



Designation: D1171 – 18

Standard Test Method for Rubber Deterioration—Surface Ozone Cracking Outdoors (Triangular Specimens)¹

This standard is issued under the fixed designation D1171; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method permits the estimation of the relative ability of rubber compounds used for applications requiring resistance to outdoor weathering.

1.2 This test method is not applicable to materials ordinarily classed as hard rubber, but is adaptable to molded or extruded soft rubber materials and sponge rubber for use in window weatherstripping as well as similar automotive applications.

1.3 *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.*

1.4 *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

D518 Test Method for Rubber Deterioration—Surface Cracking (Withdrawn 2007)³

NOTE 1—The procedures in Test Method **D518** have been incorporated as Procedures B1, B2, and B3 in Test Methods **D1149**.

D1149 Test Methods for Rubber Deterioration—Cracking in an Ozone Controlled Environment

¹ This test method is under the jurisdiction of ASTM Committee **D11** on Rubber and Rubber-like Materials and is the direct responsibility of Subcommittee **D11.15** on Degradation Tests.

Current edition approved June 1, 2018. Published September 2018. Originally approved in 1951. Last previous edition approved in 2016 as D1171 – 16^{ε1}. DOI: 10.1520/D1171-18.

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.

3. Summary of Test Method

3.1 Procedures are given for preparing triangular cross-section specimens, for mounting them in strained condition around specified circular mandrels, and for rating the effect of exposure as evidenced by the appearance of surface cracks. The type, time, temperature, and other conditions of exposure are not given but shall be agreed upon by the purchaser and the seller and shall be completely described in the test reports.

3.2 Two techniques are described, the exposure rating and the quality-retention rating.

4. Significance and Use

4.1 Molded or extruded rubber products must withstand the effects of ozone cracking and outdoor weathering for satisfactory use. This test enables a simple comparison of performance to be made under specified test conditions in an outdoor test. No direct correlation between test performance and service performance can be claimed due to the wide range of service conditions.

5. Apparatus

5.1 *Mounting Mandrel*—A wood mandrel 50 mm (2 in.) in outside diameter, suitably coated with spar varnish or a clear lacquer. The mandrel may be supported by any convenient method.

5.2 *Fastening Wire*—Enameled copper wire, stainless steel wire, or other suitable fastener known to be unaffected by ozone and not negatively interact with the specimen.

6. Test Specimen

6.1 The triangular cross-section test specimen shall be a molded, extruded, or sponge section with a continuous skin or surface layer, 250 mm (10 in.) long, and cured in a straight position. The cross-sectional dimensions shall be as shown in **Fig. 1**. Duplicate specimens shall be tested.

6.2 It is recommended that the manufacturer observe a minimum rest period of 24 h between compound mixing and compound preparation, and a minimum rest period of ½ h