JAPANESE AUTOMOBILE STANDARD

JASO
M 355 : 2015

Automotive Diesel Engine Oils

Introduction

This standard was established in 2001, and then was revised in 2002, 2003, 2005, 2008 and 2014, a total of 5 revisions until the present. This revision (2015) responses to the revision (2015) of **JASO M 354** (Automotive Diesel Engine Oils – Valve Train Wear Test Method) that was cited in this standard, by taking account of downward compatibility with the conventional valve train wear standard values.

1 Scope

This standard specifies the qualities of lubricating oils to be used in automotive 4-cycle diesel engines (hereinafter called diesel engine oils or oils).

Note 1 The diesel engine oils to be specified in this standard are applied to engines complying with the severe requirements for exhaust gas emission control on which performance improvement such as wear and corrosion prevention, high-temperature oxidation stability, soot preventive measures, etc. is required. The **DH-1** oils can be used for engines complying with the requirements for long-term exhaust gas emission control regulations and for engines before the enactment of such regulations, and within the oil drain interval recommended by the engine manufacturer, the oils can also be used with a diesel fuel of which sulfur content is 0.05% or more in mass fraction. Environment-friendly **DH-2** and **DL-1** oils can be used for engines equipped with an after-treatment device such as a diesel particulate filter or catalyst to comply with the requirements for the new short-term exhaust gas emission control regulations. Because of lubricating oil performance between trucks/buses and passenger cars differ, it is presupposed that the **DH-1** oils and **DH-2** oils are used on trucks/buses, and the **DL-1** oils are used on passenger cars.

Note 2 The **DH-2** Oils and **DL-1** Oils can be used only with a diesel fuel of which sulfur content is 0.005% or less in mass fraction are used.

2 Normative References

The standards listed below constitute part of the provisions of this standard by being cited in this standard. Of these references, for those having a year number expressed in the Common Era, the edition for the year described applies, and any revised edition thereafter (including any appendix) does not apply. For the references having no year number expressed in the Common Era, the latest edition thereof (including any appendix) applies.

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JASO M 336 Automotive Diesel Engine Oils – Detergency Test Method

JASO M 354 Automotive Diesel Engine Oils – Valve Train Wear Test Method

JIS K 2272 Crude oil and petroleum products − Determination of ash and sulfated ash

JIS K 2501:2003 Petroleum products and lubricants - Determination of neutralization number

JIS K 2518 Petroleum products − Lubricating oils − Determination of foaming characteristics

JIS K 2541-5 Crude oil and petroleum products − Determination of sulfur content

ASTM D130 Standard Test Method for Corrosiveness to Copper from Petroleum Products by Copper StripTest.

ASTM D4739 Standard Test Method for Base Number Determination by Potentiometric Hydrochloric Acid Titration.

ASTM D5967 Standard Test Method for Evaluation of Diesel Engine Oils in T-8 Diesel Engine.

ASTM D6082 Standard Test Method for High Temperature Foaming Characteristics of Lubricating Oils.

ASTM D6278 Standard Test Method for Shear Stability of Polymer Containing Fluids Using a European Diesel Injector Apparatus.

ASTM D6594 Standard Test Method for Evaluation of Corrosiveness of Diesel Engine Oil at 135 °C.

ASTM D6984 Standard Test Method for Evaluation of Automotive Engine Oils in the Sequence IIIF, Spark-Ignition Engine.

ASTM D7320 Standard Test Method for Evaluation of Automotive Engine Oils in the Sequence IIIG, Spark-Ignition Engine.

CEC L-39-96 The Evaluation of Oil-Elastomer Compatibility (Laboratory Test)

CEC L-54-96 Fuel Economy Effects of Engine Lubricants (MB M111 E20)

JPI-5S-38 Lubricating Oils - Determination of Additive Elements -Inductively Coupled Plasma Atomic Emission Spectrometry

JPI-5S-41 Test Method for Evaporation Loss of Engine Oils (NOACK Test)

JPI-5S-55 Engine oils - Hot Tube Test Method

JPI-5S-64 Petroleum products - Determination of total chlorine content - Oxidative microcoulometry method

SAE J300 Engine Oils Viscosity Classification.

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3 Terms and definitions

For the purposes of this standard, the following definitions of major terms apply.

3.1

Piston detergency

Performance that suppresses deposition of deteriorated diesel engine oils or combustion residues around the piston.

3.2

Valve train wear protection performance

Performance that suppresses wear of the tappets and camshaft.

3.3

Soot dispersal performance

Performance that suppresses a rise in diesel engine oil kinematic viscosity by preventing coagulation of the soot that has been mixed into the oil.

3.4

High temperature oxidation stability

Performance that suppresses deterioration of diesel engine oils in the high-temperature portion of the engine.

3.5

Fuel economy improvement

Ratio of fuel economy improvement in relation to the reference oil.

3.6

Hot surface deposit control

Performance that suppresses deposition of deteriorated diesel engine oils in the high-temperature portion of the engine.

3.7

Anti-foaming performance

Performance that has little foaming and that eliminates any foams that have been generated.

3.8

High temperature anti-foaming performance

Performance that has little foaming and that eliminates any foams that have been generated at high temperatures.

3.9

Volatility

Amount of evaporation of diesel engine oils in the high-temperature portion of the engine.

3.10

Anti-corrosion performance

Performance that suppresses corrosion of the nonferrous metal that is used in the cam follower bearings.

3.11

Shear stability

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Performance that suppresses a decline in kinematic viscosity of multi-grade oils as caused by the shearing of a viscosity index improver that is used in the oils.

3.12

Sulfated ash

Amount of sulfated ash in diesel engine oils.

3.13

Total base number

Amount of basic substances in diesel engine oils.

3.14

Phosphorus

Amount of phosphorus in diesel engine oils.

3.15

Sulfur

Amount of sulfur in diesel engine oils.

3.16

Chlorine

Amount of chlorine in diesel engine oils.

3.17

Seal compatibility

Performance that suppresses deterioration of seal rubber that is used in the engine.

4 Classfication and names

The classification and names of diesel engine oils are as shown in **Table 1.**

Table 1 — Classification and names of diesel engine oils

Type	Name
JASO DH-1-15	**DH-1** oil
JASO DH-2-15	**DH-2** oil
JASO DL-1-15	**DL-1** oil
Note The last two-digit number in the type shows the publication year of this standard.	

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