



Designation: D5968 – 24

Standard Test Method for Evaluation of Corrosiveness of Diesel Engine Oil at 121 °C¹

This standard is issued under the fixed designation D5968; 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

The method described in this test method is based on the gas turbine lubricant corrosion and oxidation test described in Federal Test Method Standard 791, Method 5308. Because this test method relates to corrosion in diesel engines rather than in gas turbines, temperatures, metal coupons, and certain parts of the test procedure were modified to be more appropriate for heavy duty diesel engines.

For other information, refer to the research report on the Cummins Bench Corrosion Test.

1. Scope*

1.1 This test method is used to test diesel engine lubricants to determine their tendency to corrode various metals, specifically alloys of lead and copper commonly used in cam followers and bearings. Correlation with field experience has been established.²

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

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* Specific hazard statements are given in [6.3.1](#), [7.5](#), [7.6](#), [7.7](#), [7.8](#), [7.9](#), [8.1.1](#), [8.1.2](#), and [8.1.5](#).

1.4 *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.*

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.B0.02 on Heavy Duty Engine Oils.

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² Wang, J. C., and Cusano, C. M., “Development of A Bench Test to Detect Oils Corrosive to Engine Components,” SAE Technical Paper No. 940790, 1994.

2. Referenced Documents

2.1 ASTM Standards:³

[D130](#) Test Method for Corrosiveness to Copper from Petroleum Products by Copper Strip Test

[D4175](#) Terminology Relating to Petroleum Products, Liquid Fuels, and Lubricants

[D5185](#) Test Method for Multielement Determination of Used and Unused Lubricating Oils and Base Oils by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES)

[E691](#) Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 U.S. Federal Test Method Standards:⁴

[Federal Test Method Standard 791, Method 5308.7](#) Corrosiveness and Oxidation Stability of Light Oils (Metal Squares)

3. Terminology

3.1 Definitions:

3.1.1 For definitions of terms used in this test method, refer to Terminology [D4175](#).

4. Summary of Test Method

4.1 Four metal coupons of copper, lead, tin, and phosphor bronze are immersed in a measured amount of engine oil. The

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098.

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