

# AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.  
29 West 39th Street  
New York City

AMS 3238

Issued 2-15-53

Revised

## SYNTHETIC RUBBER Inorganic Ester Resistant Butyl Type (65-75)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. FORM: Sheet, strip, molded shapes, extrusions, or as ordered.
3. APPLICATION: Primarily for parts such as O-rings, gaskets, grommets and seals requiring resistance to inorganic esters or low permeability to gases. Not suitable for use in contact with petroleum base fluids due to excessive swell.

### 4. TECHNICAL REQUIREMENTS:

#### 4.1 General:

- 4.1.1 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.

| Property                                                                        | Value      | Test Method                                                                |
|---------------------------------------------------------------------------------|------------|----------------------------------------------------------------------------|
| 4.2.1 <u>As Received</u> :                                                      |            |                                                                            |
| 4.2.1.1 Hardness, Durometer "A" or equiv.                                       | 70 $\pm$ 5 |                                                                            |
| 4.2.1.2 Tensile Strength, psi, min                                              | 1500       | ASTM D412-51T, Die B or C                                                  |
| 4.2.1.3 Elongation, %, min                                                      | 300        | ASTM D412-51T, Die B or C                                                  |
| 4.2.2 <u>Inorganic Ester Resistance:</u><br>(Immediate Deteriorated Properties) |            | ASTM D471-51T                                                              |
| 4.2.2.1 Tensile Strength Reduction, %, max<br>(based on area before immersion)  | 30         | Medium: Tri-n butyl phosphate<br>Temperature: 212 F $\pm$ 2<br>Time: 70 hr |
| 4.2.2.2 Elongation Reduction, %, max                                            | 20         |                                                                            |
| 4.2.2.3 Volume Change (Method A), %                                             | 0 to +30   |                                                                            |
| 4.2.2.4 Hardness Change, Durometer "A"<br>or equiv.                             | 0 to -20   |                                                                            |

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| Property                                         | Value    | Test Method                                                          |
|--------------------------------------------------|----------|----------------------------------------------------------------------|
| 4.2.3 <u>Dry Heat Resistance:</u>                |          | ASTM D573-48                                                         |
| 4.2.3.1 Tensile Strength Reduction, %, max       | 20       | Temperature: 212 F $\pm$ 2<br>Time: 70 hr                            |
| 4.2.3.2 Elongation Reduction, %, max             | 40       |                                                                      |
| 4.2.3.3 Hardness Change, Durometer "A" or equiv. | 0 to +10 |                                                                      |
| 4.2.4 <u>Compression Set:</u>                    |          | ASTM D395-49T, Method B                                              |
| 4.2.4.1 Percent of Original Deflection, max      | 85       | Temperature: 212 F $\pm$ 2<br>Time: 70 hr                            |
| 4.2.4.2 Percent of Original Thickness, max       | 22       | Compressed to 75% of original thickness                              |
| 4.2.5 <u>Low Temperature Brittleness:</u>        | Pass     | ASTM D736-46T (See Note)<br>Temperature: -40 F $\pm$ 2<br>Time: 5 hr |

Note. To be specified only until satisfactory replacement test and values are established.

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

6.1 Sheet and Strip:

| Nominal Thickness<br>Inch | Tolerance, Inch<br>Plus and Minus |
|---------------------------|-----------------------------------|
| 1/8 and under             | 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<br>(Not both), Inch | Tolerance, Inch<br>Plus and Minus | Ovality<br>(Note 1) |
|--------------------------------------------|-----------------------------------|---------------------|
| 1/2 and under                              | 0.020                             | 10%                 |
| Over 1/2 to 1, incl                        | 0.030                             | 15%                 |
| Over 1                                     | 4%                                | 15%                 |