

Technical Data Sheet Eastar™ Copolyester 6763

Applications

- Flexible medical device packaging
- Pharmaceutical packaging
- Rigid medical packaging

Key Attributes

- Easy primary & secondary operations
- Excellent clarity
- Excellent toughness
- Gamma, ebeam, ETO sterilization stable

Product Description

Meets ISO 10993 and/or USP Class VI biocompatibility requirement; Food Contact Status compliant. Eastar[™] 6763 copolyester is a clear, amorphous material that can be molded and extruded with ease. Its excellent performance properties include clarity, toughness, good melt strength, no dusting, no stress whitening, good heat sealability, easy cutting and thermoforming. Eastar 6763 may be colored using color concentrates, dry colors, or liquid colorants. Eastar 6763 can be safely sterilized with proper ethylene oxide, radiation, or electron beam methods without property loss or color shift. It is well suited for a variety of applications including, medical packaging, cosmetics and personal care packaging, food and beverage packaging, and display & signs.

In medical applications Eastar 6763 provides:

- Superior, long-term clarity provides easy identification of instruments
- Excellent puncture resistance and impact toughness ensure package integrity
- Excellent ability to be subjected to several methods of sterilization, providing flexibility and security to the device manufacturer
- Excellent optical and physical property stability post sterilization
- Good melt strength offers wide processing latitude and ease in thermoforming

The production and trimming of rigid medical trays made from sheet of Eastar 6763 results in little or no dust or particulates. After the thermoformed trays are made, they are put in polybags. The polybags of trays are then placed in protective boxes for storage or shipment. As long as the polybags in the protective boxes are intact and no outside contamination is evident, the thermoformer or medical device manufacturer should not need to clean the tray prior to packaging a device and sealing the package. If contamination is found on the medical trays and cleaning is required, use a lint-free towel. Blowing the tray out with filtered, deionized, non-lubricated air is also acceptable, assuming this does not stir up dust from the surrounding area. Using alcohol, which could cause crazing, or water, which would not evaporate, is not recommended.

This product has been *CRADLE TO CRADLE CERTIFIED*TM Bronze, with Material Health Certificate, Platinum. The *CRADLE TO CRADLE CERTIFIED* mark is a registered certification mark used under license through the Cradle to Cradle Products Innovation Institute, a nonprofit organization that administers the publicly available *Cradle to Cradle Certified*TM Product Standard which provides designers and manufacturers with criteria and requirements for continually improving product materials and manufacturing processes. The *Cradle to Cradle Certified*TM Product Standard guides designers and manufacturers through a continual improvement process that looks at a product through five quality categories—material health, material reutilization, renewable energy and carbon management, water stewardship, and social fairness. A product receives an achievement level in each category—Basic, Bronze, Silver, Gold, or Platinum—with the lowest achievement level representing the product's overall mark.

The Material Health Certificate provides manufacturers with a trusted way to communicate their efforts to identify and replace chemicals of concern in their products. For more information about Cradle to Cradle certification and to obtain printable certificates for Eastman copolyesters, visit <u>www.c2ccertified.org</u>. Search for Eastman Chemical Company in *Cradle to Cradle Certified* Products Registry.

Typical Properties

Property^a

Test Method^b

Typical Value, Units^C





| Electrical Properties | | |
|--|-----------------|--|
| Dielectric Constant | D 150 | 2.6 |
| 1 kHz | D 150 | 2.4 |
| 1 MHz | D 150 | 2.7 |
| Dissipation Factor | | 0.005 |
| 1 kHz | D 150 | 0.02 |
| 1 MHz | D 150 | 158 sec |
| Arc Resistance | D 495 | |
| Volume Resistivity | D 257 | 10 ¹⁵ ohm⋅cm |
| Surface Resistivity | D 257 | 10 ¹⁶ ohms/square |
| Dielectric Strength, Short Time, 500 |) D 149 | 16 kV/mm (410 V/mil) |
| V/sec rate-of-rise Film Properties | | |
| Thickness of Film Tested | D 374 | 250 Microns (10 mils) |
| | | 1.27 g/cm ³ |
| Density | D 1505 | 0.8 % |
| Haze | D 1003 | 0.0 /0 |
| Gloss | | 108 |
| @ 45° | D 2457 | 85 % |
| Transparency | D 1746 | |
| Regular Transmittance | D 1003 Modified | 89 % |
| Total Transmittance | D 1003 Modified | 91 % |
| Water Vapor Transmission Rate ^e | F 1249 | 7 g/m ² ·24h (0.5 g/100in. ² ·24h) |
| Gas Permeability, CO ₂ | D 1434 | 49 cm ³ ·mm/m ² ·24h·atm (125 |
| | | cm ³ ·mil/100in. ² ·24h·atm) |
| Gas Permeability, O ₂ | D 3985 | 10 cm ³ ·mm/m ² ·24h∙atm (25 |
| | | cm ³ ·mil/100in. ² ·24h·atm) |
| Elmendorf Tear Resistance | | |
| M.D. | D 1922 | 13.7 N (1400 gf) |
| T.D. | D 1922 | 16.7 N (1700 gf) |
| PPT Tear Resistance | | |
| M.D. | D 2582 | 93 N (21 lbf) |
| T.D. | D 2582 | 93 N (21 lbf) |
| Tear Propagation Resistance, Split 1 | ēar Method | |
| @ 254 mm/min (10 in./min) | D 1938 | 36 N/mm (205 lbf/in.) |
| M.D. | | |
| @ 254 mm/min (10 in./min) T.D | D. D 1938 | 36 N/mm (205 lbf/in.) |
| Tear Resistance, Trouser @ 200 mm | n/min | |
| M.D. | ISO 6383-1 | 36 N/mm (205 lbf/in.) |
| T.D. | ISO 6383-1 | 36 N/mm (205 lbf/in.) |
| Tensile Strength @ Yield | | |
| M.D. | D 882 | 52 MPa (7500 psi) |
| T.D. | D 882 | 52 MPa (7500 psi) |
| Tensile Strength @ Break | | |
| M.D. | D 882 | 59 MPa (8600 psi) |
| T.D. | D 882 | 55 MPa (8000 psi) |
| Elongation @ Yield | | |
| M.D. | D 882 | 4 % |
| T.D. | D 882 | 4 % |
| Elongation @ Break | | |
| M.D. | D 882 | 400 % |
| T.D. | D 882 | 400 % |
| Tensile Modulus | | |
| M.D. | D 882 | 1900 MPa (2.8 x 10 ⁵ psi) |
| T.D. | D 882 | 1900 MPa (2.8 x 10 ⁻ psi) |
| Dart Impact ⁱ | 5 002 | |
| ναι τπηματί | | 500 a |

