendar month during the period that this regulation is in force, each producer of petrol in New Zealand and each petrol importer must separately calculate the average percentage of total aromatic compounds for each relevant grade of petrol produced or imported in that month as follows:
- (a) for each batch of regular grade petrol and each batch of premium grade petrol respectively produced or imported in the month, the average total aromatic compounds content of the batch (in litres per litre) is multiplied by the volume of the batch (in litres) to obtain the volume of total aromatic compounds (in litres) contained in the batch; and
- (b) the volume of total aromatic compounds calculated from all petrol batches of the relevant grade produced or imported in a month is added together and the total divided by the total volume of all the month's batches to produce the monthly average total aromatic compounds content (in litres per litre) as follows:

$$\text{monthly average} = \frac{\sum_{i=1}^n (A_i \times V_i)}{\sum_{i=1}^n V_i}$$

where—

A_i is the average total aromatic compounds content for batch i in litres per litre

V_i is the volume of batch i in litres

n is the total number of batches in the month; and

- (c) the monthly average total aromatic compounds content is subtracted from the pool average maximum expressed in litres per litre, and the difference multiplied by the total volume of all the month's batches of the relevant grade to produce the monthly journal entry as follows:

$$\text{monthly journal entry} = (\text{pool average maximum} - \text{monthly average}) \times \sum_{i=1}^n (V_i)$$

where—

V_i is the volume of batch i in litres

n is the total number of batches in the month.

- (7) In any period of 6 consecutive months, the sum of the monthly journal entries must not be a negative number.
- (8) *[Revoked]*
- (9) *[Revoked]*

Regulation 19(7): replaced, on 2 October 2017, by regulation 9 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Regulation 19(8): revoked, on 2 October 2017, by regulation 9 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Regulation 19(9): revoked, on 2 October 2017, by regulation 9 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

20 Sampling of engine fuel

- (1) The sampling requirements for obtaining a representative sample of engine fuel for testing by the test methods set out in these regulations are referred to in BS EN 228 and BS EN 590.
- (2) In the event of a dispute as to the appropriate value, nature, or rating of any of the properties listed in the schedules or referred to in these regulations, the relevant procedures specified in ISO 4259 must be used to interpret the laboratory results.
- (3) Any of the following persons may, in writing, request the Secretary to agree to the use of an alternative test method to any of those specified in the schedules:
- an engine fuel importer; or
 - a wholesale supplier or retailer of engine fuel; or
 - a producer of engine fuel.
- (4) The Secretary may agree to such a request if satisfied that the alternative test method is at least as good as the test method specified in the schedules.
- (5) Any of the following persons must, if a person authorised in writing by the Secretary so requests, supply the authorised person with a certificate describing the properties and value of any such engine fuel (including, if asked, the properties and value of any blend of fuel or any blending component in a blended fuel or any additive) within 5 working days of receiving the request:
- an engine fuel importer; or
 - a wholesale supplier or retailer of engine fuel; or
 - a producer of engine fuel.

21 Accreditation

A person authorised by the Secretary to take samples or to conduct testing of engine fuel for compliance with these regulations must, unless the person is an employee of the Ministry of Business, Innovation, and Employment, be ISO 9001:2000 certified for engine fuel sampling or testing, or be accredited by International Accreditation New Zealand or by an overseas accreditation agency recognised under New Zealand's mutual recognition arrangements.

Regulation 21: amended, on 2 October 2017, by regulation 10 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

22 Offences

A person commits an offence and is liable on conviction to a fine not exceeding \$10,000 who—

- (a) supplies, or makes available for supply, any engine fuel other than in accordance with regulations 7 to 19; or
- (b) fails to comply with a request made under regulation 20(5).

Regulation 22: amended, on 4 October 2013, by regulation 3(2) of the Criminal Procedure (Consequential Amendments) Regulations 2013 (SR 2013/409).

23 Revocation

The Engine Fuel Specifications Regulations 2008 (SR 2008/138) are revoked.

Schedule 1 Requirements for petrol

rr 7, 8, 8A(3), 8B(1), 13, 14, 14B(1),
18(3A), 19(1)

Schedule 1: replaced, on 2 October 2017, by regulation 11 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Property	Limits	Test method
Research octane number (RON)	Regular grade fuel: 91.0 minimum	ASTM D2699
	Premium grade fuel: 95.0 minimum	ASTM D2699
Motor octane number (MON)	Regular grade fuel: 81.0 minimum	ASTM D2700
	Premium grade fuel: 85.0 minimum	ASTM D2700
Colour	Not to be mistaken for water	Visual
Percentage volume evaporated at 70°C (E70)	22 minimum ¹ 48 maximum ²	ASTM D86

