



AEROSPACE MATERIAL SPECIFICATION

AMS-P-83310™

REV. A

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Superseding AMS-P-83310

Plastic Sheet, Polycarbonate, Transparent

RATIONALE

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

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Any material relating to qualified product lists has not been adopted by SAE. This material was part of the original military specification and is reprinted here for historic reference only.

1. SCOPE AND CLASSIFICATION:

1.1 SCOPE:

This specification covers transparent flat polycarbonate plastic sheet material suitable for aerospace transparent enclosures requiring excellent optical properties.

1.2 Classification:

The sheet material shall be full finish, transparent. A sheet, as defined for this specification, shall be of monolithic construction, or a multi-ply fusion bonded polycarbonate transparency.

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 the necessary precautionary measures to ensure the health and safety of all personnel involved.

2. APPLICABLE DOCUMENTS:

The following publications, of the issues 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	Preservation, Methods of
MIL-E-9500	Ethylene Glycol, Technical
MIL-L-10547	Liners, Case, and Sheet, Overwrap, Water-Vaporproof or Waterproof, Flexible
MIL-B-13239	Barrier Material, Waterproofed, Flexible All Temperature
MIL-STD-129	Marking for Shipment and Storage
MIL-STD-1186	Cushioning, Anchoring, Bracing, Blocking and Waterproofing, with Appropriate Test Methods
NN-P-530	Plywood, Flat Panel
PPP-B-585	Boxes, Wood, Wirebound
FPP-B-591	Boxes, Fiberboard, Wood-Cleated
PPP-B-601	Boxes, Wood, Cleated-Plywood
PPP-B-621	Boxes, Wood, Nailed and Lock-Corner
FED-STD-406	Plastics; Methods of Testing

2.2 ASTM Publications:

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

ASTM D2863-70 Flammability of Plastics Using the Oxygen Index Method

2.3 Consolidated Classification Committee:

Available from Consolidated Classification Committee, 202 Chicago Union Station, Chicago, IL 60606.

Uniform Freight Classification Rules

3. REQUIREMENTS:

3.1 Preproduction:

The plastic sheet material furnished under this specification shall be a product which has been tested and has passed the preproduction tests specified herein.

3.2 Materials:

The manufacturer is given a wide range in the selection of raw polycarbonate type material and in the process of manufacture, provided the sheet material furnished is a transparent plastic conforming to all requirements of this specification and is suitable for the intended use.

3.3 Dimensions:

The dimensions of the sheets shall be as specified by the applicable drawings, specifications or purchase orders.

3.3.1 Length and width: Unless otherwise specified by the procuring activity, a tolerance of ± 0.06 inch shall be allowed on linear dimensions of trimmed sheets.

3.3.2 Thickness: The actual thickness of the sheet at any point shall be within the tolerance specified in table I. Thickness variations of sheets not included in table I shall not exceed tolerances for the next great thickness sheet listed in table I.

3.4 Color:

The material shall not contain any added pigment or dyes. Added colorant, when specified by the procuring agency, shall not alter the physical, mechanical, or chemical, properties of the sheet material.

3.5 Ultraviolet stabilizers:

The polycarbonate sheet shall be ultraviolet stabilized.

3.6 Tensile strength and elongation:

The minimum ultimate tensile strength of the material shall be 8,800 psi and the tensile elongation at rupture shall not be less than 80 percent.

3.7 Deflection temperature under load:

The minimum deflection temperature under load regardless of thickness, shall be 127°C (260°F).

3.8 Thermal expansion:

The mean linear coefficient of thermal expansion shall not exceed 0.00010 per degree Celsius (0.000055 per degree Fahrenheit) within the temperature range of -30° to +50°C. (-22° to +122°F).

3.9 Impact strength:

The minimum notched izod impact strength shall be in accordance with table I.

TABLE I. Requirements which vary with thickness

Thickness in.	Tolerance Thickness %	Original Luminous Transmittance % min.	After Accelerated Weather Transmission % min.	Minimum Izod Impact Strength ft/lb/in. of notch
.060	±0.006	88	86	12
.080	±0.008	87	85	12
.100	±0.009	86	84	12
.125	±0.010	86	84	12
.187	±0.015	85	83	12
.250	±0.020	84	82	2.5
.375	±0.030	82	80	2.5
.500	±0.040	80	78	2.2
.750	±0.050	78	76	2.2
1.000	±0.050	75	73	2.2

3.10 Flammability:

The minimum oxygen index value shall be 25 percent when tested according to 4.5.4.3.

3.11 Internal strain:

The mean dimensional change after heating shall not exceed 1 percent.

3.12 Accelerated weathering:

After exposure to the accelerated weathering test, the material shall show no cracking, crazing, or surface instability.

3.13 Specific gravity:

The mean specific gravity shall be 1.20 ± 0.01 .