



400 COMMONWEALTH DRIVE WARRENDALE PA 15096

**AEROSPACE
MATERIAL
SPECIFICATION**

AMS 3624B
Superseding AMS 3624A

Issued 11-1-46
Revised 7-1-84

PLASTIC MOLDINGS AND EXTRUSIONS, CELLULOSE ACETATE BUTYRATE

1. SCOPE:

1.1 **Form:** This specification covers a cellulose acetate butyrate resin in the form of extrusions, compression moldings, and injection moldings.

1.2 **Application:** Primarily for parts requiring good dimensional stability and good strength at moderate temperatures. These products are thermoplastic and not necessarily suitable for exposure to aromatic fuel, oil, or other petroleum hydrocarbons; each application must therefore be evaluated on its own merits.

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

2.1 **SAE Publications:** Available from SAE, 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 - Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position

ASTM D638 - Tensile Properties of Plastics

ASTM D648 - Deflection Temperature of Plastics Under Flexural Load

ASTM D785 - Rockwell Hardness of Plastics and Electrical Insulating Materials

ASTM D792 - Specific Gravity and Density of Plastics by Displacement

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2.3 U.S. 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 a cellulose acetate butyrate resin with fillers, plasticizers, and modifiers necessary to meet the requirements of 3.2 and 3.3.

3.2 Color: Shall be colorless and transparent, unless otherwise ordered.

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:

3.3.1 Tensile Strength, min		
at 23°C \pm 1 (73°F \pm 2)	4400 psi (30 MPa)	ASTM D638,
at 70°C \pm 1 (160°F \pm 2)	2300 psi (16 MPa)	Speed C
3.3.2 Impact Strength		ASTM D256,
Notched Izod, min		Method A
at 23°C \pm 1 (73°F \pm 2)	1.1 ft-lb per in. (59 J/m)	
at -40°C \pm 1 (-40°F \pm 2)	0.4 ft-lb per in. (22 J/m)	
3.3.3 Specific Gravity at 23°/23°C (73°/73°F), max	1.24	ASTM D792, Method A
3.3.4 Water Absorption (24 hr immersion) at 23°C \pm 1 (73°F \pm 2)		ASTM D570
Gain, max	1.8%	
Soluble Loss, max	0.2%	
3.3.5 Deflection Temperature at 264 psi (1.80 MPa) fiber stress, min	65°C (150°F)	ASTM D648
3.3.6 Rate of Burning, max (See 8.2)	1.5 in. per min. (0.6 mm/s)	ASTM D635
3.3.7 Hardness, min	107 HR	ASTM D785

- 3.3.8 Weathering: The product, unless otherwise specified, shall have weather resistance acceptable to purchaser, determined by a procedure agreed upon by purchaser and vendor.
- 3.3.9 Corrosion: The product, unless otherwise specified, shall not have a corrosive effect on other materials when exposed to conditions normally encountered in service, determined by a procedure agreed upon by purchaser and vendor. Discoloration of metal shall not be considered objectionable.
- 3.4 Quality: The product, as received by purchaser, shall be uniform in quality
Ø and condition, smooth, and free from imperfections detrimental to usage of the product.
4. QUALITY ASSURANCE PROVISIONS:
- 4.1 Responsibility for Inspection: The vendor of the product shall supply all
Ø samples for vendor's tests 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 sample and to perform any confirmatory testing deemed 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 requirements for
Ø tensile strength (3.3.1), impact strength (3.3.2), and specific gravity (3.3.3) are classified as acceptance tests and shall be performed on each lot.
- 4.2.2 Preproduction Tests: Tests to determine conformance to all technical
Ø requirements of this specification are classified as preproduction tests and shall be performed prior to or on the initial shipment of the product to a purchaser, when a change in material or processing, or both, 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
Ø requested, preproduction test material shall be submitted to the cognizant agency as directed by the procuring activity, the contracting officer, or the request for procurement.
- 4.3 Sampling: Shall be as follows:
- 4.3.1 For Acceptance Tests: Sufficient product shall be taken at random from
Ø 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. When the product is of such size or configuration that suitable specimens cannot be obtained, separate specimens shall be supplied upon request. Such specimens shall be molded from the same batch of powder and under conditions representative of those used in making the product.

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- 4.3.1.1 A lot shall be all product of the same size and configuration or the same part number from the same batch of molding powder produced in one continuous run and presented for vendor's inspection at one time. An inspection lot shall not exceed 200 lb (90 kg). A lot may be packaged and delivered in small quantities under the basic lot approval provided lot identification is maintained.
- 4.3.1.2 A batch of molding powder shall be all powder produced in one continuous set of operations.
- 4.3.1.3 When a statistical sampling plan and acceptance quality level (AQL) have 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 4.5.1 shall state that such plan was used.
- 4.3.1.4 Specimens for impact strength (3.3.2) shall be nominally 1/2 by 1/8 in. (12.5 by 3 mm).
- 4.3.2 For Preproduction Tests: As agreed upon by purchaser and vendor.
- 4.3.2.1 Specimens for rate of burning (3.3.6) test shall be nominally 1/8 in. (3 mm) thick.
- 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 by purchaser. Results of tests on production material shall be essentially equivalent to those on the approved sample material.
- 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 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 or processing, or both, and, when requested by purchaser, 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 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, lot number, AMS 3624B, vendor's compound number, form, size or part number, and quantity.