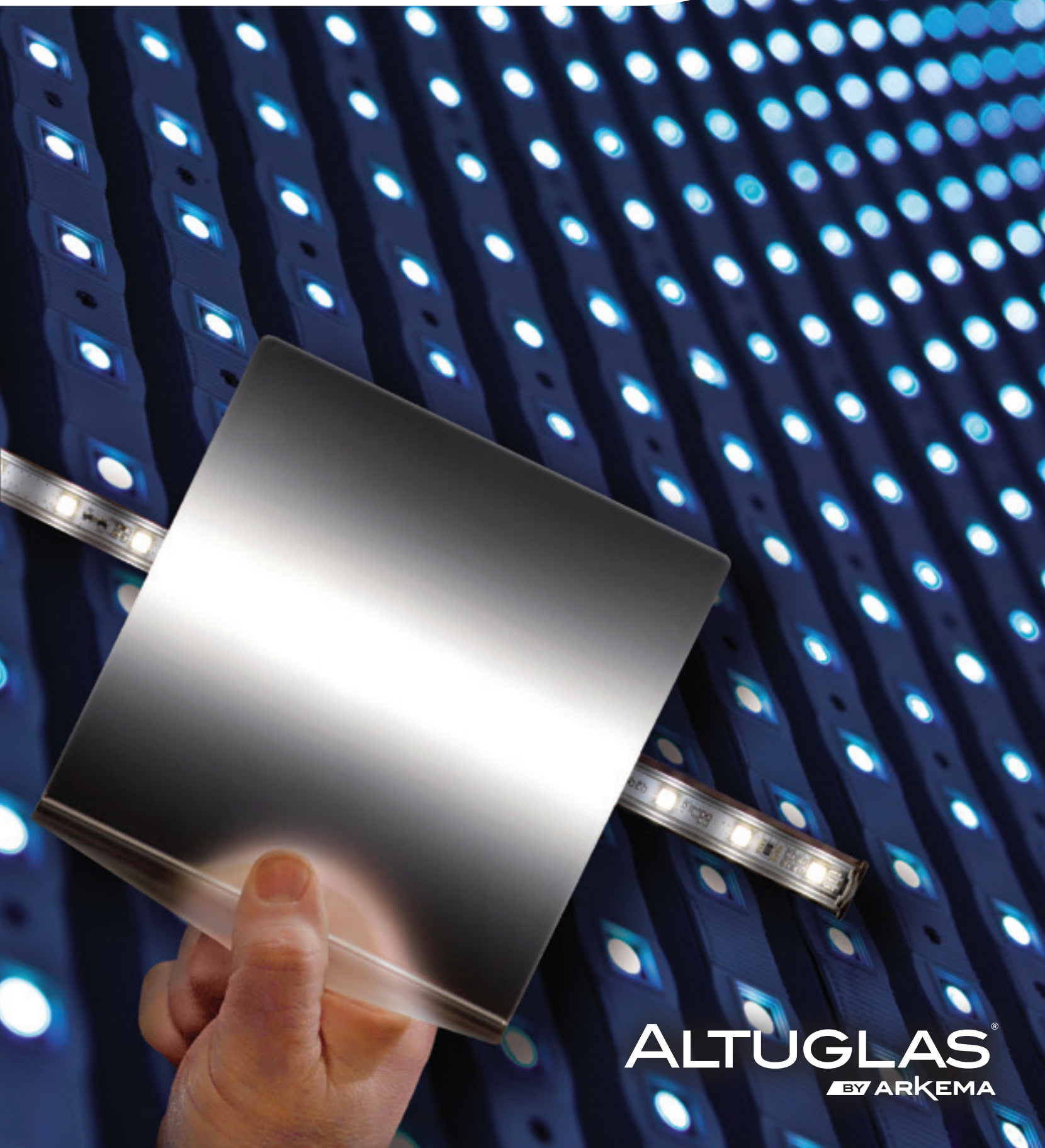


ALTUGLAS® ACRYLIC RESINS

Altuglas®, lighting solutions  
for your innovations



ALTUGLAS®  
BY ARKEMA



## ALTUGLAS® RESINS LIGHTING SOLUTIONS FOR YOUR INNOVATIONS

For more than 70 years, Altuglas® acrylic resins have played a vital role in the development of creative & durable solutions in lighting applications. Following the increasing demand for innovative LED lighting solutions, our team has used extensive experience in lighting & acrylic materials to develop and launch a complete portfolio of dedicated resins, from optically clear to highly diffuse, and reflective. These new families of resins offer unique sets of properties to meet the new technical requirements brought by challenging applications such as: thick optical lenses, efficient light diffusers & reflectors, long light guides...

