



# AEROSPACE MATERIAL SPECIFICATION

**AMS3214™****REV. M**

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|------------|---------|
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Superseding AMS3214L

Acrylonitrile Butadiene (NBR) Rubber  
Aromatic Fuel Resistant  
35 - 45

## RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

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## 1. SCOPE

### 1.1 Form

This specification covers a nitrile (NBR) rubber in the form of sheet, strip, tubing, extrusions, and molded shapes.

### 1.2 Application

These products have been used typically for parts, such as gaskets, diaphragms, bushings, grommets, and sleeves, requiring resistance to aromatic and aliphatic fuels when continuously or alternately exposed to both, but usage is not limited to such applications.

### 1.3 Safety - Hazardous Materials

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

## 2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

### 2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), [www.sae.org](http://www.sae.org).

|         |                                                    |
|---------|----------------------------------------------------|
| AMS2279 | Tolerances, Rubber Products                        |
| AMS2810 | Identification and Packaging, Elastomeric Products |

### 2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, [www.astm.org](http://www.astm.org).

|             |                                                                              |
|-------------|------------------------------------------------------------------------------|
| ASTM D 297  | Rubber Products - Chemical Analysis                                          |
| ASTM D 395  | Rubber Property - Compression Set                                            |
| ASTM D 412  | Vulcanized Rubber and Thermoplastic Elastomers - Tension                     |
| ASTM D 471  | Rubber Property - Effect of Liquids                                          |
| ASTM D 573  | Rubber - Deterioration in an Air Oven                                        |
| ASTM D 624  | Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers |
| ASTM D 2137 | Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics  |
| ASTM D 2240 | Rubber Property - Durometer Hardness                                         |

### 3. TECHNICAL REQUIREMENTS

#### 3.1 Material

Shall be a compound, based on an acrylonitrile-butadiene (NBR) elastomer, suitably cured to produce a product meeting the requirements of 3.2.

#### 3.2 Properties

The product shall conform to requirements shown in Table 1, 3.2.12, and 3.2.13; tests shall be performed on the product supplied and in accordance with specified ASTM methods, insofar as practicable:

TABLE 1 - PROPERTIES

| Paragraph | Property                                                                          | Requirement                             | Test Methods                                                                                                        |
|-----------|-----------------------------------------------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 3.2.1     | Hardness, Durometer<br>"A" or equivalent                                          | 40 ± 5                                  | ASTM D 2240                                                                                                         |
| 3.2.2     | Tensile Strength,<br>minimum                                                      | 1000 psi<br>(6.89 MPa)                  | ASTM D 412,<br>Die B or C                                                                                           |
| 3.2.3     | Elongation, minimum                                                               | 400%                                    | ASTM D 412,<br>Die B or C                                                                                           |
| 3.2.4     | Tensile Stress at<br>100% Elongation, maximum                                     | 250 psi<br>(1.72 MPa)                   | ASTM D 412,<br>Die B or C<br>Stretch specimen<br>twice to 125%<br>elongation within<br>5 minutes before<br>testing. |
| 3.2.5     | Tear Resistance, minimum                                                          | 75 pounds force per inch<br>(13.1 kN/m) | ASTM D 624, Die B                                                                                                   |
| 3.2.6     | Specific Gravity                                                                  | Preproduction<br>Value ± 0.02           | ASTM D 297                                                                                                          |
| 3.2.7     | Aliphatic Fuel Resistance<br>(After 24 hours drying at<br>158 °F ± 2 (70 °C ± 1)) |                                         | ASTM D 471<br>ASTM Ref. Fuel A<br>68 to 86 °F<br>(20 to 30 °C)<br>24 hours ± 0.5                                    |
| 3.2.7.1   | Volume Change, maximum                                                            | -5%                                     | ASTM B 471                                                                                                          |
| 3.2.8     | Aromatic Fuel Resistance<br>(Immediate Deteriorated<br>Properties)                |                                         | ASTM Ref. Fuel B<br>68 to 86 °F<br>(20 to 30 °C)<br>168 hours ± 0.5                                                 |
| 3.2.8.1   | Hardness Change, Durometer<br>"A" or equivalent                                   | -15 to 0                                |                                                                                                                     |
| 3.2.8.2   | Tensile Strength<br>Change, maximum                                               | -50%                                    |                                                                                                                     |