



Designation: G73 – 10 (Reapproved 2017)

Standard Test Method for Liquid Impingement Erosion Using Rotating Apparatus¹

This standard is issued under the fixed designation G73; 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 tests in which solid specimens are eroded or otherwise damaged by repeated discrete impacts of liquid drops or jets. Among the collateral forms of damage considered are degradation of optical properties of window materials, and penetration, separation, or destruction of coatings. The objective of the tests may be to determine the resistance to erosion or other damage of the materials or coatings under test, or to investigate the damage mechanisms and the effect of test variables. Because of the specialized nature of these tests and the desire in many cases to simulate to some degree the expected service environment, the specification of a standard apparatus is not deemed practicable. This test method gives guidance in setting up a test, and specifies test and analysis procedures and reporting requirements that can be followed even with quite widely differing materials, test facilities, and test conditions. It also provides a standardized scale of erosion resistance numbers applicable to metals and other structural materials. It serves, to some degree, as a tutorial on liquid impingement erosion.

1.2 The values stated in SI units are to be regarded as standard. The inch-pound units in parentheses are provided for information.

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.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This test method is under the jurisdiction of ASTM Committee G02 on Wear and Erosion and is the direct responsibility of Subcommittee G02.10 on Erosion by Solids and Liquids.

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2. Referenced Documents

2.1 ASTM Standards:²

- D1003 Test Method for Haze and Luminous Transmittance of Transparent Plastics
- E92 Test Methods for Vickers Hardness and Knoop Hardness of Metallic Materials
- E140 Hardness Conversion Tables for Metals Relationship Among Brinell Hardness, Vickers Hardness, Rockwell Hardness, Superficial Hardness, Knoop Hardness, Scleroscope Hardness, and Leeb Hardness
- E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods
- E179 Guide for Selection of Geometric Conditions for Measurement of Reflection and Transmission Properties of Materials
- G1 Practice for Preparing, Cleaning, and Evaluating Corrosion Test Specimens
- G32 Test Method for Cavitation Erosion Using Vibratory Apparatus
- G40 Terminology Relating to Wear and Erosion
- G134 Test Method for Erosion of Solid Materials by Cavitating Liquid Jet

2.2 Military Standards:³

- MIL-C-83231 Coatings, Polyurethane, Rain Erosion Resistance for Exterior Aircraft and Missile Plastic Parts
- MIL-P-8184 Plastic Sheet, Acrylic, Modified

3. Terminology

3.1 See Terminology G40 for definitions of terms that are not defined below in either 3.2 or 3.3. Definitions appear in 3.2 that are taken from Terminology G40 for important terms related to the title, Scope, or Summary of this test method. Definitions of Terms Specific to this Test Method are given in 3.3 that are not in Terminology G40.

3.2 Definitions:

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 Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://dodssp.daps.dla.mil>.