OPTIX R CELL CAST - RECYCLED SHEET

EUROPE

OPTIX R Cell Cast Sheet is produced from 100% Recycled monomer of Methyl Methacrylate (MMA) according to the ISO 7823-1:2003 standard.

OPTIX R Cell Cast is available in wide range of thicknesses and colors.

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

TYPICAL PROPERTY VALUES

PROPERTIES	METHOD	UNITS	VALUE
GENERAL			
Density	ISO 1183	gr/cm^3	1.2
MECHANICAL			
Tensile Strength	ISO 527-2	MPa	70
Elongation at break	ISO 527-2	%	4
Tensile Modulus	ISO 527-2	MPa	3000
Flexural Strength	ISO 178	MPa	100
Rockwell Hardness	M scale		100
Impact Resistance (Izod notched)	ISO 180/1A	kJ/m^2	1.5
OPTICAL			
Refractive Index	ISO 489		1.49
Light Transmission (thickness dependent)	ASTM D1003	%	90
Haze (3 mm transparent sheet)	ASTM D1003	%	<1
THERMAL			
Vicat Softening Temp.(50N)	ISO 306	°C	$>105\text{-}10^9$
Coef. of Linear Thermal Expansion (0-50O°C)	ISO 11359-2	°C	$7x10^{-5}$

DIMENSIONS

Thickness, mm	Width, mm	Length, mm
3-6	2050	3050
8-20	2030	3050

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

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TOLERANCES FOR DIMENSIONS

Sheet Thickness, mm	Thickness Tolerances, mm (25°C)	Width Tolerances, mm (25°C)	Length Tolerances, mm	Diagonals Tolerances, mm	Flatness Tolerances
3-20	± (0.4 + 0.1 x sheet nominal thickness)	Sheets cut in production: -0.0 /+3.0 Sheets cut to size: ± 1.0	Sheets cut in production: -0.0 /+3.0 Sheets cut to size: ± 1.0	Sheets cut in production: Length ≤ 4000 mm - ≤ 3 Length ≥ 4000 mm - ≤ 4 Sheets cut to size: ≤ 1	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

Maximum number of faults	- Black specks, scratches, marks, or other surface defects of 3 mm^2 size, with a minimum distance between them of 0.5 meter. - Air bubbles, inclusions, cracks, or other inclusion defects of 3 mm^2 in size, with a minimum distance between them of 0.5 meter. - "Fisheyes" of 3 mm^2 in size, when there are no more than five (5) on an area of 0.4 m^2.

COLORS

OPTIX R Cell Cast sheets are naturally colorless and clear, however they can be pigmented to obtain a wide range of tints and colors. They are available transparent and in a wide range of translucent colors, opaque colors, opals and diffusers. OPTIX R Cell Cast colored sheets maintain the same light transmission percentages regardless of the thickness (except for special types of opals, diffusers, and LEDs).

For a list of updated colors, please contact PLASKOLITE Technical Support or your regional supplier.

TEXTURES:

All colors can be manufactured:

- Both sides glossy
- One or both sides satin

SHRINKAGE

As opposed to the extrusion process, cast PMMA sheets shrink isotropically (same in all directions). OPTIX R Cell Cast sheets may shrink up to 2% in each direction.

CHEMICAL RESISTANCE

Some chemical substances do not have any effect on OPTIX R Cell Cast, however some can cause staining, swelling, crazing or weakening.

OPTIX R Cell Cast sheets have good resistance to water, alkalis, aqueous inorganic salt solutions and most common dilute acids. For information regarding specific chemicals please refer to the OPTIX Guidebook or PLASKOLITE Technical Support.

Important Note:
Any substance that comes with contact with PMMA should be checked for compatibility. Even if the supplier confirms that the material is suitable for PMMA, please apply it first to a hidden area to see if there are any effects. However, this will cover you for short-time effects only. To assess long-term effects of substances on PMMA, laboratory testing is required.