¹ For regular and premium grade petrol in summer, a minimum E70 of 20% is permitted. Petrol that complies with the previous season's quality, and that is stored in a filling-station tank to which fewer than 3 deliveries of petrol have been made since 6 weeks before the beginning of

Property	Limits	Test method
Percentage volume evaporated at 100°C (E100)	45 minimum 70 maximum	ASTM D86
Percentage volume evaporated at 150°C (E150)	75 minimum	ASTM D86
End point (°C)	210 maximum	ASTM D86
Residue (% volume)	2 maximum	ASTM D86
Flexible volatility index ³ [DVPE (kPa) + (0.7 × E70)]	115.0 maximum	ASTM D86 and ASTM D5191
Vapour Pressure ⁴ (DVPE) (kPa)	Maxima: Auckland and Northland: 65 kPa summer, 80 kPa autumn and spring, 90 kPa winter; rest of North Island: 70 kPa summer, 80 kPa autumn and spring, 90 kPa winter; South Island: 75 kPa summer, 85 kPa autumn and spring, 95 kPa winter Minimum: 45 kPa all year	ASTM D5191
Copper strip corrosion (3 hours at 50°C)	Class 1 maximum	ASTM D130
Sulphur (mg/kg)	Until close of 30 June 2018: 50 maximum From 1 July 2018: 10 maximum	IP 497 or ASTM D5453
Existent gum (solvent washed) (mg/100 ml)	5 maximum	ASTM D381
Oxidation stability induction period (minutes)	360 minimum	ASTM D525
Lead (mg/l)	5 maximum	IP 224 or ASTM D5059
Benzene (% volume)	1 maximum	ASTM D5580

the season, is regarded as complying with this specification for up to 6 weeks after the beginning of the season.

- ² For regular and premium grade petrol blended with more than 1% volume oxygenates, the E70 maximum is increased by 1% per 1% volume oxygenates in the blend.
- ³ For regular and premium grade petrol blended with more than 1% volume oxygenates, the flexible volatility index maximum allowed is 115.0 summer; 120.0 autumn and spring; 130.0 winter. Petrol that complies with the previous season's quality, and that is stored in a filling-station tank to which fewer than 3 deliveries of petrol have been made since 6 weeks before the beginning of the season, is regarded as complying with this specification for up to 6 weeks after the beginning of the season.
- ⁴ For regular and premium grade petrol blended with more than 1% oxygenates, the maximum vapour pressure allowed is Auckland and Northland: 72 kPa summer, 87 kPa autumn and spring, 97 kPa winter; rest of North Island: 77 kPa summer, 87 kPa autumn and spring, 97 kPa winter; South Island: 82 kPa summer, 92 kPa autumn and spring, 102 kPa winter. Petrol that complies with the previous season's quality, and that is stored in a filling-station tank to which fewer than 3 deliveries of petrol have been made since 6 weeks before the beginning of the season, is regarded as complying with this specification for up to 6 weeks after the beginning of the season.

Property	Limits	Test method
Total aromatic compounds (including benzene) (% volume)	42 maximum pool average and 45 maximum cap	ASTM D5580
Ethanol (% volume) ⁵	10 maximum	ASTM D4815
Olefins (% volume)	18 maximum	ASTM D1319 or ASTM D6839
Manganese (mg/ℓ)	2.0 maximum	ASTM D3831 or BS EN 16136
Phosphorus (mg/ℓ)	1.3 maximum	ASTM D3231
Total oxygen (% mass)	Petrol blended with not more than 5% volume ethanol: 2.7 maximum Petrol blended with more than 5% and not more than 10% volume ethanol: 3.7 maximum	ASTM D4815 ASTM D4815
Methyl tertiary butyl ether (% volume)	1 maximum	ASTM D4815
Methanol (% volume)	3 maximum	ASTM D4815

Schedule 1A Requirements for fuel ethanol E85

rr 8B(2), 14B(2)

Schedule 1A: inserted, on 2 October 2017, by regulation 11 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Property	Limits	Test method
Acidity (as acetic acid CH ₃ COOH) (% mass)	0.006 maximum	ASTM D1613
Copper strip corrosion (3 hours at 50°C)	Class 1 maximum	ASTM D130
Ethanol (% volume)	70.0 minimum 85.0 maximum	ASTM D5501
Existent gum (solvent washed) (mg/100mℓ)	5 maximum	ASTM D381
Inorganic chloride (mg/ℓ or mg/kg)	10.0 maximum (mg/ℓ) or 12.6 maximum (mg/kg)	ASTM D7319 or ASTM D7328
Methanol (% volume)	1.0 maximum	ASTM D5501
pHe	6.5 minimum 9.0 maximum	ASTM D6423
Silver strip corrosion	Class 1 maximum	ASTM D130
Sulphur (mg/kg)	Until close of 30 June 2018: 30 maximum	IP 497 or ASTM D5453

⁵ Regulation 8(3)(c) provides that ethanol must comply with Schedule 4 (requirements for denatured ethanol for blending).

