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Standard Test Method for TORQUE STABILITY, WEAR, AND BRINE SENSITIVITY EVALUATION OF BALL JOINT GREASES¹

This standard is issued under the fixed designation D 3428; 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.

1. Scope

1.1 This test method covers two procedures for evaluating the suitability of greases for use in automotive chassis ball joints.

1.2 The Torque Stability Test provides a measure of the frictional and antiwear properties of greases when subjected to load and prolonged working under oscillating motions in ball joints.

1.3 The Brine Sensitivity Test provides a measure of the ability of the grease to prevent noise from an oscillating ball joint when exposed to contamination by brine.

1.4 The values stated in inch-pound units are to be regarded as the standard.

1.5 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems 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 statements, see Notes 1, 2, and 3.

2. Referenced Documents

2.1 ASTM Standards:

D 235 Specification for Mineral Spirits (Petroleum Spirits) Hydrocarbon Drycleaning Solvent²

D 329 Specification for Acetone³

3. Summary of Test Method

3.1 A lubricated automotive ball joint stud and bearing, confined in a fixed housing, is rocked through an arc under prescribed conditions of rocking frequency, rocking amplitude, load and time. Noise, wear, and torque are observed or recorded, or both.

4. Significance and Use

4.1 Both procedures are intended as screening tests to aid in the selection of greases for the lubrication of automotive chassis ball joints. Since both the test components and procedures approximate those typical of current equipment and operation, respectively, test results are considered to provide a measure of grease suitability. Neither procedure, however, is intended as a measure of long-time service under actual conditions of operation.

5. Apparatus

5.1 *Ball Joint Grease Tester*—A mechanical unit⁴ for a single ball joint but equipped with components for variable speed and adjustable rocking amplitude is shown in Fig. 1. A tester⁵ for two ball joints but with fixed speed and rocking amplitude is shown in Fig. 2. The mechanical unit shown in Fig. 1 consists of the following components:

5.1.1 A power system comprised of an electric motor (A) which drives a speed reducer (B) through a variable pitch pulley (C) and belt arrangement.

5.1.2 An eccentric drive (D) driven directly off

¹ This test method is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.G on Lubricating Grease.

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

³ *Annual Book of ASTM Standards*, Vol 05.03.

⁴ Drawings for a single ball joint mechanical unit are available from Research Laboratories, General Motors Corp., Warren, MI. 48090.

⁵ A complete tester with instrumentation for two ball joints is manufactured by O. P. Schuman and Sons, Inc., County Line and Titus Road, Warrington, PA. 18976.