



Designation: D 6110 – 024

Standard Test Methods for Determining the Charpy Impact Resistance of Notched Specimens of Plastics¹

This standard is issued under the fixed designation D 6110; 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 is used to determine the resistance of plastics to breakage by flexural shock as indicated by the energy extracted from standardized (see Note 2) 1) pendulum-type hammers, mounted in standardized machines, in breaking standard specimens with one pendulum swing. These test methods requires specimens to be made with a milled notch (see Note 3); 2). The notch produces a stress concentration which promotes a brittle, rather than a ductile, fracture. The results of these test methods are reported in terms of energy absorbed per unit of specimen width (see Note 4); 3).~~

~~NOTE 1—This standard resembles ISO 179 1—The machines with pendulum-type hammers have been standardized in that they must comply with certain requirements including a fixed height of hammer fall, which results in a substantially fixed velocity of the hammer at the moment of impact. Hammers of different initial energies (produced by varying their effective weights), however, are recommended for use with specimens of different impact resistance. Moreover, manufacturers of the equipment are permitted to use different lengths and constructions of pendulums with possible differences in pendulum rigidities resulting (see Section 5). Be aware that other differences in machine design do exist.~~

~~NOTE 2—The machines with pendulum-type hammers have been standardized in that they must comply with certain requirements including have a fixed height of hammer fall, which results in a substantially length and fixed velocity of depth, however, the hammer at the moment width of impact. Hammers of different initial energies (produced by varying their effective weights), however, are recommended for use with the specimens is permitted to vary between limits. One design of different impact resistance. Moreover, manufacturers of milled notch is allowed. The notch in the equipment are permitted specimen serves to use different designs concentrate the stress, minimize plastic deformation, and direct the fracture to the part of pendulums, which may result the specimen behind the notch. Scatter in different pendulum rigidities (see Section 5); plus other energy-to-break is thus reduced. Because of differences in machine design, the elastic and viscoelastic properties of plastics, however, response to a given notch varies among materials.~~

~~NOTE 3—The specimens are standardized in that they have a fixed length and fixed depth, however, the width of the specimens is permitted to vary between limits. One design of milled notch is allowed. The notch in the specimen serves to concentrate the stress, minimize plastic deformation, and direct the fracture to the part of the specimen behind the notch. Scatter in energy-to-break is thus reduced. Because of differences in the elastic and viscoelastic properties of plastics, however, response to a given notch varies among materials.~~

~~NOTE 4—Caution 3—Caution must be exercised in interpreting the results of these this test methods. The following testing parameters may have been shown to affect test results significantly: method of specimen fabrication, including but not limited to processing technology, molding conditions, mold design, and thermal treatment; method of notching; speed of notching tool; design of notching apparatus; quality of the notch; time between notching and test; test specimen thickness; test specimen width under notch; and environmental conditioning.~~

1.2 *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 4—This standard resembles ISO 179 in title only. The content is significantly different.

⁺ These

¹ This test methods are under the jurisdiction of ASTM Committee D20 on Plastics and are the direct responsibility of Subcommittee D20.10 on Mechanical Properties

Current edition approved August 10, 2002; March 1, 2004. Published October 2002; April 2004. Originally published as D 6110 – 97; approved in 1997. Last previous edition approved in 2002 as D 6110 – 9702.