



AEROSPACE MATERIAL SPECIFICATION

AMS-R-83485

REV. A

Issued 1998-05

Cancelled 2014-05

Superseding AMS-R-83485

Rubber, Fluorocarbon Elastomer, Improved Performance
at Low Temperatures

RATIONALE

AMS-R-83485 has been cancelled and superseded by AMS3384 and AMS7287.

CANCELLATION NOTICE

This specification has been "CANCELLED" and superseded by two specifications: AMS7287 replaces AMS-R-83485 Type I- O-rings and compression seals and AMS3384 replaces AMS-R-83485 Type II- Molded parts (other than sealing devices), sheets, strips and extruded shapes. This action has been completed by the Aerospace Materials Division, SAE as of December 2013. By this action, this document will remain listed in the Numerical Section of Aerospace Material Specifications.

Cancelled specifications are available from SAE.

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NOTICE

This document has been taken directly from U.S. Military Specification MIL-R-83485, Amendment 3, and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE technical standards. The initial release of this document is intended to replace MIL-R-83485, Amendment 3. Any part numbers established by the original specification remain unchanged.

The original Military Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, and (b) the use of the existing government specification or standard format.

Any material relating to qualified product lists has not been adopted by SAE. This material was part of the original military specification and is reprinted here for historic reference only.

1. SCOPE:

1.1 Scope:

This specification covers high temperature, compression set, and fluid resistant fluorocarbon elastomer sheets, strips, molded parts, and extruded shapes for aeronautical and aerospace applications. This material differs from other fluorocarbon elastomers because of its improved low temperature performance of approximately 25°F.

1.2 Classification:

The synthetic rubber shall be of the following types and classes, as specified (see 6.2).

Type I - O-Rings and compression seals

Type II - Molded parts (other than sealing devices), sheets, strips, and extruded shapes

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.

MIL-P-4861	Packing, Preformed, Rubber, Packing, Packaging of
MIL-L-7808	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base
MIL-R-83485/1	(USAF) Rubber, Fluorocarbon Elastomer, Improved Performance at Low Temperatures, O-Rings, Sizes and Tolerances

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-289	Visual Inspection Guide for Rubber Sheet Material
MIL-STD-298	Visual Inspection Guide for Rubber Extruded Goods
MIL-STD-407	Visual Inspection Guide for Rubber Molded Items
MIL-STD-413	Visual Inspection Guide for Rubber O-Rings

TT-S-735	Standard Test Fluids; Hydrocarbon
UU-P-268	Paper, Kraft, Untreated Wrapping
PPP-B-601	Boxes, Wood, Cleated-Plywood
PPP-B-636	Box, Fiberboard
PPP-T-45	Tape; Gummed, Paper, Reinforced and Plain, For Sealing and Securing

2.2 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 3021 Reference Fluid for Testing Di-ester (polyol) Resistant Material

AS568 Aerospace Size Standard for O-Rings

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 395	Rubber Property - Compression Set
ASTM D 412	Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension
ASTM D 471	Rubber Property - Effect of Liquids
ASTM D 573	Rubber - Deterioration in an Air Oven
ASTM D 1329	Evaluating Rubber Property - Retraction at Lower Temperatures (TR Test)
ASTM D 1414	Rubber O-Rings
ASTM D 2240	Rubber Property - Durometer Hardness

3. REQUIREMENTS:

3.1 First article:

When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3. The approval of the first article sample authorizes the commencement of production, but does not relieve the supplier of responsibility for compliance with all applicable provisions of this specification. The first article sample shall be manufactured in the same facilities to be used for the manufacture of the production items.

3.1.1 Test report: A test report shall be prepared for each type. An updated test report shall be prepared whenever a change is made in the materials, processes, or this specification. Preproduction tests over 3 years old shall not be acceptable.

3.2 Materials:

The cured compound of fluorocarbon elastomer shall be entirely suitable for the intended purpose, and shall be of the same composition as the material used for the preproduction sample.

3.3 Dimensions and tolerances:

3.3.1 Sheets and strips: Unless otherwise specified (see 6.2), the width of the sheet material shall be 36 ± 1 inches, and the tolerances on thickness shall be as shown in table I. The width of strip material, or of shapes cut from sheet, shall be as specified within a tolerance of ± 5 percent. The thickness of strip material, other than shapes cut from sheet, shall be as specified within a tolerance of ± 5 percent, and the length shall be as specified within a tolerance of ± 1 percent.

Table 1
Thickness tolerances for sheet

Nominal thickness (inch)	Tolerance (inch)
0.060 and less	±0.010
Over 0.060 to 0.120, inclusive	±0.016
Over 0.120 to 0.500, inclusive	±0.031
Over 0.500 to 1.000, inclusive	±0.047
Over 1,000	±0.063

3.3.2 Molded parts (excluding O-rings) and extruded shapes (including tubing): Unless otherwise specified (see 6.2), dimensions and tolerances of molded parts (excluding O-rings) and extruded shapes (including tubing) shall be as specified on the drawing or in the contract or order.

3.3.3 O-Rings: Dimensions and tolerances of O-Rings shall be in accordance with MIL-R-83485/1 (USAF).

3.4 Physical properties:

The physical properties of the fluorocarbon elastomer rubber shall conform to the values given in Table II.

3.5 Identification of product:

3.5.1 Sheets and strips: Unless otherwise specified (see 6.2), sheet material (including strips cut from sheets) shall be marked to show the specification number, type, the manufacturer, the manufacturer's designation (compound number), and the cure date by quarter and year; for example, 3Q76), thus:

MIL-R-83485, Type II
Compound No.
Cure date
XYZ Co.

The identification shall recur constantly, from one end of the sheet to the other, in rows spaced approximately 5 inches apart; shall be clear, legible, and not less than 3/8 inch high; and shall be applied by suitable means using marking fluid that is not deleterious to the fluorocarbon elastomer. The marking shall not be obliterated by normal handling. The color of the marking shall be white, or a contrasting color if the product is white or very light.

3.5.2 Molded parts and extruded shapes (including tubing): Where the size of the product permits, the identification shall be marked as indicated in 3.5.1. When identification marking of the product is impracticable, the unit package shall show the compound number and manufacturer in addition to those markings specified in 5.3. Temporary marking of O-rings for the manufacturer's identification shall be permitted at the time of manufacture but shall in no way affect the properties or function of the O-rings.