



Standard Test Method for Determining Corrosion Preventive Properties of Lubricating Greases¹

This standard is issued under the fixed designation D 1743; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

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

1. Scope

1.1 This test method covers the determination of the corrosion preventive properties of greases using grease-lubricated tapered roller bearings stored under wet conditions. This test method is based on CRC Technique L 41² that shows correlations between laboratory results and service for grease lubricated aircraft wheel bearings.

1.2 The values stated in acceptable inch-pound units for the apparatus dimensions are to be regarded as standard, and the metric conversions are provided for information only. All other values stated in acceptable metric units are 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

D 235 Specification for Mineral Spirits (Petroleum Spirits) (Hydrocarbon Drycleaning Solvent)³

D 1193 Specification for Reagent Water⁴

G 15 Terminology Relating to Corrosion and Corrosion Testing⁵

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *corrosion, n*— the chemical or electrochemical reaction between a material, usually a metal, and its environment that produces a deterioration of the material and its properties.

3.1.2 *Discussion*—In this test method, corrosion is manifested by red rust or black stains on the bearing race. Stains, through which the underlying metal surface is still visible, are not considered corrosion in Test Method D 1743 and shall be ignored.

4. Summary of Test Method

4.1 New, cleaned, and lubricated bearings are run under a light thrust load for 60 ± 3 s to distribute the lubricant in a pattern that might be found in service. The bearings are exposed to water, then stored for 48 ± 0.5 h at $52 \pm 1^\circ\text{C}$ ($125 \pm 2^\circ\text{F}$) and 100 % relative humidity. After cleaning, the bearing cups are examined for evidence of corrosion.

5. Significance and Use

5.1 This test method differentiates the relative corrosion-preventive capabilities of lubricating greases under the conditions of the test.

6. Apparatus

6.1 *Bearings*—Timken bearing cone and roller assembly LM11949, and cup LM11910.⁶

6.2 *Motor*, 1750 $\pm$ 50-rpm speed, $\frac{1}{15}$ hp (min).

6.3 *Bearing Holder*⁷ (see Fig. 1) consists of a 1 ± 0.10 kg weight, upper and lower plastic collars for the bearing cone (Parts A and B), a metal screw, a plastic collar for the cup (Part C), and a plastic jar with a screw cap.

6.4 *Run-in Stand*,⁷ as shown in Fig. 2.

6.5 *Spindle/Thrust Loading Device*,⁷ as shown in Fig. 3. (See Table 1 for metric equivalents.)

6.6 *Mechanical Grease Packer*, as shown in Fig. 4 and Fig. 5.

6.7 *Pliers*,⁸ as shown in Fig. 6.

6.8 *Syringe*, of at least 100-mL volume and with a needle of at least 16 gage and a minimum length of 100 mm (4 in.).

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.G on Lubricating Grease.

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² “Research Technique for Determining Rust-Preventive Properties of Lubricating Greases in the Presence of Free Water,” L-41-957, undated, Coordinating Research Council, Inc., 219 Perimeter Center Parkway, Atlanta, GA 30346.

³ *Annual Book of ASTM Standards*, Vol 06.04.

⁴ *Annual Book of ASTM Standards*, Vol 11.01.

⁵ *Annual Book of ASTM Standards*, Vol 03.02.

⁶ Manufactured by The Timken Co., Canton, OH 44706.

⁷ This equipment is available from Falex Corporation, 1020 Airpark Drive, Sugar Grove, IL 60554-9585.

⁸ A Waldes Truarc Plier No. 4 available from Truarc Co. or similar, modified as in Fig. 6.