BAY PLASTICS

# DATASHEET

## PETG

PETG is a clear transparent thermoplastic (polyethylene terephthalate glycol) polyester flat sheet that offers excellent strength to weight ratio, outstanding optical clarity, superior chemical resistance, durability, good fire performance and is 100% recyclable. Key benefit is the exceptional ease of workability and thermoformability it offers, particularly at low temperature for fabrication, print and display applications.

PETG is the ideal product for a wide range of sign & display applications including point of sale equipment, signage, illuminated advertising signs, displays and graphic arts and is suitable for protective glazing applications including vending machines, interior safety glazing and office partition screens.

## Applications

- Displays
- Signage
- Illuminated Advertising Signs
- Point of Sale Equipment
- Graphic Arts
- Poster Covers
- Kiosks
- Vending Equipment
- Protective Screens
- Shower Surrounds
- Industrial Trays
- Thermoformed Parts

## Benefits

- Good Impact Strength
- Excellent Thermoforming Properties
- Reduced Process Time
- No Pre-Drying Required
- Optical Clarity
- Chemical Resistance
- Light Transmission
- Durability
- Easily Machined and Fabricated
- Good Fire Performance
- Recyclable

## Typical Properties

| General Properties | Method | Unit | Test Result |
|---|---|---|---|
| **Physical Properties** | | | |
| Density | ISO 1183 | | 1.27g/cm3 |
| Moisture Absorption (24h @ 23°C) | ISO 62-4 | | <0.2% |
| Water Solubility | DIN 53122 | | Insoluble |
| **Mechanical Properties** | | | |
| Tensile Strength at Yield | ISO 527 | | > 50 MPa |
| Tensile Strength at Break | ISO 527 | | > 25 MPa |
| Elastic Modulus | ISO 178 | | > 2100 MPa |
| Notched Izod Impact | ISO 180/1A | | 9 J/m |
| Rockwell Hardness (R-Scale) | - | | 115 |
| **Optical Properties** | | | |
| Refractive Index | ASTM D542 | | 1.570% |
| **Thermal Properties** | | | |
| Vicat Softening Temperature | ISO 306 (B) | | 82°C |
| Thermal Expansion Coefficient | ISO 75-2 | | 0.068mm/m°C |
| Service Temperature Range | - | | -20 to +60°C |
| **Electrical Properties** | | | |
| Dielectric Strength | IEC 60243-1 | | 16kV/mm |
| Surface Resistivity | IEC 60093 | | $10^{16}$ Ω |

## Chemical Resistance

PETG is resistant to many chemicals and atmospheric pollutants. Contact with solvents must be avoided.

## Fabrication

PETG transparent sheet is easy to handle and very suitable for fabrication, heating and vacuum forming particularly at lower temperatures. It has a wide window of processing conditions enabling complex shapes, whilst maintaining good impact strength. Always ensure adequate allowance for thermal expansion.

## Sawing

PETG can be sawn using standard hand tools, circular saws and band saws with carbide-tipped blades for a clean finish. Ensure that the blade is sharp, and the material is clamped to prevent vibration which may result in cracking. PETG is notch sensitive which can adversely affect the mechanical properties of the material.

## Drilling

When drilling PETG it is recommended to use drill bits designed for plastics. To avoid overheating, it's best to use compressed air or wide and highly polished flutes. To prevent vibration, which may result in cracking, it's recommended to clamp the part securely.

## Die Stamping

PETG can be die-cut, with excellent results on thinner sheets. Sharpened steel blades up to 2.5mm can be used. The back board must be correctly aligned for a clean cut, with the blade completely traversing the sheet to avoid notches. Ensure adequate allowance for thermal expansion.

## Bending

PETG is suitable for cold and hot bending techniques. Cold bending is ideal to create simple shapes. It is recommended to heat sheets above 3mm to produce more complex shapes. The best result is obtained by heating the sheet on both sides using an electric heater. When the optimum temperature is reached (+105°C) the sheet can be bent.

## Thermoforming

PETG can be easily thermoformed using general forming techniques including thermoforming, vacuum forming and line bending. PETG does not require pre-drying and forms between 120-160°C.

## Bonding

Bonding PETG is can be achieved using suitable adhesive tape, mechanical fixing or welding. When using adhesives ensure they're chemically compatible with PETG. Adhesive types such as polyurethanes and two-component acrylics give good results.

## Edge Finishing

Following cutting, a good edge finish can be obtained using a suitable polishing paste in conjunction with a medium density Reiter wheel, followed by a soft fabric polishing wheel without paste.

## Printing

PETG can be printed with standard screen and digital printers in conjunction with inks that are suitable for use with thermoplastic co-polyesters. It's recommended to protect the ink from scratches by applying a light coat of clear lacquer. Prior to printing ALWAYS clean the surface with a soft cloth and use ionized air to clear dust.