Property	Limits	Test method
Vapour pressure (DVPE) (kPa)	From 1 July 2018: 10 maximum 38 minimum Maxima: Auckland and Northland: 62 summer, 70 autumn and spring, 80 winter; rest of North Island: 68 summer, 75 autumn and spring, 80 winter; South Island: 70 summer, 80 autumn and spring, 85 winter	ASTM D5191
Water (% mass)	1.26 maximum	ASTM E203 or EN 15489

Schedule 2 Requirements for diesel

rr 9, 15, 17(3), 18(4A)(a)

Property	Limits	Test method
Fatty acid methyl esters (% volume) ⁶	7 maximum	EN 14078
Density at 15°C (kg/m ³) ⁷	820 minimum 850 maximum	ASTM D1298 or ASTM D4052
Distillation—95% volume recovered at (°C) (T95)	360 maximum	ASTM D86
Cetane	51 minimum cetane index, or 51 minimum cetane number and 47 minimum cetane index ⁸	Cetane number: ASTM D613 or ASTM D6890 Cetane index: ASTM D4737
Water content (mg/kg)	200 maximum	IP 438
Total contamination (mg/kg)	24 maximum	ASTM D6217
Colour (ASTM colour)	3.0 maximum	ASTM D1500
Cloud point (°C) and cold filter plugging point (°C) ⁹	Summer maxima: Auckland and Northland: +6 cloud point; rest of New Zealand: +4 cloud point. Winter maxima: +2 cloud point and –6 cold filter plugging point	Cloud point: ASTM D5773 Cold filter plugging point: IP 309

⁶ Regulation 10 provides that the fatty acid methyl esters (biodiesel) must comply with Schedule 3: Requirements for biodiesel.

⁷ For diesel blended with more than 1% and not more than 7% volume biodiesel, the density maximum is 854 kg/m³.

⁸ The cetane index is not applicable for diesel blended with biodiesel.

⁹ These are maximum criteria; cold flow properties of a fuel must be fit for common purposes in the region and the season in which it is sold. Diesel that complies with the previous season's quality, and that is stored in a filling-station tank to which fewer than 3 deliveries of diesel have been made since 6 weeks before the beginning of the season, is regarded as complying with this specification for up to 6 weeks after the beginning of the season. Sales for marine use may be summer grade at any time of the year.

Property	Limits	Test method
Sulphur ¹⁰ (mg/kg)	10 maximum	IP 497 or ASTM D5453
Polycyclic aromatic hydrocarbons (% mass)	11 maximum	IP 391
Filter blocking tendency	2.5 maximum; fuel must be of acceptable filterability so that it is fit for common purposes	IP 387 or ASTM D2068
Lubricity—HFRR wear scar diameter at 60°C (µm)	460 maximum	IP 450
Viscosity at 40°C mm ² per second	2.0 minimum 4.5 maximum	ASTM D445
Oxidation stability (g/m ³)	25 maximum	ASTM D2274
Carbon residue (on 10% distillation residue) (% mass)	0.2 maximum	ASTM D4530
Copper strip corrosion (3 hours at 50°C)	Class 1 maximum	ASTM D130
Ash (% mass)	0.01 maximum	ASTM D482
Flash point (°C)	61 minimum	ASTM D93

Schedule 2 heading: amended, on 2 October 2017, by regulation 12(1) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 2: amended, on 2 October 2017, by regulation 12(2) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 2: amended, on 2 October 2017, by regulation 12(3) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 2 footnote 7: amended, on 2 October 2017, by regulation 12(4) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 2 footnote 7: amended, on 2 October 2017, by regulation 12(5) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 3 Requirements for biodiesel

rr 10, 16, 17(2)

Schedule 3: replaced, on 2 October 2017, by regulation 13 of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Property	Limits	Test method
Fatty acid methyl esters (% mass)	96.5 minimum	EN 14103
Density at 15°C (kg/m ³)	860 minimum 900 maximum	ASTM D1298 or ASTM D4052
Viscosity at 40°C mm ² per second	2.0 minimum 5.0 maximum ¹¹	ASTM D445
Flash point (°C)	100 minimum	ASTM D93
Sulphur (mg/kg)	10 maximum	IP 497 or ASTM D5453

¹⁰ The limit for sulphur does not apply to sale for marine use. *See also* regulation 15(2).

¹¹ Regulations 10(a) and 17(2)(a) provide that, in the case of the biodiesel component of any blend of diesel and biodiesel, the maximum viscosity at 40°C is 6.0 mm² per second.

