

AEROSPACE MATERIAL SPECIFICATIONS

AMS 3215H

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SYNTHETIC RUBBER Aromatic Fuel 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:** Sheet, strip, tubing, molded shapes, extrusions, or as ordered.
3. **APPLICATION:** Primarily for gaskets, diaphragms, bushings, grommets, and sleeves requiring resistance to aromatic and non-aromatic fuels when continuously or alternately exposed to both.
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 suitable test specimens cannot be cut from the product, a separate flat strip test sample shall be supplied upon request. This strip shall be prepared from 1 in. \pm 1/16 OD by 0.075 in. \pm 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. | 70 \pm 5 | ASTM D676 |
| 4.2.1.2 | Tensile Strength, psi, min | 1500 | ASTM D412, Die B or C |
| 4.2.1.3 | Elongation, %, min | 250 | ASTM D412, Die B or C |
| 4.2.1.4 | Tensile Stress at 100% Elongation, psi, max (See Note 1) | 1000 | ASTM D412, Die B or C |
| 4.2.1.5 | Tear Strength, lb per in., min | See Note 2 | ASTM D624, Die B |
| 4.2.1.6 | Specific Gravity | See Note 3 | ASTM D297 |
 - 4.2.2 **Non-Aromatic Fuel Resistance:**

| | | |
|---|--|------------------------------------|
| Ø | (After 24 Hr drying at 70 C \pm 1 (158 F \pm 1.8)) | ASTM D471 |
| | | Medium: ASTM Ref. Fuel A |
| | | Temperature: 20 - 30 C (68 - 86 F) |
 - 4.2.2.1 Volume Change, %, max

| | | | |
|--|--|----|-------------|
| | | -5 | Time: 24 hr |
|--|--|----|-------------|

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4.2.3 Aromatic Fuel Resistance:

Ø (Immediate Deteriorated Properties)

ASTM D471

Medium: ASTM Ref. Fuel B

Temperature: 20 - 30 C

(68 - 86 F)

Time: 168 hr

4.2.3.1 Hardness Change, Durometer "A" or equiv. -20 to 0

4.2.3.2 Tensile Strength Change, %, max (based on area before immersion)

4.2.3.2.1 For parts other than extrusions -50

4.2.3.2.2 For extruded parts -60

4.2.3.3 Elongation Change, %, max -45

4.2.3.4 Volume Change in 24 hr, % 0 to +35

4.2.3.5 Volume Change in 168 hr, % (calculated on basis of unimmersed volume) 0 to +35

4.2.3.6 Volume Change on Drying (after 168 hr aromatic fuel immersion) at $70\text{ C} \pm 1$ ($158\text{ F} \pm 1.8$) for 24 hr %, max (based on unimmersed volume) -10

4.2.4 Dry Heat Resistance:

ASTM D573

Temperature: $100\text{ C} \pm 1$

($212\text{ F} \pm 1.8$)

Time: 70 hr

4.2.4.1 Hardness, Change, Durometer "A" or equiv. 0 to +10

4.2.4.2 Tensile Strength Change, %, max -20

4.2.4.3 Elongation Change, %, max -40

4.2.4.4 Bend (flat) No cracking or checking

4.2.5 Compression Set:

ASTM D395, Method B

Temperature: $100\text{ C} \pm 1$

($212\text{ F} \pm 1.8$)

Time: 70 hr

4.2.5.1 Per cent of original deflection, max

4.2.5.1.1 For parts other than extrusions 75

4.2.5.1.2 For extruded parts 80

4.2.5.2 Per cent of original thickness, max

4.2.5.2.1 For parts other than extrusions 19

4.2.5.2.2 For extruded parts 20

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4.2.6 Low Temperature Resistance:

| | | | |
|---------|---|--------|---|
| 4.2.6.1 | Brittleness ∅ | Pass | ASTM D746, Procedure B Temperature: $-18\text{ C} \pm 1$ $(-0.4\text{ F} \pm 1.8)$ Time: 10 min. |
| 4.2.6.2 | Young's Modulus, psi, max ∅ (See Note 4) | 30,000 | ASTM D797 Temperature: $-25\text{ C} \pm 1$ $(-13\text{ F} \pm 1.8)$ Time: 5 hr |

Note 1. Specimen to be prestretched twice to 125% elongation within 5 min. of test.

Note 2. Value to be reported.

Note 3. Value to be reported. Production material to be within ± 0.02 of the value found on the approved sample.

Note 4. This test is not normally required but is intended to be used as a referee test in case of disagreement on the results of the brittleness 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. **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 5) |
|-------|--|-----------------------------|----------------------------|
| | Up to 1/2, incl | 0.020 in. | 10 |
| | Over 1/2 to 1, incl | 0.030 in. | 15 |
| | Over 1 | 4% | 15 |

Note 5. 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% |