

AEROSPACE
MATERIAL
SPECIFICATION

AMS 7259
(Draft 72ET)

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Revised

RINGS, SEALING, FLUOROCARBON RUBBER

High-Temperature-Fluid Resistant

Very-Low Compression Set

FKM Type

85 - 95

1. SCOPE:

1.1 Form: This specification covers a high-temperature-fluid resistant, very-low compression set fluorocarbon rubber in the form of molded rings.

1.2 Application: Sealing rings for use in contact with air or a variety of fuels, lubricants, and specific hydraulic fluids from -15°C (+5°F) to +260°C (+500°F). The very low compression set of these rings gives longer life than rings of other fluorocarbon rubbers such as AMS 7279 at equal temperatures. The cross section of such rings is usually not over 0.275 in. (7.0 mm) in diameter or thickness. Standard sizes are as shown in AS 568.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS), Aerospace Standards (AS), and Aerospace Information Reports (AIR) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

AMS 2817 - Packaging and Identification, Preformed Packings

AMS 3021 - Reference Fluid for Testing Di-Ester (Polyol) Resistant
Materials

2.1.2 Aerospace Standards:

AS 568 - Aerospace Size Standard for O-Rings

AS 871 - Manufacturing and Inspection Standards for Preformed Packings
(O-Rings)

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2.1.3 Aerospace Information Reports:

AIR 851 - O-Ring Tension Testing Calculations

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D471 - Rubber Property - Effect of Liquids

ASTM D1414 - Testing Rubber O-Rings

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be a compound based on a fluorocarbon elastomer, suitably cured to produce sealing rings meeting the requirements of 3.2.

3.2 Properties: Rings shall conform to the following requirements; tests shall be performed on the rings supplied and, except as otherwise specified, in accordance with ASTM D1414, insofar as practicable. Testing for tensile strength and tensile stress is not required on rings which are too small to permit assembly on rollers and are, after cutting, too short to permit testing as a single strand. Eliminating testing for tensile strength and tensile stress does not eliminate testing for elongation; elongation test can be made by stretching a ring over a mandrel of a size which will stretch the ring sufficiently to produce the required elongation when figured on the ID of the ring. Calculations of tensile strength, elongation, and tensile stress may be made in accordance with AIR 851.

3.2.1 As Received:

3.2.1.1	Hardness, Durometer "A" or equivalent	90 $\pm$ 5
3.2.1.2	Tensile Strength, min	1200 psi (8.25 MPa)
3.2.1.3	Elongation, min	100%
3.2.1.4	Tensile Stress at 100% Elongation, min	850 psi (5.85 MPa)
3.2.1.5	Corrosion	Nil
3.2.1.6	Specific Gravity	Preproduction Value $\pm$ 0.02

3.2.2 Aromatic Fuel Resistance: (Immediate Deteriorated Properties)

Medium:	ASTM Ref. Fuel B (ASTM D471)
Temperature:	20° - 30°C (68° - 86°F)
Time:	70 hr $\pm$ 0.5

3.2.2.1 Hardness Change, -5 to +5
Durometer "A" or
equiv.

3.2.2.2 Tensile Strength Change, -20%
max

3.2.2.3 Elongation Change, max -15%

3.2.2.4 Volume Change 0 to +5%

3.2.3 Synthetic Lubricant Resistance:
(Immediate Deteriorated
Properties)

Medium: AMS 3021
(See 8.1)
Temperature: $175^{\circ}\text{C} \pm 3$
 $347^{\circ}\text{F} \pm 5$
Time: 70 hr ± 0.5

3.2.3.1 Hardness Change, 0 to -15
Durometer "A" or equiv.

3.2.3.2 Tensile Strength Change, -30%
max

3.2.3.3 Elongation Change, max -20%

3.2.3.4 Volume Change 0 to +20%

3.2.4 Dry Heat Resistance:

Temperature: $275^{\circ}\text{C} \pm 3$
($528^{\circ}\text{F} \pm 5$)
Time: 70 hr ± 0.5

3.2.4.1 Hardness Change, 0 to +10
Durometer "A" or equiv.

3.2.4.2 Tensile Strength
Change, max -45%

3.2.4.3 Elongation Change, -20%
max

3.2.4.4 Weight loss, max 10%

3.2.4.5 Bend (Flat) No cracking
or checking