Property	Limits	Test method
Carbon residue (on 100% distillation residue) (% mass)	0.05 maximum	ASTM D4530
Cetane number	51 minimum ¹²	ASTM D613 or ASTM D6890
Sulphated ash content (% mass)	0.020 maximum	ASTM D874
Water (mg/kg)	500 maximum	IP 438
Total contamination (mg/kg)	24 maximum	EN 12662
Copper strip corrosion (3 hours at 50°C)	Class 1 maximum	ASTM D130
Oxidation stability, 110°C (hours)	8.0 minimum ¹³	EN 14112 or EN 15751
Acid value (mg KOH/g)	0.50 maximum	ASTM D664
Iodine value (g iodine/100 g)	140 maximum	EN 14111
Linolenic acid methyl ester (% mass)	12.0 maximum	EN 14103
Polyunsaturated (≥ 4 double bonds) methyl esters (% mass)	1 maximum	EN 15779
Methanol (% mass)	0.20 maximum	EN 14110
Monoglycerides (% mass)	0.80 maximum	ASTM D6584
Diglycerides (% mass)	0.20 maximum	ASTM D6584
Triglycerides (% mass)	0.20 maximum	ASTM D6584
Free glycerol (% mass)	0.020 maximum	ASTM D6584
Total glycerol (% mass)	0.25 maximum	ASTM D6584
Group I metals (Na+K) (mg/kg)	5.0 maximum	EN 14538 or EN 14108 and EN 14109
Group II metals (Ca+Mg) (mg/kg)	5.0 maximum	EN 14538
Phosphorus (mg/kg)	4.0 maximum	EN 14107 and EN 16294

Schedule 4 Requirements for denatured ethanol for blending

rr 8, 14

Property	Limits	Test method
Ethanol (% volume)	95.6 minimum	ASTM D5501
Methanol (% volume)	1.0 maximum	ASTM D5501
Denaturant ¹⁴ (% volume)	1 minimum 1.5 maximum	ASTM D5501

¹² Regulations 10(b) and 17(2)(b) provide that, in the case of the biodiesel component of any blend of diesel and biodiesel, the minimum cetane number is 47.

¹³ Regulation 10(c) provides that, in the case of the biodiesel component of any blend of diesel and biodiesel sold by retail sale, the minimum oxidation stability is 10.0 hours.

¹⁴ The denaturant contained in ethanol must comply with regulation 8(3)(b) in the case of retail sales and regulation 14(3)(a) in the case of non-retail sales.

Property	Limits	Test method
Water (% mass)	1.26 maximum	ASTM E203 or EN 15489
Existent gum (solvent washed) (mg/100 ml)	5 maximum	ASTM D381
Inorganic chloride (mg/l or mg/kg)	10 maximum (mg/l) or 12.6 maximum (mg/kg)	ASTM D7319 or ASTM D7328
Copper (mg/kg)	0.1 maximum	ASTM D1688A (as modified in ASTM D4806)
Sulphate (mg/kg)	4 maximum	ASTM D7318, ASTM D7319, and ASTM D7328
Sulphur (mg/kg)	Until close of 30 June 2018: 30 maximum From 1 July 2018: 10 maximum	IP 497 or ASTM D5453
Acidity (as acetic acid CH ₃ COOH) (%) mass)	0.007 maximum	ASTM D1613
pHe	6.5 minimum 9.0 maximum	ASTM D6423
Appearance	Clear and bright	ASTM D4806

Schedule 4: amended, on 2 October 2017, by regulation 14(1) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 4: amended, on 2 October 2017, by regulation 14(2) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 4: amended, on 2 October 2017, by regulation 14(3) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 4: amended, on 2 October 2017, by regulation 14(4) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 4: amended, on 2 October 2017, by regulation 14(5) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 4 footnote 14: amended, on 2 October 2017, by regulation 14(6) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Schedule 4 footnote 14: amended, on 2 October 2017, by regulation 14(7) of the Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259).

Rebecca Kitteridge,
Clerk of the Executive Council.

Reprints notes

1 *General*

This is a reprint of the Engine Fuel Specifications Regulations 2011 that incorporates all the amendments to those regulations as at the date of the last amendment to them.

2 *Legal status*

Reprints are presumed to correctly state, as at the date of the reprint, the law enacted by the principal enactment and by any amendments to that enactment. Section 18 of the Legislation Act 2012 provides that this reprint, published in electronic form, has the status of an official version under section 17 of that Act. A printed version of the reprint produced directly from this official electronic version also has official status.

3 *Editorial and format changes*

Editorial and format changes to reprints are made using the powers under sections 24 to 26 of the Legislation Act 2012. See also <http://www.pco.parliament.govt.nz/editorial-conventions/>.

4 *Amendments incorporated in this reprint*

Engine Fuel Specifications Amendment Regulations 2017 (LI 2017/259)

Criminal Procedure (Consequential Amendments) Regulations 2013 (SR 2013/409): regulation 3(2)