

[TSQ 12,270] Short title and commencement

**1**

(1) This Order may be cited as the Trade Standards (Fuel Standards) Order 2007.

(2) The obligations in respect of manufacture and import of fuel under this Order are to come into force on 1 July 2008 for petrol and 1 March 2009 for automotive diesel

[para (2) am LN 110 of 2007 O 2, effective 23 November 2007; LN 33 of 2008 O 2, effective 11 March 2008; LN 138 of 2008 O 2, effective 31 December 2008]

(3) The obligation in relation to sale of fuel under this Order are to come into force on 1 October 2008 for petrol and 1 July 2009 for automotive diesel.

[para (3) am LN 110 of 2007 O 2, effective 23 November 2007; LN 33 of 2008 O 2, effective 11 March 2008; LN 138 of 2008 O 2, effective 31 December 2008]

(4) The obligations in respect of the manufacture and import of fuel 10ppm (diesel) and 50ppm (unleaded petrol) under this Order come into force on 1 January 2019.

[para (4) insrt LN 76 of 2018 O 2, effective 1 January 2019]

(5) The obligations in respect of the manufacture and import of unleaded petrol to reduce the sulphur content to 10ppm come into force on 1 January 2021.

[para (5) insrt LN 76 of 2018 O 2, effective 1 January 2019]

[TSQ 12,275] Trade standards for automotive diesel fuel

**2**

The trade standards for automotive diesel fuel are set out in Schedule 1.

[TSQ 12,280] Trade standards for petrol fuel

**3**

The trade standards for petrol are set out in Schedule 2.

[TSQ 12,285] Trade standards for biodiesel fuel

**4**

The trade standards for biodiesel fuel are set out in Schedule 3.

[O 4 insrt LN 71 of 2011 O 3, effective 1 October 2011]

[TSQ 12,290] Trade standards for ethanol fuel

**5**

The trade standards for ethanol fuel are set out in Schedule 4.

[O 5 insrt LN 71 of 2011 O 4, effective 1 October 2011]

**[TSQ 12,380] SCHEDULE 1 (Order 2) TRADE STANDARDS FOR NATIONAL GAS-OIL (DIESEL) STANDARD**

[Sch 1 am LN 15 of 2009 O 1, effective 1 June 2009; LN 71 of 2011 O 2, effective 1 October 2011; LN 99 of 2016 reg 282, effective 1 December 2016; LN 76 of 2018 O 2, effective 1 January 2019; LN 112 of 2018 O 2, effective 1 January 2019]

**Application**

**1**

These Trade Standards (herein referred to as “Standards”) apply to diesel produced, imported, sold or used in Fiji or exported to other countries.

## Definition

### 2

In these Standards, unless the context otherwise requires—

#### Director

means the Director of National Trade Measurement and Standards appointed under section 14 of the Act;

#### gas-oil (diesel)

means all diesel imported, sold or used in Fiji, or exported to other countries; and

#### Officer

means a person appointed as such pursuant to the Act.

## Import Licence

### 3

Import licensing of gas oil (diesel) — all gas-oil (diesel) having sulphur content exceeding 500 ppm shall be issued with import licence by the permanent secretary responsible for trade or any other person authorised to act on his or her behalf.

## Standards for diesel

### 4

(1) Diesel that contains a substance mentioned in Table 1 must not contain more than the amount mentioned for the substance from the date mentioned for the substance.

*TABLE 1*

Item	Substance	Amount
1	Sulphur	10mg/kg
2	Ash and suspended solids	100mg/kg
3	PAH (Polycyclic aromatic hydrocarbons)	11% mass by mass

(2) The distillation temperature at which 95% of diesel has been recovered must occur below 360°C.

(3) The cetane index of diesel must be at least 46.

(4) The density of diesel must be at least 820 kg/m<sup>3</sup> and not more than 850 kg/m<sup>3</sup>.

(5) The viscosity of diesel must be at least 2.0cSt, and not more than 4.5cSt, at 40°C.

