

# PLAZGAL PETG – PLAZIT- POLYGAL EXTRUDED PETG (Polyethylene Terephthalate Glycol-Modified) SHEETS

## PRODUCT DATASHEET



### DESCRIPTION

PLAZIT-POLYGAL PLAZGAL PETG EXTRUDED SHEETS are produced according to internal ISO standards and are highly cost-effective in a wide range of both indoor and outdoor applications, such as covers, guards, electronics, medical braces, point-of-purchase and graphic displays.

PLAZGAL PETG extruded sheets are durable and tough, have good chemical resistance, high impact strength, clarity and light transmission, and are easily formed, die-cut and printed.

PLAZGAL PETG extruded sheets are available in a range of thicknesses and grades: PLAZGAL PETG non UV protected for internal use only and UV coextruded on 1 or 2 sides upon request (specific thicknesses).

### TYPICAL PROPERTY VALUES

Properties	Method	Units	Value
<b>General</b>			
Density	ISO 1183	g/cm <sup>3</sup>	1.27
Water Absorption	ISO 62 (1)		0.2
Flammability: < 3 mm > 3 mm	UL94	%	94HB, 94V-2
<b>Mechanical</b>			
Tensile Stress at Yield	ISO 527-2	MPa	53
Tensile Stress at Break	ISO 527-2	MPa	26
Elongation at Break	ISO 527-2	%	> 60
Tensile Modulus	ISO 527-2	MPa	2200
Flexural Strength	ISO 178	MPa	70
Flexural Modulus	ISO 178	MPa	2100
Impact Resistance (Charpy unnotched)	ISO 179/1fu	kJ/m <sup>2</sup>	NB
Impact Resistance (Izod notched)	ISO 180/1A	kJ/m <sup>2</sup>	11.5
<b>Optical</b>			
Refractive Index	ASTM D542		1.57
Light Transmission (3 mm transparent sheet)	ASTM D1003	%	90
Haze (3mm transparent sheet)	ASTM D1003	%	< 1
<b>Thermal</b>			
Vicat Softening Temp. 1 kg Load 5 kg Load	ISO 306	°C	83 78
Heat Deflection Temp. 0.45 MPa 1.80 MPa	ISO 75-1	°C	72 68
Coeff. of Linear Thermal Expansion (-30°C - +23 °C)	ASTM D696		7X10 <sup>-5</sup> /°C
Service Temperature Range		°C	-40 - +65

Properties	Method	Units	Value
<b>Electrical</b>			
Dielectric Constant 1kHz 1MHz	ASTM D150		2.6 2.4
Dissipation Factor tan 1kHz 1 MHz	ASTM D150		0.005 0.023
Dielectric Strength (Short Time, 500 V/sec) rate-of-rise	ASTM D149	kV/mm	16.1
Surface Resistivity	ASTM D257	Ohms/square	>10 <sup>16</sup>
Volume Resistivity	ASTM D257	Ohm·cm	>10 <sup>15</sup>

## DIMENSIONS

Thickness, mm	Width, mm	Length, mm
0.5 – 10.0	1000, 1250 and 2050	600 – 6000

Sheets are also available cut to size, according to customer requirements.

## TOLERANCES FOR DIMENSIONS

Sheet Thickness, mm	Thickness, %	Width Tolerances, mm	Length Tolerances, mm	Diagonals Tolerances, mm	Flatness Tolerances
<1.5	± 8	Sheets cut in production: -0.0 /+3.0	Sheets cut in production: -0.0 /+3.0	Sheets cut in production: Length ≤ 4000 mm - ≤ 2 Length ≥ 4000 mm - ≤ 4	Max allowed bowing - 0.5% from linear dimensions.
≥ 1.5, < 2.0	± 4				Max allowed bowing across the width of the sheet - ≤ 5 mm per meter of width.
≥ 2.0, < 10.0	± 3	Sheets cut to size: ± 0.50	Sheets cut to size: ± 0.50	Sheets cut to size: ≤ 0.5	Max allowed bowing along the length of the sheet - ≤ 5 mm per meter of length.

## OPTICAL QUALITY

Maximum number of faults	- Black specks of 0.5 mm in size, with a minimum distance between them of 1 meter. - Air bubbles of 0.3 mm in size, with a minimum distance between them of 1 meter. - "Fish eyes" of 1 mm in size, with a maximum 5 items on an area of 0.5 m <sup>2</sup> .
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## COLORS

PLAZGAL PETG extruded sheets are naturally colorless and clear, however, pigments can be added in order to obtain a wide range of tints and colors, according to customer requirements. The light transmission of PLAZGAL PETG extruded colored sheets varies depending on thickness. For a details, please contact PLAZIT-POLYGAL Technical Support.

## DEFINITIONS

### SHRINKAGE

After heating, PLAZGAL PETG extruded sheets will shrink during the cooling process, the shrinkage is higher in the extrusion direction.

