



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

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

1.3 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.

1.4 *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 and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- D 297 Test Methods for Rubber Products—Chemical Analysis²
- D 412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension²
- D 471 Test Method for Rubber Property—Effect of Liquids²
- D 573 Test Method for Rubber—Deterioration in an Air Oven²
- D 2240 Test Method for Rubber Property—Durometer Hardness²

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 thermal carbon black as reinforcing filler with calcium hydroxide, magnesium oxide, and minimal processing aids (<5 % by weight). The fluoroelastomer curative shall be of the dihydroxy, bisphenol type. 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 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 sample shall meet the physical property requirements shown in Table 1.

5.2 A sample shall be exposed to $260 \pm 3^\circ\text{C}$ ($500 \pm 5^\circ\text{F}$) for 70 ± 0.5 h per Test Method D 573 and conform with the following property change requirements to determine dry heat resistance:

Hardness Change	± 10 points
Tensile Strength Change	-40 % max
Elongation Change	-30 % max
Weight Change	+5.0 % max

5.3 The material color shall be black.

6. Sampling

6.1 Sampling and testing shall be as follows:

6.1.1 For acceptance tests, sufficient product shall be taken at random from each lot to perform all required tests. The number of samples tested per lot shall be no less than three.

6.1.2 ASTM International test specimens shall be prepared from the same batch of polymer/compound as the material being supplied and shall be fully press-cured as specified in 4.2.

6.1.3 A lot is all compound processed in one continuous run and presented to the purchaser at one time.

¹ This specification is under the jurisdiction of ASTM Committee D11 on Rubber and is the direct responsibility of Subcommittee D11.36 on Seals. This specification was developed in cooperation with the Fluid Sealing Association (Specification FSA-DSJ-401-02).

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² Annual Book of ASTM Standards, Vol 09.01.