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|---|--|---|---|--|--|--|
| Specific Gravity D.792 1.27 Water Absorption, 24 h immersion D.570 0.13 % Tensile Stress @ Break D.638 28 MPa (4100 ps) Tensile Stress @ Vield D.638 50 MPa (7300 ps) Tensile Stress @ Tensile Modulus D.638 130 % Tensile Modulus D.638 2100 MPa (3.0 x 10 ⁵ psi) Flexural Yield Strength D.790 70 MPa (10200 psi) Rekural Yield Strength, Nathed 0.236 101 J/m (1.9 ft-lbf/in.) @ 249°C (-49°F) D.256 37 J/m (0.7 ft-lbf/in.) Impact Strength, Nuntothed ⁹ 0.4812 NB @ -20°C (-49°F) D.4812 NB @ -30°C (-22°F) D.4812 NB @ -30°C (-22°F) D.4812 NB @ -30°C (-22°F) D.4812 NB @ -30°C (-24°F) D.4812 NB @ -30°C (-24°F) D.4812 NB Plaques, @ 23°C (73°F) D.4812 NB _2.5 mm (0.100-in.) Thick D.3763 28 J (21 ft-lbf) Plaques, @ 40°C (-40°F) D.4312 NB | | | 400 g | | | |
| Description, 24 h immersion D 570 0.13 % Tensile Stress @ Freak D 638 28 MP2 (4100 psi) Tensile Stress @ Teak D 638 130 % Tensile Stress @ Teak D 638 2100 MPa (3.0 x 10 ⁵ psi) Flexural Modulus D 790 2100 MPa (3.0 x 10 ⁵ psi) Flexural Modulus D 790 70 MPa (10200 psi) Rockwell Hardness, R Scale D 785 106 Tradit Strength, Notched 0 256 101 J/m (1.9 ft-lbf/in.) MacAvell Hardness, R Scale D 785 106 106 Tradit Strength, Unnotched ^a 0 256 101 J/m (0.7 ft-lbf/in.) Impact Strength, Unnotched ^a 0 256 101 J/m (0.7 ft-lbf/in.) Impact Resistance (Puncture), Energy @ Max. Load 2.5 mm (0.100-in.) Thick D 3763 28 J (21 ft-lbf) Plaques, @ 23°C (73°F) D 4812 NB 10 (0.10-in.) Thick D 3763 2.5 mm (0.102-in.) Thick D 3763 28 J (21 ft-lbf) Plaques, @ 23°C (73°F) 3.2 mm (0.125-in.) Thick D 3763 33 J (24 ft-lbf) Plaques, @ 40°C (-40°F) | Mechanical Properties (Injection | Mechanical Properties (Injection Molded), ASTM Method | | | | |
| Thesis (1) to be provided in the provid | Specific Gravity | D 792 | | | | |
| Tensile Stress @ Yield D 638 50 MPa (7300 psi) Elongation @ Break D 638 130 % Tensile Modulus D 638 2100 MPa (3.0 x 10 ⁵ psi) Flexural Modulus D 790 2100 MPa (3.0 x 10 ⁵ psi) Flexural Yield Strength D 790 70 MPa (10200 psi) Rockwell Hardness, R Scale D 735 106 Izod Impact Strength, Notched @ 23°C (73°F) D 256 37 J/m (0.7 ft-lbf/in.) Impact Strength, Unnotched ⁰ @ @ 23°C (74°F) D 4812 NB @ -30°C (-24°F) D 4812 NB @ -30°C (-24°F) D 4812 NB @ -30°C (-24°F) D 4812 NB @ -30°C (-24°F) D 4812 NB @ -30°C (-24°F) D 4812 NB | Water Absorption, 24 h immersion | D 570 | | | | |
| Source 2000 D 638 130 % Tensile Modulus D 638 2100 MPa (3.0 x 10 ⁶ psi) Flexurel Modulus D 790 2100 MPa (3.0 x 10 ⁶ psi) Flexurel Modulus D 790 2100 MPa (3.0 x 10 ⁶ psi) Flexurel Modulus D 790 2100 MPa (3.0 x 10 ⁶ psi) Rockwell Hardness, R Scale D 785 106 Izod Impact Strength, Notched 0 23°C (73°F) D 4812 NB @ -20°C (-40°F) D 4812 NB 0 -30°C (-22°F) D 4812 NB @ -30°C (-22°F) D 4812 NB 0 -30°C (-22°F) D 4812 NB Impact Resistance (Puncture), Energy @ Max. Load 2.5 mm (0.100-in). Thick D 3763 28 J (21 ft-lbf) Plaques, @ 23°C (73°F) 2.4512 NB 31 (30 ft-lbf) Plaques, @ 23°C (73°F) 3.763 33 J (24 ft-lbf) Plaques, @ 23°C (73°F) D 3763 50 J (37 ft-lbf) Plaques, @ 23°C (73°F) J.25 mm (0.125-in). Thick D 3763 50 J (37 ft-lbf) Plaques @ 23°C (73°F) J.24 ft-lbf) Plaques @ 23°C (73°F) J.27 g/cm ³ <tr< td=""><td>Tensile Stress @ Break</td><td>D 638</td><td></td></tr<> | Tensile Stress @ Break | D 638 | | | | |
| Imputing of the second seco | Tensile Stress @ Yield | D 638 | | | | |
| Flexural Modulus D 790 2100 MPa ($3.0 \times 10^{5} \text{ psi}$) Flexural Yield Strength D 790 70 MPa (10200 psi) Rockwell Hardness, R Scale D 785 106 Izod Impact Strength, Notched D 256 101 J/m (1.9 ft-lbf/in.) $@ - 40^{\circ}C (-40^{\circ}F)$ D 256 37 J/m (0.7 ft-lbf/in.) Impact Strength, Unnotched ⁹ 0 256 (-(40^{\circ}F)) D 4812 $@ - 30^{\circ}C (-22^{\circ}F)$ D 4812 NB 0 $@ - 40^{\circ}C (-40^{\circ}F)$ D 4812 NB 0 Impact Resistance (Puncture), Energy @ Max. Load 2.5 rmm (0.100-in.) Thick D 3763 28 J (21 ft-lbf) Plaques, @ -40^{\circ}C (-40^{\circ}F) 3.763 33 J (24 ft-lbf) Plaques, @ -40^{\circ}C (-40^{\circ}F) 3.2-rmm (0.102-in.) Thick D 3763 50 J (37 ft-lbf) Plaques, @ -40^{\circ}C (-40^{\circ}F) 3.2-rmm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques, @ -40^{\circ}C (-40^{\circ}F) 3.2-rmm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques, @ -40^{\circ}C (-40^{\circ}F) Machanical Properties (Injection Molded), ISO Method 1.2.7 g/cm ³ Machanical Properties (Injection Molded), ISO Method< | Elongation @ Break | D 638 | 130 % | | | |
