

# AEROSPACE MATERIAL SPECIFICATION



AMS-R-6130A

Issued JUL 1998  
Cancelled SEP 2001  
Superseded by ASTM D 6576

Superseding AMS-R-6130

Rubber, Cellular, Chemically Blown

## CANCELLATION NOTICE

This specification has been declared "CANCELLED" by the Aerospace Materials Division, SAE, as of September 2001, and has been superseded by ASTM D 6576. The requirements of the latest issue of ASTM D 6576 shall be fulfilled whenever reference is made to the cancelled AMS-R-6130. By this action, this document will remain listed in the Numerical Section of the Index of Aerospace Material Specifications noting that it is superseded by ASTM D 6576.

Cancelled specifications are available from SAE.

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Under Department of Defense policies and procedures, any qualification requirements and associated qualified products lists are mandatory for DOD contracts. Any requirement relating to qualified products lists (QPL's) has not been adopted by SAE and is not part of this technical report.

## 1. SCOPE:

## 1.1 Scope:

This specification establishes requirements for chemically blown cellular rubber.

## 1.2 Classification:

The cellular rubber shall be furnished in the following types, grades and conditions:

## 1.2.1 Types:

- Type I - Open cell (sponge rubber)
- Type II - Closed cell (expanded rubber)

## 1.2.2 Grades:

Grade A - Oil and flame resistant  
Grade B - Nonoil resistant  
Grade C - Low temperature, nonoil resistant

## 1.2.3 Conditions:

Soft  
Medium  
Firm

## 2. APPLICABLE DOCUMENTS:

The following publications of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

## 2.1 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

|             |                                                                                                                        |
|-------------|------------------------------------------------------------------------------------------------------------------------|
| C-C-91      | Candle, Illuminating                                                                                                   |
| PPP-B-576   | Box, Wood, Cleated, Veneer, Paper Overlaid                                                                             |
| PPP-B-591   | Box, Fiberboard, Wood-Cleated                                                                                          |
| PPP-B-601   | Box, Wood; Cleated Plywood                                                                                             |
| PPP-B-621   | Box, Wood, Nailed and Lock-Corner                                                                                      |
| PPP-B-636   | Box, Shipping, Fiberboard                                                                                              |
| MIL-STD-105 | Sampling Procedures and Tables for Inspection by Attributes                                                            |
| MIL-STD-129 | Marking for Shipment and Storage                                                                                       |
| MIL-STD-293 | Visual Inspection Guide for Cellular Rubber Items                                                                      |
| FED-STD-313 | Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities |

## 2.2 Code of Federal Regulations:

Available from Superintendent of Documents, Government Printing Office, Washington DC 20402.

29 CFR Labor

### 2.3 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.

ASTM D 297 Rubber Products-Chemical Analysis  
ASTM D 471 Rubber Property-Effect of Liquids  
ASTM D 1055 Flexible Cellular Materials-Latex Foam  
ASTM D 1056 Flexible Cellular Materials-Sponge or Expanded Rubber

### 2.4 Uniform Classification Committee Agent:

Available from Uniform Classification Committee, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.

Uniform Freight Classification Rules

## 3. REQUIREMENTS:

### 3.1 Materials:

The materials shall be homogeneous. Except for the production allowances specified in 3.2.4, the material shall not include cemented, bonded, shredded, or reprocessed cellular rubber. Grade A cellular rubber shall not contain natural rubber. Grades B and C cellular rubber shall be unrestricted in composition.

### 3.2 Design and construction:

- 3.2.1 Form: Chemically blown cellular rubber shall be furnished as sheets or molded shapes as specified, and shall have a vulcanized uniform cellular structure, with thin skin or rind surfaces. Cut or split sheets void of skin or rind surfaces may be furnished only for Type II material when specified by the procuring activity (see 6.2).
- 3.2.2 Skin or rind: The smooth surface formed by contact with the mold shall be considered a skin or rind. It shall be the same compound, and vulcanized integrally with the cellular structure.
- 3.2.2.1 Cut or split sheets (Type II only): When two or more sheets are derived from one thick sheet, the cut or split sheets shall not be required to possess a skin or rind on either major surface (see 3.2.1). Only longitudinal splitting of the thickness shall be permitted.
- 3.2.3 Surfacing: Cellular rubber shall be backed or surfaced with fabric, cement, or other materials when and as specified in the contract or order (see 6.2), or by applicable drawings.

