

AEROSPACE MATERIAL SPECIFICATION



AMS 7259D

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Superseding AMS 7259C

Rings, Sealing, Fluorocarbon (FKM) Rubber High-Temperature-Fluid Resistant Low Compression Set 85 to 95

1. SCOPE:

1.1 Form:

This specification covers a fluorocarbon (FKM) rubber in the form of O-rings, O-ring cord, compression seals, and molded-in-place gaskets.

1.2 Application:

These products have been used typically as sealing rings, compression seals, O-ring cord, and molded-in-place gaskets in contact with air and a wide variety of fuels, lubricants, and specific hydraulic fluids from -29 to +204 °C (-20 to +400 °F), but usage is not limited to such applications. Each application should be considered individually. This class of fluoroelastomers is not recommended for use in high temperature stabilized, "HTS", engine oils. Each "HTS" oil should be evaluated separately.

1.3 Safety - Hazardous Materials:

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

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2. APPLICABLE DOCUMENTS:

The issue of the following documents in effect on the date of the purchase order form a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been canceled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2817 Packaging and Identification, Preformed Packings
AMS 3023 Fluid, Reference for Testing Polyol Ester (and Diester) Resistant Material

AS568 Aerospace Size Standard for O-Rings
AS871 Manufacturing and Inspection Standards for Preformed Packings (O-Rings)
AS3581 Packings, Preformed - AMS 7259 - O-Rings
AIR851 O-Ring Tension Testing Calculations

PD 2000 Procedures for an Industry Qualified Product Management Process

2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 297 Rubber Products - Chemical Analysis
ASTM D 395 Rubber Property - Compression Set
ASTM D 412 Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension

ASTM D 471 Rubber Property - Effect of Liquids
ASTM D 573 Rubber - Deterioration in an Air Oven
ASTM D 1329 Rubber Property - Retraction at Lower Temperatures (TR Test)
ASTM D 1414 Rubber O-Rings
ASTM D 2240 Rubber Property - Durometer Hardness

3. TECHNICAL REQUIREMENTS:

3.1 Material:

Shall be a compound, based on a fluorocarbon (FKM) elastomer, suitably cured to produce sealing rings, compression seals, and molded-in-place gaskets meeting the requirements of 3.2 and 3.3. A dihydroxy/bisphenol cure system shall be used. Material shall be based on 100% virgin fluorocarbon (FKM) elastomer. No reprocessed or non-fluorocarbon polymer is acceptable.

3.1.1 Color: Shall be black or brown. No other color shall be acceptable.

3.2 Properties:

Rings shall conform to the requirements shown in Table 1; tests shall be performed on the rings supplied and in accordance with ASTM D 1414, insofar as practicable. O-ring sizes that are suitable for test are shown in Table 3. For all other sizes, and products, tests shall be conducted on a size -214 O-ring of identical batch and state of cure as the end item. Compression set and specific gravity tests shall be conducted on the end item if possible. Calculations of tensile strength and elongation may be made in accordance with AIR851.

TABLE 1 - Properties

Property	Requirement	Test Method
3.2.1 Hardness, Durometer "A" or equivalent	90 ± 5	ASTM D 2240
3.2.2 Tensile Strength, min	1400 psi (9.65 MPa)	ASTM D 412
3.2.3 Elongation, min	100%	ASTM D 412
3.2.4 Specific Gravity	Preproduction Value ±0.02	ASTM D 297 (Hydrostatic Method)
3.2.5 Aromatic Fuel Resistance		ASTM D 471 ASTM Ref. Fuel B 23 °C ± 2 (73 °F ± 5) 70 hours ± 0.5
3.2.5.1 Hardness Change, Durometer "A" or equivalent	-5 to +5	
3.2.5.2 Tensile Strength Change, max	-20%	
3.2.5.3 Elongation Change, max	-20%	
3.2.5.4 Volume Change	0 to +5%	