| Flexural Yield Strength D 790 70 MPa (10200 ps) Rockwell Hardness, R Scale D 785 106 Izod Impact Strength, Notched 0 0 @ -40°C (-40°F) D 256 37 J/m (0.7 ft-lbf/in.) Impact Strength, Notched [®] 0 37 J/m (0.7 ft-lbf/in.) @ -30°C (-40°F) D 4812 NB @ -30°C (-22°F) D 4812 NB @ -40°C (-40°F) D 4812 NB Impact Resistance (Puncture), Energy @ Max. Load 2.5-mm (0.100-in.) Thick D 3763 2.5-mm (0.100-in.) Thick D 3763 28 J (21 ft-lbf) Plaques, @ 29°C (73°F) 2.4 Strength. NB 2.5-mm (0.125-in.) Thick D 3763 33 J (24 ft-lbf) Plaques @ 23°C (73°F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ 23°C (73°F) D 3763 50 J (37 ft-lbf) Plaques (0.125-in.) Thick D 3763 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques (0.125-in.) Thick D 3763 Plaques @ 23°C (73°F) Z D 3763 50 J (37 ft-lbf) Plaqu | Tensile Modulus | D 638 | | | | |
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| Instant information (1) Bubble (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) | Flexural Yield Strength | D 790 | | | | |
| $ \begin{array}{c c c c c c c c c c c c c c c c c c c $ | | D 785 | 106 | | | |
| @ -40°C (-44°F) D 256 37 J/m (0.7 ft-lbf/in.) Impact Strength, Unnotched ⁰ NB NB @ -20°C (-42°F) D 4812 NB @ -30°C (-22°F) D 4812 NB Impact Resistance (Puncture), Energy @ Max. Load 2.5-mm (0.100-in.) Thick D 3763 28 J (21 ft-lbf) Plaques, @ 23°C (73°F) 2.5-mm (0.100-in.) Thick D 3763 41 J (30 ft-lbf) Plaques, @ -40°C (-40°F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques, @ -40°C (-40°F) ISO 1183, Method 1.2.7 g/cm ³ Mechanical Properties (Injection Molded), ISO Method Ensite Stress @ Break ISO 527 Tensile Stress @ Trield ISO 527 28 MPa Tensile Stress @ Trield ISO 527 100 % Tensile Modulus ISO 178 2000 MPa Flexural Modulus ISO 178 2000 MPa Flexural Modulus ISO 180 4.2 kl/m ² @ -20°C ISO 180 4.2 kl/m ² @ -20°C ISO 180 NB kl/m ² @ -20°C ISO 180 NB kl/m ² @ | | | | | | |
| Impact Strength, Unnotched ^a NB (m) - 20°C (-40°F) D 4812 NB (m) - 30°C (-22°F) D 4812 NB (m) - 40°C (-40°F) D 4812 NB Impact Resistance (Puncture), Energy @ Max. Load 2.5-mm (0.100-in.) Thick D 3763 28 J (21 ft-lbf) Plaques, @ 23°C (73°F) 2.5-mm (0.100-in.) Thick D 3763 41 J (30 ft-lbf) Plaques, @ 23°C (73°F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ 23°C (73°F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ 23°C (73°F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ 40°C (-40°F) Matcr Absorption, 24 h immersion ISO 62 0.13 % Tensile Stress @ Preak ISO 527 28 MPa Tensile Stress @ Preak ISO 527 Mater Absorption, 24 h immersion ISO 527 100 % Tensile Modulus ISO 527 100 % Tensile Modulus ISO 527 100 MPa Flexural Yield Strength ISO 178 2000 MPa Flexural Yield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2030-2 109 Izod | | | | | | |
| $@ -20^{\circ}C(-4^{\circ}F)$ D 4812 NB $@ 23^{\circ}C(73^{\circ}F)$ D 4812 NB $@ -40^{\circ}C(-42^{\circ}F)$ D 4812 NB $@ -40^{\circ}C(-42^{\circ}F)$ D 4812 NB Impact Resistance (Puncture), Energy @ Max. Load 2.5-mm (0.100-in.) Thick D 3763 28 J (21 ft-lbf) Plaques, @ 23^{\circ}C(73^{\circ}F) 3.2-mm (0.125-in.) Thick D 3763 33 J (24 ft-lbf) Plaques @ 23^{\circ}C(73^{\circ}F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ 23^{\circ}C(73^{\circ}F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ -40^{\circ}C (-40^{\circ}F) Mechanical Properties (Injection Molded), ISO Method | | D 256 | 37 J/m (0.7 ft·lbf/in.) | | | |
| © 129°C (73°F) D 4812 NB @ -30°C (-22°F) D 4812 NB Impact Resistance (Puncture), Energy @ Max, Load 2.5-mm (0.100-in.) Thick D 3763 28 J (21 ft-lbf) Plaques, @ 23°C (73°F) 2.5-mm (0.100-in.) Thick D 3763 41 J (30 ft-lbf) Plaques, @ -40°C (-40°F) 3.2-mm (0.125-in.) Thick D 3763 33 J (24 ft-lbf) Plaques @ 23°C (73°F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ -40°C (-40°F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ -40°C (-40°F) Mechanical Properties (Injection Molded), ISO Method 1.2.7 g/cm ³ Water Absorption, 24 h immersion ISO 62 0.13 % 1.2.7 g/cm ³ Water Absorption, 24 h immersion ISO 527 28 MPa 1.2.7 g/cm ³ Tensile Stress @ Preak ISO 527 100 % 1.2.7 g/cm ³ Tensile Modulus ISO 527 100 % 1.2.7 g/cm ³ Tensile Stress @ Vield ISO 527 100 % 1.2.7 g/cm ³ Tensile Modulus ISO 178 68 MPa Rckuell Hardness, R Scale ISO 180 Flexural | | | | | | |
| B = 10 (-22°F) D 4812 NB @ -40°C (-40°F) D 4812 NB Impact Resistance (Puncture), Energy @ Max. Load 2.5-mm (0.100-in.) Thick D 3763 28 J (21 ft-lbf) Plaques, @ 23°C (73°F) D 3763 41 J (30 ft-lbf) 2.5-mm (0.102-in.) Thick D 3763 41 J (30 ft-lbf) Plaques, @ -40°C (-40°F) 3.3 J (24 ft-lbf) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ -40°C (-40°F) Mechanical Properties (Injection Molded), ISO Method | | | | | | |
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| Impact Resistance (Puncture), Energy @ Max. Load 2.5-mm (0.100-in.) Thick D 3763 28 J (21 ft-lbf) Plaques, @ 23°C (73°F) 2.5-mm (0.100-in.) Thick D 3763 41 J (30 ft-lbf) Plaques, @ -40°C (-40°F) 3.3-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ 23°C (73°F) 3.3 J (24 ft-lbf) Plaques @ -40°C (-40°F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ -40°C (-40°F) 3.7 Matchanical Properties (Injection Molded), ISO Method 1.27 g/cm ³ Water Absorption, 24 h immersion ISO 527 28 MPa 1.27 g/cm ³ Tensile Stress @ Break ISO 527 20 MPa 1.27 g/cm ³ Tensile Stress @ Yield ISO 527 100 % 1.27 g/cm ³ Tensile Stress @ Yield ISO 527 100 % 1.27 g/cm ³ Tensile Modulus ISO 527 100 % 1.27 g/cm ³ Tensile Modulus ISO 178 2000 MPa 1.27 g/cm ³ Flexural Yield Strength ISO 178 68 MPa 1.25 kt/m ² Rockwell Hardness, R Scale ISO 180 6.2 kl/m ² 0.40°C | | | | | | |
