



AEROSPACE MATERIAL SPECIFICATION

AMS3812™

REV. C

Issued 1978-04
Revised 1993-07
Reaffirmed 1998-09
Stabilized 2016-06

Superseding AMS3812B

Rods, Glass Fiber, Polyester Resin,
Loaded Pultrusion

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 the 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.

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 © 2016 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 AMS3812C

SAE values your input. To provide feedback
on this Technical Report, please visit
<http://www.sae.org/technical/standards/AMS3812C>

Documents

Document Sharing Hub

1. SCOPE:

1.1 Form:

This specification covers coated round rods manufactured by the pultrusion process from glass fiber roving and a weather-resistant polyester resin binder in the form of straight lengths or in coils.

1.2 Application:

These rods have been used typically for nonconductive tension elements in antenna supports where superior long-term weather resistance is required, but usage is not limited to such applications.

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 applicable issue of referenced publications shall be the issue in effect on the date of the purchase order.

2.1 ASTM Publications:

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

ASTM D 149	Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
ASTM D 638	Tensile Properties of Plastics
ASTM D 638M	Tensile Properties of Plastics (Metric)
ASTM D 695	Compressive Properties of Rigid Plastics
ASTM D 695M	Compressive Properties of Rigid Plastics (Metric)
ASTM D 785	Rockwell Hardness of Plastics and Electrical Insulating Materials
ASTM D 790	Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D 790M	Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials (Metric)
ASTM D 792	Specific Gravity (Relative Density) and Density of Plastics by Displacement
ASTM D 2289	Tensile Properties of Plastics at High Speeds
ASTM D 2584	Ignition Loss of Cured Reinforced Resins
ASTM D 2990	Tensile, Compressive, and Flexural Creep and Creep Rupture of Plastics

2.2 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MIL-R-60346	Roving, Glass, Fibrous (for Prepreg Tape and Roving, Filament Winding, and Pultrusion Applications)
MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-2073-1	DOD Materiel, Procedures for Development and Application of Packaging Requirements

3. TECHNICAL REQUIREMENTS:

3.1 Material:

Shall be rods of circular cross section, manufactured by the pultrusion process from the necessary number of unidirectional, continuous, glass fiber rovings and a polyester resin binder. The rods shall be coated for enhanced resistance to weathering and handling damage.

3.1.1 Roving: Shall conform to MIL-R-60346, Type I, Class 2, and shall be free of splices.

3.1.2 Resin Binder: Shall be a high-quality, weather-resistant, thermosetting polyester resin, cross-linked with styrene. The resin formulation may contain a catalyst, a die lubricant, and additives for enhanced weather resistance, flame retardance, and anti-tracking qualities, but it shall not contain a wetting agent or a coupling agent, and shall be free of grease, oil, dirt, and other foreign matter.

3.1.3 Coating: Shall be primarily organic but may contain inorganic ingredients. It shall be applied uniformly over the cylindrical surfaces of the rods to a thickness of 0.010 inch $\pm$ 0.005 (0.25 mm $\pm$ 0.13).

3.1.3.1 The surfaces of coated rods shall be smooth, nonporous, and free of cracks. The coating shall not contain scratches, gouges or other handling damage. Scuff marks, occasional blisters not exceeding one in any 5 feet (1.5 m), pits, and other manufacturing imperfections will be acceptable provided that they neither penetrate to the substrate nor protrude above the surface by more than 3% of the finished rod diameter.

3.1.3.2 The coating shall be flexible and adherent to the substrate, determined in accordance with 4.5.1 and 4.5.2.

3.2 Fabrication:

3.2.1 Pultrusion: Pultrusion of the rods shall be performed in accordance with best practices of the pultrusion industry.

3.2.2 Coiling: Coiling of rods shall not be attempted until the rods have cooled to below 100 °F (38 °C). The coil diameter shall be not less than 300 times the rod diameter, unless rods have passed the coiled storage test in accordance with 4.5.11 utilizing a smaller coil diameter.

3.2.2.1 Rods furnished in straight lengths shall not be cut from coils.

3.2.3 Post Curing: When specified by purchaser, straight rods exceeding 10 feet (3 m) in length shall be post-cured for not less than 15 hours at 275 °F $\pm$ 10 (135 °C $\pm$ 6). The rods shall be fully supported during post curing to avoid warping.

3.3 Properties:

Rods shall conform to requirements shown in Table 1; tests shall be performed on the rods supplied and in accordance with specified test methods, insofar as practicable.