(6) Diesel may contain 5% by volume (max) biodiesel (FAME). The 5% biodiesel should however conform to the biodiesel, B100 standards prior to blending.

(7) Water (all diesel) 200mg/kg max.

(8) Derived Cetane number (all diesel) 51.0 min.

(9) Particulate matter max 24.0mg/kg.

(10) [Repealed]

(11) [Repealed]

(12) Flash point min 64°C.

### *SAMPLING, METHODS AND RECORD KEEPING*

## Testing methods

### 5

**(1)** To determine the amount of a substance mentioned in Table 2 that is contained in diesel or a parameter mentioned in that Table for diesel, an American Society for Testing and Materials (*ASTM*) or Institute of Petroleum (*IP*) or European Standards (*EN*) testing method or any later or equivalent test method mentioned in that Table for the substance or parameter must be used.

*Table 2*

<b>Item</b>	<b>Substance or Parameter</b>	<b>Testing Method</b>
1	Ash and suspended solids	ASTM D482
2	Sulphur	ASTM D1266
		ASTM D2622
		ASTM D4294
		ASTM D5184
		ASTM D5185
		ASTM D5453
		IP336
3	Cetane Index	ASTM D976
		ASTM D4737
4	Density	ASTM D1298
		ASTM D4052
5	Distillation temperature	ASTM D86
		ASTM D2887
6	Viscosity	ASTM D445
7	Biodiesel (FAME)	EN14078
8	Water (all diesel containing biodiesel)	ASTM D6304
		EN ISO 12937
		ASTM D93
9	Derived Cetane number (of diesel containing biodiesel)	ASTM D6890
		ASTM D613

Reporting by oil companies and importers **(2)** To allow for consistent monitoring of diesel, an oil company or importer is required to provide test reports following the test methods specified in Table 2 for each shipment from an accredited laboratory from the country of export that is approved by the Minister on the recommendation of the Director. The reports are to be submitted within one month of end of each quarter should include tests for substances mentioned in Table 1. Reports must be submitted to—

The Director of National Trade Measurement and Standards

Department of National Trade Measurement and Standards

P.O. Box 2118

Government Buildings

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Taking of Samples **(3)** The Director may direct an officer to take samples for testing for the purpose of compliances with these Standards.

## Operating Standards for Diesel

### 6

**(1)** To allow the more effective operation of engines, diesel of a kind mentioned in an item set out in Table 3 must, in relation to the parameter mentioned in that item comply with the specification for that parameter mentioned in that item.

**(2)** For paragraph (1), a parameter of diesel of a kind mentioned in an item set out in Table 3 complies with the specification for that item only if that is the result after the diesel has been tested, in relation to that parameter, using the ASTM or IP method of testing mentioned in Table 3 or any later or equivalent test method.

*Table 3*

Item	Kind of diesel	Parameter	Specification	Referee test method
1	All diesel	Carbon residue (10% distillation residue)	0.2 mass % maximum	ASTM D4530
2	All diesel	Water and sediment	0.05 vol% maximum	ASTM D2709
3	All diesel held by a terminal or refinery for sale or distribute	Conductivity at ambient temperature	50 per pS/m minimum at ambient temperature	ASTM D2624
4	All diesel	Oxidation stability	25mg/l maximum	ASTM D2274
5	All diesel	Colour	2 maximum	ASTM D1500
6	All diesel	Copper corrosion (3 hours at 50°C)	Class 1 maximum	ASTM D130 IP 309
7	All diesel	Flash point	61.5°C	ASTM D93
8	All diesel	Filter blocking tendency	2.0 maximum	IP 387 ASTM D2068

9	All diesel containing less than 500ppm sulphur	Lubricity	0.460 mm maximum	IP 450 ASTM D6079
10	All diesel	Particulate matter	24.0 mg/kg maximum	EN 12662

## [TSQ 12,385] SCHEDULE 2 (Order 3) TRADE STANDARDS FOR PETROL FUEL

[Sch 2 am LN 99 of 2016 reg 282, effective 1 December 2016; LN 76 of 2018 O 2, effective 1 January 2019; LN 112 of 2018 O 2, effective 1 January 2019]

### Application

#### 1

These Trade Standards (herein referred to as “Standards”) applies to petrol fuel, produced, imported, sold or used in Fiji or exported to other countries.