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| 2.5-mm (0.100-in.) Thick D 3763 41 J (30 ft·lbf) Plaques, @ -40°C (-40°F) 3.3-mm (0.125-in.) Thick D 3763 33 J (24 ft·lbf) Plaques @ 23°C (73°F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft·lbf) Plaques @ -40°C (-40°F) | | D 3763 | 20) (21 101) | | | |
| Plaques, @. 40°C (-40°F) 3.2-mm (0.125-in.) Thick D 3763 33 J (24 ft-lbf) Plaques @. 23°C (73°F) 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @40°C (-40°F) ISO 1183, Method D 1.27 g/cm ³ Mechanical Properties (Injection Molded), ISO Method D Density ISO 1183, Method D 1.27 g/cm ³ Water Absorption, 24 h immersion ISO 62 0.13 % Tensile Stress @ Break ISO 527 28 MPa Tensile Modulus ISO 527 50 MPa Elongation @ Break ISO 527 100 % Tensile Modulus ISO 178 2000 MPa Flexural Modulus ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch @ 23°C @ -40°C ISO 180 6.2 kJ/m ² @ -40°C ISO 180 NB kJ/m ² @ -20°C ISO 180 NB kJ/m ² <td< td=""><td></td><td>D 3763</td><td>41 J (30 ft·lbf)</td></td<> | | D 3763 | 41 J (30 ft·lbf) | | | |
| 3.2-mm (0.125-in.) Thick D 3763 33 J (24 ft·lbf) Plaques @ 23°C (73°F) 3.3-mm (0.125-in.) Thick D 3763 50 J (37 ft·lbf) Plaques @ -40°C (-40°F) ISO 1183, Method D 1.27 g/cm³ Mechanical Properties (Injection Molded), ISO Method Density ISO 1183, Method D 1.27 g/cm³ Water Absorption, 24 h immersion ISO 62 0.13 % 1 Tensile Stress @ Break ISO 527 28 MPa Tensile Stress @ Yield ISO 527 50 MPa Elongation @ Break ISO 527 2100 MPa Flexural Modulus ISO 178 2000 MPa Flexural Vield Strength ISO 178 2000 MPa Flexural Vield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch 23°C ISO 180 6.2 kJ/m² @ -40°C ISO 180 NB kJ/m² 9.23°C ISO 180 NB kJ/m² @ -20°C ISO 180 NB kJ/m² 9.30°C ISO 180 NB kJ/m² @ -20°C ISO 180 NB kJ/m² 9.30°C ISO 180 NB kJ/m² | | 5705 | | | | |
| 3.2-mm (0.125-in.) Thick D 3763 50 J (37 ft-lbf) Plaques @ -40°C (-40°F) Impact Adverted of the second | | D 3763 | 33 J (24 ft·lbf) | | | |
| Plaques @ -40°C (-40°F) Density ISO 1183, Method Density ISO 1183, Method D 1.27 g/cm ³ Water Absorption, 24 h immersion ISO 527 28 MPa Tensile Stress @ Break ISO 527 28 MPa Tensile Stress @ Yield ISO 527 200 MPa Elongation @ Break ISO 527 2100 MPa Flexural Modulus ISO 527 2100 MPa Flexural Modulus ISO 178 2000 MPa Flexural Yield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch 0 4.2 k/m ² @ -40°C ISO 180 6.2 kJ/m ² 0 @ -40°C ISO 180 NB kJ/m ² 0 @ -20°C ISO 180 NB kJ/m ² 0 @ -30°C ISO 180 NB kJ/m ² 0 @ -30°C ISO 180 NB kJ/m ² 0 @ -30°C ISO 180 NB kJ/m ² 0 @ -40°C ISO 180 NB kJ/m ² 0 <td></td> <td></td> <td></td> | | | | | | |
| Mechanical Properties (Injection Molded), ISO Method Density ISO 1183, Method D 1.27 g/cm ³ Water Absorption, 24 h immersion ISO 62 0.13 % Tensile Stress @ Break ISO 527 28 MPa Tensile Stress @ Yield ISO 527 50 MPa Elongation @ Break ISO 527 2100 % Tensile Modulus ISO 527 2100 MPa Flexural Modulus ISO 527 2000 MPa Flexural Modulus ISO 178 2000 MPa Flexural Yield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch 6.2 kJ/m ² @ -40°C ISO 180 6.2 kJ/m ² Impact Strength, Unnotched, Type 1 Specimen ^f 0 -20°C @ -20°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -40°C ISO 180 NB kJ/m ² @ -40°C ISO 160-2 35 J .2.5-mm Thick Plaques @ 2 | | D 3763 | 50 J (37 ft·lbf) | | | |
| Density ISO 1183, Method D 1.27 g/cm ³ Water Absorption, 24 h immersion ISO 62 0.13 % Tensile Stress @ Break ISO 527 28 MPa Tensile Stress @ Yield ISO 527 50 MPa Elongation @ Break ISO 527 100 % Tensile Modulus ISO 527 100 % Tensile Modulus ISO 527 2100 MPa Flexural Modulus ISO 178 2000 MPa Flexural Yield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch 0 23°C ISO 180 @ -40°C ISO 180 6.2 kJ/m ² @ -40°C ISO 180 NB kJ/m ² @ -20°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -40°C ISO 180 NB kJ/m ² @ -40°C ISO 160-2 35 J .2.5-mm Thick Plaques @ 23°C </td <td></td> <td>Maldad) ISO Mathad</td> <td></td> | | Maldad) ISO Mathad | | | | |
| Water Absorption, 24 h immersion ISO 62 0.13 % Tensile Stress @ Break ISO 527 28 MPa Tensile Stress @ Yield ISO 527 50 MPa Elongation @ Break ISO 527 100 % Tensile Modulus ISO 527 2100 MPa Flexural Modulus ISO 527 2100 MPa Flexural Modulus ISO 178 2000 MPa Flexural Yield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch 62 23°C ISO 180 @ -40°C ISO 180 4.2 kJ/m ² Impact Strength, Unnotched, Type 1 Specimen ^f 0 -20°C @ -20°C ISO 180 NB kJ/m ² @ 23°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -40°C ISO 180 NB kJ/m ² @ -40°C ISO 180 NB kJ/m ² Impact Resistance (Puncture), Energy @ Max. Load ^h 2.5-mm Thick Plaques @ 23°C | | | $1.27 a/cm^3$ | | | |
