



Designation: F 790 – 02

## Standard Guide for Testing Materials for Aerospace Plastic Transparent Enclosures<sup>1</sup>

This standard is issued under the fixed designation F 790; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

### 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 Washing<sup>2</sup>
- D 149 Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies<sup>3</sup>
- D 150 Test Methods for AC Loss Characteristics and Permittivity (Dielectric Constant) of Solid Electrical Insulation<sup>3</sup>
- D 256 Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics<sup>4</sup>
- D 257 Test Methods for DC Resistance or Conductance of Insulating Materials<sup>3</sup>

<sup>1</sup> This guide is under the jurisdiction of ASTM Committee F07 on Aerospace and Aircraft and is the direct responsibility of F07.08 on Transparent Enclosures and Materials.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.02.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 10.01.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 08.01.

**TABLE 1 Property or Aspects of Aerospace Plastic Transparent Enclosures**

Property or Aspect	Test Method
Abrasion Resistance	D 1044
Abrasion Resistance—Oscillating Sand	F 735
Abrasion Testing—Sizing Sand for	C 117
Bearing Strength	D 953
Bird Impact Resistance	F 330
Bond Integrity	F 521
Brittleness Temperature—By Impact	D 746
Chemical Resistance	D 543
Coefficient of Linear Thermal Expansion	D 696
Compressive Properties	D 695
Electrical Insulating Material—DC Resistance or Conductance	D 257
Electrical Insulating Material—Dielectric Breakdown Voltage	D 149
Electrical Insulating Material—Dielectric Constant	D 150
Electrical Insulating Material—Flexural Properties	D 790
Electrical Insulating Material—Impact Resistance	D 256
Electrical Insulating Material—Rockwell Hardness	D 785
Environmental Resistance	F 520
Exposure Apparatus Operation—Carbon ARC Type	D 1499
Exposure Apparatus Operation—Fluorescent UV Type	G 154
Exposure Apparatus Operation—Xenon ARC Type	D 2565
Flow Rate	D 1238
Glass Transition Temperature	E 1640
Hail Impact Resistance	F 320
Hardness—Barcol	D 2583
Hardness—Durometer	D 2240
Heating Elements—Detection of Flaws	F 319
Ignition Loss	D 2584
Impact Resistance—Falling Weight	D 5420
Impact Resistance—Falling Weight (Polycarbonate)	F 736
Index of Refraction	D 542
Interlayer Material Selection	F 942
Light Transmissivity	F 1316
Luminous Transmittance and Haze	D 1003
Optical Angular Deviation	F 801
Optical Angular Displacement—Multiple Images	F 1165
Optical Binocular Disparity	F 1181
Optical Distortion and Deviation—Double Exposure	F 733
Optical Reflectivity	F 1252
Peel Resistance—Floating Roller	D 3167
Rubber Properties in Tension	D 412
Scratches—Intensity of	F 548
Shear Strength—Fusion Bonded Polycarbonate	F 734
Shear Strength and Modulus—Interlayer Materials	F 1362
Softening Temperature	D 1525
Specific Gravity and Density	D 792
Specific Heat	D 2766
Stress Cracking	F 791
Stress Cracking	F 484
Tear Resistance	D 624
Tear Resistance—Initial	D 1004
Tensile Properties	D 638
Water Absorption	D 570