Designation: D 665 – 03

An American National Standard

Designation: 135/93

Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water[1]

This standard is issued under the fixed designation D 665; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This test method covers the evaluation of the ability of inhibited mineral oils, particularly steam-turbine oils, to aid in preventing the rusting of ferrous parts should water become mixed with the oil. This test method is also used for testing other oils, such as hydraulic oils and circulating oils. Provision is made in the procedure for testing heavier-than-water fluids.

NOTE 1—For synthetic fluids, such as phosphate ester types, the plastic holder and beaker cover should be made of a chemically resistant material, such as polytetrafluoroethylene (PTFE).

1.2 *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.* For specific warning statements, see 6.4-6.6.

2. Referenced Documents

2.1 *ASTM Standards:* [2]

A 108 Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality

A 240/A 240M Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

D 91 Test Method for Precipitation Number of Lubricating Oils

D 1193 Specification for Reagent Water

D 2422 Classification of Industrial Fluid Lubricants by Viscosity System

D 3603 Test Method for Rust-Preventing Characteristics of Steam Turbine Oil in the Presence of Water (Horizontal Disk Method)

D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products

E 1 Specification for ASTM Thermometers

Motor Fuels, Section I, Annex A2, Table 32, Reference Materials and Blending Accessories[3]

2.2 *Other Documents:*

Specifications-IP Standard Thermometers, Appendix A[4]

Specifications for IP Standard Reference Liquids, Appendix B[4]

SAE Standard J405 Chemical Composition of SAE Wrought Stainless Steels[5]

BS 871 Specification for abrasive papers and cloths[4]

BS 970: Part 1: Carbon and Carbon Manganese Steels Including Free Cutting Steels[4]

3. Summary of Test Method

3.1 A mixture of 300 mL of the oil under test is stirred with 30 mL of distilled water or synthetic sea water, as required, at a temperature of 60 ± 1°C (140 ± 2°F) with a cylindrical steel test rod completely immersed therein. It is recommended to run the test for 4 h; however, the test period may, at the discretion of the contracting parties, be for a shorter or longer period. The test rod is observed for signs of rusting and, if desired, degree of rusting.

[1] This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.C0 on Turbine Oils.

Current edition approved Nov. 1, 2003. Published November 2003. Originally approved in 1942. Last previous edition approved in 2002 as D 665–02.

In the IP, this test method is under the jurisdiction of the Standardization Committee. This test method was adopted as a joint ASTM–IP standard in 1964.

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

[3] See 1996 *Annual Book of ASTM Standards*, Vol 05.04.

[4] *Annual Book of IP Standard Methods for Analysis and Testing of Petroleum and Related Products*, Vol 2.

[5] *1995 SAE Handbook*, Vol 1.

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