Altuglas® acrylic resins are broadly used in numerous markets such as architecture & construction, automotive & transportation, lighting, consumer goods & design, electronics, medical, visual communication... A close collaboration with customers for development of new products pushes the Altuglas International teams to constantly innovate to meet all the latest technical needs and specifications.



## ALTUGLAS® CRYSTAL CLEAR FOR EFFICIENT LIGHT TRANSPORT



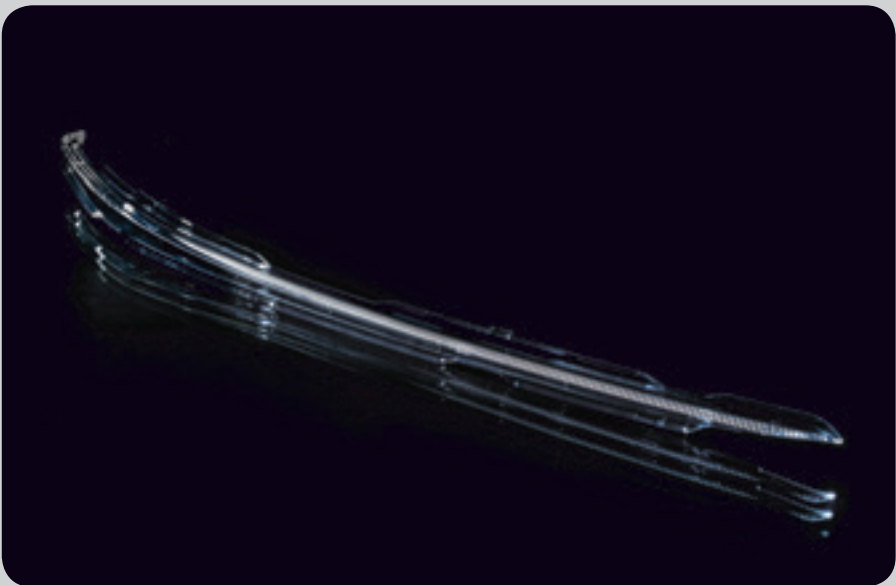
Altuglas® HT 121 – Thick lenses

Over the years, Altuglas® crystal clear resins have demonstrated their outstanding performance and benefits for the transport of light. They are widely used today in highly demanding applications such as automotive cluster lenses, long light guides, and thick optical lenses, as well as optical parts for lighting fixtures in general lighting, etc.

## ALTUGLAS® HT 121 INTEGRATES HIGH TEMPERATURE RESISTANCE

As a premium crystal clear grade, Altuglas® HT 121 combines outstanding optical performance & higher heat resistance, with a Relative Thermal Index (RTI) of 100°C (UL certified) the highest RTI for a PMMA resin presently on the market.

As light sources become more powerful and luminaires more compact, Altuglas® HT 121 is the material of choice for challenging market needs. In addition, Altuglas® HT 121 provides excellent durability, with outstanding UV & scratch resistance.



Altuglas® HT 121 ; light guide.





# ALTUGLAS® DIFFUSE: A COMPLETE FAMILY OF PRODUCTS FOR LIGHT DIFFUSION



Typical diffuser parts made from Altuglas® Diffuse

Altuglas® Diffuse innovative solutions offer a unique set of properties that LED Lighting designers have dreamed of - better diffusion of intense LED point light sources to provide an even illumination, without sacrificing significant light transmission. With Altuglas® Diffuse, luminaires achieve higher lumens/watt efficiency while providing uniform ambient lighting.