### Definition

#### 2

In these Standards, unless the context otherwise requires—

**Director**

means the Director of National Trade Measurement and Standards appointed under section 14 of the Act;

**officer**

means a person appointed as such pursuant to the Act;

**petrol**

does not include avgas supplied for use in aircraft; and

**ULP**

means unleaded grade of petrol.

### Fuel standards for petrol

#### 3

(1) Petrol that contains a substance mentioned in Table 1 must not contain more that the amount mentioned for the substance and the grade of the petrol from the date mentioned for the substance.

*Table 1*

Item	Substance	Grade	Amount
1	Sulphur	ULP	50mg/kg
2	Benzine	All grades	1%volume by volume
3	Lead	All grades	0.005 g/l
4	Oxygen	All grades of petrol not containing ethanol	2.7% mass by mass (maximum)

5	Ethanol	All grades	10% volume by volume (maximum)
6	Phosphorous	ULP	0.0013 g/l
7	DIPE (Di-isopropyl ether CAS No 108-20-3)	All grades	1% volume by volume
8	MTBE (Methyl all grades tert-butyl ether, CAS No 1634-04-4)	All grades	1% volume by volume
9	TEA (Tertiary butyl alcohol, CAS No 75-65-0)	All grades	0.5% volume by volume

- (2) Petrol must have a maximum final boiling point of 210°C.
- (3) Research octane number for ULP 95.0 min.
- (4) The olefin content of petrol must be not more than 18% volume by volume.
- (5) The aromatic content of petrol must not be more than 45% volume by volume.
- (6) Reid vapour pressure to be a maximum of 75Kpa.
- (7) Unwashed gum to be a maximum of 30.0 mg/100ml.
- (8) Corrosion silver strip (3 hours at 50°C) to be a maximum of 1.

*SAMPLING, METHODS AND RECORD KEEPING*

## Testing methods

**4**

- (1) To determine the amount of a substance mentioned in Table 2 that is contained in petrol, or a parameter mentioned in that Table for petrol, an American Society for Testing and Materials (*ASTM*) or Institute of Petroleum (*IP*) testing methods or any later or equivalent test method mentioned in that Table for the substance or parameter must be used.

*Table 2*

Item	Substance or Parameter	Testing Method
1	Aromatics	ASTM D1319
		ASTM D5059
		ASTM D5580
		ASTM D5845
		ASTM D6293
2	Lead	ASTM D3237
		ASTM D5059
3	Olefins	ASTM D1319
		ASTM D5845
		ASTM D6293
		ASTM D6296

Item	Substance or Parameter	Testing Method
4	Oxygen	ASTM D6550
		ASTM D6839
		ASTM D5622
		ASTM D4815
5	MTBR (Methyl tertiary, butyl ether)	ASTM D1319
		ASTM D4815
		ASTM D5599
		ASTM D5845
		ASTM D5986
		ASTM D6293
6	DIPE (Di-isopropyl ether)	ASTM D1319
		ASTM D4815
		ASTM D5599
		ASTM D5845
		ASTM D5986
7	TBA (Tertiary butyl alcohol)	ASTM D1319
		ASTM D4815
		ASTM D5599
		ASTM D5845
		ASTM D5986
8	Sulphm	ASTM D1266
		ASTM D2622
		ASTM D4294
		ASTM D5453
		ASTM D6334
		IP 107
		IP336
9	Phosphorus	ASTM D3231
10	Research octane number	ASTM D2699
		IP237

