

ACRILICO COLATO CRYLUX® Lumina



1. PRODUCT IDENTIFICATION

CRYLUX® Lumina is the brand name of POLYCASA PMMA cast sheet with special light diffusion characteristics.

The composition of the product is 95-99% PMMA, the same as CRYLUX™ standard material. This formulation gives the material exceptional optical qualities.

Its innovative characteristics make CRYLUX® Lumina the right choice for the development of new designs in decoration, lighting and publicity.

CRYLUX® Lumina is available in thickness from 4mm to 10mm as standard material, but it is possible to produce from 3mm to 30mm upon request.

Thickness choice will be directly related to the kind of light source used (LED, fluorescent tubes, CCFL) size and configuration of the final panel. See our recommendations further in this document.

2. CHARACTERISTICS

CRYLUX® Lumina is the recommended Cast acrylic sheet for applications that require an homogenous distribution of light across the surface, when the sheet is illuminated through its edges.

By installing a light source next to a polished edge of the piece, the light passes uniformly through the surface, giving bright, even illumination to a picture or image on top of it. These special characteristics also allow a reduction in the frame profiles, improving its' appearance, depending on visual angle.

3. APPLICATIONS

Ultra-slim frames for Point of Sale
Illuminated urban displays
Double-sided poster frames
Safety signage
Decorative lighting

4. FABRICATION AND FINISHING TECHNIQUES

CRYLUX® Lumina sheets are as easy to handle as standard material.

Sawing, drilling, gluing, printing, milling, mechanical polishing, thermoforming, hot bending do not offer any problems to this special product.

More detailed information on these items can be found in the "USER GUIDE", available on request.

5. TECHNICAL DATA

GENERAL

Property	Method	Units	CRYLUX®
Density	ISO 1183	g/cm ³	1.19
Water absorption	ISO 62, Method A	%	0,2
Rockwell Hardness	ISO 2039-2	M scale	100

MECHANICAL

Property	Method	Units	CRYLUX®
Tensile Strength	ISO 527	MPa	75
Elongation	ISO 527	%	6
Tensile Modulus	ISO 527	MPa	3400
Flexural Strength	ISO 178	MPa	120
Flexural Modulus	ISO 178	MPa	3200
Charpy (unnotched)	ISO 179	kJ/m ²	17
Charpy (notched)	ISO 527	MPa	2

THERMAL

Property	Method	Units	CRYLUX®
Vicat Temp. (VST/B 50)	ISO 306	°C	110
Specific Heat Capacity	ISO 3146-C-60°C	J/g.K	2.16
Linear thermal expansion	ISO 11359-2	mm/m°C	0.07
Thermal conductivity	DIN 52612	W/m.K	0.19
Max. service temperature continuous use		°C	80
Max service temperature short term use		°C	90
Degradation temperature		°C	>280

OPTICAL

Property	Method	Units	CRYLUX®
Light transmission)	EN 13468-2	%	92
Refractive index	ISO 489	n _D ^D ₂₀	1.492

ELECTRICAL

Property	Method	Units	CRYLUX®
Surface resistivity	IEC 60093	Ω	1014
Volume resistivity	IEC 60093	Ω x m	1015
Electrical strength	IEC 60243-1	kV/mm	10
Dielectric strength	DIN EN 60243-1	kV/mm	30
Dielectrical dissipation factor 50 Hz	DIN 53483-2		0.06
Dielectrical dissipation factor 1 KHz	DIN 53483-2		0.04
Dielectrical dissipation factor 1 MHz	DIN 53483-2		0.02
Relative permittivity 50 Hz	DIN 53483-2		2.7
Relative permittivity 1 KHz	DIN 53483-2		3.1
Relative permittivity 1MHz	DIN 53483-2		2.7

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Note: These technical data of our products are typical ones; the actually measured values are subject to production variations

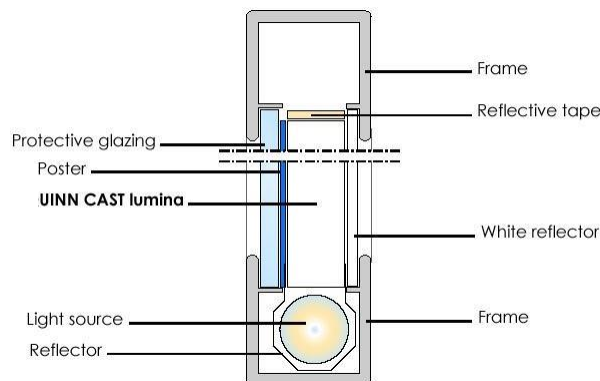
Resistance to chemicals

CRYLUX® Luminasheets are – at room temperature – resistant to saturated hydrocarbons, aromatic free fuel and mineral oils, vegetable and animal fats and oils, water, aqueous salt solutions as well as diluted acids and alkalis. Aromatic hydrocarbons and hydrogen chlorides, ester, ether and ketones attack CRYLUX™ Lumina.

