



Designation: D6382 – 99 (Reapproved 2005)

Standard Practice for Dynamic Mechanical Analysis and Thermogravimetry of Roofing and Waterproofing Membrane Material¹

This standard is issued under the fixed designation D6382; 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 practice covers test procedures and conditions that are applicable when Test Methods [D5023](#), [D5024](#), [D5026](#), [D5279](#), and [D5418](#) are used for conducting dynamic mechanical analysis of roofing and waterproofing membrane material in three-point bending, compression, tension, torsion, and dual cantilever modes, respectively. The specific method is selected by the analyst and depends on the membrane material and the operating principles of the individual instrument used for the analysis.

1.2 This practice covers test procedures and conditions that are applicable when Test Method [E1131](#) is used for conducting thermogravimetry of roofing and waterproofing membrane material.

1.3 Membrane materials include bituminous built-up roofing, polymer-modified bitumen sheets, vulcanized rubbers, non-vulcanized polymeric sheets, and thermoplastics. The membrane materials can be either nonreinforced or reinforced.

1.4 This practice is applicable to new membrane materials received from the supplier, those exposed artificially in the laboratory or outdoors on an exposure rack, and those sampled from field installations.

1.5 This practice contains notes which are explanatory and are not part of the mandatory requirements of this practice.

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

1.7 *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.*

¹ This practice is under the jurisdiction of ASTM Committee [D08](#) on Roofing and Waterproofing and is the direct responsibility of Subcommittee [D08.20](#) on Roofing Membrane Systems.

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2. Referenced Documents

2.1 *ASTM Standards*:²

- [D1079 Terminology Relating to Roofing and Waterproofing](#)
- [D4092 Terminology for Plastics: Dynamic Mechanical Properties](#)
- [D5023 Test Method for Plastics: Dynamic Mechanical Properties: In Flexure \(Three-Point Bending\)](#)
- [D5024 Test Method for Plastics: Dynamic Mechanical Properties: In Compression](#)
- [D5026 Test Method for Plastics: Dynamic Mechanical Properties: In Tension](#)
- [D5279 Test Method for Plastics: Dynamic Mechanical Properties: In Torsion](#)
- [D5418 Test Method for Plastics: Dynamic Mechanical Properties: In Flexure \(Dual Cantilever Beam\)](#)
- [E473 Terminology Relating to Thermal Analysis and Rheology](#)
- [E1131 Test Method for Compositional Analysis by Thermogravimetry](#)
- [E1142 Terminology Relating to Thermophysical Properties](#)

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminologies [E473](#), [D1079](#), [D4092](#), and [E1142](#).

4. Summary of Practice

4.1 In conducting a dynamic mechanical analysis, the roofing or waterproofing membrane specimen is placed in a test chamber and subjected to a controlled, increasing temperature program. The temperature range can be from well-below (for example, -80°C) to somewhat (for example, 50°C) above room temperature. The glass transition temperature, storage modulus, loss modulus, and damping factor of the specimen are measured.

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.