| Tensile Stress @ Break ISO 527 28 MPa Tensile Stress @ Yield ISO 527 50 MPa Elongation @ Break ISO 527 100 % Tensile Modulus ISO 527 2100 MPa Flexural Modulus ISO 178 2000 MPa Flexural Yield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch 0 6.2 kJ/m ² @ -40°C ISO 180 6.2 kJ/m ² @ -40°C ISO 180 4.2 kJ/m ² Impact Strength, Unnotched, Type 1 Specimenf 0 23°C @ -20°C ISO 180 NB kJ/m ² @ -20°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² Impact Resistance (Puncture), Energy @ Max. Load ^h 2.5-mm Thick Plaques @ 23°C ISO 6603-2 2.5-mm Thick Plaques @ 23°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 3.2-mm Thick Plaques @ 23°C ISO 6603-2 36 J J Thermal Properties Deflection Tempe | | | | | | |
| Tensile Stress @ Yield 150 527 50 MPa Elongation @ Break 150 527 100 % Tensile Modulus 1S0 527 2100 MPa Flexural Modulus 1S0 178 2000 MPa Flexural Yield Strength 1S0 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch @ 23°C ISO 180 6.2 kJ/m² @ -40°C ISO 180 4.2 kJ/m² Impact Strength, Unnotched, Type 1 Specimenf @ 23°C ISO 180 NB kJ/m² @ -20°C ISO 180 NB kJ/m² @ -30°C ISO 180 NB kJ/m² @ -30°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² Impact Resistance (Puncture), Energy @ Max. Loadh 2.5-mm Thick Plaques @ 23°C ISO 6603-2 35 J 2.5-mm Thick Plaques @ 23°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 36 J Thermal Properties ISO 6603-2 36 J Imact Adv J 3.2-mm Thick Plaques @ -40°C ISO 6603-2 36 J Thermal Properties ISO 6603-2 36 J <td></td> <td></td> <td></td> | | | | | | |
| Elongation @ Break ISO 527 100 % Tensile Modulus ISO 527 2100 MPa Flexural Modulus ISO 178 2000 MPa Flexural Yield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch @ 23°C ISO 180 6.2 kJ/m² @ -40°C ISO 180 4.2 kJ/m² Impact Strength, Unnotched, Type 1 Specimenf @ 23°C ISO 180 NB kJ/m² @ 23°C ISO 180 NB kJ/m² @ -20°C ISO 180 NB kJ/m² @ -30°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² Impact Resistance (Puncture), Energy @ Max. Loadh Z.5-mm Thick Plaques @ 23°C ISO 6603-2 35 J 2.5-mm Thick Plaques @ 23°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 36 J Thermal Properties Energy Deflection Temperature @ 0.455 MPa (66 psi) | | | | | | |
| Tensile Modulus ISO 527 2100 MPa Flexural Modulus ISO 178 2000 MPa Flexural Yield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch 0 23°C 0 -40°C ISO 180 6.2 kJ/m² 0 -40°C ISO 180 4.2 kJ/m² Impact Strength, Unnotched, Type 1 Specimenf 0 -20°C ISO 180 0 -20°C ISO 180 NB kJ/m² 0 -20°C ISO 180 NB kJ/m² 0 -30°C ISO 180 NB kJ/m² 0 -30°C ISO 180 NB kJ/m² 0 -40°C ISO 180 NB kJ/m² 1mpact Resistance (Puncture), Energy @ Max. Load ^h 2.5-mm Thick Plaques @ 23°C ISO 6603-2 40 J 2.5-mm Thick Plaques @ 23°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 36 J Thermal Properties Deflection Temperature | | | | | | |
| Flexural Modulus ISO 178 2000 MPa Flexural Yield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch 0 6.2 kJ/m ² @ -40°C ISO 180 6.2 kJ/m ² Impact Strength, Unnotched, Type 1 Specimenf 0 -20°C @ -20°C ISO 180 NB kJ/m ² @ -20°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -40°C ISO 180 NB kJ/m ² Impact Resistance (Puncture), Energy @ Max. Load ^h 2.5-mm Thick Plaques @ 23°C ISO 6603-2 2.5-mm Thick Plaques @ -40°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 36 J Thermal Properties Deflection Temperature 0 0.455 MPa (66 psi) D 648 70 °C (158 °F) 0 | | | | | | |
| Flexural Yield Strength ISO 178 68 MPa Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch @ 23°C ISO 180 G.2 kJ/m² Impact Strength, Unnotched, Type 1 Specimen ^f @ -40°C ISO 180 A.2 kJ/m² Impact Strength, Unnotched, Type 1 Specimen ^f @ -20°C ISO 180 NB kJ/m² @ -30°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² Impact Resistance (Puncture), Energy @ Max. Load^h 2.5-mm Thick Plaques @ 23°C ISO 6603-2 3.2-mm Thick Plaques @ 23°C ISO 6603-2 3.2-mm Thick Plaques @ 23°C ISO 6603-2 3.2-mm Thick Plaques @ -40°C ISO 6603-2 J Deflection Temperature @ 0.455 MPa (66 psi) D 648 70 °C (158 °F) | | | | | | |
| Notice Iso 170 Rockwell Hardness, R Scale ISO 2039-2 109 Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch 0 6.2 kJ/m² @ -40°C ISO 180 6.2 kJ/m² Impact Strength, Unnotched, Type 1 Specimen ^f 0 4.2 kJ/m² @ -20°C ISO 180 NB kJ/m² @ 23°C ISO 180 NB kJ/m² @ 23°C ISO 180 NB kJ/m² @ -20°C ISO 180 NB kJ/m² @ -30°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² Impact Resistance (Puncture), Energy @ Max. Load ^h 2.5-mm Thick Plaques @ 23°C ISO 6603-2 35 J 2.5-mm Thick Plaques @ -40°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 36 J Thermal Properties ISO 6603-2 36 J 36 J Deflection Temperature @ 0.455 MPa (66 psi) D 648 70 °C (158 °F) | | 150 178 | 2000 111 0 | | | |
