# AEROSPACE
## MATERIAL SPECIFICATIONS

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**AMS 3326B**

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# SILICONE RUBBER
Fuel and Oil Resistant
50 - 65

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. FORM: Sheet, strip, tubing, molded shapes, extrusions, or as ordered.

3. APPLICATION: Primarily for rubber-like parts requiring continuous operation in aromatic fuel and di-ester lubricants at temperatures from -60 to +150 C (-76 to +302 F).

4. TECHNICAL REQUIREMENTS:

4.1 General:

4.1.1 Condition: Unless otherwise specified, a suitably cured product shall be furnished.

4.1.2 Weathering: When specified, the product shall have weather resistance acceptable to the purchaser as determined by a procedure agreed upon by purchaser and vendor.

4.1.3 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 the issue of specified ASTM methods listed in the latest issue of AMS 2350, insofar as practicable. When the product supplied is an extrusion of such shape that ø suitable specimens cannot be cut from the product, a separate flat test strip sample shall be supplied upon request. This strip shall be prepared from 1 in. ± 1/16 OD by 0.075 in. ± 0.008 thick wall tubing which shall be mechanically split and flattened into a strip while being extruded and then cured in the same manner as production material.

4.2.1 As Received:

| | | | |
|---|---|---|---|
| ø 4.2.1.1 | Hardness, Durometer "A" or equiv. | 50 - 65 | ASTM D676 |
| 4.2.1.2 | Tensile Strength, psi, min | 800 | ASTM D412, Die B or C |
| 4.2.1.3 | Elongation, %, min | 130 | ASTM D412, Die B or C |
| 4.2.1.4 | Tensile Stress at 50% Elongation, psi | See Note 1 | ASTM D412, Die B or C |
| 4.2.1.5 | Tear Resistance, lb per in., min | 40 | ASTM D624, Die B |
| 4.2.1.6 | Specific Gravity | See Note 2 | ASTM D297 |
| 4.2.2 ø | Di-Ester Oil Resistance: (Immediate Deteriorated Properties) | | ASTM D471<br>Medium: ASTM Service Fluid No. 101 |
| 4.2.2.1 | Hardness Change, Durometer "A" or equiv., max | -10 | Temperature: 150 C ± 3 (302 F ± 5.4)<br>Time: 48 hr |

| | | |
|---|---|---|
| 4.2.2.2 Volume Change, %, max | +20 | |
| 4.2.3 Fuel Resistance: (Immediate Deteriorated Properties) | | ASTM D471<br>Medium: ASTM Ref. Fuel B<br>Temperature: 20 - 30 C (68 - 86 F)<br>Time: 48 hr |
| 4.2.3.1 Hardness Change, Durometer "A" or equiv., max | -10 | |
| 4.2.3.2 Tensile Strength Change, %, max | -60 | |
| 4.2.3.3 Elongation Change, %, max | -50 | |
| 4.2.3.4 Volume Change, %, max | | |
| 4.2.3.4.1 For molded O-rings | +25 | |
| 4.2.3.4.2 For other forms | +30 | |
| 4.2.4 Phosphate Ester Fluid Resistance: (Immediate Deteriorated Properties) | | ASTM D471<br>Medium: SAE Phosphate Ester Standard Test Fluid No. 1A (See Note 3)<br>Temperature: 70 C ± 1 (158 F ± 1.8)<br>Time: 48 hr |
| 4.2.4.1 Hardness Change, Durometer "A" or equiv. | -25 to 0 | |
| 4.2.4.2 Tensile Strength Change, %, max (based on area before immersion) | -70 | |
| 4.2.4.3 Elongation Change, %, max | -45 | |
| 4.2.4.4 Volume Change, % | 0 to +30 | |
| Ø 4.2.5 Dry Heat Resistance: | | ASTM D573<br>Temperature: 225 C ± 3 (437 F ± 5.4)<br>Time: 24 hr |
| 4.2.5.1 Hardness Change, Durometer "A" or equiv. | -5 to +5 | |
| 4.2.5.2 Tensile Strength Change, %, max | -25 | |
| 4.2.5.3 Elongation Change, %, max | -15 | |
| 4.2.5.4 Bend (flat) | No cracking or checking | |
| Ø 4.2.6 Compression Set: | | ASTM D395, Method B<br>Temperature: 175 C ± 3 (347 F ± 5.4)<br>Time: 22 hr |
| Ø 4.2.6.1 Per cent of original deflection, max | 50 | |
| Ø 4.2.6.2 Per cent of original thickness, max | 13 | |
| Ø 4.2.7 Low Temperature Brittleness: | Pass | ASTM D746, Procedure B<br>Temperature: -65 C ± 3 (-85 F ± 5.4)<br>Time: 10 min. |

Note 1. Value to be reported. Specimens shall be prestretched to 60% elongation twice within 5 min. of test.

Note 2. Value to be reported. Production material shall be within ±0.05 of the value agreed upon by purchaser and vendor.

Note 3. SAE Phosphate Ester Standard Test Fluid No. 1A is a standardized batch of test fluid which has been set aside by the manufacturer for use in AMS tests. It may be obtained for test purposes from:

Monsanto Chemical Company
Organic Chemical Division
800 North Twelfth Blvd.
St. Louis 1, Missouri

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

6. TOLERANCES: Unless otherwise specified, the following tolerances apply:

6.1 Sheet and Strip:

| Nominal Thickness Inches | Tolerance, Inch Plus and Minus |
|---|---|
| Up to 1/8, incl | 1/64 |
| Over 1/8 to 1/2, incl | 1/32 |
| Over 1/2 | 3/64 |

6.2 Tubing:

6.2.1

| Nominal OD or ID (not both), Inches | Tolerance Plus and Minus | Ovality, % (See Note 4) |
|---|---|---|
| Up to 1/2, incl | 0.020 in. | 10 |
| Over 1/2 to 1, incl | 0.030 in. | 15 |
| Over 1 | 4% | 15 |

Note 4. Ovality applies to tubing ordered in straight lengths with wall thickness of 1/16 in. and over, and shall be computed from the difference of the minor and major axis diameter measurements, taken at the same transverse plane on the tube, expressed as a percentage of the nominal diameter.

6.2.2

| Nominal Wall Thickness Inches | Tolerance Plus and Minus |
|---|---|
| Up to 1/16, excl | 0.005 in. |
| 1/16 and over | 10% |

7. REPORTS:

7.1 Unless otherwise specified, the vendor of the product 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, values to be reported, form or part number, and quantity.