SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS3571 REV. C

Issued 1976-07
Revised 1991-04
Reaffirmed 2001-01
Stabilized 2011-09

Superseding AMS3571B

Resin, Polyether Urethane (EU) Casting Flexible, Solid, Unfilled

RATIONALE

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

STABILIZED NOTICE

This document has been declared "Stabilized" by SAE AMS P, Polymeric Materials Committee, and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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
SAE WEB ADDRESS: **http://www.sae.org**

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS3571C

1. SCOPE:

1.1 Form:

This specification and its supplementary detail specifications cover polyether-type urethane (EU) resins and hardeners which, when mixed and cured, produce elastomeric polyurethane products.

1.2 Application:

Primarily for liquid application as electronics encapsulation or for casting parts and shapes.

1.3 Classification:

The resin system shall be classified by hardness of the cured product as shwon in the detail specifications, wherein each material is classified by hardness ranging from 45 to 95 Durometer “A” and from 45 to 75 Durometer “D”.

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 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.

2.1 SAE Publications:

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

2.1.1 Aerospace Material Specifications:

AMS 2825 Material Safety Data Sheets

2.2 ASTM Publications:

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

ASTM D 257	D-C Resistance or Conductance of Insulating Materials
ASTM D 395	Rubber Property - Compression Set
ASTM D 412	Rubber Properties in Tension
ASTM D 624	Rubber Property - Tear Resistance
ASTM D 792	Specific Gravity (Relative Density) and Density of Plastics by Displacement
ASTM D 903	Peel or Stripping Strength of Adhesive Bonds
ASTM D 1002	Strength Properties of Adhesives in Shear by Tension Loading (Metal-to-Metal)
ASTM D 1053	Rubber Property - Stiffening at Low Temperatures; Flexible Polymers and Coated Fabrics
ASTM D 2240	Rubber Property - Durometer Hardness
ASTM D 2393	Viscosity of Epoxy Resins and Related Components

2.3 U.S. Government Publications:

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

2.3.1 Military Specifications:

MIL-M-24041 Molding and Potting Compound, Chemically Cured, Polyurethane

2.3.2 Military Standards:

MIL-STD-2073-1 DOD Materiel Procedures for Development and Application of Packaging Requirements

3. TECHNICAL REQUIREMENTS:

3.1 Detail Specifications:

The requirements for a specific material shall consist of all requirements specified herein in addition to requirements specified in the applicable detail specification. In case of conflict between requirements of this basic specification and an applicable detail specification, requirements of the detail specification shall govern.

3.2 Material:

The compounds shall be two-component, polyether-type polyurethane (EU) systems, each consisting of a prepolymer and a separate curing agent. The prepolymer shall cure by addition of the curing agent and shall not depend on solvent evaporation or moisture reaction for curing. The prepolymer and curing agent shall be of high quality, selected for the purpose.

3.3 Properties:

The compound shall conform to the following requirements:

3.3.1 Uncured Material:

3.3.1.1 Appearance: The separate components shall have a uniform, homogeneous texture and shall be free of lumps, coarse particles, and air bubbles. There shall be no separation of ingredients which cannot be dispersed readily. Solidification of ingredients is permissible provided they can be reliquefied readily by heating.

3.3.1.2 Nonvolatile Content: Shall be not less than 99%, determined in accordance with MIL-M-24041.

3.3.1.3 Storage Life: The unmixed resin and hardener shall meet the requirements of this specification at any time up to 6 months from date of receipt by purchaser when stored in the original, unopened containers at 30°C (86°F) or lower.

3.3.1.4 Viscosity of Mix: 800 centipoises (8 Pa·s), maximum, at manufacturer's recommended processing temperture, determined in accordance with ASTM D 2393.

3.3.2 Properties of Cured Product: Shall be as specified in the applicable detail specification.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of the product shall supply all samples for vendor's tests and shall be responsible for performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the product conforms to the requirements of this specification and the applicable detail specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests for appearance of the separate components (3.3.1.1), and for hardness and specific gravity of cured compound (as specified in the applicable detail specification) are acceptance tests and shall be performed on each lot.

4.2.2 Preproduction Tests: Tests for all technical requirements are preproduction tests and shall be performed prior to or on the initial shipment of the product to a purchaser, when a change in ingredients and/or processing requires reapproval as in 4.4.2, and when purchaser deems confirmatory testing to be required.

4.2.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, contracting officer, or request for procurement.

4.3 Sampling and Testing:

Shall be as follows:

4.3.1 For Acceptance Tests: Sufficient product shall be taken at random from each lot to perform all required tests. The number of determinations for each requirement shall be as specified in the applicable test procedure or, if not specified therein, not less than three.

4.3.1.1 A lot shall be all product from the same batches of prepolymer and curing agent processed in one continuous run and presented for vendor's inspection at one time. An inspection lot shall not exceed 500 pounds (227 kg) and may be packaged in smaller quantities and delivered under the basic lot approval provided lot identification is maintained.

4.3.1.2 When a statistical sampling plan has been agreed upon by purchaser and vendor, sampling shall be in accordance with such plan in lieu of sampling as in 4.3.1 and the report of 4.5 shall state that such plan was used.

4.3.2 For Preproduction Tests: As agreed upon by purchaser and vendor.

4.4 Approval:

4.4.1 Sample product shall be approved by purchaser before product for production use is supplied, unless such approval be waived by purchaser. Results of tests on production product shall be essentially equivalent to those on the approved sample.

4.4.2 Vendor shall use ingredients, manufacturing procedures, processes, and methods of inspection on production product which are essentially the same as those used on the approved sample product. If necessary to make any change in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in ingredients and/or processing and, when requested by purchaser, sample product. Production product made by the revised procedure shall not be shipped prior to receipt of reapproval.