| Izod Impact Strength, Notched, Type 1 Specimen, Type A Notch @ 23°C ISO 180 6.2 kJ/m ² @ -40°C ISO 180 4.2 kJ/m ² Impact Strength, Unnotched, Type 1 Specimen ^f @ -20°C ISO 180 NB kJ/m² @ 23°C ISO 180 NB kJ/m² @ 23°C ISO 180 NB kJ/m² @ -30°C ISO 180 NB kJ/m² @ -40°C ISO 6603-2 40 J 2.5-mm Thick Plaques @ 23°C ISO 6603-2 3.2-mm Thick Plaques @ 23°C ISO 6603-2 36 J Thermal Properties Deflection Temperature @ 0.455 MPa (66 psi) D 648 70 °C (158 °F) @ 0.455 MPa (66 psi) | Llasurum Vialal Chuanatha | 100 170 | 68 MPa | | | |
| ⓐ 23°C ⓐ -40°C ISO 180 6.2 kJ/m ² ⓐ -40°C ISO 180 4.2 kJ/m ² Impact Strength, Unnotched, Type 1 Specimen ^f ⓐ -20°C ISO 180 NB kJ/m ² @ 23°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -40°C ISO 180 NB kJ/m ² [Impact Resistance (Puncture), Energy @ Max. Load ^h 2.5-mm Thick Plaques @ 23°C ISO 6603-2 40 J 2.5-mm Thick Plaques @ -40°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 44 J 3.2-mm Thick Plaques @ -40°C ISO 6603-2 36 J Thermal Properties Deflection Temperature @ 0.455 MPa (66 psi) D 648 70 °C (158 °F) | | | | | | |
| @ -40°C ISO 180 4.2 kJ/m ² Impact Strength, Unnotched, Type 1 Specimen ^f | Rockwell Hardness, R Scale | ISO 2039-2 | | | | |
| Impact Strength, Unnotched, Type 1 Specimen ^f @ -20°C ISO 180 NB kJ/m ² @ 23°C ISO 180 NB kJ/m ² @ -30°C ISO 180 NB kJ/m ² @ -40°C ISO 180 NB kJ/m ² Impact Resistance (Puncture), Energy @ Max. Load ^h NB kJ/m ² 2.5-mm Thick Plaques @ 23°C ISO 6603-2 40 J 2.5-mm Thick Plaques @ -40°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 44 J 3.2-mm Thick Plaques @ -40°C ISO 6603-2 36 J Thermal Properties Deflection Temperature @ 0.455 MPa (66 psi) D 648 70 °C (158 °F) 14 0.0 (117 0.0) | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type | ISO 2039-2 e 1 Specimen, Type A Notch | 109 | | | |
| @ -20°C ISO 180 NB kJ/m² @ 23°C ISO 180 NB kJ/m² @ -30°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² Impact Resistance (Puncture), Energy @ Max. Load ^h NB kJ/m² 2.5-mm Thick Plaques @ 23°C ISO 6603-2 40 J 2.5-mm Thick Plaques @ -40°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 36 J Thermal Properties Deflection Temperature 0 0.455 MPa (66 psi) D 648 | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type @ 23°C | ISO 2039-2 e 1 Specimen, Type A Notch ISO 180 | 109 6.2 kJ/m ² | | | |
| @ 23°C ISO 180 NB kJ/m² @ -30°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² Impact Resistance (Puncture), Energy @ Max. Loadh NB kJ/m² 2.5-mm Thick Plaques @ 23°C ISO 6603-2 40 J 2.5-mm Thick Plaques @ -40°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 36 J Thermal Properties Deflection Temperature 0.455 MPa (66 psi) D 648 | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type @ 23°C @ -40°C | ISO 2039-2 2 1 Specimen, Type A Notch ISO 180 ISO 180 | 109 6.2 kJ/m ² | | | |
| @ -30°C ISO 180 NB kJ/m² @ -40°C ISO 180 NB kJ/m² Impact Resistance (Puncture), Energy @ Max. Load ^h 40 J 2.5-mm Thick Plaques @ 23°C ISO 6603-2 40 J 2.5-mm Thick Plaques @ -40°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 44 J 3.2-mm Thick Plaques @ -40°C ISO 6603-2 36 J Thermal Properties Deflection Temperature 0.455 MPa (66 psi) D 648 | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type @ 23°C @ -40°C Impact Strength, Unnotched, Type 1 | ISO 2039-2 e 1 Specimen, Type A Notch ISO 180 ISO 180 Specimen ^f | 109 6.2 kJ/m ² 4.2 kJ/m ² | | | |
| @ -40°C ISO 180 NB kJ/m ² Impact Resistance (Puncture), Energy @ Max. Load ^h 40 J 2.5-mm Thick Plaques @ 23°C ISO 6603-2 40 J 2.5-mm Thick Plaques @ -40°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 44 J 3.2-mm Thick Plaques @ -40°C ISO 6603-2 36 J Thermal Properties Deflection Temperature 0.455 MPa (66 psi) D 648 70 °C (158 °F) C 100 (117 0F) 100 (117 0F) | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type @ 23°C @ -40°C Impact Strength, Unnotched, Type 1 @ -20°C | ISO 2039-2 e 1 Specimen, Type A Notch ISO 180 ISO 180 Specimen ^f ISO 180 | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² | | | |
| Impact Resistance (Puncture), Energy @ Max. Loadh2.5-mm Thick Plaques @ 23°CISO 6603-240 J2.5-mm Thick Plaques @ -40°CISO 6603-235 J3.2-mm Thick Plaques @ 23°CISO 6603-244 J3.2-mm Thick Plaques @ -40°CISO 6603-236 JThermal PropertiesDeflection Temperature @ 0.455 MPa (66 psi)D 64870 °C (158 °F) | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type @ 23°C @ -40°C Impact Strength, Unnotched, Type 1 @ -20°C @ 23°C | ISO 2039-2 e 1 Specimen, Type A Notch ISO 180 ISO 180 Specimen ^f ISO 180 ISO 180 | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² NB kJ/m ² | | | |
