



AEROSPACE MATERIAL SPECIFICATION

AMS-P-29609™

REV. A

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Superseding AMS-P-29609

Polyimide Retainer Material, Porous Non-Metallic

RATIONALE

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

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This document has been taken directly from U.S. Military Specification MIL-P-29609, Amendment 1, 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-P-29609, Amendment 1. Any part numbers established by the original specification remain unchanged.

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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 SAE technical document.

1. SCOPE:

1.1 Scope:

This specification covers basic characteristics required for porous polyimide materials intended for use as instrument and thin section ball bearing retainers (cages), and methods of determining these characteristics.

1.2 Classification:

The materials shall be furnished in the following types and forms as specified (see 6.2).

Form RM - Rods, molded

2. APPLICABLE DOCUMENTS:

The following publications, of the issue 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-116	Methods of Preservation
MIL-STD-129	Military Marking
MIL-STD-2073-1	DOD Standard Practice for Military Packaging

2.2 ASTM Publications:

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

ASTM-D2240	Rubber Property - Durometer Hardness
ASTM-D2873	Porosity, Mercury Intrusion Porosimetry
ASTM-D3951	Packaging, Commercial

2.3 American Society for Quality Control (ASQC) Publications:

Available from American Society for Quality Control, 310 West Wisconsin Avenue, Milwaukee, WI 53203.

ASQC-Z1.4 Sampling Procedures and Tables for Inspection by Attributes

2.4 Order of precedence:

In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets or MS standards), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS:

3.1 General Requirements:

- 3.1.1 Material: Material shall be polyimide, organic condensation polymers derived from the reaction between aromatic dianhydrides and aromatic diamines.
- 3.1.2 Construction: This material shall consist of powder mixed, cured and uncured, to obtain a specified pore size and pore volume. The material is formed through the isostatic molding of the cured and uncured milled polyimide powders.
- 3.1.3 Characteristics: The material shall have the following characteristic values. These values apply only to standard sizes of rods and tubes listed in Table I. The characteristic requirements for special sizes shall be specified (see 6.2).
 - 3.1.3.1 Hardness: Material shall have a minimum hardness of 84 Shore D.
 - 3.1.3.2 Apparent density: Material shall have an apparent density between 1.1 and 1.2 grams per cubic centimeter (g/cc).
 - 3.1.3.3 Ring tensile strength: Material shall have a minimum ring tensile strength of 2000 pounds per square inch (psi).
 - 3.1.3.4 Porosity: Material shall have pore diameter from 0.95 (140.4 pounds per square inch, absolute (psia)) to 1.25 microns (144.7 psia) at a corresponding intrusion volume from 0.08 to 0.10 cc/gram, the total intrusion volume to be 0.13 to 0.20 cc/gram inclusive at an intrusion pressure of 1500 psia. The shape of the intrusion curve shall be similar to that shown in Figure 1.
- 3.1.4 Material defects: Material shall be considered defective if any debris or more than five non-polyimide inclusions over 0.010 inch in any dimension are found in any diametrical cross section.
- 3.1.5 Color: The color varies and shall not be a cause for rejection.
- 3.1.6 Dimensions and tolerances:
 - 3.1.6.1 Lengths: Standard and minimum lengths per diameter shall be as specified in Table I. At least 75 percent of the rods of any given shipment shall be standard length or longer and no more than 25 percent of a given shipment shall be supplied in lengths between the minimum and standard shipping lengths without prior approval.