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Standard Guide for Testing Materials for Aerospace Plastic Transparent Enclosures¹

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1. Scope

1.1 This guide is intended to summarize the standard test methods available on individual and composite materials utilized in fabrication of aerospace plastic transparent enclosures. As such, it is intended to specifically include transparent thermoplastics, transparent elastomers and reinforced plastics whether thermoplastic or thermosetting.

1.2 This guide is intended as an aid in the search for test methods pertinent to Aerospace Plastic Transparent Enclosures. It should be understood that all methods listed may not apply to all enclosures.

1.3 The standards included refer to the properties or aspects listed in Table 1. The properties or aspects are listed in alphabetical order and the descriptions used are intended to facilitate the search.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- C 117 Test Method for Material Finer Than 75-μm (No. 200) Sieve in Mineral Aggregates by Washing²
- D 149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies³
- D 150 Test Methods for A-C Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulating Materials³
- D 256 Test Methods for Impact Resistance of Plastics and Electrical Insulating Materials⁴
- D 257 Test Methods for D-C Resistance or Conductance of Insulating Materials³
- D 412 Test Methods for Vulcanized Rubber and Thermo-

- plastic Rubbers and Thermoelastic Elastomers Tension⁵
- D 542 Test Methods for Index of Refraction of Transparent Organic Plastics⁴
- D 543 Test Method for Resistance of Plastics to Chemical Reagents⁴
- D 570 Test Method for Water Absorption of Plastics⁴
- D 621 Test Methods for Deformation of Plastics Under Load⁴
- D 624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers⁵
- D 637 Test Method for Surface Irregularities of Flat Transparent Plastic Sheets⁴
- D 638 Test Method for Tensile Properties of Plastics⁴
- D 673 Test Method for Mar Resistance of Plastics⁴
- D 695 Test Method for Compressive Properties of Rigid Plastics⁴
- D 696 Test Method for Coefficient of Linear Thermal Expansion of Plastics Between –30° and 30°C⁴
- D 746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact⁴
- D 785 Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials⁴
- D 790 Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials⁴
- D 792 Test Methods for Specific Gravity (Relative Density) and Density of Plastics by Displacement⁴
- D 953 Test Method for Bearing Strength of Plastics⁴
- D 1003 Test Method for Haze and Luminous Transmittance of Transparent Plastics⁴
- D 1004 Test Method for Initial Tear Resistance of Plastic Film and Sheet⁴
- D 1044 Test Method for Resistance of Transparent Plastics to Surface Abrasion⁴
- D 1181 Method for Warpage of Sheet Plastics⁶
- D 1238 Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer⁴
- D 1371 Recommended Practice for Cleaning Plastic Specimens for Insulation Resistance, Surface Resistance, and Volume Resistivity Testing⁷

¹ This guide is under the jurisdiction of ASTM Committee F-7 on Aerospace and Aircraft and is the direct responsibility of F07.08 on Transparent Enclosures and Materials.

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² Annual Book of ASTM Standards, Vol 04.02.

³ Annual Book of ASTM Standards, Vol 10.01.

⁴ Annual Book of ASTM Standards, Vol 08.01.

⁵ Annual Book of ASTM Standards, Vol 09.01.

⁶ Discontinued—See 1982 Annual Book of ASTM Standards, Part 35.

⁷ Discontinued—See 1981 Annual Book of ASTM Standards, Part 39.