

RINGS, SEALING, BUTYL RUBBER
Phosphate Ester Hydraulic Fluid Resistant
85 - 95

This specification has been declared "NONCURRENT" by the Aerospace Materials Division, SAE, as of 10-16-80. It is recommended that this specification not be specified for new designs.

This cover sheet should be attached to the "C" revision of the subject specification.

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AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AMS 7263C
Superseding AMS 7263B

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RINGS, SEALING, BUTYL RUBBER Phosphate Ester Hydraulic Fluid Resistant 85 - 95

1. SCOPE:

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

1.2 Application: Sealing rings for use in phosphate-ester-base, fire-resistant, hydraulic fluids at temperatures as low as -55°C (-67°F). 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 Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, Pennsylvania 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

AMS 2817 - Packaging and Identification, Preformed Packings

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 Report:

AIR 851 - O-Ring Tension Testing Calculations

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

ASTM D1414 - Testing Rubber O-Rings

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be a compound based on a butyl elastomer, suitably cured to produce a product \emptyset meeting all technical requirements of this specification.

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3.2 Properties: The product shall conform to the following requirements; tests shall be performed on the product supplied and 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 equiv. 90 ± 5
- 3.2.1.2 Tensile Strength, min 1000 psi
(6.90 MPa)
- 3.2.1.3 Elongation, min 150%
- 3.2.1.4 Tensile Stress at 100% Elongation, min 600 psi
(4.14 MPa)
- 3.2.1.5 Corrosion Nil

∅ 3.2.2 Phosphate Ester Fluid Resistance:
(Immediate Deteriorated Properties)

- 3.2.2.1 Hardness Change, Durometer "A" or equiv. -15 to 0
- 3.2.2.2 Tensile Strength Change, max -25%
- 3.2.2.3 Elongation Change, max -20%
- 3.2.2.4 Volume Change 0 to +10%
- 3.2.2.5 Decomposition None
- 3.2.2.6 Surface Tackiness None

Medium: SAE Phosphate Ester Std. Test Fluid No. 1A (See 8.2)
 Temperature: 70° C ± 1 (158° F ± 1.8)
 Time: 168 hr ± 1

∅ 3.2.3 Dry Heat Resistance:

- 3.2.3.1 Hardness Change, Durometer "A" or equiv. 0 to +10
- 3.2.3.2 Tensile Strength Change, max -20%
- 3.2.3.3 Elongation Change, max -35%
- 3.2.3.4 Bend (flat) No cracking or checking

Temperature: 70° C ± 1 (158° F ± 1.8)
 Time: 168 hr ± 1

3.2.4 Compression Set:

Percent of original deflection, max 50

Temperature: 70° C ± 1 (158° F ± 1.8)
 Time: 22 hr ± 0.3

3.2.5 Low Temperature Brittleness: No cracking

4.5.2

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3.3 Quality: The product shall be uniform in quality and condition, clean, smooth, as free from foreign material as commercially practicable, and free from internal imperfections detrimental to performance of parts. 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 and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.6. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to assure 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 or routine control tests and shall be performed on each lot of rings. A lot of rings shall be all rings of the same size from the same batch of compound processed in one continuous run and submitted for the vendor's inspection at one time. A batch shall be the quantity of compound run through a mill or mixer at one time.

Test	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
Volume Change in Phosphate Ester	3.2.2.4
Compression Set	3.2.4

4.2.2 Periodic Control Tests: Tests to determine conformance to the acceptance tests of 4.2.1 plus the following tests are classified as periodic control tests and shall be performed on rings produced from a production batch of compound at intervals not greater than 6 months.

Test	Paragraph Reference
Corrosion, as received	3.2.1.5
Tensile Strength Change in Phosphate Ester	3.2.2.2
Elongation Change in Phosphate Ester	3.2.2.3
Hardness Change after dry heat exposure	3.2.3.1
Bend after dry heat exposure	3.2.3.4
Low Temperature Brittleness	3.2.5

4.2.3 Qualification Tests: Tests to determine conformance to all technical requirements of this specification are classified as qualification tests and may be the basis for approval of the compound (See 4.4.1).

4.3 Sampling: A sufficient number of rings shall be taken from each lot to perform each required test on three specimens.

4.4 Approval: