

AERONAUTICAL MATERIAL SPECIFICATION

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Revised

RINGS, SEALING, SYNTHETIC RUBBER Oil Resistant (65-75)

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. **FORM:** Molded parts.
3. **APPLICATION:** Static sealing rings for use at temperatures as low as -65 F where resistance to hot lubricating oil is required. The cross-section of such rings is usually not over 3/16 in. in diameter or thickness.
4. **TECHNICAL REQUIREMENTS:**
 - 4.1 **Corrosion:** The product shall not have a corrosive or other deleterious effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal is not considered objectionable.
 - 4.2 **Properties:** The product shall conform to the following requirements; test shall be performed on the product supplied and in accordance with listed ASTM Methods, in so far as practicable. The ASTM Methods for manufacturing specimens do not apply. Tensile strength is not required on rings which, after cutting, are too short to permit testing. Eliminating the tensile requirement does not eliminate the elongation requirement; 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 inside diameter of the ring. The cross-section of rings (or of specimens from rings) to be used for all fluid resistance tests shall be not over 1/8 in. and, if over, shall be reduced to 1/8 in. or less before immersion in the fluid media.
 - 4.2.1 **As Received:**

Hardness, Durometer "A"	70 ± 5	
or equivalent		
Tensile Strength, psi min	1500	ASTM D412-41
Elongation, %, min	150	D412-491

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4.2.2 Lubricating Oil Resistance:

ASTM D471-46T

(Immediate Deteriorated Properties)

Hardness Change, Durometer "A" or equivalent -5 to + 10

Tensile Strength Reduction, %, max (based on area before immersion) 60

Elongation Reduction, %, max 50

Volume Change (Method A), % 0 to + 10

Decomposition None

Surface Tackiness None

Medium: ASTM Oil No. 1
Temperature: 300 F $\pm$ 2
Time: 96 hr

Note: If impracticable to determine tensile strength of rings 0.5 in. and less nominal ID after oil immersion, the rings shall withstand, without cracking, closing flat.

4.2.3 Processing Oil Resistance:

ASTM D471-46T

(Immediate Deteriorated Properties)

Hardness Change, Durometer "A" or equivalent -20 to 0

Volume Change (Method A), % +25 to +45

Decomposition None

Surface Tackiness None

Medium: ASTM Oil No. 5
Temperature: 300 F $\pm$ 2
Time: 70 hr**4.2.4 Dry Heat Resistance:**

ASTM D573-45

Hardness Change, Durometer "A" or equivalent 0 to +10

Tensile Strength Reduction, %, max 25

Elongation Reduction, %, max 40

Surface Hardening None

Bend (flat) No cracks

Temperature: 212 F $\pm$ 2
Time: 70 hr

Note: Reduction of section is not required for conditioning and testing.

4.2.5 Compression Set:

ASTM D395-46T, Method B

Per cent of original deflection, max 50

Per cent of original thickness, max 15

Temperature: 250 F $\pm$ 2
Time: 70 hr
Compressed to 70% original thickness

Note 1: Reduction of section is not required for conditioning and testing.

Note 2: Rings over 2 in. nominal ID may be cut for testing. The cut specimen shall be not less than 1 in. in length.

4.2.6 Low Temperature Brittleness:
(after aging in lubricating oil)

The specimen for rings 2 in. and less nominal ID shall be a complete ring; the specimen for rings over 2 in. nominal ID shall be a piece 3 in. long cut from a ring. The specimen shall be immersed in lubricating oil in accordance with 4.2.2 and, after cooling in air to room temperature, shall be placed in a refrigerator at $-40\text{ F} \pm 2$ and held at that temperature for 5 hr. At the end of the refrigeration time, the specimen, while in the refrigerator or within 10 seconds after removal from the refrigerator, shall withstand, without cracking, bending as follows: The complete ring shall be ovalized until the minor axis is equal to 50% of the original ID, and the 3-in. specimen shall be bent around to form a circle.

Note: Should the testing schedule be such as to make it inconvenient to place the specimen in the refrigerator as soon as it has cooled to room temperature, the specimen may be allowed to rest in air until time as it is convenient to resume the test.

5. QUALITY: The product shall be uniform in quality and condition, clean, smooth, and free from foreign materials and from defects detrimental to fabrication, appearance, or performance of parts.

6. REPORTS: Unless otherwise specified, the vendor shall furnish with each shipment three copies of a notarized report stating that the product meets the requirements of this specification. This report shall include the purchase order number, material specification number, vendor's compound number and batch number, part number, and quantity.

7. PACKAGING:

7.1 Packaging shall be accomplished in such a manner as to ensure that the product during shipment and storage, will not be permanently distorted, and will be protected against damage from exposure to weathering or any normal hazard.

7.2 Each package shall be marked to give the following information:

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PART NUMBER _____
PURCHASE ORDER NUMBER _____
QUANTITY _____
COMPOUND NUMBER _____
BATCH NUMBER _____
MANUFACTURER'S IDENTIFICATION _____
DATE OF MANUFACTURE _____

8. APPROVAL: A vendor shall not supply parts until samples have been approved by purchaser. After such approval, changes in molds, compound, or production manufacturing procedures and processes shall not be made without prior written approval by purchaser. Results of tests on incoming shipments shall be essentially equal to those on approved samples; the specific gravity shall not vary more than 0.02 from that of the approved sample.