

# Xtend XT - PLAZIT-POLYGAL EXTRUDED ACRYLIC RECYCLED SHEETS

## PRODUCT DATASHEET



### DESCRIPTION

PLAZIT-POLYGAL Xtend XT SHEETS are produced from own recycled PMMA according to the ISO 7823-2:2003 standard. The sheets can be used both indoor and outdoor for a wide variety of domestic and industrial applications.

Xtend XT is available in range of thicknesses and clear color.

The complete range offers transparency, clarity, weathering and ageing resistance and can be easily machined or thermoformed by standard techniques.

### TYPICAL PROPERTY VALUES

Properties	Method	Units	Xtend XT
<b>General</b>			
Density	ISO 1183	g/cm <sup>3</sup>	1.19
Water Absorption	ISO 62 (1)	%	0.3
<b>Mechanical</b>			
Tensile Strength	ISO 527-2	MPa	72
Elongation at break	ISO 527-2	%	4
Tensile Modulus	ISO 527-2	MPa	3300
Flexural Strength	ISO 178	MPa	106
Flexural Modulus	ISO 178	MPa	3350
Compressive Strength	ISO 604	MPa	117
Rockwell Hardness	M scale		95
Impact Resistance (Charpy unnotched)	ISO 179/1fu	kJ/m <sup>2</sup>	15
Impact Resistance (Charpy notched)	ISO 179/1eA	kJ/m <sup>2</sup>	2
Impact Resistance (Izod notched)	ISO 180/1A	kJ/m <sup>2</sup>	1.5
<b>Optical</b>			
Refractive Index	ISO 489		1.49
Light Transmission (3mm transparent sheet)	ASTM D1003	%	92
Haze (3mm transparent sheet)	ASTM D1003	%	< 1
<b>Thermal</b>			
Vicat Softening Temp.(50N)	ISO 306	°C	105
Heat Deflection Temp. (1.82 MPa)	ISO 75-1	°C	95
Coeff. of Linear Thermal Expansion (0-500C)	ISO 11359	µm/mOC	65
Thermal Conductivity	ASTM C177	W/mK	0.19
Maximum Continuous Service Temp.		°C	70
Maximum Short Time Service Temp.		°C	90
Minimum Temp.		°C	-40
<b>Electrical</b>			
Dielectric Strength	DIN 53481	kV/mm	20-25
Dielectric Constant (50Hz)	DIN 53483		3.7
Dissipation Factor tanδ (50Hz)	DIN 53483		0.04
Surface Resistivity	IEC 60093	Ohm	>10 <sup>14</sup>
Volume Resistivity	IEC 60093	Ohm.cm	>10 <sup>15</sup>

## DIMENSIONS

Thickness, mm	Width, mm	Length, mm
2.0 – 6.0	1000, 1220 and 2050	600 – 6000

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

## TOLERANCES FOR DIMENSIONS

Sheet Thickness, mm	Thickness Tolerances, %	Width Tolerances, mm	Length Tolerances, mm	Diagonals Tolerances, mm	Flatness Tolerances
≥ 2.0, < 6.0	± 3	Sheets cut in production: -0.0 /+3.0  Sheets cut to size: ± 0.50	Sheets cut in production: -0.0 /+3.0  Sheets cut to size: ± 0.50	Sheets cut in production: Length ≤ 4000 mm - ≤ 2 Length ≥ 4000 mm - ≤ 4  Sheets cut to size: ≤ 0.5	Max. allowed bowing - 0.5% from linear dimensions. Max. allowed bowing across the width of the sheet - ≤ 5 mm per meter of width. Max. allowed bowing along the length of the sheet - ≤ 5 mm per meter of length.

## OPTICAL QUALITY

Due to the increased use of recycled material Xtend XT sheets will not be able to conform with ISO standards regarding black spots and other inclusions.

For more information, please contact PLAZIT-POLYGAL Technical Support.

## COLORS

Xtend XT sheets are naturally colorless and exceptionally clear while containing from 70% up to 100% recycled material.

For more information, please contact PLAZIT-POLYGAL Technical Support.

## Recycled Volume

Xtend XT sheets contain between 70% to 90% recycled material

## DEFINITIONS

### SHRINKAGE

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

This characteristic of Xtend XT should be taken into account when planning the final sheet's dimensions.

Sheet Thickness, mm	Shrinkage	
	Shrinkage M.D*, %	Shrinkage T.D*, %
≥ 2.0, < 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

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

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

## FIRE TEST PERFORMANCE

PMMA is a combustible material and will burn if ignited, however, unlike other polymers, does not produce toxic or corrosive gases and produces very little smoke which is an important safety benefit.

Xtend XT extruded acrylic sheets are classified:

- HB according to UL94.
- E according to UNE-EN ISO 13501.

## NOISE REDUCTION

Xtend XT sheets are used widely as noise-reduction barriers along roads and highways. For more information, see PLAZCRYL Acoustic Walls Guidebook.

## CHEMICAL RESISTANCE

Xtend XT sheets have good resistance to water, alkalis, aqueous inorganic salt solutions and most common dilute acids. Some substances do not have any effect on Xtend XT however some can cause staining, swelling, crazing, weakening or even complete dissolving of the material.

Please contact Plazit-Polygal Technical Support for information regarding special applications.

### **Note:**

Any substance that comes with contact with PMMA should be checked for compatibility.

## 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 PMMA in a chemical-free environment. Stresses can be created during fabrication and forming and can be controlled by an annealing process. Stresses can also be created by improper installation. Cold bended sheets under permanent induced stress or sheets under periodic stress (fatigue) are also susceptible to ESC.

## GENERAL GUIDELINES

### STORAGE

Xtend XT is a rigid sheet, incorrect handling can cause breakage, leaving sharp edges.

Xtend XT sheets must be stored with their original protective masking in a cool, dry and well-ventilated room, away from direct sunlight, excessive humidity, rain or solvent vapors.

Xtend XT sheets are best stored horizontally on their delivery pallets. Pay attention to avoiding pressure on the unsupported areas. Never leave sheets or pallets uncovered.

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## PROTECTIVE FILM

Both surfaces of Xtend XT sheet are protected by a fully recyclable polyethylene (PE) film. Keep this film in position as long as possible and remove only and immediately after installation.

There are two kinds of protective film for the sheets:

- Universal film that is suitable for machining
- Easy-removal film that is suitable for sheets where the film will be removed before processing. This type of film is not suitable if machining of the sheet is required to be done with the protective film on the sheet.

Both of the above types of film are suitable for thermoforming and laser cutting.

Printed film must be removed before thermoforming in order to avoid transfer of the printing ink to the sheet's surface.

## CLEANING & MAINTENANCE

Xtend XT sheets are produced in clean-room environment and do not need to be cleaned before use. However, cleaning may be needed after fabrication, before sensitive processes such as vacuum metallization or printing or for maintenance during use.

If Xtend XT sheets need to be cleaned, wash the sheet surface with clean fresh water with a mild soap. In order to verify that the soap you are using is compatible with PMMA test a hidden area before cleaning. Use a clean soft cloth or sponge and rinse well. Do not scrub or use brushes. Dry with a soft cloth. The use of window cleaning fluids or solvents such as alcohols, turpentine, acetone, etc., can cause damage to the sheet.

## ENVIRONMENTAL ADVANTAGES

Xtend XT sheets are environmental friendly. LCA (Life Cycle Assessment) and Eco profiles of PMMA sheet production show a low impact on the environment.

The outstanding chemical stability and long-time resistance to aging and weathering of Xtend XT sheets often ensures a long service time. The sheets and their polyethylene protective layers are fully recyclable. They do not contain any toxic materials, halogens or heavy metals, which may cause environmental damage or health risks. Xtend XT sheets do not contain Bisphenol-A. Ozone Depleting Substances (ODP) are not used in the manufacture of Xtend XT sheets and they do not release pollutant substances into the environment during manufacture. They do not produce toxic or corrosive gases when burning, fires can be extinguished with water.

Xtend XT scrap is not classified as hazardous waste small amounts can be disposed as household refuse. Large quantities should be disposed by recycling.

## RE-WORKING

- **Handling:**  
Machining, Assembling, Forming, Glazing and Signage Installation recommendations can be found in the PLAZCRYL Guidebook.
- **Cold bending:**  
Unlike thermoforming, cold-bended Xtend XT will not keep its form unless installed into a frame. The sheet must be with perfect edges to avoid breakage during bending. The radius of the bend should not be below the minimum value in order to avoid high permanent stress, which can eventually cause small cracks or even break the sheet.  
Minimum recommended bend radius is 300 times the thickness of the sheet.

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