Designation: D6905 – 20 (Reapproved 2025)ε1

Standard Practice for Impact Flexibility of Organic Coatings[1]

This standard is issued under the fixed designation D6905; 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.

ε[1] NOTE—Editorially updated Test Method D522/D522M in subsection 1.2 in February 2025.

1. Scope

1.1 This practice covers a procedure for determining the ability of a coating film and its substrate to resist shattering, cracking, or chipping when the film and substrate are distended beyond their original form by impact.

1.2 This practice does not measure impact resistance but uses rapid impact to improve Test Method D522/D522M, a test method for flexibility. Since the impact of the coating is almost instantaneous, all of the problems associated with time variables in the mandrel tests are eliminated.

1.3 This practice is similar in content but not technically equivalent to Test Method D2794.

1.4 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D522/D522M Test Methods for Mandrel Bend Test of Attached Organic Coatings

D609 Practice for Preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Conversion Coatings, and Related Coating Products

D823 Practices for Producing Films of Uniform Thickness of Paint, Coatings and Related Products on Test Panels

D2240 Test Method for Rubber Property—Durometer Hardness

D2794 Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)

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

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *impact flexibility, n—of a coating*, the percent area increase required to produce cracking in the deformed coating.

4. Summary of Practice

4.1 The organic coating under test is applied to suitable thin metal panels (see Practice D609). After the coating has cured, a standard weight/indenter is dropped from a measured distance so as to strike the substrate which deforms the coating

[1] This practice 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 www.astm.org/contact. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.