



Standard Test Method for Flatwise Flexural Impact Resistance of Rigid Plastics¹

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1. Scope*

1.1 The resistance of plastics to breakage by flexural shock may be determined by test methods such as those contained in Test Method [D256](#). Specimens used in those test methods feature a milled notch to promote brittle fracture. The test specimens are struck by a pendulum with the depth dimension parallel to the direction of pendulum swing. This test method is differentiated from the others by its application to the assessment of the effect on impact resistance of changes in the surface of specimens resulting from weathering or other exposure. In this test method, specimens are struck by a pendulum with the depth dimension perpendicular to the direction of pendulum swing. Test Method [D5420](#) may also be used to conduct testing of weathered or exposed specimens. This test method is differentiated from Gardner Impact by the smaller size of the specimens, which may result in substantially higher productivity of accelerated weathering instruments. Additionally, this test method provides multiple data from a single specimen for characterization of within specimen variability.

1.2 This test method describes the determination of the resistance of rigid plastic strip specimens to breakage or permanent deformation when one end of the specimen is subjected to an impact upon its wide face while the other end of the specimen is firmly clamped.

1.3 This test method is applicable to specimens of 1.60 mm (0.0625 in.) thickness. However, the limits of applicability of the test are not sharply defined, and specimens having other dimensions may frequently be used. For specimens of thicknesses other than 1.60 mm (0.0625 in.) the ratio of the distance between the top of the clamp and the centerline of the rounded striking edge to the specimen thickness must be 2.5 ± 0.1 .

1.4 This test method measures the relative impact resistance of samples having approximately the same thickness. Normalization of the impact resistance to unit cross-sectional area only partly compensates for the effects of specimen thickness variation because, at the fixed cantilever length, the ratio of

shear stress to tensile stress in bending increases with thickness, and the importance of these effects in contributing to the energy absorbed is greater for ductile than for brittle failure.

1.5 This test method is used primarily as a means of assessing, for a series of samples, changes relative to a control due to some treatment such as weathering or exposure to active environments. It has been particularly useful as a sensitive indicator of the development of surface cracks or a brittle surface. The existence or formation of cracks in an inherently brittle surface produces marked lowering of impact strength when that surface is the one subjected to tension in the test.

1.6 This test method is not generally applicable to materials such as elastomers or nonrigid plastics in which there is no fracture, permanent deformation, or other change due to yielding in flexure. However, it may be desirable to test such materials as file samples to establish reference points when the test is applied as described in [1.5](#).

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

1.8 *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.*

NOTE 1—There is no known ISO equivalent to this standard.

2. Referenced Documents

2.1 ASTM Standards:²

- [D256 Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics](#)
- [D618 Practice for Conditioning Plastics for Testing](#)
- [D883 Terminology Relating to Plastics](#)
- [D5420 Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight \(Gardner Impact\)](#)
- [D5947 Test Methods for Physical Dimensions of Solid Plastics Specimens](#)

¹ This test method is under the jurisdiction of ASTM Committee [D20](#) on Plastics and is the direct responsibility of Subcommittee [D20.10](#) on Mechanical Properties.

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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.