Item	Substance or Parameter	Testing Method
11	Reid vapour pressure	ASTM D323
12	Benzene (All Grades)	ASTM D1591
13	Ethanol (All Grades)	ASTM D5501
		ASTM D4815
14	Corrosion silver strip (3 hours at 50°C)	ASTM D4814
		ASTM D130
		modified
15	Unwashed gum	ASTM D38

Reporting by oil companies or importers **(2)** To allow for consistent monitoring of petrol fuel, oil companies are required to provide test reports following the test methods specified in Table 2 for each shipment from an accredited laboratory from the country of export that is approved by the Minister on the approval of the Director. The reports are to be submitted within one month of end of each quarter should include tests for substances mentioned in Table 1. Reports to be submitted to—

The Director National Trade Measurement and Standards  
Department of National Trade Measurement and Standards  
P.O. Box 2118  
Government Buildings  
SUVA

Taking of samples **(3)** The Director may direct an officer to take samples for testing for the purpose of compliance with these Standards.

## Operability standards for petrol

5

**(1)** To allow the more effective operation of engines, petrol of a grade mentioned in an item set out in Table 3 must in, relation to the parameter mentioned in that item, comply with the specification for that parameter in that item.

**(2)** For subsection (1), a parameter of petrol of a grade mentioned in an item set out in Table 3 complies with the specification for that item only if that is the result after the petrol has been tested, in relation to that parameter, using the ASTM method of testing mentioned in Table 3 or any later or equivalent test method.

*Table 3*

Item	Grade of petrol	Parameter	Specification	Referee test method
1	ULP	MON	81.0 minimum	ASTM 2700
2	All grades	Copper corrosion (3hrs at 50°C)	Class 1 maximum	ASTM D130

3	All grades	Existent gun (washed)	50 mg/l	ASTM D381
4	All grades	Induction period	360 minutes minimum	ASTM D525

**[TSQ 12,390] SCHEDULE 3 (Order 4) TRADE STANDARDS FOR  
BIODIESEL FUEL**

[Sch 3 insrt LN 71 of 2011 O 3, effective 1 October 2011]

**1-0**

**Application**

These trade standards (herein referred to as “Standards”) apply to biodiesel produced, imported, sold or used in Fiji or exported to other countries.

**2-0**

**Definition**

In these Standards, unless the context otherwise requires—

**biodiesel**

means any fuel comprised of mono-alkyl esters of long chain fatty acids derived from vegetable oils or animal fats, and meeting the requirements of ASTM D6751.

**Director**

means the Director of National Trade Measurement and Standards appointed under section 14 of the Act; and

**Officer**

means a person appointed as such pursuant to the Act.

**3-0**

**Standards for biodiesel**

Biodiesel must meet the requirements as set out in Table 1.

*TABLE 1: BIODIESEL REQUIREMENTS*

<b>Item</b>	<b>Property</b>	<b>Value</b>
1	Ester Content	96.5 (min)
2	Oxidation Stability: Induction Period	6 hrs (min)
3	Total Acid Number	0.50 mg KOH/g (max)
4	Methanol <sup>(1)</sup>	0.20% m/m (max)
	Glycerides	
	Mono-glycerides	0.80% m/m (max)
5	Di-glycerides	0.20% m/m (max)
	Tri-glycerides	0.20% m/m (max)
	Glycerin (glycerol)	
6	Free glycerin	0.02% m/m (max)

Item	Property	Value
	Total glycerin	0.25% m/m (max)
7	Density @ 15°C	860–890 kg/m <sup>3</sup>
8	Kinematic viscosity @ 40°C	3.5–5.0 mm <sup>2</sup> /s
9	Flash Point	100°C (min)
10	Cetane Number	51 (min)
11	Cetane Index <sup>(2)</sup>	48 (min)
12	Water	500 mg/kg (max)
13	Water and Sediment	0.05% v/v (max)
14	Total Contamination	24 mg/kg (max)
15	Ash Content	0.01% m/m (max)
16	Sulphated Ash	0.02% m/m (max)
17	Carbon residue [Ramsbottom, on 100% distillation residue]	0.05% m/m (max)
18	Sulphur	50 mg/kg (max) [50ppm]
19	Phosphorus	4 mg/kg (max) [4ppm]
20	Alkali metals (Na + K)	5 mg/kg (max)
21	Alkaline metals (Ca + Mg)	5 mg/kg (max)
22	Distillation T90	360°C (max)
23	Copper Strip Corrosion	No 3 (max)

