



AEROSPACE MATERIAL SPECIFICATION

AMS7258™**REV. B**

Issued 1985-07
Revised 1990-10
Reaffirmed 2017-11

Superseding AMS7258A

Rings, Sealing, Butadiene-Acrylonitrile (NBR) Rubber
Fuel Resistant, Low Shrinkage
65 - 75

RATIONALE

AMS7258B has been reaffirmed to comply with the SAE Five-Year Review policy.

1. SCOPE:

1.1 Form:

This specification covers butadiene acrylonitrile (NBR) rubber in the form of molded rings.

1.2 Application:

Primarily for use in aircraft fuel systems operating from -55 to +125 °C (-67 to +257 °F). These rings contain less plasticizer than normally used in aircraft fuel seals; therefore, there is less shrinkage when the rings are dried out.

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 following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2017 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
<http://www.sae.org>

SAE WEB ADDRESS:

Full document details: SAE AMS7258B

SAE values your input. To provide feedback on this Technical Report, please visit <http://standards.sae.org/AMS7258B>

Documents
Document Sharing Hub

2.1 SAE Publications:

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

2.1.1 Aerospace Material Specifications:

AMS 2817	Packaging and Identification, Preformed Packings
AMS 3022	Reference Fluid for Testing Hydrocarbon Fuel Resistant Materials, 10% Aromatic Content
AMS 4027	Aluminum Alloy Sheet and Plate, 1.0Mg - 0.60Si - 0.28Cu - 0.20Cr, (6061; -T6 Sheet, -T651 Plate), Solution and Precipitation Heat Treated
AMS 4037	Aluminum Alloy Sheet and Plate, 4.4Cu - 1.5Mg - 0.60Mn, (2024; -T3 Flat Sheet, -T351 Plate), Solution Heat Treated
AMS 4045	Aluminum Alloy Sheet and Plate, 5.6Zn - 2.5Mg - 1.6Cu - 0.23Cr (7075; -T6 Sheet, -T651 Plate), Solution and Precipitation Heat Treated
AMS 5513	Steel Sheet, Strip, and Plate, Corrosion Resistant, 19Cr - 9.2Ni (SAE 30304), Solution Heat Treated
AMS 5630	Steel Bars and Forgings, Corrosion Resistant, 17Cr - 0.52Mo (0.95 - 1.20C) (SAE 51440C)
AMS 6350	Steel Sheet, Strip, and Plate, 0.95Cr - 0.20Mo (0.28 - 0.33C) (SAE 4130)

2.1.2 Aerospace Standards:

AS568	Aerospace Size Standard for O-rings
AS871	Manufacturing and Inspection Standards for Preformed Packings (O-rings)

2.1.3 Aerospace Information Reports:

AIR851	O-ring Tension Testing Calculations
--------	-------------------------------------

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM D 1414	Testing Rubber O-rings
ASTM D 2240	Rubber Property - Durometer Hardness

2.3 U.S. Government Publications:

Available from Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

2.3.1 Federal Specifications:

QQ-A-250/4	Aluminum Alloy 2024, Plate and Sheet
QQ-A-250/11	Aluminum Alloy 6061, Plate and Sheet
QQ-A-250/12	Aluminum Alloy 7075, Plate and Sheet

2.3.2 Military Specifications:

MIL-H-6083	Hydraulic Fluid, Petroleum Base, for Preservation and Operation
MIL-S-18729	Steel Plate, Sheet, and Strip, Alloy 4130, Aircraft Quality

2.3.3 Military Standards:

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-413	Visual Inspection Guide for Elastometric O-Rings

2.4 ANSI Publications:

Available from American National Standards Institute, 1430 Broadway, New York, NY 10018.

ANSI B46.1 Surface Texture (Surface Roughness, Waviness, and Lay)

3. TECHNICAL REQUIREMENTS:

3.1 Material:

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

3.2 Properties:

Rings shall conform to the following requirements; except as otherwise specified herein, tests shall be performed in accordance with ASTM D 1414, insofar as practicable. Calculations of tensile strength and elongation may be made in accordance with AIR851.

TABLE 1

3.2.1 As Received:

3.2.1.1	Specific Gravity	Preproduction Value ± 0.02	
3.2.1.2	Hardness, Durometer "A" or equivalent	70 $\pm$ 5	ASTM D 2240
3.2.1.3	Tensile Strength, minimum	1200 psi (8.27 MPa)	
3.2.1.4	Elongation, minimum	200%	
3.2.1.5	Corrosion and Adhesion	Slight corrosion allowed on 4130 steel, none on other metals	4.5.1

TABLE 1 (Continued)

3.2.2	Room-Temperature Fuel Resistance:		Medium:	ASTM Reference Fuel B
3.2.2.1	Volume Change	+25 to +50%	Temperature:	25 °C ± 1 (77 °F ± 2)
			Time:	70 hours ± 0.5
3.2.3	Elevated-Temperature Fuel Resistance:		4.5.2	
			Medium:	AMS 3022
3.2.3.1	Hardness Change, Durometer "A" or equivalent	-15 to 0	Temperature:	125 °C ± 3 (257 °F ± 5)
			Time:	70 hours ± 0.5
3.2.3.2	Tensile Strength Change, maximum	-50%		
3.2.3.3	Elongation Change, maximum	-40%		
3.2.3.4	Volume Change	+15 to +40%		
3.2.4	Aliphatic Fuel Soak and Dry-out:		4.5.3	
			Medium:	ASTM Reference
3.2.4.1	Volume Shrinkage, maximum	1.0%		Reference Fluid A
3.2.5	Aromatic Fuel Soak and Dry-out:		4.5.3	
			Medium:	ASTM Reference Fluid B
3.2.5.1	Volume Shrinkage, maximum	1.0%		
3.2.6	Compression Set: Percent of Original Deflection, maximum	60%	Temperature:	125 °C ± 3 (257 °F ± 5)
			Time:	70 hours ± 0.5
3.2.7	Low-Temperature Resistance Temperature Retraction, TR ₁₀ point, maximum			
3.2.7.1	As Received	-40 °C (-40 °F)		
3.2.7.2	After Aging 70 hours ± 0.5 at 25 °C (77 °F) in AMS 3022	-60 °C (-76 °F)		