3.2.4 Production allowances: The following defects and manufacturing methods are permitted in chemically blown cellular rubber when their occurrence is incident to standard manufacturing practice and assembly, provided they are corrected as indicated herein and the resulting product conforms with the requirements of this specification and applicable supplementary specifications and drawings:

3.2.4.1 Defects:

- a. Tears occurring during removal from mold, carefully cemented together.
- b. Changes in the volume of product during cure resulting in shallow surface depressions or minor changes in size (not exceeding 1 inch) corrected by addition of material of identical composition and quality as that of the product, and buffing to a level, neat-appearing surface.

3.2.4.2 Manufacturing methods:

- a. Assembled products, where the finished product desired is larger than it is standard practice in industry to mold in one section.
- b. Hand-built shapes, where the order is small and the nature of the shape is such as to make molding uneconomical.

3.3 Finish:

3.3.1 Sheets: Sheets shall have a smooth skin or rind on both faces, unless otherwise specified (see 3.2.1). Fabric impressions are not objectionable.

3.3.2 Molded Shapes: Molded shapes shall have a smooth skin or rind on all surfaces, unless otherwise specified. Marks left by mold partings or gates should be as small as practicable.

3.4 Color:

The color of the material shall be "as manufactured," unless otherwise specified.

3.5 Odor:

The cellular rubber shall be free from any objectionable odor. When specified, material shall be treated to minimize the odor (see 6.2).

3.6 Physical properties:

Physical properties of the cellular rubber shall conform to the requirements specified in Table I.

TABLE I. Physical properties

| Property                                                        | Requirement <u>1/</u>            |                                 | Test Paragraph |
|-----------------------------------------------------------------|----------------------------------|---------------------------------|----------------|
|                                                                 | Type I                           | Type II                         |                |
| Apparent density                                                |                                  |                                 | 4.5.1          |
| lbs/cu in. (kg/m <sup>3</sup> ) max                             |                                  |                                 |                |
| soft                                                            | 0.020 (0.544 x 10 <sup>3</sup> ) | .015 (0.415 x 10 <sup>3</sup> ) |                |
| medium                                                          | 0.027 (0.747 x 10 <sup>3</sup> ) | .020 (0.554 x 10 <sup>3</sup> ) |                |
| firm                                                            | 0.030 (0.830 x 10 <sup>3</sup> ) | .030 (0.747 x 10 <sup>3</sup> ) |                |
| Compression deflection                                          |                                  |                                 | 4.5.2          |
| load, psi (kPa), for 25% deflection                             |                                  |                                 |                |
| soft                                                            | 2 to 7 (14 to 48)                | 2 to 7 (14 to 48)               |                |
| medium                                                          | over 7 to 14 (48 to 96)          | over 7 to 14 (48 to 96)         |                |
| firm                                                            | over 14 to 21 (96 to 144)        | over 14 to 21 (96 to 144)       |                |
| Low Temperature resistance, % retention of orig. 25% deflection |                                  |                                 |                |
| Grade A                                                         | 30                               | 30                              |                |
| Grade B                                                         | 30                               | 30                              |                |
| Grade C                                                         | 45                               | 45                              |                |
| Accelerated aging, % retention of original 25% deflection       | 55 to 145                        | 70 to 130                       | 4.5.4          |
| Recovery %, min after 50% deflection                            | 90                               | 70                              | 4.5.5          |
| Flexing, % set, max                                             | 10                               | 10                              | 4.5.6          |
| Flame resistance, seconds, max, Grade A, only                   | 30                               | 30                              | 4.5.7          |
| Shrinkage, %, max                                               | -                                | 15                              | 4.5.8          |
| Water absorption, %, max                                        | -                                | 5                               | 4.5.9          |
| Oil aging, % change in volume                                   |                                  |                                 | 4.5.10         |
| Grade A, only                                                   | -15 to +30                       | -15 to +30                      |                |
| Sulfur content, %, by wt, max.                                  | 0.60                             | 0.60                            | 4.5.11         |

1/ Unless otherwise specified, the requirement is for all types, grades and conditions.