Designation: D 6279 – 03

Standard Test Method for Rub Abrasion Mar Resistance of High Gloss Coatings[1]

This standard is issued under the fixed designation D 6279; 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 procedures for evaluating the relative mar resistance of a series of high gloss coatings applied to a flat, rigid surface. Wet rub and dry rub abrasion tests are described. To fully characterize a coating's mar resistance, both tests should be run.

NOTE 1—Dry abrasion mar resistance can also be evaluated by using Test Methods D 6037. If a series of very highly mar resistant coatings is being evaluated, Test Methods D 6037 will generally provide the better performance discrimination than the dry rub test described here. However, if the equipment described in Test Methods D 6037 is not available, the dry rub test described in this test method affords a reasonable alternative. The dry rub test is also useful for evaluating coatings that are not highly mar resistant.

1.2 Mar resistance is assessed by measuring the gloss of the abraded and unabraded areas. Mar resistance is directly related to the coating's ability to retain gloss in abraded areas.

NOTE 2—The mar resistance values obtained by this test method have no absolute significance. They should only be used to derive relative performance rankings for test panels that have been prepared from the series of coatings that are currently being evaluated. If mar resistance values are quoted between laboratories, it is essential that a common standard be measured and that the values be compared to that standard. Even then, the values should be used with caution.

1.3 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.4 *This standard does not purport to address 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:*

D 523 Test Method for Specular Gloss[2]

D 823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels[2]

D 1005 Test Method for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers[2]

D 1186 Test Methods for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base[2]

D 1400 Test Method for Nondestructive Measurement of Dry Film Thickness of Nonconductive Coatings Applied to a Nonferrous Metal Base[2]

D 3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquer, and Related Materials[2]

D 6037 Test Methods for Dry Abrasion Mar Resistance of High Gloss Coatings[2]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *mar resistance*—The ability of a coating to resist permanent deformation or fracture, resulting from the application of a dynamic mechanical force.

3.1.1.1 *Discussion*—This test method measures resistance to visible damage caused by mild abrasion.

4. Summary of Test Method

4.1 The coatings that are being evaluated are applied at uniform dry film thickness to planar panels of uniform surface texture. After drying or curing, or both, panels are marred by the action of dry abrasion media or wet abrasion media, or both, under a reciprocating weighted pad. Mar resistance is assessed by measuring the coating's gloss within the abraded and unabraded areas of test panels. Mar resistance is directly related to the coating's ability to retain gloss in abraded areas.

5. Significance and Use

5.1 Coatings, particularly the high gloss coatings used on automobiles, boats, toys, etc., are subject of a wide variety of conditions (for example, wiping, cleaning and exposure) during manufacture and service that can mar their surface. The ability of high gloss coatings to maintain their appearance is an important product attribute. This test method provides a way to estimate the ability of high gloss coatings to resist mar damage.

6. Apparatus

6.1 *Application Equipment*, as described in Practices D 823.

[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 D01.55 on Factory Applied Coatings on Preformed Products.

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[2] *Annual Book of ASTM Standards*, Vol 06.01.