This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: D8114 – 18

Standard Test Method for Measurement of Effects of Automotive Engine Oils on Fuel Economy of Passenger Cars and Light-Duty Trucks in Sequence VIE Spark Ignition[1,2]

This standard is issued under the fixed designation D8114; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

INTRODUCTION

Portions of this test method are written for use by laboratories that make use of ASTM Test Monitoring Center (TMC)[3] services (see Annex A1 – Annex A4).

The TMC provides reference oils and engineering and statistical services to laboratories that desire to produce test results that are statistically similar to those produced by laboratories previously calibrated by the TMC.

In general, the Test Purchaser decides if a calibrated test stand is to be used. Organizations such as the American Chemistry Council require that a laboratory utilize the TMC services as part of their test registration process. In addition, the American Petroleum Institute (API) and the Gear Lubricant Review Committee of the Lubricant Review Institute (SAE International) require that a laboratory use the TMC services in seeking qualification of oils against their specifications.

The advantage of using the TMC services to calibrate test stands is that the test laboratory (and hence the Test Purchaser) has an assurance that the test stand was operating at the proper level of test severity. It should also be borne in mind that results obtained in a non-calibrated test stand may not be the same as those obtained in a test stand participating in the ASTM TMC services process.

Laboratories that choose not to use the TMC services may simply disregard these portions.

1. Scope*

1.1 This test method covers an engine test procedure for the measurement of the effects of automotive engine oils on the fuel economy of passenger cars and light-duty trucks with gross vehicle weight 3856 kg or less. The tests are conducted using a specified spark-ignition engine with a displacement of 3.6 L (General Motors)[4] on a dynamometer test stand. It applies to multi-viscosity oils used in these applications.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.2.1 *Exceptions*—Where there is no direct equivalent such as the units for screw threads, National Pipe threads/diameters, tubing size, and single source supply equipment specifications. Additionally, Brake Fuel Consumption (BSFC) is measured in kilograms per kilowatt-hour.

1.3 This test method is arranged as follows:

Subject	Section
Introduction	
Scope	1
Referenced Documents	2
Terminology	3
Summary of Test Method	4
Significance and Use	5
Apparatus	6
General	6.1
Test Engine Configuration	6.2
Laboratory Ambient Conditions	6.3
Engine Speed and Torque Control	6.4
Dynamometer	6.4.1
Dynamometer Torque	6.4.2
Engine Cooling System	6.5
External Oil System	6.6
Fuel System	6.7
Fuel Flow Measurement	6.7.2

[1] This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.B0.01 on Passenger Car Engine Oils.

Current edition approved April 1, 2018. Published May 2018. Originally approved in 2017. Last previous edition approved in 2017 as D8114 – 17. DOI: 10.1520/D8114-18.

[2] The multi-cylinder engine test sequences were originally developed by an ASTM Committee D02 group. Subsequently, the procedures were published in an ASTM special technical publication. The Sequence VIB was published as Research Report RR:D02-1469, dated April 8, 1999.

[3] Until the next revision of this test method, the ASTM Test Monitoring Center will update changes in the test method by means of information letters. Information letters may be obtained from the ASTM Test Monitoring Center, 6555 Penn Ave., Pittsburgh, PA 15206-4489. Attention: Administrator. This edition incorporates revisions in all information Letters through No. 17-3.

[4] Trademark of General Motors Corporation, 300 Renaissance Center, Detroit, MI 48265.

*A Summary of Changes section appears at the end of this standard

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959. United States