



Designation: D 665 – 02

An American National Standard



Designation: 135/93

Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water¹

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 is used to evaluate 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 precautionary statements, see 6.4-6.6.*

2. Referenced Documents

2.1 ASTM Standards:

A 108 Specification for Steel Bars, Carbon, Cold-Finished, Standard Quality²

A 240/A 240M Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications³

D 91 Test Method for Precipitation Number of Lubricating Oils⁴

D 1193 Specification for Reagent Water⁵

D 2422 Classification of Industrial Fluid Lubricants by Viscosity System⁴

D 3603 Test Method for Rust-Preventing Characteristics of Steam Turbine Oil in the Presence of Water (Horizontal Disk Method)⁶

D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products⁶

E 1 Specification for ASTM Thermometers⁷

Motor Fuels, Section I, Annex A2, Reference Materials and Blending Accessories⁸

2.2 Other Documents:

Specifications-IP Standard Thermometers, Appendix A⁹
Specifications for IP Standard Reference Liquids, Appendix B⁹

SAE Standard J 405 Chemical Composition of SAE Wrought Stainless Steels¹⁰

BS 871 Specification for abrasive papers and cloths⁹

BS 970: Part 1: Carbon and Carbon Manganese Steels Including Free Cutting Steels⁹

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 $60 \pm 1^\circ\text{C}$ ($140 \pm 2^\circ\text{F}$) 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.C0.02 on Corrosion and Water/Air Separability.

Current edition approved Nov. 10, 2002. Published December 2002. Originally approved in 1942. Last previous edition approved in 1999 as D 665-99.

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 Annual Book of ASTM Standards, Vol 01.05.

³ Annual Book of ASTM Standards, Vol 01.03.

⁴ Annual Book of ASTM Standards, Vol 05.01.

⁵ Annual Book of ASTM Standards, Vol 11.01.

⁶ Annual Book of ASTM Standards, Vol 05.02.

⁷ Annual Book of ASTM Standards, Vol 14.03.

⁸ Annual Book of ASTM Standards, Vol 05.05.

⁹ Annual Book of IP Standard Methods for Analysis and Testing of Petroleum and Related Products, Vol 2.

¹⁰ 1995 SAE Handbook, Vol 1.