

AEROSPACE

MATERIAL SPECIFICATIONS

AMS 7274D

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

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

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. FORM: Molded rings.
3. APPLICATION: Sealing rings for use at temperatures as low as -65 F, where resistance to hot petroleum base 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 effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal shall not be 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. Tensile strength testing is not required on rings ϕ which are too small to permit assembly on rollers for testing and are, after cutting too short to permit testing as a single strand. 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 ID of the ring.
 - 4.2.1 As Received:
 - 4.2.1.1 Hardness, Durometer "A" or equiv. 70 $\pm$ 5
 - ϕ 4.2.1.2 Tensile Strength, psi, min 1500 See 4.2.1.5
 - ϕ 4.2.1.3 Elongation, %, min 150 See 4.2.1.5
 - ϕ 4.2.1.4 Specific Gravity, variation from sample submitted for approval $\pm$ 0.02
 - ϕ 4.2.1.5 Use ASTM D1414-56T for "O" rings; use ASTM D412-51T for other rings.
 - 4.2.2 Lubricating Oil Resistance:
(Immediate Deteriorated Properties)

ASTM D471-59T
Medium: ASTM Oil No. 1
Temperature: 300 F $\pm$ 2
Time: 96 hr

4.2.2.1	Hardness Change, Durometer "A" or equiv.	-5 to +10	
4.2.2.2	Tensile Strength Change, %, max (based on area before immersion)	-60	
4.2.2.3	Elongation Change, %, max	-50	
4.2.2.4	Volume Change (Method A), %	0 to +10	
4.2.2.5	Decomposition	None	
4.2.2.6	Surface Tackiness	None	
4.2.2.7	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	<u>Processing Oil Resistance:</u> (Immediate Deteriorated Properties)	ASTM D471-59T Medium: Temperature: Time:	ASTM Oil No. 3 300 F $\pm$ 2 70 hr
4.2.3.1	Hardness Change, Durometer "A" or equiv.	-20 to 0	
4.2.3.2	Volume Change (Method A), %	+25 to +45	
4.2.3.3	Decomposition	None	
4.2.3.4	Surface Tackiness	None	
4.2.4	<u>Dry Heat Resistance:</u>	ASTM D573-53 Temperature: Time:	212 F $\pm$ 2 70 hr
4.2.4.1	Hardness Change, Durometer "A" or equiv.	0 to +10	
4.2.4.2	Tensile Strength Change, %, max	-25	
4.2.4.3	Elongation Change, %, max	-40	
4.2.4.4	Bend (flat)	No cracking or checking	
4.2.5	<u>Compression Set:</u>	ASTM D395-55, Method B Temperature: Time:	250 F $\pm$ 2 70 hr
4.2.5.1	Percent of Original Deflection, max Ring Cross Section Diameter, Inch ϕ 0.066 to 0.110, incl Over 0.110	85 75	
4.2.5.2	Percent of Original Thickness, max Ring Cross Section Diameter, Inch ϕ 0.066 to 0.110, incl Over 0.110	26 23	

- 4.2.5.3 Compression set shall be determined on complete rings if the ID of the ring is 2 in. or less; for larger rings, a section approximately 1 in. long cut from the ring shall be used.

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 hours. At the end of the refrigeration time, the specimen, while in the refrigerator or within 10 sec 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.

- 4.2.6.1 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 such 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 imperfections 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 conforms to the requirements of this specification. This report shall include the purchase order number, material specification number, vendor's compound number, batch number unless waived by purchaser, part number, and quantity.

7. PACKAGING AND MARKING: Unless otherwise ordered, rings shall be packaged and identified as follows:

- 7.1 Individual rings shall be packaged and identified in accordance with the latest issue of AMS 2817.

- 7.2 Sheets or strips of individual ring packages shall be packed in cartons in such a manner that the rings, during shipment and storage, will not be permanently distorted and will be protected against damage from exposure to weather or any normal hazard. Each carton shall be marked to give the following information:

AMS 7274D
PART NUMBER _____
PURCHASE ORDER NUMBER _____
QUANTITY _____
COMPOUND NUMBER _____
BATCH NUMBER (Unless waived by purchaser) _____
MANUFACTURER'S IDENTIFICATION _____
DATE OF CURE _____