(1) If methanol content is above this maximum level this specification may still be met if the flash point meets a minimum of 130°C.

(2) For calculation of cetane index, temperature readings for 10 vol. %, 50 vol. % and 90 vol. % are required.

*Note:* These Standards are based on engine and vehicle manufacturers experience with biodiesel fuels made from feed stocks commonly used today in various markets around the world. These Standards are performance based and feed stock neutral.

## 4-0

### Sampling, methods and record keeping

#### 4.1 Testing methods

To determine the amount of a substance mentioned in Table 1 that is contained in biodiesel, or a parameter mentioned in Table 1 for biodiesel, an American Society for Testing and Materials (ASTM) or European Standard (EN) testing methods mentioned in Table 2 for the substance or parameter must be used.

*TABLE 2: TESTING METHODS*

<b>Item</b>	<b>Property</b>	<b>Test method</b>
1	Ester Content	EN 14103 modified
2	Oxidation Stability: Induction Period	prEN 15751 or EN 14112
3	Total Acid Number	ASTM D664
4	Methanol	EN 14110
	Glycerides	
	Mono-glycerides	
5	Di-glycerides	ASTM D6584
	Tri-glycerides	
6	Glycerin (glycerol)	
	Free glycerin	ASTM D6584
	Total glycerin	
7	Density @ 15°C	ASTM D4052
8	Kinematic viscosity @ 40°C	ASTM D445
9	Flash Point	ASTM D93
10	Cetane Number	ASTM D613
11	Cetane Index	ASTM D976/D4737
12	Water	EN 12937
13	Water and Sediment	ASTM D2709
14	Total Contamination	ASTM D2276
15	Ash Content	ASTM D482
16	Sulphated Ash	ASTM D874
17	Carbon residue [Ramsbottom, on 100% distillation residue]	ASTM D4530
18	Sulphur	ASTM D2622
19	Phosphorus	ASTM D4951
20	Alkali metals (Na + K)	EN 14108/14109
21	Alkaline metals (Ca + Mg)	EN 14538
22	Distillation T90	ASTM D1160
23	Copper Strip Corrosion	ASTM D130

#### **4.2 Reporting by oil companies or importers**

To allow for consistent monitoring of biodiesel fuel, companies are required to provide test reports following the test methods specified in Table 2 from an accredited laboratory that is approved by the Minister on the recommendations of the Director. The reports are to be submitted within month end of each quarter and should include tests for properties of substances mentioned in Table 1. Reports to be submitted to—

The Director  
Department of National Trade Measurement and Standards  
P.O. Box 2118  
Government Buildings  
Suva

#### 4.3 Taking of samples

The Director may direct an Officer to take samples at any time for testing for the purposes of compliance with these Standards.

## [TSQ 12,395] SCHEDULE 4 (Order 5) TRADE STANDARDS FOR ETHANOL FUEL

[Sch 4 insrt LN 71 of 2011 O 4, effective 1 October 2011]

### 1-0

#### Application

These trade standards (herein referred to as “Standards”) apply to ethanol produced, imported, sold or used in Fiji or exported to other countries.

### 2-0

#### Definition

In these Standards, unless the context otherwise requires—

#### ethanol

means any fuel used in the transportation or power sector, excluding ethanol produced for alcoholic beverages;

#### Director

means the Director of National Trade Measurement and Standards appointed under section 14 of the Act; and

#### Officer

means a person appointed as such pursuant to the Act.