This characteristic of PLAZGAL PETG extruded sheets should be taken into account when planning the final sheet's dimensions.

Sheet Thickness, mm	Standard Grade	
	Shrinkage M.D**, %	Shrinkage T.D**, %
≥ 1.80, < 2.30	6 – 7	0.5
≥ 2.30, < 3.50	5 – 6	0.5
≥ 3.50, < 4.00	3 – 4	0.5
≥ 4.00, < 6.00	2 – 3	0.5
≥ 6.00	2	0.5

\* M.D. – Machine (extrusion) direction

\*\* T.D. – Transverse (perpendicular to extrusion) direction

### UV PROTECTION

PLAZGAL PETG extruded sheets provide excellent weather resistance.

A coextruded UV layer, which is an integral part of the sheet, protects the sheets from degradation from solar ultraviolet radiation (upon request / for specific thicknesses). The effectiveness of this protection has been confirmed by field and laboratory durability testing of Yellowness Index (YI), Light Transmission (LT) and Maintaining Mechanical properties.

For detailed information, please contact Plazit-Polygal Technical Support.

### FIRE TEST PERFORMANCE

PLAZGAL PETG extruded sheets is classified by UL 94 vertical burning classification:

- HB for sheet thickness less than 3 mm
- V-2 for sheet thickness 3 mm or greater

### CHEMICAL RESISTANCE

Plazit-Polygal PLAZGAL PETG sheets can be safely used with most chemical materials and components. The chemical stability depends on many factors such as concentration of the chemical agents, internal stresses and on exposure temperature.

Because of the complexity of chemical compatibility, all materials intended for contact with the PETG sheets should always be tested.

For detailed information, please contact Plazit-Polygal Technical Support.

### ENVIRONMENTAL STRESS CRACKING

Environmental Stress Cracking (ESC) is a result of the combination of stress and chemical exposure. The level of stress needed for ESC is lower than the normal failure mechanical stress of PETG in a chemical-free environment. Stresses can be created during fabrication, forming and also by improper installation.

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## GENERAL GUIDELINES

### STORAGE

PLAZGAL PETG sheets must be stored with their original protective masking in a dry, shady and well ventilated area, with NO EXPOSURE to direct sunlight, wind, dirt or hard objects. Avoid storage in areas with excessive heat or strong solvents.

Sheets should be stored horizontally on their delivery pallets and placed on a soft material (such as cardboard) to prevent damage. Pay attention to avoiding pressure on the unsupported areas.

### PROTECTIVE FILM

Both surfaces of PLAZGAL PETG sheet are protected by a fully recyclable polyethylene (PE) film. Keep this film in position as long as possible and remove immediately after installation. Sharp objects, sharp particles or even small chips can penetrate the protective PE masking and damage the surface, therefore always lay the sheets on a clean smooth surface.

### CLEANING & MAINTENANCE

PLAZGAL PETG extruded sheets are produced in clean-room environment and do not need to be cleaned before use.

PETG sheets will give longer and more effective service life by cleaning by warm soapy water using a mild liquid dish soap. If any dirt remains, gently wipe off with a soft cloth.

- A 50:50 solution of IPA and water also will work well.
- Sponges, squeegees, brushes or sharp instruments should not be used for cleaning sheets as they can damage the protective UV coating and / or causes scratches in the sheet surface.

### ENVIRONMENTAL ADVANTAGES

PLAZGAL PETG sheets are environmental friendly. The sheets and their polyethylene protective layers are fully recyclable. They do not contain any toxic materials, which may cause environmental damage or health risks, and they do not release pollutant substances into the environment during manufacture.

PLAZGAL PETG sheets can be used for energy recovery and mechanical recycling. PLAZGAL scrap is not classified as hazardous waste.

### DRYING

- Before the production of PLAZGAL PETG sheets, drying of the PETG virgin material should be carried out for about 6 hours at a temperature of 60 °C.
  - Do not dry the sheets before thermoforming.
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## RE-WORKING

### - **Handling:**

PLAZGAL PETG sheets can be cut, sawn, drilled, milled and bent easily using standard workshop equipment for wood or metal. However, it is always recommended to use specific tools specially designed for plastics.

Machining, Assembling, Forming, Glazing and Signage Installation recommendations can be refer by PLAZIT-POLYGAL Technical Support.

### - **Cold bending:**

Cold bending of PLAZGAL PETG sheets can be used to produce simple shapes. The maximum amount of bend will depend on sheet thickness and rate of deflection. Cold bending sheet more than 2.5 mm will likely cause high stress levels, which may lead to part failure. When cold bending, use the general recommendation of radius equals 100 x thickness of sheet.

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DISCLAIMER: The data in this advertisement are provided in good faith and constitute general information without commitment and no warranty is given or implied. Our plastics products are a combustible thermoplastic that complies with various and national international standards, as customary in each country. Avoid exposure to excessive heat or aromatic cleaning solvents. Normal fire precautions should be taken to protect against combustion.

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