



Designation: D6909 – 10 (Reapproved 2023)

Standard Specification for High Temperature and Acid-Resistant Fluorocarbon Terpolymer Elastomer¹

This standard is issued under the fixed designation D6909; 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 specification covers requirements for the fluorocarbon terpolymer elastomer used in the manufacture of expansion joints for use in coal-fired utilities and other high temperature industrial applications in which corrosive flue gases are present.

1.2 This specification is intended as a reference procedure for evaluating the performance of these vulcanizates and can also be used for quality assurance testing before release of a lot based on agreement between supplier and purchaser.

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

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 requirements prior to use.*

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.*

2. Referenced Documents

2.1 ASTM Standards:²

D297 Test Methods for Rubber Products—Chemical Analysis

D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

D471 Test Method for Rubber Property—Effect of Liquids

D573 Test Method for Rubber—Deterioration in an Air Oven

D1765 Classification System for Carbon Blacks Used in Rubber Products

D2240 Test Method for Rubber Property—Durometer Hardness

3. Ordering Information

3.1 The seller shall mention this specification number in all quotations and when acknowledging purchase order.

4. Materials and Manufacture

4.1 Material shall be based on 100 % virgin fluoroelastomer terpolymer of at least 68 % by weight of fluorine content. The compound shall contain no less than 70 % by weight of fluoroelastomer. The remaining 30 % by weight shall be comprised of Medium Thermal (MT) carbon black, Classification N 990 (in Classification **D1765**), as reinforcing filler. No mineral fillers shall be used. The fluoroelastomer curative shall be of the bisphenol (dihydroxy), or peroxide types. No amount of reprocessed fluoroelastomer scrap or nonfluoroelastomer polymer is acceptable.

4.2 As-received virgin fluoroelastomer sampled in accordance with Section 6 shall be fully press-cured, typically for 20 min at 150 °C (302 °F), but not post-cured. Other time/temperature conditions are acceptable providing they produce vulcanizates that meet the property requirements.

5. Physical Properties

5.1 The mean value of the individual samples shall meet the physical and chemical property requirements shown in **Table 1**.

5.2 A sample shall be exposed to 260 °C $\pm$ 3 °C (500 °F $\pm$ 5 °F) for 70 h $\pm$ 0.5 h per Test Method **D573** and conform with the following property change requirements to determine dry heat resistance:

Hardness Change	$\pm$ 10 points
Tensile Strength Change	+50 % max
Elongation Ultimate	225 % min
Weight Change	$\pm$ 7 % max

5.3 The material color shall be black.

¹ This specification is under the jurisdiction of ASTM Committee **D11** on Rubber and Rubber-like Materials and is the direct responsibility of Subcommittee **D11.37** on Coated Fabrics, Rubber Threads and Seals. This specification was developed in cooperation with the Fluid Sealing Association (Specification FSA-DSJ-401-09).

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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.