

PALGARD™ TG

Material: Scratch Resistant Polycarbonate Sheet

Updated: 05/14/2018 (MDW)

Notes: The table depicting the typical properties of PALGARD TG sheets appears below. Note that some of the displayed properties are typical to polycarbonate (the material PALGARD TG is made of) while others relate to a typical 3 mm (1/8 in.) thick PALGARD TG sheet.

Conditions, units and values in U.S. Customary units are presented in the table within parentheses. All the results depicted in this table were obtained by following the indicated ASTM method except where another method is indicated by the appearance of this symbol (b).

| Property | Conditions (U.S. Customary) | ASTM Method | Units - SI (U.S. Customary) | Value (U.S. Customary) |
|---|--------------------------------|-------------|---|----------------------------|
| Physical | | | | |
| Density | | D-1505 | g/cm ³ (lb/ft ³) | 1.2 (75) |
| Water Absorption | 24 hr. @ 23°C | D-570 | % | 0.15 |
| Mechanical | | | | |
| Tensile strength at yield | 10 mm/min (0.4 in./min) | D-638 | MPa (psi) | 62 (9,000) |
| Tensile strength at break | 10 mm/min (0.4 in./min) | D-638 | MPa (psi) | 65 (9500) |
| Elongation at yield | 10 mm/min (0.4 in./min) | D-638 | % | 6 |
| Elongation at break | 10 mm/min (0.4 in./min) | D-638 | % | 110 |
| Tensile Modulus of Elasticity | 10 mm/min (0.4 in./min) | D-638 | MPa (psi) | 2,378 (345,000) |
| Flexural Modulus | 1.3 mm/min (0.05 in./min) | D-790 | MPa (psi) | 2,378 (345,000) |
| Flexural Strength at Yield | 1.3 mm/min (0.05 in./min) | D-790 | MPa (psi) | 93 (13,500) |
| Notch Impact Strength Izod | 23°C (73°F) | D-256 | J/m (ft-lbf/in.) | 800 (15) |
| Notch Impact Strength Charpy | 23°C (73°F) | D-256 | J/m (ft-lbf/in) | 800 (15) |
| Impact Falling Weight | 3 mm (0.12 in.) Sheet | ISO-6603/1b | J (ft-lbf) | 158 (117) |
| Rockwell Hardness | | D-785 | R scale / M scale | 125 / 70 |
| Abrasion (Taber Process) | 100 Cycles, CS-10S Wheel, 500g | D-1044 | % Haze | <2.0 |
| Compressive Strength | 1.3 mm/min (.05 in./min) | D-695 | MPa (psi) | 86 (12,500) |
| Compressive Modulus | 1.3 mm/min (.05 in./min) | D-695 | MPa (psi) | 2378 (345,000) |
| Shear strength at Yield | 1.3 mm/min (.05 in./min) | D-732 | MPa (psi) | 41 (6000) |
| Shear strength at Break | 1.3 mm/min (.05 in./min) | D-732 | MPa (psi) | 68 (10,000) |
| Shear Modulus | 1.3 mm/min (.05 in./min) | D-732 | MPa (psi) | 786 (114,000) |
| Thermal | | | | |
| Long Term Service Temperature | | | °C (°F) | -75 to +100 (-175 to +212) |
| Short Term Service Temperature | | | °C (°F) | -75 to +120 (-175 to +250) |
| Heat Deflection Temperature | Load: 1.82 Mpa (264 psi) | D-648 | °C (°F) | 132 (270) |
| Vicat Softening Temperature | Load: 1 kg (2.2 lb) | D-1525 | °C (°F) | 150 (300) |
| Coefficient of Linear Thermal Expansion | | D-696 | 10 ⁻⁵ /°C (10 ⁻⁵ /°F) | 6.5 (3.6) |
| Thermal Conductivity | | C-177 | W/m ² K (Btu-in./hr-ft ² -°F) | 0.21 (1.46) |
| Specific Heat Capacity | | C-351 | kJ/kg°K (Btu/lb°F) | 1.26 (0.31) |
| Optical | | | | |
| Haze | 3 mm (0.12 in.) Clear Sheet | D-1003 | % | <0.5 |
| Light Transmission | 3 mm (0.12 in.) Clear Sheet | D-1003 | % | 89 |
| Refractive Index | Clear Sheet | D-542 | | 1.59 |
| Yellowness Index | 3 mm (0.12 in.) Clear Sheet | D-1925 | | <1 |
| Electrical | | | | |
| Dielectric Constant | 50 Hz | D-150 | | 3 |
| | 1 MHz | D-150 | | 2.9 |
| Dissipation Factor | 50 Hz | D-150 | | 0.9 |
| | 1 MHz | D-150 | | 11 |
| Dielectric Strength Short Time | 500 V/s | D-149 | kV/mm (V/mil) | >30 (>770) |
| Surface Resistance | Ketley | D-257 | Ohm | 5.1x10 ¹⁵ |
| Volume Resistance | Ketley | D-257 | Ohm-cm | 1.3x10 ¹⁷ |