



Standard Practice for Determining the Wear Volume on Standard Test Pieces Used by High-Frequency, Linear-Oscillation (SRV) Test Machine¹

This standard is issued under the fixed designation D7755; 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 practice covers a procedure for determining the wear volume W_v of wear scars and tracks on test pieces tribologically stressed under high-frequency, linear-oscillation motion using a SRV test machine by means of stylus tip profilometry.

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.*

2. Referenced Documents

2.1 ASTM Standards:²

D2714 Test Method for Calibration and Operation of the Falex Block-on-Ring Friction and Wear Testing Machine

D2782 Test Method for Measurement of Extreme-Pressure Properties of Lubricating Fluids (Timken Method)

D3702 Test Method for Wear Rate and Coefficient of Friction of Materials in Self-Lubricated Rubbing Contact Using a Thrust Washer Testing Machine

D4175 Terminology Relating to Petroleum, Petroleum Products, and Lubricants

D5620 Test Method for Evaluating Thin Film Fluid Lubricants in a Drain and Dry Mode Using a Pin and Vee Block Test Machine (Withdrawn 2010)³

D5706 Test Method for Determining Extreme Pressure

Properties of Lubricating Greases Using a High-Frequency, Linear-Oscillation (SRV) Test Machine

D5707 Test Method for Measuring Friction and Wear Properties of Lubricating Grease Using a High-Frequency, Linear-Oscillation (SRV) Test Machine

D6425 Test Method for Measuring Friction and Wear Properties of Extreme Pressure (EP) Lubricating Oils Using SRV Test Machine

2.2 DIN Standards:⁴

DIN 51631:1999-04 Special-boiling-point spirit — Requirements and testing

DIN 51834-3:2008-12 Testing of lubricants – Tribological test in translatory oscillation apparatus – Part 3: Determination of tribological behaviour of materials in co-operation with lubricants

DIN EN ISO 13565-2:1998 Geometrical Product Specifications (GPS) – Surface texture: Profile method; Surfaces having stratified functional properties – Part 2: Height characterization using linear material ratio curve (replaces of DIN 4776:1990: Measurement of surface roughness; parameters R_K , R_{PK} , R_{VK} , M_{T1} , M_{T2} for the description of the material portion)

3. Terminology

3.1 Definitions:

3.1.1 *Hertzian contact area, n* —the apparent area of contact between two non-conforming solid bodies pressed against each other.

3.1.2 *Hertzian contact pressure, n* —magnitude of the pressure at any specified location in a Hertzian contact area, as calculated from Hertz's equations of elastic deformation. The Hertzian contact pressure can also be calculated and reported as maximum value P_{max} in the centre of the contact or as $P_{average}$ as average over the total contact area. **D4175**

3.1.3 *seizure, n* —localized fusion of metal between the rubbing surfaces of the test pieces. **D5706**

3.1.3.1 *Discussion*—Seizure is usually indicated by a sharp increase in coefficient of friction, wear, or unusual noise and vibration. In this test method, increase in coefficient of friction

¹ This practice is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.L0 on Industrial Lubricants and Engineering Sciences of High Performance Fluids and Solids.

Current edition approved Oct. 1, 2011. Published November 2011. DOI: 10.1520/D7755-11.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from Deutsches Institut für Normung e.V.(DIN), Beuth Verlag GmbH, Burggrafenstraße 6, D-10787 Berlin 30, Germany, <http://www.din.de>.