\*Typical pictures from Altuglas demonstration Light box

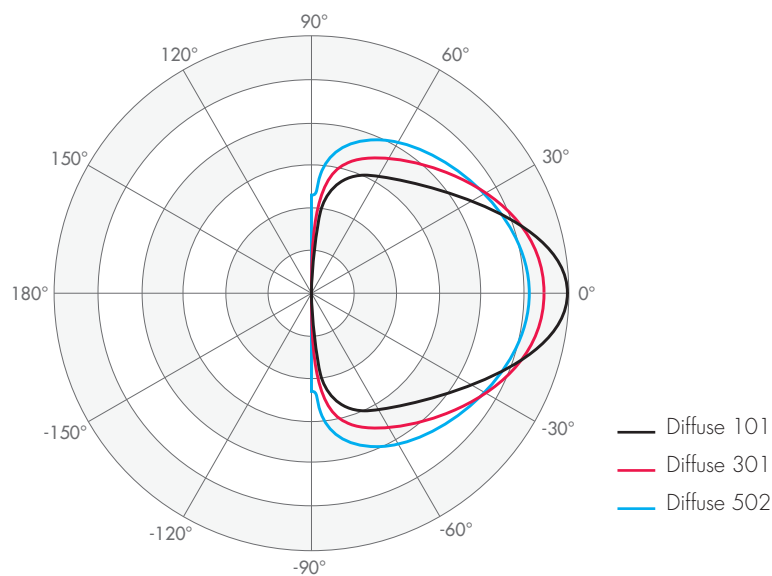
## Features

The Altuglas® Diffuse family of resins provides LED luminaire OEMs and optics suppliers with:

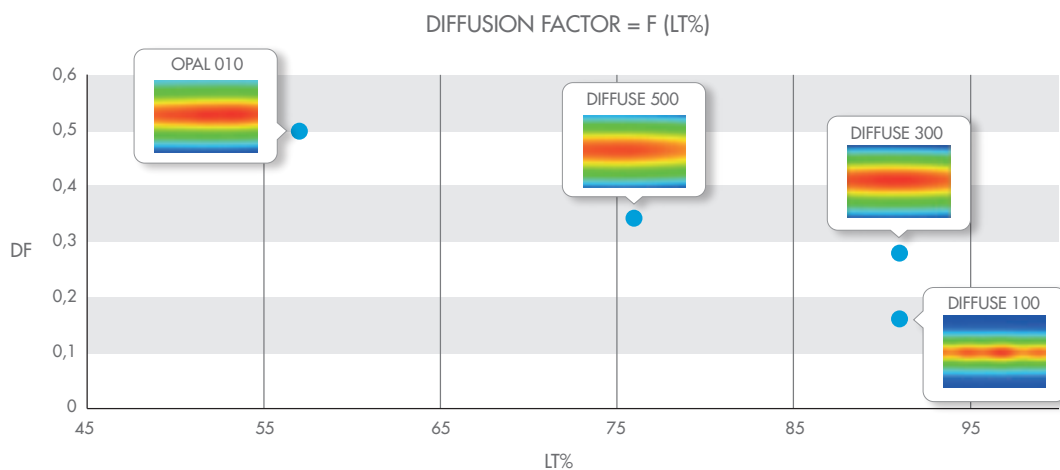
- Excellent light diffusion
- Superior light transmission
- Choice of smooth or textured surface on extruded lenses
- Outstanding UV resistance & weatherability
- Excellent surface gloss & scratch resistance
- Ease to extrude, injection mold, thermoform & cut
- Recyclability



**Altuglas® Diffuse range - Typical goniometer polar diagram - Thickness 2mm**



**Diffuser 2D luminance pictures taken with videophotometer KM at 2.54cm distance from LED source**



Altuglas® Opal and Altuglas® Frosted solutions are well established market solutions for various luminaire designs. The Opal family can enhance the aesthetics of any luminaire with an elegant white satin look.

With Altuglas® Diffusion solutions, our partners and customers will always find materials that meet their needs.



