

AERONAUTICAL MATERIAL SPECIFICATION

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RINGS, PACKING, SYNTHETIC RUBBER Fuel and Low Temperature Resistant (70-80)

1. **ACKNOWLEDGMENT:** A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. **TYPE:** Molded parts.
3. **APPLICATION:** Primarily for gland type packings and seals in flexible couplings for use at temperatures as low as -65 F where resistance to fuel is required.
4. **TECHNICAL REQUIREMENTS:**
 - 4.1 **Corrosion:** The product shall not have a corrosive 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; tests shall be performed on the product supplied and in accordance with listed ASTM methods, insofar as practicable. The ASTM methods for manufacturing specimens do not apply, except for compression set discs. Tensile strength testing is not required on rings which, after cutting, are too short to permit testing. Eliminating tensile testing 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 inside diameter of the ring.
 - 4.2.1 **As Received:**

4.2.1.1 Hardness, Durometer "A" or equiv.	75 ± 5	
4.2.1.2 Tensile Strength, psi, min	1000	ASTM D412-51T
4.2.1.3 Elongation, %, min	100	
 - 4.2.2 **Aromatic and Non-Aromatic Fuel Resistance:** See 4.2.2.4
 - 4.2.2.1 Volume Change (Method A), % +30 to +50
(after 96 hr immersion in 30% aromatic fuel)
 - 4.2.2.2 Volume Change (Method A), % Positive Swell
(after 96 hr immersion in 30% aromatic fuel followed by 72 hr immersion in non-aromatic fuel)
(based on unimmersed volume)

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4.2.2.3 Volume Change (Method A), %, max.
(after cyclic immersion and 48 hr
drying at $158\text{ F} + 2$) (based on
unimmersed volume)

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4.2.2.4 Procedure: The specimen shall be tested in accordance with ASTM D471-52T,
as follows:

4.2.2.4.1 Immerse in ASTM Reference Fuel B at 70-85 F for 96 hr; determine volume
change.

4.2.2.4.2 Reimmerse in ASTM Reference Fuel A at 70-85 F for 72 hr; determine volume
change.

4.2.2.4.3 The specimen, after the immersion of 4.2.2.4.2, may be allowed to air dry
for such time as may suit the testing schedule, and shall then be dried in
an oven at $158\text{ F} + 2$ for 48 hr, cooled in desiccator to room temperature,
and the volume change determined.

4.2.3 Low Temperature Flexibility:

See 4.2.3.3

4.2.3.1 As Received, deg Fahr, max

-55

4.2.3.2 After heat aging, cyclic immersion
in fuel and drying, deg Fahr, max

-40

4.2.3.3 Procedure: Rings 1.75 in. and under in OD shall be tested full size; larger
rings shall have a section removed and this section fastened at the ends to
form a ring 1.75 in. or under in OD for testing. In testing cut sections,
the joint shall be at approximately top center in the fixture and the fastened
ends shall be in the same vertical plane.

4.2.3.3.1 As Received: Ring shall be placed in the fixture illustrated in Figure 1
and the space between retaining walls adjusted so that ring will not shift
its position during bending. Fixture shall be placed in refrigerator at
 $-55\text{ F} + 2$ and held at that temperature for 5 hours. Without removing fix-
ture from refrigerator, the ring shall be bent flat by striking upper end
of plunger with a hammer. Fracture of seal or evidence of any cracks after
removal from fixture and warming to room temperature will be considered
failure.

4.2.3.3.2 After Heat Aging, Cyclic Fuel Immersion, and Drying: Rings shall be oven
aged in accordance with ASTM D573-53 at $212\text{ F} + 2$ for 70 hr and then sub-
jected to cyclic immersion in fuels and oven drying as in 4.2.2.4. Rings
shall then be refrigerated and tested as in 4.2.3.3.1 except that the re-
frigerator shall be maintained at $-40\text{ F} + 2$.

4.2.4 Compression Set:

ASTM D395-53T, Method B

4.2.4.1 ASTM Discs:

Temperature: $250\text{ F} + 2$

Time: 70 hr

Compressed to 0.350 in. thick

4.2.4.1.1 Per cent of original deflection, max 40

4.2.4.1.2 Per cent of original thickness, max 12

- 4.2.4.2 **Parts:** Compression set shall be determined on parts except that rings over 2 in. ID may be cut for testing. Cut specimens shall be approximately 1 in. long. Rings or specimens shall be compressed to 70% of the nominal original thickness. Compression set on parts or specimens may differ from that on ASTM discs but values determined on production rings shall be approximately the same as those on approved samples.
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 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 weather or any normal hazard.
- 7.2 Each package shall be marked to give the following information:
- AMS 7260
 PART NUMBER _____
 PURCHASE ORDER NUMBER _____
 QUANTITY _____
 COMPOUND NUMBER _____
 BATCH NUMBER _____
 MANUFACTURER'S IDENTIFICATION _____
 DATE OF CURE _____
8. **APPROVAL:**
- 8.1 To assure adequate performance characteristics, compounds shall be approved by purchaser before rings for production use are supplied, unless such approval be waived. Results of tests on production rings shall be essentially equivalent to those on the approved sample.
- 8.2 Vendor shall use the same compound and manufacturing processes for production rings as for approved sample rings. If necessary to make any changes in mold, compound, or processing, vendor shall obtain written permission from purchaser prior to incorporating such change.
9. **REJECTIONS:** Parts not conforming to this specification or to authorized modifications will be subject to rejection.