



AEROSPACE MATERIAL SPECIFICATION

AMS 3626D

Superseding AMS 3626C

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

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PLASTIC MOLDINGS AND EXTRUSIONS Methyl Methacrylate

1. SCOPE:

- 1.1 Form: This specification covers one type of methyl methacrylate resin in the form of extrusions, compression moldings, and injection moldings.
- 1.2 Application: Primarily for parts requiring good dimensional stability, a high degree of optical clarity, and good resistance to outdoor weathering.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

- 2.1 SAE Publications: Available from Society of Automotive Engineers, Inc. 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods

- 2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM D256 - Impact Resistance of Plastics and Electrical Insulating Materials
ASTM D570 - Water Absorption of Plastics
ASTM D635 - Flammability of Self-Supporting Plastics
ASTM D638 - Tensile Properties of Plastics
ASTM D648 - Deflection Temperature of Plastics Under Flexural Load
ASTM D792 - Specific Gravity and Density of Plastics by Displacement

- 2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

- 3.1 Material: Shall be an unfilled methyl methacrylate resin.
- 3.2 Color and Condition: Colorless, transparent, unless otherwise specified. When specified, the product shall be furnished translucent or opaque and in the color specified.

SAE Technical Board rules provide that: "All technical reports, including standards, approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against infringement of patents."

3.3 Properties: The product shall conform to the following requirements; tests shall be performed on the product supplied and in accordance with specified ASTM methods, insofar as practicable:

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|-------|--|----------------------------------|---|
| 3.3.1 | Tensile Strength, min | 7600 psi
(52.4 MPa) | ASTM D638 |
| 3.3.2 | Impact Resistance, min | | ASTM D256 |
| | Ft-lb per in. of notch | 0.2 | |
| | (N·m per metre of notch) | (10.7) | |
| 3.3.3 | Specific Gravity at 23°/23°C
(73.4°/73.4°F), max | 1.19 | ASTM D792 |
| 3.3.4 | Water Absorption (24 hr immersion), max | | ASTM D570 |
| | Gain | 0.60% | |
| | Soluble Loss | 0.12% | |
| 3.3.5 | Heat Distortion Temperature
(264 psi (1.82 MPa) Fiber Stress), min | 149°F
(65°C) | ASTM D648 |
| 3.3.6 | Flammability, max
(See 8.2) | 2.4 in. per min.
(61 mm/min.) | ASTM D635;
Use 1/8-in.
(3.2-mm)
thick specimen |
| 3.3.7 | <u>Weathering</u> : When specified, the product shall have weather resistance acceptable to the purchaser, determined by a procedure agreed upon by purchaser and vendor. | | |
| 3.3.8 | <u>Corrosion</u> : The product shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service. Discoloration of metal shall not be considered objectionable. | | |
| 3.4 | <u>Quality</u> : The product shall be uniform in quality and condition, clean, smooth, and free from foreign materials and from internal and external imperfections detrimental to fabrication, appearance, or performance of parts. | | |

4. QUALITY ASSURANCE PROVISIONS:

- 4.1 Responsibility for Inspection: The vendor of the product shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.5. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to ensure that the product conforms to the requirements of this specification.
- 4.2 Classification of Tests:
- 4.2.1 Acceptance Tests: Tests to determine conformance to impact resistance (3.3.2), specific gravity (3.3.3), water absorption (3.3.4), and heat distortion temperature (3.3.5) requirements are classified as acceptance tests.
- 4.2.2 Qualification Tests: Tests to determine conformance to all technical requirements of this specification are classified as qualification tests.
- 4.2.2.1 For direct U.S. Military procurement, substantiating test data and, when requested, qualification test material shall be submitted to the cognizant qualification agency as directed by the procuring activity, the contracting officer, or the request for procurement.

- 4.3 Sampling: Sufficient product shall be selected from each lot to perform each acceptance test on at least one specimen; a lot shall be all product produced in a single production run from the same batch of raw materials under the same fixed conditions and submitted for vendor's inspection at one time.
- 4.4 Approval:
- 4.4.1 Sample material shall be approved by purchaser before material for production use is supplied, unless such approval be waived. Results of tests on production material 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 material which are essentially the same as those used on the approved sample material. If any change is necessary in ingredients, in type of equipment for processing, or in manufacturing procedures, vendor shall submit for reapproval a statement of the proposed changes in material and processing and, when requested, sample material. Production material made by the revised procedure shall not be shipped prior to receipt of reapproval.
- 4.5 Reports:
- 4.5.1 The vendor of the product shall furnish with each shipment three copies of a report showing the results of tests to determine conformance to the acceptance test requirements and stating that the product conforms to the other technical requirements of this specification. This report shall include the purchase order number, material specification number and its revision letter, vendor's compound number, form and size or part number, and quantity.
- 4.5.2 The vendor of finished or semi-finished parts shall furnish with each shipment three copies of a report showing the purchase order number, material specification number and its revision letter, contractor or other direct supplier of material, supplier's material designation, part number, and quantity. When material for making parts is produced or purchased by the parts vendor, that vendor shall inspect each lot of material to determine conformance to the requirements of this specification, and shall include in the report a statement that the material conforms, or shall include copies of laboratory reports showing the results of tests to determine conformance.
- 4.6 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the product may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the product represented and no additional testing shall be permitted. Results of all tests shall be reported.
5. PREPARATION FOR DELIVERY:
- 5.1 Product Identification:
- 5.1.1 Molded Parts: Each molded part of suitable size shall have the part number molded or permanently impressed therein. If size precludes integral marking, parts of each different part number shall be packed in separate, suitable containers marked with the part number.
- 5.1.2 Extrusions: Shall be marked near one end with AMS 3626D and the manufacturer's designation. If extrusions are supplied in coils, the marking shall appear at the outside end of the coil.
- 5.2 Packaging and Package Identification: