

INCH-POUND

MIL-PRF-5425E

5 October 1998

SUPERSEDING

MIL-P-5425D

28 September 1979

## PERFORMANCE SPECIFICATION

## PLASTIC SHEET, ACRYLIC, HEAT RESISTANT

This specification is approved for use by all Departments and Agencies of the Department of Defense.

## 1. SCOPE

1.1 Scope. This specification covers optical quality, transparent, heat-resistant, cast acrylic plastic sheet. The requirements are for flat sheet material that has not been formed.

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Air Warfare Center Aircraft Division, Code 414100B120-3, Highway 547, Lakehurst, NJ 08733-5100, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- |            |   |   |
|------------|---|---|
| ASTM-D542  | - | Index of Refraction of Transparent Organic Plastics, Standard Test Method for (DoD adopted)   |
| ASTM-D570  | - | Water Absorption of Plastics, Standard Test Method for (DoD adopted)  |
| ASTM-D635  | - | Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position, Standard Test Method for (DoD adopted)        |
| ASTM-D638  | - | Tensile Properties of Plastics, Standard Test Method for (DoD adopted)  |
| ASTM-D648  | - | Deflection Temperature of Plastics Under Flexural Load, Standard Test Method for (DoD adopted)  |
| ASTM-D696  | - | Coefficient of Linear Thermal Expansion of Plastics Between -30 Degrees C and 30 Degrees C, Standard Test Method for (DoD adopted)                    |
| ASTM-D792  | - | Density and Specific Gravity (Relative Density) of Plastics by Displacement, Standard Test Methods for (DoD adopted)                                  |
| ASTM-D1003 | - | Haze and Luminous Transmittance of Transparent Plastics, Standard Test Method for (DoD adopted)   |
| ASTM-F733  | - | Optical Distortion and Deviation of Transparent Parts Using the Double-Exposure Method, Standard Practice for (DoD adopted)                           |
| ASTM-G26   | - | Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials, Standard Practice for (DoD adopted) |

(Application for copies should be addressed to the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 Qualification. The plastic sheet furnished under this specification shall be a product that is authorized by the qualifying activity for listing on the applicable qualified products list before contract award (see 4.2 and 6.3).

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3.2 Materials. The plastic sheet shall be an acrylic plastic that is transparent and meets all the requirements of this specification.

3.2.1 Color. Unless otherwise specified (see 6.2), the plastic sheet shall be colorless.

3.2.2 Dimensions. Dimensions of the plastic sheet shall be as specified by applicable drawings. Unless otherwise specified (see 6.2), the tolerance on length and width dimensions shall be  $\pm 0.063$  inch (1.6 mm).

3.2.3 Thickness. The actual thickness of the plastic sheet at any point shall be within the tolerances specified in table I. Thickness variations of sheets not included in table I shall be not greater than the tolerance for the next larger thickness.

3.3 Performance characteristics. The plastic sheet shall meet the requirements of table II when tested in accordance with table IV.

3.4 Formability. Formability shall be determined as specified in 4.5.3.

3.4.1 Sheets 0.500 inch (12.7 mm) and less in thickness. After the heating procedure in 4.5.3.1, the plastic sheet shall be formed into a hemispheric shape with an outside diameter of  $10 \pm 0.1$  inches ( $25 \pm 0.2$  cm) and a draw of not less than 4.5 inches (11.5 cm).

3.4.2 Sheets over 0.500 inch (12.7 mm) in thickness. After the heating procedure in 4.5.3.2, the plastic sheet shall be formed into a cylindrical shape with an outside radius equal to the formability radius specified in table I. There shall be no surface irregularities or crazing after a specimen cut from the formed sheet is exposed to accelerated weathering as specified in 4.5.10.1.

3.5 Resistance to weathering. After exposure to accelerated or natural weathering as specified in 4.5.10, the plastic sheet shall show no evidence of cracking, crazing, or other surface irregularities that affect visibility.

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TABLE I. Thickness, Tolerances and Requirements varying with thickness

Nominal thickness Inch (mm)	Thickness tolerances for lengths and widths			Water absorption Percent (max)	Formability radius (heated) Inches (cm)	Warp- age after accel- erated weathering Inch (mm) (max)	Rate of burn- ing Inches (cm) per min (max)
	See 1/ Inch (mm)	See 2/ Inch (mm)	See 3/ Inch (mm)				
0.060 (1.52)	±0.012 (0.30)	--	--	1.00	--	0.030 (0.76)	2.5 (6.35)
0.080 (2.03)	±0.012 (0.30)	±0.020 (0.51)	--	0.80	--	0.020 (0.51)	2.25 (5.72)
0.100 (2.54)	±0.012 (0.30)	±0.020 (0.51)	--	0.70	--	0.020 (0.51)	2.00 (5.08)
0.125 (3.18)	±0.015 (0.38)	±0.020 (0.51)	±0.030 (0.76)	0.65	±0.030 (0.76)	0.015 (0.38)	1.80 (4.57)
0.150 (3.81)	±0.017 (0.43)	±0.020 (0.51)	±0.030 (0.76)	0.60	±0.030 (0.76)	0.015 (0.38)	1.70 (4.32)
0.187 (4.75)	±0.020 (0.51)	±0.023 (0.58)	±0.030 (0.76)	0.50	±0.030 (0.76)	0.015 (0.38)	1.60 (4.06)
0.220 (5.59)	±0.023 (0.58)	±0.025 (0.63)	±0.030 (0.76)	0.45	±0.030 (0.76)	0.015 (0.38)	1.50 (3.81)
0.250 (6.35)	±0.025 (0.63)	±0.030 (0.76)	±0.035 (0.89)	0.40	±0.035 (0.89)	0.015 (0.38)	1.50 (3.81)
0.312 (7.92)	±0.030 (0.76)	±0.035 (0.89)	±0.040 (1.02)	0.36	±0.040 (1.02)	0.015 (0.38)	1.50 (3.81)
0.375 (9.53)	±0.035 (0.89)	±0.040 (1.02)	±0.045 (1.14)	0.30	±0.045 (1.14)	0.015 (0.38)	1.50 (3.81)
0.417 (10.6)	±0.040 (1.02)	±0.045 (1.14)	±0.045 (1.14)	0.28	±0.045 (1.14)	0.015 (0.38)	1.50 (3.81)
0.500 (12.7)	±0.040 (1.02)	±0.045 (1.14)	±0.050 (1.27)	0.25	±0.050 (1.27)	0.015 (0.38)	1.50 (3.81)
0.625 (15.9)	±0.050 (1.27)	±0.050 (1.27)	±0.060 (1.52)	0.25	±0.060 (1.52)	0.015 (0.38)	1.50 (3.81)
0.750 (19.0)	±0.050 (1.27)	±0.050 (1.27)	±0.065 (1.65)	0.21	±0.065 (1.65)	0.015 (0.38)	1.50 (3.81)
0.875 (22.2)	±0.050 (1.27)	±0.050 (1.27)	±0.070 (1.78)	0.21	±0.070 (1.78)	0.015 (0.38)	1.50 (3.81)
1.000 (25.4)	±0.050 (1.27)	±0.050 (1.27)	±0.075 (1.91)	0.20	±0.075 (1.91)	0.015 (0.38)	1.50 (3.81)

1/ Sheets up to and including 36 by 60 and 40 by 50 inches (91 by 152 and 101 by 127 cm)

2/ Sheets larger than 1/ up to and including 53 by 80 and 60 by 72 inches (134 by 203 and 152 by 183 cm)

3/ Sheets larger than 2/ up to and including 72 by 90 and 67 by 102 inches (183 by 228 and 170 by 259 cm)

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TABLE II. Performance characteristics.

CHARACTERISTIC	REQUIREMENT
Specific gravity	1.19 ±0.01
Water absorption	See table I
Rate of burning	See table I
Coefficient of thermal expansion per °F (°C), maximum	0.000055 (0.00010)
Internal strain (dimensional change), percent, maximum	1
Flexural deformation temperature, °F (°C) 0.500 inch and less in thickness Over 0.500 inch in thickness	185 to 239 (85 to 115) 194 to 242 (90 to 117)
Tensile strength, psi (MPa), minimum As received After natural weathering	8000 (55.2) 8000 (55.2)
Elongation, percent, minimum As received After natural weathering	2 2
Ultraviolet transmittance (290 to 330 mμ range), percent, maximum	5
Index of refraction <u>1/</u>	1.49 ±0.01
Luminous transmittance, percent, minimum <u>1/</u> Thickness, inch: 0.060 through 0.187 As received After accelerated and natural weathering Over 0.187 through 0.312 As received After accelerated and natural weathering Over 0.312 through 0.417 As received After accelerated and natural weathering Over 0.417 through 1.000 As received After accelerated and natural weathering	91 90 90 89 89 87 89 86
Haze, percent, maximum <u>1/</u> As received After accelerated weathering After natural weathering	3 3 4
Warpage after accelerated weathering	See table I
Thermal stability	No evidence of blistering

1/ Requirement is for colorless plastic sheet.

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3.6 Optical uniformity.

3.6.1 Optical defects. The plastic sheet shall contain no optical defects, such as embedded particles, bubbles, scratches, or imperfections, that reduce visibility through the sheet and cause a variation in angular deviation of more than 5 minutes within a distance of not more than 20 inches (50 cm) on a grid board when tested as specified in 4.5.12.1. Blemishes that do not individually reduce visibility through the sheet shall be disregarded unless they form a cluster. Optical defects within 1 inch (25.4 mm) from the edge of the sheet shall also be disregarded.

3.6.2 Angular deviation. The plastic sheet shall contain no surface irregularities which cause angular deviations on either side of the undeformed position that are greater than the limits specified in table III when tested as specified in 4.5.12.2.

TABLE III. Angular deviation.

SHEET THICKNESS	LIMITS OF PERMISSIBLE DEVIATION <sup>1/</sup>
0.060 through 0.220 inch	7 minutes at any location more than 1 inch from the edge of the sheet.
Over 0.220 through 0.250 inch	7 minutes at any location more than 3 inches from the edge of the sheet and 9 minutes between 3 inches and 1 inch of the edge.
Over 0.250 through 0.375 inch	7 minutes at any location more than 3 inches from the edge of the sheet and 12 minutes between 3 inches and 1 inch of the edge.
Over 0.375 through 0.500 inch	7 minutes at any location more than 3 inches from the edge of the sheet and 14 minutes between 3 inches and 1 inch of the edge.
Over 0.500 through 1.000 inch	12 minutes at any location more than 3 inches from the edge of the sheet and 20 minutes between 3 inches and 1 inch of the edge.

<sup>1/</sup> Surface irregularities within 1 inch from the edge of the sheet shall be disregarded.

3.7 Instruction sheet. An instruction sheet containing information relating to the necessary precautions to be observed in the use, forming, cementing, handling, and storage of the plastic sheet shall be included in each shipping container.

3.8 Protective covering. A protective covering shall be applied to both sides of the plastic sheet to protect the surfaces from scratches and abrasions. The covering shall be easily removed without injury or damage to the surface. The plastic sheet shall be identified on the protective covering by specification number, thickness, manufacturer's code, and national stock number.

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## 4. VERIFICATION

4.1 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. Qualification inspection (see 4.2).
- b. Conformance inspection (see 4.3).

4.2 Qualification inspection. Qualification inspection shall consist of all the tests specified in table IV.

TABLE IV. Qualification inspection.

CHARACTERISTIC	REQUIREMENT PARAGRAPH	TEST METHOD OR PARAGRAPH
Thickness	3.2.3	4.5.1
Specific gravity	Table II	ASTM-D792
Water absorption	Table I	ASTM-D570
Rate of burning	Table I	ASTM-D635
Coefficient of thermal expansion	Table II	4.5.2
Formability	3.4	4.5.3
Internal strain	Table II	4.5.4
Flexural deformation temperature	Table II	4.5.5
Tensile strength	Table II	4.5.6.1
Elongation	Table II	4.5.6.2
Ultraviolet transmittance	Table II	4.5.7
Index of refraction	Table II	4.5.8
Luminous transmittance	Table II	4.5.9
Haze	Table II	4.5.9
Resistance to weathering	3.5	4.5.10
Warpage after accelerated weathering	Table I	4.5.11
Optical uniformity	3.6	4.5.12
Thermal stability	Table II	4.5.13
Instruction sheet	3.7	Visual
Protective covering	3.8	Visual

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4.2.1 Qualification test sample. The qualification test sample shall consist of not less than 20 square feet (1.9 square meters) of plastic sheet for each thickness. Individual sheet dimensions shall be not less than 12 by 36 inches (30 by 90 cm). To be qualified for all thicknesses, manufacturers shall submit samples of plastic sheet with nominal thicknesses of 0.060, 0.125, 0.250, 0.500, 0.750, and 1.000 inch (1.5, 3.2, 6.4, 12.7, 19.0, and 25.4 mm). Qualification samples for specific thicknesses may also be submitted.

4.2.1.1 Test specimens. Test specimens shall be prepared from a portion of the sheet sample (see 4.2.1) to complete the tests specified for mechanical properties (see 4.5.6).

#### 4.3 Conformance inspection.

4.3.1 Visual and dimensional inspection. Each lot (see 6.4) shall be sampled as specified (see 6.2). Visual and dimensional defects shall be as specified in table V.

TABLE V. Visual and dimensional inspection.

INSPECTION	DEFECT
Appearance	Bubbles, striae, chips, or scratches. Waves, distortion, irregularities, or other defects that would render the sheet unfit for viewing objects through it. Surfaces not made to a smooth or polished finish. Embedded particles, such as grit or other foreign matter. Ragged or rough edges or sides.
Color	Not colorless, or not color specified.
Protective covering	Not easily peeled. Surfaces marked when removed.
Length and width	Varies by more than $\pm 0.063$ inch (1.6 mm) from length or width specified, unless greater tolerance permitted (see 6.2).
Thickness	Varies by more than the applicable tolerance specified in table I. (For thickness of sheets not listed in table I, the tolerance for the next larger thickness shall apply.)

4.3.2 Physical and mechanical inspection. Three samples shall be randomly selected from each lot (see 6.4). Test specimens shall be prepared from each sample to complete the tests specified in table VI.



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TABLE VI. Physical and mechanical inspection.

CHARACTERISTIC	REQUIREMENT PARAGRAPH	TEST PARAGRAPH	NUMBER OF DETERMINATIONS PER SAMPLE	RESULTS RECORDED AS	
				PASS OR FAIL	AVERAGE (1/) NUMERICALLY TO THE NEAREST:
Flexural deformation temperature	Table II	4.5.5	2	–	0.1 °C
Luminous transmittance, as received	Table II	4.5.9	2	–	0.1 percent
Haze, as received	Table II	4.5.9	2	–	0.1 percent
Optical defects	3.6.1	4.5.12.1	2	X	–
Angular deviation	3.6.2	4.5.12.2	2	–	1 minute
Thermal stability	Table II	4.5.13	1	X	–

1/ All values shall be recorded.

#### 4.4 Test conditions.

4.4.1 Standard conditions. Unless otherwise specified in the applicable test method, all tests and inspections shall be conducted at a temperature of  $77 \pm 2$  °F ( $25 \pm 1$  °C) and a relative humidity of  $50 \pm 5$  percent.

4.4.2 Test results. Unless otherwise specified in the applicable test method, all test results shall be recorded as the average of the number of specimens being tested as well as each individual value.

#### 4.5 Methods of inspection.

4.5.1 Thickness. Thickness measurements shall be made with any device having an accuracy of 0.001 inch (0.025 mm) and shall meet the requirement of 3.2.3.

4.5.2 Coefficient of thermal expansion. Two test specimens shall be tested in accordance with ASTM-D696. If the results obtained on the two specimens are within 10 percent, the average of the two values shall be recorded. If not, the test shall be repeated. Results shall meet the requirement in table II.

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4.5.3 Formability.

4.5.3.1 Sheets 0.500 inch (12.7 mm) and less in thickness. Two test specimens, 14 inches (35.6 cm) in diameter, shall be formed to determine conformance to 3.4.1. The heating temperature and pressure to be used shall be in accordance with the manufacturer's instructions.

4.5.3.2 Sheets over 0.500 inch (12.7 mm) in thickness. Two test specimens, measuring 4 by 36 inches (10 by 91 cm), shall be formed to determine conformance to 3.4.2. Heating methods, temperatures, rate of forming, and procedures shall be in accordance with the manufacturer's instructions. Forming shall be done over wooden molds covered with a soft lintless cloth. After the formed specimens have cooled, a section 1.5 inches (3.8 cm) along the circumference and 4 inches (10 cm) long shall be cut from one of the formed specimens. This specimen shall be subjected to accelerated weathering (see 4.5.10.1) and then visually examined for crazing or other optical defects.

4.5.4 Internal strain. Two conditioned 12- by 18-inch (30- by 45-cm) plastic sheets shall be tested. Each sheet shall be considered to be a 12- by 12-inch (30- by 30-cm) specimen supported by the remainder of the sheet. Two fine lines shall be scribed at right angles crossing the center of the 12- by 12-inch area. Finely scribed gauge marks shall then be placed 2 inches (5 cm) from the edge of the specimen area on each of these lines. The distance between each pair of gauge marks shall be measured to the nearest 0.010 inch (0.25 mm) and the data recorded. Each sheet shall be hung by one short edge in a circulating air oven at  $320 \pm 18$  °F ( $160 \pm 10$  °C) for the time indicated below:

<u>Nominal Sheet Thickness, Inch (mm)</u>	<u>Minimum Heating Time, Minutes</u>
0.250 (6.4) and less	16
0.375 (9.5)	25
0.500 (12.7)	33
0.750 (19.0)	55
1.000 (25.4)	79

After removal from the oven, the sheets shall be cooled to standard conditions (see 4.4.1) while hanging vertically. The distance between each pair of gauge marks shall be remeasured. The dimensional change shall be computed as the percent change in distance between the gauge marks from the first measurement. The average of the four values shall be recorded and shall meet the requirement in table II.

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4.5.5 Flexural deformation temperature. Two test specimens shall be tested in accordance with ASTM-D648 except that the thickness of the sample being tested shall become the width of the specimen. Those thicknesses not in the range specified in ASTM-D648 shall be plied or machined. The unmachined surface shall be on a side. The load shall be calculated to give a maximum fiber stress of 264 psi (1,820 kPa). Each value shall be recorded and shall meet the requirement in table II.

4.5.6 Mechanical properties. Tensile and elongation test specimens shall be prepared from as received plastic sheet that is 0.500 inch (12.7 mm) or less in thickness. Plastic sheet that is over 0.500 inch in thickness shall be machined to 0.500 inch.

4.5.6.1 Tensile strength. Five test specimens shall be tested in accordance with ASTM-D638. Results shall meet the requirement in table II.

4.5.6.2 Elongation. Elongation shall be determined in accordance with ASTM-D638. The mean elongation immediately before fracture shall meet the requirement in table II.

4.5.7 Ultraviolet transmittance. The spectral transmittance of a test specimen, 0.250 inch (6.4 mm) thick, shall be determined with a monochromator having a bandwidth of 10 millimicrons or less and a photometer having a reproducibility of  $\pm 1$  percent. Results shall meet the requirement in table II.

4.5.8 Index of refraction. Three test specimens shall be tested in accordance with the refractometer procedure of ASTM-D542. Results shall meet the requirement in table II.

4.5.9 Luminous transmittance and haze. Three test specimens shall be examined as specified in ASTM-D1003, procedure A or B, for luminous transmittance and haze. Specimens subjected to weathering in 4.5.10 shall be immersed in distilled water for not longer than 10 seconds and blotted to remove surface moisture prior to examination. Luminous transmittance and haze results shall meet the requirements in table II.

4.5.10 Weathering properties.

4.5.10.1 Accelerated weathering. Accelerated weathering shall be conducted in accordance with ASTM-G26 except that the duration of the test shall be 120 hours. Each test specimen shall be visually examined for conformance to 3.5, then subjected to examinations for luminous transmittance and haze (see 4.5.9). Separate specimens shall be subjected to the warpage examination (see 4.5.11).

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4.5.10.2 Natural weathering. Test specimens, measuring 12 by 18 inches (30 by 45 cm), shall be exposed outdoors in southern Florida for a period of 6 months. Each specimen shall be supported at the edges only and shall be mounted at an angle of 45° from the horizontal, facing south. Both surfaces of the specimen shall be exposed to the conditions. After exposure, the specimen shall be visually examined for conformance to 3.5, subjected to examinations for luminous transmittance and haze (see 4.5.9), then tested for tensile strength (see 4.5.6.1).

4.5.11 Warpage after accelerated weathering. The accelerated weathering specimens shall be conditioned on a plane surface. After conditioning, the specimens shall be measured for warpage by determining the greatest distance from a straight edge connecting diagonally opposite corners to the near surface of the plastic. This distance shall be measured by using any device having an accuracy of 0.001 inch (0.025 mm). The warpage recorded shall be the maximum value, not an average, and shall meet the requirement in table I.

4.5.12 Optical uniformity.

4.5.12.1 Optical defects. The plastic sheet shall be visually examined for conformance to 3.6.1. Local areas which are suspected of containing optical defects that cause reduced visibility or distortion shall be tested in accordance with ASTM-F733.

4.5.12.2 Angular deviation. The angular deviation shall be determined in accordance with ASTM-F733. Each sheet shall be examined, then rotated 90°, and re-examined for conformance to 3.6.2.

4.5.13 Thermal stability. Two conditioned 12- by 18-inch (30- by 45-cm) plastic sheets shall be tested. Each sheet shall be hung in a circulating air oven at  $356 \pm 9$  °F ( $180 \pm 5$  °C) for 2 hours +5, -0 minutes. After removal from the oven, the sheets shall be cooled to standard conditions (see 4.4.1) while hanging vertically, then visually examined for conformance to table II.

## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

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## 6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. The acrylic plastic sheet is used in the production and maintenance of military aircraft exposed for prolonged periods to extreme seagoing environments not encountered by civilian aircraft. It is superior to conventional acrylic plastic sheet for heat resistance. The intended use of the plastic sheet is for cockpit and cabin windows that require a transparency with good optical, formability, outdoor weathering, and heat resistant characteristics.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of the specification.
- b. Issue of DoDISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.2).
- c. Color and optical requirements, when required (see 3.2.1).
- d. Dimensional tolerance requirements, when other than specified (see 3.2.2 and table V).
- e. Sampling procedures (see 4.3.1).
- f. Packaging requirements (see 5.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL-5425 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from the Commander, Naval Air Warfare Center Aircraft Division, Code 4.3.4.3, Building 2188, 48066 Shaw Road, Unit 5, Patuxent River, MD 20670-1908.

6.3.1 Inspection reports and additional information. When authorizing the forwarding of qualification samples, the qualifying activity will require the manufacturer to submit, along with the samples, two copies of the manufacturer's test report showing that the material to be submitted for qualification conforms to the requirements of this specification, and two copies of

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the manufacturer's instruction sheet (see 3.7). The qualification samples will be plainly and durably marked with the following information and forwarded to the test facility identified in the letter of authorization.

Sample for qualification inspection  
 PLASTIC SHEET, ACRYLIC, HEAT RESISTANT  
 Specification MIL-PRF-5425E  
 Manufacturer's name  
 Plant address (where sheet is manufactured)  
 Submitted by (name and date) for qualification inspection in accordance with the requirements of MIL-PRF-5425E under authorization of (reference authorization letter).

6.3.2 Retention of qualification. To retain qualification of a product approved for listing on the QPL, the manufacturer will verify by certification to the qualifying activity that the manufacturer's product complies with the requirements of this specification. The time of periodic verification by certification will be every two years from the date of original qualification and will be initiated by the Government. The Government reserves the right to re-examine the qualified product whenever deemed necessary to ensure that the product continues to meet any or all of the specification requirements.

6.4 Lot formation. Unless otherwise specified, a lot consists of the total number of plastic sheets of the same thickness, forming part of one order or contract, submitted for inspection at one time.

6.5 Suggested inspection levels. Manufacturing processes of the plastic sheet are such that slight variations in length, width, thickness, and appearance necessitate the use of acceptance sampling plans for the visual and dimensional inspection. Suggested inspection levels, taken from ASQC-Z1.4, "Sampling Procedures and Tables for Inspection by Attributes" (American Society for Quality Control, 611 East Wisconsin Avenue, Milwaukee, WI 53202) are as follows:

<u>Inspection</u>	<u>Inspection Level</u>
Visual	I
Dimensional	S-3

6.6 Special sheet size. Plastic sheets measuring 100 by 120 inches (254 by 305 cm) are available in thicknesses of 0.187 to 0.500 inch (4.75 to 12.7 mm) having thickness tolerances conforming to the requirements in table I.

6.7 Variation of physical properties with temperature. Many physical properties of the plastic sheet vary with temperature. Designers, engineers, draftsmen, and prospective users of the product should consider this fact.

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6.8 Cross-reference. MIL-PRF-5425E includes the requirements for Finish A (full finish transparent) of the superseded MIL-P-5425D. Finish B (rib stock) is no longer covered by this specification.

### 6.9 Subject term (key word) listing.

Aircraft quality  
Formability  
Transparent  
Weatherability

6.10 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

## CONCLUDING MATERIAL

### Custodians:

Army - MR  
Navy - AS  
Air Force - 11

### Preparing activity:

Navy - AS

(Project 9330-0092)

### Review activities:

Army - AV, EA  
Navy - OS, SH  
DLA - GS  
Other - DS

# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.  
**NOTE:** This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

### I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER  
MIL-PRF-5425E

2. DOCUMENT DATE (YYMMDD)  
981005

3. DOCUMENT TITLE

PLASTIC SHEET, ACRYLIC, HEAT RESISTANT

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME *(Last, First, Middle Initial)*

b. ORGANIZATION

c. ADDRESS *(Include Zip Code)*

d. TELEPHONE  
*(Include Area Code)*  
(1) Commercial:

7. DATE SUBMITTED  
(YYMMDD)

(2) DSN:  
*(If Applicable)*

8. PREPARING ACTIVITY

a. NAME  
COMMANDER  
NAVAL AIR WARFARE CENTER  
AIRCRAFT DIVISION

b. TELEPHONE NUMBER *(Include Area Code)*  
(1) Commercial (732) 323-2947 (2) DSN 624-2947

c. ADDRESS *(Include Zip Code)*  
CODE 414100B120-3  
HIGHWAY 547  
LAKEHURST, NJ 08733-5100

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:  
Defense Logistics Agency (DLSC-LM),  
Attn: Carla Jenkins/John Tascher  
8725 John J. Kingman Road, Ste 2533  
Fort Belvoir, VA 22060-6221  
Telephone (703) 767-6874