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ENVIRONMENTAL STRESS CRACKING

ESC (Environmental Stress Cracking) is a well-known phenomenon in plastics including PMMA, and a common reason of product failure. ESC is a result of the combination of stress and chemical exposure. Under harsh chemical environment, stressed sheets will fail by cracking and crazing. 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 induced during forming and fabrication. These can be eliminated by an annealing process (see OPTIX Guidebook for machining and forming instructions). Stresses can be induced also by improper installation (see OPTIX Guidebook for installation instructions). Cold bended sheets under permanent induced stress or sheets under periodic stress (fatigue) are also susceptible to ESC.

GENERAL GUIDELINES

STORAGE

OPTIX R Cell Cast sheets must be stored with their original protective masking in a cool, dry and well-ventilated room, at a reasonable constant temperature, away from direct sunlight, excessive humidity, rain or solvent's vapors. Failing to store OPTIX R Cell Cast in adequate conditions can produce distortions in the sheets and other effects, which will make later fabricating, a more difficult task.

Long term exposure to the sun or other heat sources can cause fusing of the protective polyethylene film to the sheet surface, impeding its removal.

OPTIX R Cell Cast sheets are best stored horizontally on their delivery pallets. Pay attention to avoid pressure on the unsupported areas.

Never leave uncovered sheets or pallets. It is advisable to replace the original packaging over the stack after a sheet is removed from stock to avoid moisture absorption. If stored for long time, the use of dry packaging is highly recommendable.

PROTECTIVE FILM

Both surfaces of OPTIX R Cell Cast 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.

Sharp objects, sharp particles or even small chips can penetrate the protective PE masking, and damage the surface, therefore always lay OPTIX R Cell Cast on a clean smooth surface.

OPTIX R Cell Cast protective film in glossy sheets is suitable for thermoforming and laser cutting.

Machining and Forming will PE Film:

It is preferable to leave the protective film in position throughout machining to keep the sheet surface in perfect condition. Normal thermoforming temperatures do not affect the adhesive used for the film on OPTIX R Cell Cast glossy sheets and can therefore be left in place during most heating and forming operations. However, care should be taken to ensure there are no defects in the film (holes, scratches, bubbles), which could mark the part during the forming process. High-heat deep-draw thermoforming applications can cause the PE film to adhere more strongly. Printed film must be removed before thermoforming, to avoid transfer of the printing ink to the sheet's surface.

CLEANING & MAINTENANCE

OPTIX R Cell Cast 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 OPTIX R Cell Cast 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.

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ENVIRONMENTAL ADVANTAGES

OPTIX R Cell Cast sheets are environmentally friendly. They are produced from recycled raw materials (recycled Methyl Methacrylate monomer) and can be recycled indefinitely.

They do not contain any toxic materials, halogens or heavy metals, which may cause environmental damage or health risks.

OPTIX R Cell Cast sheets do not contain Bisphenol-A. Ozone Depleting Substances (ODP) are not used in the manufacture of OPTIX R Cell Cast 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 Cell Cast sheets can be used for energy recovery and chemical recycling-obtaining raw material again closing the circle of recyclability of the material.

OPTIX R Cell Cast scrap is not classified as hazardous waste. Small amounts can be disposed as household refuse. Large quantities should be disposed for recycling.

HANDLING:

OPTIX R Cell Cast is a rigid sheet, which with wrong handling can break, leaving sharp edges. Handling OPTIX R Cell Cast must be done with care, always using protective gloves and shoes.

BURNING BEHAVIOR:

OPTIX R Cell Cast sheets are combustible, and if not extinguished, will burn to completion once ignited, without producing molten droplets. When burning, in the presence of sufficient air, OPTIX R Cell Cast releases CO_2 and water however if there is a lack of sufficient air, CO can be formed.

When storing or working with OPTIX R Cell Cast, the necessary fire precautions must be considered, taking into account the burning behavior of OPTIX R Cell Cast.

WORKING:

OPTIX R Cell Cast looks and performs as standard OPTIX sheets.

For general guidelines about how to work with OPTIX R Cell Cast sheets please refer to the OPTIX Guidebook. Thermoforming processes performed on colored sheets should check the color stability before its application.

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use are beyond our control. We recommend that the prospective user determines the suitability of our materials and suggestions before adopting them on a commercial scale.

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