



AMERICAN NATIONAL
STANDARD

ANSI/ASTM D 1261 – 55
(Reapproved 1977)

Method 5314—Federal Test
Method Standard No. 791b

Standard Test Method for EFFECT OF GREASE ON COPPER¹

This Standard is issued under the fixed designation D 1261; 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.

1. Scope

1.1 This method covers the determination of the effect of grease on copper parts of bearing assemblies with which the grease comes in contact. Although it is not primarily intended for the prediction of the stability of greases in storage in contact with copper, some indication of this stability may be found by a visual inspection of the grease at the end of the test, as mentioned in the Appendix. This method is not intended to predict the stability of grease in contact with copper under dynamic service conditions.

2. Summary of Method

2.1 A prepared copper strip is partially immersed in a sample of grease and heated in a bomb filled with oxygen under pressure for a definite time. At the end of this period, the copper strip is removed, washed, and examined for evidence of discoloration, etching, or corrosion. The examination is made by comparison with reference strips mutually approved by the purchaser and the seller.

3. Apparatus

3.1 *Oxidation Bomb, Sample Dishes, Dish Holder, Pressure Gage, and Oil Bath*, as described in detail in the Appendix of ASTM Method D 942, Test for Oxidation Stability of Lubricating Greases by the Oxygen Bomb Method.²

3.2 *Thermometer*—An ASTM Saybolt Viscosity Thermometer having a range from 204 to 218 F and conforming to the requirements for Thermometer 22 F as prescribed in ASTM Specification E 1 for ASTM Thermometers.³

4. Reagents and Material

4.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless

otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.⁴ Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

4.2 *Purity of Water*—Unless otherwise indicated references to water shall be understood to mean distilled water or water of equal purity.

4.3 *Grease Analysis Naphtha*—The grease analysis naphtha shall have an end point not higher than 200 F (93 C), and 125 ml of it shall not consume more than 0.2 ml of 0.5 N KOH solution when a blank test is made as follows: Boil 125 ml of grease analysis naphtha with 10 ml of 0.5 N alcoholic KOH solution and 50 ml of neutral 50 percent alcohol for 1½ h on a hot plate, using a glass tube about 7 mm in internal diameter and 750 mm in length as a reflux condenser. After cooling, titrate the solutions with 0.5 N HCl and phenolphthalein. Not less than 9.8 ml of 0.5 N HCl shall be required for neutralization.

4.4 *Sulfuric-Nitric Acid Mixture*—Prepare a solution containing 1 part by volume of H₂SO₄ (sp gr 1.84), 1 part by volume of HNO₃ (sp gr 1.42), and 2 parts by volume of water.

¹ This method is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants.

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² *Annual Book of ASTM Standards*, Part 17.

³ *Annual Book of ASTM Standards*, Parts 18 and 30.

⁴ "Reagent Chemicals, American Chemical Society Specifications," Am. Chemical Soc., Washington, D.C. For suggestions on the testing of reagents not listed by the American Chemical Society, see "Reagent Chemicals and Standards," by Joseph Rosin, D. Van Nostrand Co., Inc., New York, N.Y., and the "United States Pharmacopeia."