LED Reflector made in Altuglas® Reflect

### ALTUGLAS® REFLECT – LIGHT OUTPUT MAXIMIZATION AND DURABILITY

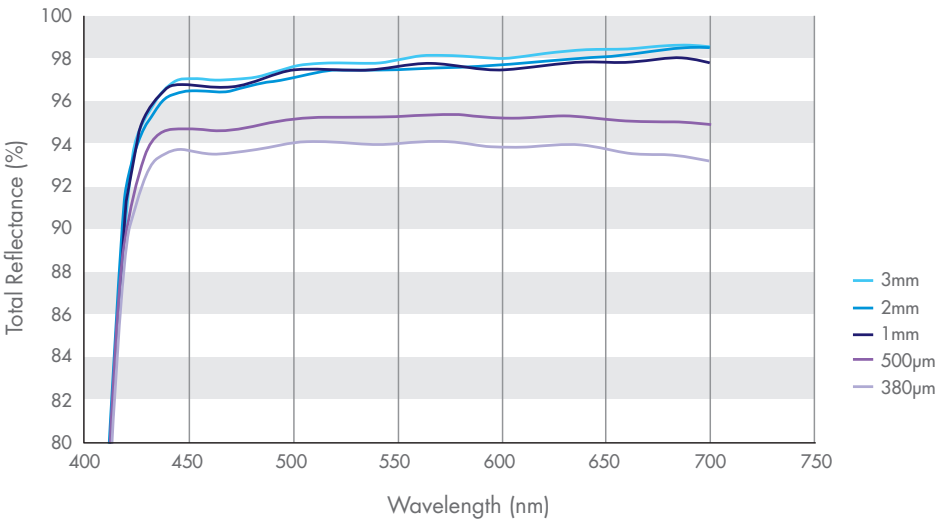
In LED lighting systems, a highly reflective enclosure is key to efficiently recycle the light and maximize light output. Altuglas® Reflect has been engineered to achieve maximum reflectivity (or reflectance), without the need for subsequent coating or metallization. Altuglas® Reflect possesses Altuglas® resins historical weatherability and durability in harsh environments. While other resins can begin to yellow over time, the Altuglas® Reflect resins maintain their reflective performance and brilliant white appearance over the long term. This long-lasting performance makes Altuglas® Reflect an ideal choice for LED lighting fixtures.



Replacing metallized surface with white PMMA reflector

### Optimum efficiency from sheets to films application

Altuglas® Reflect



THE NEW ALTUGLAS® DIFFUSE AND  
ALTUGLAS® REFLECT FAMILIES ARE NOW  
REFERENCED ON THE OPTIS ONLINE LIBRARY.



OPTIS Library is a free online design resource, intended for the fast growing community of OPTIS software users. These Altuglas® Diffuse and Altuglas® Reflect models bring them free materials which can be integrated into OPTIS software. It is definitely a time saving solution to design 3D parts, getting reliable simulation of optical properties, without need to produce real parts.

