



Designation: D3795 – 20

Standard Test Method for Thermal Flow, Cure, and Behavior Properties of Pourable Thermosetting Materials by Torque Rheometer¹

This standard is issued under the fixed designation D3795; 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 the apparatus, and a specific test method, including the evaluation of results required for the determination of the thermal flow and cure behavior properties of pourable thermosetting materials.

1.2 This test method can be used:

1.2.1 As a control for the development and production of pourable thermosetting materials and to measure the different properties (for example, melting behavior, cure behavior, etc.) as well as the influence of various additives and fillers in any given formulations, and

1.2.2 Verify the uniformity of different production batches of the same formulation.

1.3 The values are stated in SI units.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. Specific precautions are given in Section 7.*

NOTE 1—This standard is equivalent to the inactive ISO 15062. This standard and ISO 15252-2 address the same subject matter, but differ in technical content.

1.5 *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.*

¹ This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.30 on Thermal Properties.30.08).

Current edition approved April 1, 2020. Published April 2020. Originally approved in 1979. Last previous edition approved in 2012 as D3795 – 00a (2012). DOI: 10.1520/D3795-20.

2. Referenced Documents

2.1 ASTM Standards:²

D792 Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement

D883 Terminology Relating to Plastics

D1898 Practice for Sampling of Plastics (Withdrawn 1998)³

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 ISO Standards:⁴

ISO 15062 Plastics—Determination of the thermal-flow and cure behaviour of thermosetting materials by torque rheometry

ISO 15252-2 Plastics—Epoxy Powder Moulding Compounds (EP-PMCs)—Part 2: Preparation of Test Specimens And Determination of Properties

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method and associated with plastics issues refer to the terminology contained in Terminology D883.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 For the purpose of this test method, the following definitions apply, (see Fig. 1):

3.2.2 *flow and cure behavior*—the flow behavior is represented by the recorded torque curve from the loading peak (Point t_1), to the torque minimum (Point t_5). The cure behavior is represented by the recorded torque curve from the torque minimum (Point t_5) to the torque maximum (Point t_4). The rate of curing is represented by the slope of the torque curve.

3.2.3 *time*—the residence time at torque $t_5 \times X$, where X is a factor (preferably 1.3) is t_v (s). To determine t_v , draw a line at $t_5 \times X$ parallel with the time axis. The intersection of this line with the left branch of the curve is t_2 . The intersection of this line with the right branch of the curve is t_3 :

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 The last approved version of this historical standard is referenced on www.astm.org.

⁴ 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