

# OPTIX.R XT - EXTRUDED ACRYLIC RECYCLED SHEETS

## DESCRIPTION

PLASKOLITE OPTIX.R 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.

OPTIX.R 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	OPTIX.R XT
<b>General</b>			
Density	ISO 1183	gr/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 (thickness dependent)	ASTM D1003	%	92
Haze (3 mm 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 (0-50°C)	ISO 11359	µm/m°C	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>

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## 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 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. 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.
		Sheets cut to size: ± 0.50	Sheets cut to size: ± 0.50	Sheets cut to size: ≤ 0.5	

## OPTICAL QUALITY

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

For more information, please contact PLASKOLITE Technical Support.

## COLORS

OPTIX.R XT sheets are naturally colorless and exceptionally clear.

For more information, please contact PLASKOLITE Technical Support.

## RECYCLED VOLUME

OPTIX.R 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 OPTIX.R 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

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## **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. OPTIX.R XT extruded acrylic sheets are classified:

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

## **NOISE REDUCTION**

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

## **CHEMICAL RESISTANCE**

OPTIX.R 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 OPTIX.R XT however some can cause staining, swelling, crazing, weakening or even complete dissolving of the material.

Please contact PLASKOLITE 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**

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

OPTIX.R 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.

OPTIX.R 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.

### **PROTECTIVE FILM**

Both surfaces of OPTIX.R 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.

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## ENVIRONMENTAL ADVANTAGES

OPTIX.R 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 OPTIX.R 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. OPTIX.R XT sheets do not contain Bisphenol-A. Ozone Depleting Substances (ODP) are not used in the manufacture of OPTIX.R 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.

OPTIX.R 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 OPTIX.R 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.

For higher thicknesses, up to 12 mm, the recommended minimum bend angle is 135°.

Hard coated sheets cannot be bent.