### 3-0

#### Standards for ethanol

Ethanol must meet the requirements as set out in Table 1.

*TABLE 1: ETHANOL STANDARDS*

Item	Property	Value
1	Ethanol	99.2% m/m (min) [prior to denaturing]
		94.2% m/m (min) [after denaturing]
2	Methanol	0.5% vol. (max)

Item	Property	Value
3	Water	0.7% vol. (max)
4	Density	791.5 kg/m <sup>3</sup> (max)
5	Electrical conductivity <sup>1</sup>	500 µS/m (max)
6	Inorganic chloride	10 mg/L (max)
7	Sulphate	4 mg/kg (max)
8	Copper <sup>2</sup>	0.1 mg/kg (max)
9	Phosphorus	0.5 mg/L (max)
10	Sulphur	10 mg/kg (max)
11	Non-volatile material	5 mg/100mL
12	pHe	6.5–9
13	Acidity (as acetic acid)	0.007% m/m (max)
14	Appearance	Clear and bright, no visible impurities
15	Denaturant	1–1.5% vol.

(1) Electrical conductivity correlates closely with the amount of metallic ions such as chloride, sulphate, sodium and iron in the fuel. A higher electrical conductivity means the fuel contains a higher amount of corrosive and metallic ions that promote corrosion and failure in fuel lines and cause injector deposits. The electrical conductivity should be monitored closely and if below the specified value, inorganic chloride and sulphate tests may not necessary be carried out.

(2) Inductively Coupled Plasma (ICP) spectrometry can be used to measure copper, sodium, iron and phosphorus in one test.

*Note:* Given the known potential for ethanol to absorb water, suppliers shall ensure that water does not contaminate the ethanol fuel under the expected range of climatic (local humidity levels and temperature) and fuel distribution conditions. The presence of water indicates a need to improve ethanol handling practices, such as by adding a nitrogen seal to the storage tank. Fuel contaminated with water should not be sold to consumers.

## 4-0

### Sampling, methods and record keeping

#### 4.1 Testing methods

To determine the amount of a substance mentioned in Table 1 that is contained in ethanol, or a parameter mentioned in Table 1 for biodiesel, an American Society for Testing and Materials (ASTM) or European Standard (EN) testing methods mentioned in Table 2 for the substance or parameter must be used.

*TABLE 2: TESTING METHODS*

Item	Property	Test method
1	Ethanol	ASTM D5501

Item	Property	Test method
2	Methanol	ASTM D5501
3	Water	ASTM E203
4	Density	ASTM D4052
5	Electrical conductivity	ASTM D1125
6	Inorganic chloride	ASTM D7319
7	Sulphate	ASTM D7318
8	Copper	ASTM D1688 modified
9	Phosphorus	ASTM D3231
10	Sulphur	ASTM D5453 <sup>1</sup> (<20ppm) ASTM D2622 (>20ppm)
11	Non-volatile material	ASTM D381
12	pHe	ASTM D6423
13	Acidity (as acetic acid)	ASTM D1613
14	Appearance	ASTM D4806
15	Detnaturant	ASTM D5501

(1) ASTM D5453 is the accepted method for samples containing less than 20 mg/kg (ppm) of sulphur. If it is suspected that samples contain more than 20 mg/kg of sulphur ASTM D2622 is to be used.

#### **4.2 Reporting by oil companies or importers**

To allow for consistent monitoring of ethanol fuel, companies are required to provide test reports following the test methods specified in Table 2 from an accredited laboratory that is approved by the Minister on the recommendation of the Director. The reports are to be submitted within month end of each quarter and should include tests for properties of substances mentioned in Table 1. Reports to be submitted to—

The Director  
Department of National Trade Measurement and Standards  
P.O. Box 2118  
Government Buildings  
Suva

#### **4.3 Taking of samples**

The Director may direct an Officer to take samples at any time for testing for the purposes of compliance with these Standards.