Lighting range - Technical properties

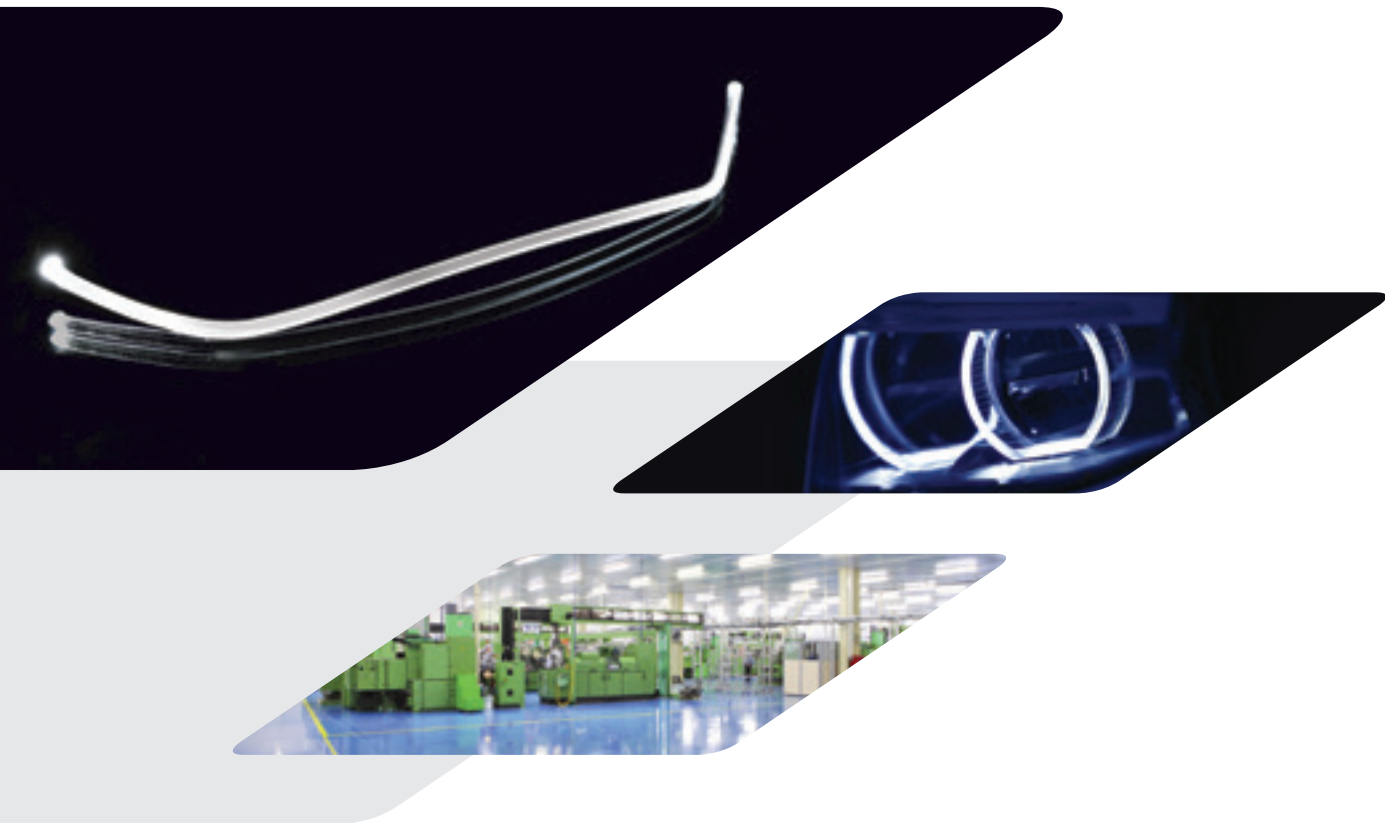
Main Technical Properties (thickness 2mm)	Measurement method	Unit	Diffuse 100 series*	Diffuse 300 series*	Diffuse 500 series*	Opal 010 series*	Reflect M31	HT 121 clear 102
Rheology - Melt Flow Index	ISO 1133 230C/3.8kg	g/10min	from 1 to 6	from 1 to 6	from 0.9 to 3.2	from 0.7 to 13	1.1	2
Vicat softening Point (B50)	ISO 306	°C	from 90 to 103	from 90 to 103	from 94 to 103	from 90 to 103	107	119
Heat Deflection Temperature (1.82MPa)	ISO 75-2	°C	from 83 to 95	from 83 to 95	from 87 to 95	from 85 to 93	105	110
Flexural Modulus	ISO 178	MPa	from 1700 to 3300	from 2300 to 3300	from 2000 to 3300	from 1700 to 3300	2200	3450
Light transmittance	ASTM D-1003	%	92	92	76	57	n.r	92
Hiding Power (T2°/T0°)	Photogoniometer	/	0.98	0.99	0.99	0.98	n.r	n.r
Diffusion Factor (T20°+T70°)/2*T5°	Photogoniometer	/	0.16	0.28	0.34	0.50	n.r	n.r
Half Angle Value (50% of Max. Light transmittance)	Photogoniometer	degree	14°	20°	23.5°	44°	n.r	n.r
Total Reflectance	D65/2°	%	n.r	n.r	n.r	n.r	>97%	n.r

\* Different levels of impacts & MFI available, depending on series

## Welcome to the world of Altuglas International, subsidiary of Arkema group

Altuglas International, a global integrated leader in PMMA is heavily involved in the technical plastic sector – from MMA monomer to PMMA acrylic glass – creating and manufacturing innovative products to suit customers' needs worldwide. Its 1,300 highly committed staff make their contribution daily in our three businesses (MMA, sheet and PMMA resins). Its four great brand names are references: Altuglas®, Plexiglas® (Americas), Oroglas®, Solarkote®.

[www.altuglasint.com](http://www.altuglasint.com)



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