| 2.5-mm Thick Plaques @ 23°C ISO 6603-2 40 J 2.5-mm Thick Plaques @ -40°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 44 J 3.2-mm Thick Plaques @ -40°C ISO 6603-2 36 J Thermal Properties Deflection Temperature 0.455 MPa (66 psi) D 648 70 °C (158 °F) 0.455 MPa (56 psi) D 648 | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type @ 23°C @ -40°C Impact Strength, Unnotched, Type 1 @ -20°C @ 23°C @ -30°C | ISO 2039-2 1 Specimen, Type A Notch ISO 180 ISO 180 Specimen ^f ISO 180 ISO 180 ISO 180 ISO 180 | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² | | | |
| 2.5-mm Thick Plaques @ -40°C ISO 6603-2 35 J 3.2-mm Thick Plaques @ 23°C ISO 6603-2 44 J 3.2-mm Thick Plaques @ -40°C ISO 6603-2 36 J Thermal Properties Deflection Temperature 0.455 MPa (66 psi) D 648 70 °C (158 °F) 0.455 MPa (66 psi) D 648 70 °C (158 °F) 100 (117 °C) | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type @ 23°C @ -40°C Impact Strength, Unnotched, Type 1 @ -20°C @ 23°C @ -30°C @ -40°C | ISO 2039-2 2 1 Specimen, Type A Notch ISO 180 ISO 180 Specimen ^f ISO 180 ISO 180 ISO 180 ISO 180 | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² | | | |
| 3.2-mm Thick Plaques @ 23°C ISO 6603-2 44 J 3.2-mm Thick Plaques @ -40°C ISO 6603-2 36 J Thermal Properties Deflection Temperature 0.455 MPa (66 psi) D 648 70 °C (158 °F) 0.147 0F) | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type @ 23°C @ -40°C Impact Strength, Unnotched, Type 1 @ -20°C @ 23°C @ -30°C @ -40°C Impact Resistance (Puncture), Energy | ISO 2039-2 2 1 Specimen, Type A Notch ISO 180 Specimen ^f ISO 180 ISO 180 ISO 180 ISO 180 ISO 180 V @ Max. Load ^h | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² | | | |
| 3.2-mm Thick Plaques @ -40°C ISO 6603-2 36 J Thermal Properties Deflection Temperature 70 °C (158 °F) @ 0.455 MPa (66 psi) D 648 70 °C (158 °F) | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type @ 23°C @ -40°C Impact Strength, Unnotched, Type 1 @ -20°C @ 23°C @ -30°C @ -40°C Impact Resistance (Puncture), Energy 2.5-mm Thick Plaques @ 23°C | ISO 2039-2 1 Specimen, Type A Notch ISO 180 ISO 180 Specimen ^f ISO 180 ISO 180 ISO 180 ISO 180 ISO 180 ISO 180 JSO 180 JSO 180 JSO 180 JSO 180 | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² 40 J | | | |
| Thermal Properties Deflection Temperature @ 0.455 MPa (66 psi) D 648 70 °C (158 °F) C100 (117 0F) | Rockwell Hardness, R ScaleIzod Impact Strength, Notched, Type@ 23°C@ -40°CImpact Strength, Unnotched, Type 1@ -20°C@ 23°C@ -30°C@ -40°CImpact Resistance (Puncture), Energy2.5-mm Thick Plaques @ 23°C2.5-mm Thick Plaques @ -40°C | ISO 2039-2 2 1 Specimen, Type A Notch ISO 180 Specimen ^f ISO 180 ISO 180 ISO 180 ISO 180 ISO 180 Y @ Max. Load ^h ISO 6603-2 ISO 6603-2 | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² 40 J 35 J | | | |
| @ 0.455 MPa (66 psi) D 648 70 °C (158 °F) | Rockwell Hardness, R Scale Izod Impact Strength, Notched, Type @ 23°C @ -40°C Impact Strength, Unnotched, Type 1 @ -20°C @ 23°C @ -30°C @ -30°C @ -40°C Impact Resistance (Puncture), Energy 2.5-mm Thick Plaques @ 23°C 3.2-mm Thick Plaques @ 23°C | ISO 2039-2 2 1 Specimen, Type A Notch ISO 180 ISO 180 Specimen ^f ISO 180 ISO 6603-2 ISO 6603-2 ISO 6603-2 ISO 6603-2 | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² 40 J 35 J 44 J | | | |
| | Rockwell Hardness, R ScaleIzod Impact Strength, Notched, Type@ 23°C@ -40°CImpact Strength, Unnotched, Type 1@ -20°C@ 23°C@ -30°C@ -40°CImpact Resistance (Puncture), Energy2.5-mm Thick Plaques @ 23°C2.5-mm Thick Plaques @ -40°C3.2-mm Thick Plaques @ 23°C3.2-mm Thick Plaques @ -40°C | ISO 2039-2 2 1 Specimen, Type A Notch ISO 180 ISO 180 Specimen ^f ISO 180 ISO 6603-2 ISO 6603-2 ISO 6603-2 ISO 6603-2 | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² 40 J 35 J 44 J | | | |
| @ 1.82 MPa (264 psi) D 648 64 °C (147 °F) | Rockwell Hardness, R ScaleIzod Impact Strength, Notched, Type@ 23°C@ -40°CImpact Strength, Unnotched, Type 1@ -20°C@ 23°C@ -30°C@ -40°CImpact Resistance (Puncture), Energy2.5-mm Thick Plaques @ 23°C2.5-mm Thick Plaques @ -40°C3.2-mm Thick Plaques @ -40°C3.2-mm Thick Plaques @ -40°C3.2-mm Thick Plaques @ -40°CDeflection Temperature | ISO 2039-2 2 1 Specimen, Type A Notch ISO 180 ISO 180 Specimen ^f ISO 180 ISO 6603-2 ISO 6603-2 ISO 6603-2 ISO 6603-2 | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² 40 J 35 J 44 J 36 J | | | |
| | Rockwell Hardness, R ScaleIzod Impact Strength, Notched, Type@ 23°C@ -40°CImpact Strength, Unnotched, Type 1@ -20°C@ 23°C@ -30°C@ -40°CImpact Resistance (Puncture), Energy2.5-mm Thick Plaques @ 23°C2.5-mm Thick Plaques @ -40°C3.2-mm Thick Plaques @ 23°C3.2-mm Thick Plaques @ -40°C3.2-mm Thick Plaques @ -40°CDeflection Temperature | ISO 2039-2 2 1 Specimen, Type A Notch ISO 180 ISO 180 Specimen ^f ISO 180 ISO 180 ISO 180 ISO 180 ISO 180 ISO 180 So 6603-2 ISO 6603-2 ISO 6603-2 ISO 6603-2 | 109 6.2 kJ/m ² 4.2 kJ/m ² NB kJ/m ² NB kJ/m ² NB kJ/m ² 40 J 35 J 44 J 36 J 70 °C (158 °F) | | | |

