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AEROSPACE MATERIAL SPECIFICATION

AMS 7266A
Superseding AMS 7266

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RINGS, SEALING, FLUOROSILICONE RUBBER
General Purpose, High Temperature, Fuel and Oil Resistant
65 - 75

1. SCOPE:

1.1 Form: This specification covers a fluorosilicone rubber in the form of molded rings.

1.2 Application: Sealing rings for use from -55° to +175°C (-65° to +350°F) in fuels and from -55° to +150°C (-65° to +300°F) in lubricating oils. The cross-section of such rings is usually not over 0.275 in. (7.0 mm) in diameter or thickness.

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 Material

2.1.2 Aerospace Standards:

AS 568 - Aerospace Size Standard for O-Rings
AS 871 - Manufacturing and Inspection Standards for Preformed Packings (O-Rings)

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 fluorosilicone 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. Tensile strength testing 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 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 equiv.	70 ± 5
3.2.1.2	Tensile Strength, min	600 psi (4.1 MPa)
3.2.1.3	Elongation, min	120%
3.2.1.4	Tensile Stress at 100% Elongation	500 - 1000 psi (3.4 - 6.9 MPa)
3.2.1.5	Corrosion	Nil
3.2.1.6	Specific Gravity	Preproduction Value ± 0.003

3.2.2 Aromatic Fuel Resistance: (Immediate Deteriorated Properties)

Medium: ASTM Ref. Fuel B (ASTM D471)
Temperature: 20° - 30°C (68° - 86°F)
Time: 22 hr ± 0.5

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

3.2.2.2	Tensile Strength Change, max	-40%		
3.2.2.3	Elongation Change, max	-35%		
3.2.2.4	Volume Change	0 to +20%		
3.2.3	Lubricating Oil Resistance: (Immediate Deteriorated Properties)		Medium:	AMS 3021 (See 8.2)
			Temperature:	150°C ± 3 (302°F ± 5)
3.2.3.1	Hardness Change, Durometer "A" or equiv.	-15 to 0	Time:	70 hr ± 0.5
3.2.3.2	Tensile Strength Change, max	-25%		
3.2.3.3	Elongation Change, max	-35%		
3.2.3.4	Volume Change	0 to +12%		
3.2.4	Dry Heat Resistance:		Temperature:	200°C ± 3 (392°F ± 5)
3.2.4.1	Hardness Change, Durometer "A" or equiv.	0 to +10	Time:	70 hr ± 0.5
3.2.4.2	Tensile Strength Change, max	-20%		
3.2.4.3	Elongation Change, max	-30%		
3.2.5	Compression Set:		Temperature:	175°C ± 3 (347°F ± 5)
			Time:	22 hr ± 0.25
	Percent of Original Deflection, max			
	Ring Cross Section Diameter			
	0.066 to 0.110 in. (1.65 to 2.75 mm), incl	50		
	Over 0.110 in. (2.75 mm)	30		

3.2.6 Low-Temperature Resistance:

Temperature Retraction, TR_{10} point, max	-55°C (-67°F)

3.3 Quality: Rings, as received by purchaser, shall be uniform in quality and condition, clean, smooth, as free from foreign material as commercially practicable, and free from internal imperfections detrimental to their performance. Surface imperfections shall, unless otherwise specified, be no greater than permitted by AS 871 for minor defects.

3.4 Sizes and Tolerances: Shall be as specified on the drawing. Inspection for conformance to dimensional requirements shall be made in accordance with AS 871, unless otherwise agreed upon by purchaser and vendor.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of rings shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the rings conform to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to the following requirements are classified as acceptance tests and shall be performed on each lot:

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Requirement	Paragraph Reference
Hardness, as received	3.2.1.1
Tensile Strength, as received	3.2.1.2
Elongation, as received	3.2.1.3
Tensile Stress, as received	3.2.1.4
Specific Gravity, as received	3.2.1.6

4.2.2 Periodic Tests: Tests to determine conformance to the following requirements are classified as periodic tests and shall be performed at a Ø frequency selected by the vendor but not longer than six months unless other frequency of testing is specified by purchaser:

Requirement	Paragraph Reference
Corrosion, as received	3.2.1.5
Volume Change in fuel	3.2.2.4
Tensile Strength Change in oil	3.2.3.2
Elongation Change in oil	3.2.3.3
Volume Change in oil	3.2.3.4
Hardness Change after dry heat exposure	3.2.4.1
Compression Set	3.2.5
Temperature Retraction, TR_{10} point	3.2.6

4.2.3 Preproduction Tests: Tests to determine conformance to all technical requirements of this specification are classified as preproduction tests Ø and shall be performed on the first-article shipment of rings to a purchaser, when a change in material and/or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.2.3.1 For direct U.S. Military procurement, substantiating test data and, when requested, preproduction test material shall be submitted to the Ø cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.

4.3 Sampling: Shall be as follows:

4.3.1 For Acceptance Tests: Sufficient rings shall be taken at random from each Ø lot to perform all required tests; the number of tests for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three.

4.3.1.1 A lot shall be all rings of the same size from the same batch of Ø compound processed in one continuous run and presented for vendor's inspection at one time but shall not exceed 1000 rings or 100 lb (45 kg), whichever is the lesser mass.

4.3.1.2 A batch shall be the quantity of compound run through a mill or mixer at one time.

4.3.1.3 When a statistical sampling plan and acceptance quality level (AQL) have Ø been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.1 and the report of 4.5.1 shall state that such plan was used.

4.3.2 For Periodic Tests: As in 4.3.1 for the batch from which the samples are Ø taken.