



Standard Test Method for Leakage Tendencies of Automotive Wheel Bearing Greases¹

This standard is issued under the fixed designation D 1263; 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 leakage tendencies of wheel bearing greases when tested under prescribed laboratory conditions.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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.* For specific hazard information see Note 2 and Annex A2.

2. Referenced Documents

2.1 ASTM Standards:

D 217 Test Methods for Cone Penetration of Lubricating Grease²

D 3527 Test Method for Life Performance of Automotive Wheel Bearing Grease³

D 4175 Terminology Relating to Petroleum, Petroleum Products, and Lubricants³

D 4290 Test Method for Determining the Leakage Tendencies of Automotive Wheel Bearing Grease under Accelerated Conditions²

E 1 Specification for ASTM Thermometers⁴

E 77 Test Method for Inspection and Verification of Thermometers⁴

3. Terminology

3.1 Definitions:

3.1.1 *lubricating grease, n*—a semi-fluid to solid product of a dispersion of a thickener in a liquid lubricant.

3.1.1.1 *Discussion*—The dispersion of the thickener forms a two-phase system and immobilizes the liquid lubricant by surface tension and other physical forces. Other ingredients are commonly included to impart special properties. **D 217**

3.1.2 *lubricant, n*—any material interposed between two surfaces that reduces the friction or wear between them. **D 4175**

3.1.3 *thickener, n*—in lubricating grease, a substance composed of finely-divided particles dispersed in a liquid lubricant to form the product's structure.

3.1.3.1 *Discussion*—The solid thickener can be fibers (such as various metallic soaps) or plates or spheres (such as certain non-soap thickeners) which are insoluble or, at the most, only very slightly soluble in the liquid lubricant. The general requirements are that the solid particles be extremely small, uniformly dispersed, and capable of forming a relatively stable, gel-like structure with the liquid lubricant. **D 217**

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *automotive wheel bearing grease, n*—a lubricating grease specifically formulated to lubricate automotive wheel bearings at relatively high grease temperatures and bearing speed. **D 3527**

3.2.2 *leakage, n*—of wheel bearing grease, separation and overflow of grease or oil from the bulk grease charge, induced by high temperature and bearing rotation. **D 4290**

4. Summary of Test Method

4.1 The grease is distributed in a modified front-wheel hub and spindle assembly. The hub is rotated at a speed of 660 ± 30 rpm for $6 \text{ h} \pm 5 \text{ min}$, at a spindle temperature which is raised to and then maintained at $105 \pm 1.2^\circ\text{C}$ ($220 \pm 2.5^\circ\text{F}$). Leakage of grease or oil, or both, is measured, and the condition of the bearing surface is noted at the end of the test.

5. Significance and Use

5.1 The test method provides a screening device that permits differentiation among products having distinctly different leakage characteristics (Note 1). It is not the equivalent of longtime service tests, nor is it intended to distinguish between wheel bearing greases showing similar or borderline leakage.

NOTE 1—It is possible for skilled operators to observe significant changes in other important grease characteristics that occurred during the

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² *Annual Book of ASTM Standards*, Vol 05.01.

³ *Annual Book of ASTM Standards*, Vol 05.02.

⁴ *Annual Book of ASTM Standards*, Vol 14.03.