



Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser¹

This standard is issued under the fixed designation D4060; 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 U.S. Department of Defense.

1. Scope*

1.1 This test method covers the determination of the resistance of organic coatings to abrasion produced by the Taber Abraser on coatings applied to a plane, rigid surface, such as a metal panel.

1.2 The values stated in SI units are to be regarded as the standard, with the exception of mils when determining coating thickness.

1.3 This standard is similar in content (but not technically equivalent) to ISO 7784–2.

1.4 *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

- D823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels
- D968 Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
- D1005 Test Method for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers
- D2240 Test Method for Rubber Property—Durometer Hardness
- D3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquer, and Related Materials
- D7091 Practice for Nondestructive Measurement of Dry

Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals

G195 Guide for Conducting Wear Tests Using a Rotary Platform Abraser

2.2 Other Standards:

ISO 7784–2 Paints and varnishes—Determination of resistance to abrasion—Part 2: Rotating abrasive rubber wheel method³

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 Abrasion resistance can be expressed as one or more of the following terms:

3.1.2 *wear index*, n —1000 times the loss in weight in milligrams per cycle.

3.1.3 *weight loss*, n —the loss in weight in milligrams, determined at a specified number of cycles.

3.1.4 *wear cycles per mil*, n —the number of cycles of abrasion required to wear a film through to the substrate per mil (0.001 in.) of film thickness.

4. Summary of Test Method

4.1 The organic coating is applied at uniform thickness to a plane, rigid panel and, after curing, the surface is abraded using rotary rubbing action under controlled conditions of pressure and abrasive action. The test specimen, mounted on a turntable platform, turns on a vertical axis, against the sliding rotation of two abrading wheels. One abrading wheel rubs the specimen outward toward the periphery and the other, inward toward the center. The resulting abrasion marks form a pattern of crossed arcs over an area of approximately 30 cm².

4.2 Abrasion resistance is calculated as loss in weight at a specified number of abrasion cycles, as loss in weight per cycle, or as number of cycles required to remove a unit amount of coating thickness.

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.23 on Physical Properties of Applied Paint Films.

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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 American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

*A Summary of Changes section appears at the end of this standard