| Vicat Softening Temperature | D 1525 | 85 °C (185 °F) |
|--|--------|--|
| Thermal Conductivity | C 177 | 0.21 W/m·K (1.5 Btu∙in./h∙ft ² ·°F) |
| Glass Transition Temperature (T _g) | DSC | 80 °C (176 °F) |
| Specific Heat | | |
| @ 100°C (212°F) | DSC | 1.76 kJ/kg·K (0.42 Btu/lb·°F) |
| @ 150°C (302°F) | DSC | 1.88 kJ/kg·K (0.45 Btu/lb·°F) |
| @ 200°C (392°F) | DSC | 1.97 kJ/kg·K (0.47 Btu/lb·°F) |
| @ 250°C (482°F) | DSC | 2.05 kJ/kg·K (0.49 Btu/lb·°F) |
| @ 60°C (140°F) | DSC | 1.30 kJ/kg·K (0.31 Btu/lb·°F) |
| Coefficient of Linear Thermal | D 696 | 5.1 x 10 ⁻⁵ /°C (mm/mm⋅°C) (2.8 x |
| Expansion ^d | | 10 ⁻⁵ /°F (in./in.·°F)) |
| Typical Processing Conditions | | |
| Mold Temperature | | 16-38 °C (60-100 °F) |
| Processing Melt Temperature | | 249-271 °C (480-520 °F) |
| Drying Time | | 4-6 hrs |
| Drying Temperature | | 65 °C (150 °F) |

^aUnless noted otherwise, all tests are run at 23°C (73°F) and 50% relative humidity.

^bUnless noted otherwise, the test method is ASTM.

^cUnits are in SI or US customary units.

^d-30°C to 40°C (-22°F to 104°F)

^eTest conducted at 38°C (100°F) and 100% relative humidity.

^fNonbreak as defined by ISO 180 with 4-mm specimens.

⁹Nonbreak as defined by ASTM D 4812 with 3.2-mm specimens.

^hTesting based on ISO 6603-2 using a striker diameter of 20 mm, a support and clamp diameter of 40 mm, and a velocity of 4.1 m/s.

ⁱ12.7 mm (0.5 in.) dia. head, 127 mm (5 in.) dia. clamp, 660 mm (26 in.) drop

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