



Designation: D8047 – 17

Standard Test Method for Evaluation of Engine Oil Aeration Resistance in a Caterpillar C13 Direct-Injected Turbocharged Automotive Diesel Engine¹

This standard is issued under the fixed designation D8047; 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)² services (see [Annex A1](#)).

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 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.

1. Scope*

1.1 This test method evaluates an engine oil's resistance to aeration in automotive diesel engine service. It is commonly referred to as the Caterpillar-C13 Engine-Oil Aeration Test (COAT). The test is conducted under high-engine-speed (1800 r/min), zero-load conditions using a specified Caterpillar 320 kW, direct-injection, turbocharged, after-cooled, six-cylinder diesel engine designed for heavy-duty, on-highway truck use. This test method was developed as a replacement for Test Method [D6894](#).

NOTE 1—Companion test methods used to evaluate engine oil performance for specification requirements are discussed in the latest revision of Specification [D4485](#).

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](#) on Automotive Lubricants.

Current edition approved May 1, 2017. Published May 2017. Originally approved in 2016. Last previous edition approved in 2016 as D8047 – 16. DOI: 10.1520/D8047-17.

² 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 Avenue, Pittsburgh, PA 15206-4489, Attention Administrator. This edition incorporates revisions in all information letters through No. 16-1. <http://www.astmtmc.cmu.edu>.

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 *Exception*—Where there is no direct SI equivalent, for example, screw threads, national pipe threads/diameters, and tubing size.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. See [Annex A2](#) for general safety precautions.*

1.4 This test method is arranged as follows:

	Section
Scope	1
Referenced Documents	2
Terminology	3
Summary of Test Method	4
Significance and Use	5
Apparatus	6
Engine Liquids and Cleaning Solvent	7
Preparation of Apparatus	8
Engine Stand Calibration and Non-Reference-Oil Tests	9
Procedure	10
Calculation, Test Validity and Test Results	11
Report	12
Precision and Bias	13

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