



AEROSPACE MATERIAL SPECIFICATION

AMS7289™

Issued

2021-10

Elastomer: Nitrile Rubber (NBR)
Synthetic Oil Resistant
Compression Seals, 65 to 75 Type A Hardness
for Products in Engine Oil Systems

RATIONALE

New specification to supercede SAE AMS-R-7362 Type I.

1. SCOPE

1.1 Form

This specification covers a nitrile rubber (NBR) in the form of molded compression seals such as O-rings, T-seals, and molded-in-place gaskets for aeronautical and aerospace applications. For sheet, strip, tubing, extrusions, and molded shapes, use the AMS3786 specification, which is intended for that use.

1.2 Application

This material has resistance to diester and polyol ester synthetic oils, but usage is not limited to such applications. This material may not be suitable for use in some high temperature stabilized, "HTS," engine oils. Each HTS oil should be evaluated separately. Examples of HTS oils are those oils conforming to MIL-PRF-23699 Class HTS, MIL-PRF-7808 Grade 4, and AS5780 Class HPC. This material has a typical service temperature range of -65 to 250 °F (-54 to 121 °C). The service temperature range of the material is a general temperature range, but the presence of particular fluids and specific design requirements may modify this range. Each application should be considered separately. It is the responsibility of the user to determine that this specification is appropriate for the environments (temperature range, fluids exposure, etc.) in which it is sought to be used.

1.3 Order of Precedence

Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained. This specification is in addition to and in no way limiting, superseding, or abrogating any contractual obligation as required by the applicable procurement document. In the event of conflict in requirements, the order of precedence shall be:

1. Procurement document or contractual agreement and all statutory and regulatory requirements (excluding this document).
2. Applicable purchaser's drawing or AS29561 parts standard.
3. Specification referenced on the drawing.
4. This document.
5. All specifications referenced in this document.

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Full document details: SAE AMS7289

For more information on this standard, visit
<https://www.sae.org/standards/content/AMS7289/>

Documents

Document Sharing Hub

1.4 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 document 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 +1 724-776-4970 (outside USA), www.sae.org.

AMS2817	Packaging and Identification of Molded Elastomeric Seals and Sealing Components
AMS3021	Fluid, Reference, for Testing Di-Ester (Polyol) Resistant Material
AMS3786	Elastomer: Nitrile Rubber (NBR) Diester Synthetic Oil Resistant, Sheets, 65 to 75 Type A Hardness, for Products in Engine Oil Systems
AMS6345	Steel, Sheet, Strip, and Plate, 0.95Cr - 0.20Mo (0.28 - 0.33C) (SAE 4130), Normalized or Otherwise Heat Treated
AMS7276	Rubber: Fluorocarbon (FKM), High Temperature - Fluid Resistant, Low Compression Set/70 to 80 Type A Hardness, for Seals in Fuel Systems and Specific Engine Oil Systems
AMS-QQ-A-250/4	Aluminum Alloy 2024, Plate and Sheet
AMS-R-7362	Rubber, Synthetic, Solid, Sheet, Strip and Fabricated Parts, Synthetic Oil Resistant
AIR851	O-Ring Tension Testing Calculations
AS568	Aerospace Size Standard for O-Rings
AS5752	Aerospace - Visual Inspection Standard for Elastomeric Sealing Elements Other than O-Rings
AS29561	O-Ring, Synthetic Lubricant Resistant, Molded from AMS-R-7362 Rubber

2.2 ANSI Accredited Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

ANSI/ ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes

2.3 ASME Publications

Available from ASME, P.O. Box 2900, 22 Law Drive, Fairfield, NJ 07007-2900, Tel: 800-843-2763 (U.S./Canada), 001-800-843-2763 (Mexico), 973-882-1170 (outside North America), www.asme.org.

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

2.4 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.

ASTM B36	Brass Plate, Sheet, Strip and Rolled Bar
ASTM B139	Phosphor Bronze: Bar, Rod, Shapes
ASTM D297	Chemical Analysis of Rubber Products
ASTM D395	Standard Test Methods for Rubber Property - Compression Set
ASTM D471	Standard Test Method for Rubber Property - Effects of Liquids
ASTM D573	Standard Test Method for Rubber - Deterioration in an Air Oven
ASTM D2240	Standard Test Method for Rubber Property - Durometer Hardness
ASTM D1329	Standard Test Method for Evaluating Rubber Property - Retraction at Lower Temperatures
ASTM D1414	Standard Test Methods for Rubber O-Rings
ASTM D6880	Standard Specification for Wood Boxes

2.5 ISO Publications

Available from International Organization for Standardization, ISO Central Secretariat, 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, Tel: +41 22 749 01 11, www.iso.org.

ISO 3601-3	Fluid Power Systems - O-Rings - Part 3: Quality Acceptance Criteria
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2.6 U.S. Government Publications

Copies of these documents are available online at <https://quicksearch.dla.mil>.

MIL-PRF-7808	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base
MIL-PRF-23699	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base, NATO Code Numbers: O-152, O-154, O-156, and O-167

2.7 PRI Publications

Available from Performance Review Institute, 161 Thorn Hill Road, Warrendale, PA 15086-7527, Tel: 724-772-1616, www.pri-network.org.

PD2000	Procedures for an Industry Qualified Product Management Process
PD2102	Aerospace Quality Assurance, Product Standards, Qualification Procedure, Elastomeric Seal

3. TECHNICAL REQUIREMENTS

3.1 Compound

Shall be prepared from ingredients as shall be necessary to achieve the requirements detailed in this standard and shall be a compound, based on the polymer specified in 1.1, suitably cured to produce product meeting the requirements of 3.2. Reprocessed vulcanized material shall not be added to the uncured compounded mix nor shall it be part of the formulation.