6. COLOUR RANGE

- Light entering by the edges is distributed across both surfaces of the sheet.
- Reduces light-box dimensions. Allows ultra-slim frames.
- Simplifies maintenance (tubes are very accessible for replacement).
- Can be used with any light source: tubes, LEDs, optical fibre, CCFs ...
- Allows new designs. Can be curved and treated as standard material.
- Avoids shadows and hot spots due to the lights behind the image.
- Reduces problems of thermal damage.
- Suitable for single or double-panels.
- Completely neutral, it does not produce any change in colour values.

7. FRAME CONFIGURATION



8. SPECIAL RECOMMENDATIONS

In order to maximise the performance of CRYLUX™ Lumina, the following points should be taken into consideration:

- For best results, edges should be polished, preferably with a diamond wheel. A high luminosity effect is obtained when polishing the four edges of the sheet (see Graphic 1). Once the edges are polished, they should be completely flat. Any curvature in the edge could cause a loss of light (due to successive internal reflections through the material). Laser cutting is not recommended.
- The frame or profile system should not only fix the sheet in place but also enhance its' edge lighting. Usually, this type of frame is made from a high light reflecting material in order to increase light reflection efficiency and to avoid the loss of light. The light source should be placed as close as possible the edge of the sheet.
- The lighting efficiency will be improved by placing a white reflector between the assembly and Lumina sheet. This white material should have maximum light reflection and minimal light absorption. We recommend our reference CRYLUX™ 3014.

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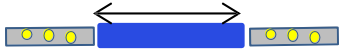




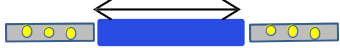


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- When the sheet is illuminated by one or two edges only, the other non-illuminated edges must be covered with a reflective adhesive tape.
- CRYLUX® Luminasheets are covered with a masking film for protection. We recommend keeping the protection film in place during material handling. Any scratch on the material surface will be visible when the sheet is illuminated.

▪ **LED lighting**

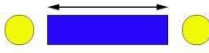






Recommended thickness

Panel size	Panel dimension in mm	Light source configuration	CRYLUX™ Lumina	
			Optimal thickness	Acceptable thickness
> A0		> 1197 mm 	10 mm	-
A0	1197 x 840	1197 mm 	8mm	-
A1	840 x 595	595 mm 	6 mm	5mm
A2	595 x 420	420 mm 	5mm	4mm
A3	420 x 297	297 mm 	5 mm	4 mm
A3	420 x 297	297 mm 	4 mm	3 mm
A4	297x210	210 mm 	4 mm	3 mm
< A4		<210 mm 	3mm	-

Tests carried out with LED 50/50, 60u/m, 15W/m

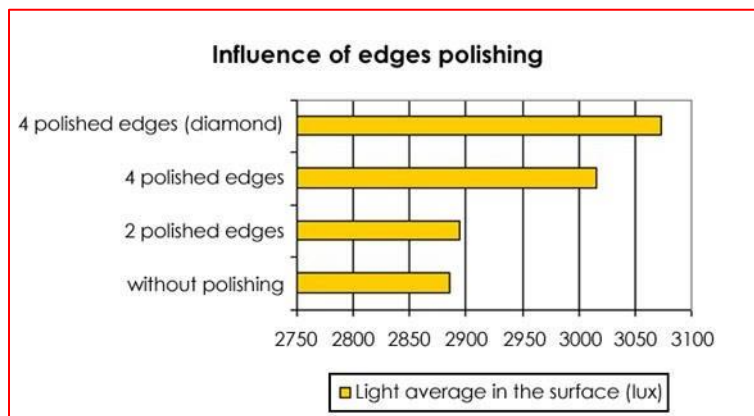
▪ **Fluorescent tubes:**

Recommended thickness

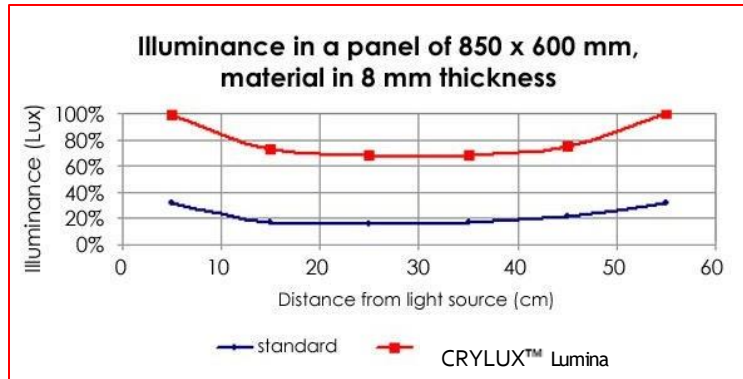
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> A0		> 1197 mm 	15 mm	-
A0	1197 x 840	1197 mm 	15 mm	10 mm
A1	840 x 595	595 mm 	10 mm	8 mm
	840 x 595	595 mm 	15 mm	-
A2	595 x 420	420 mm 	10 & 8 mm	6 mm
A3	420 x 297	297 mm 	10 mm	6 mm
	< A3	< 297 mm 	6 mm	-

Tests carried out tubes type T5

Lighting information



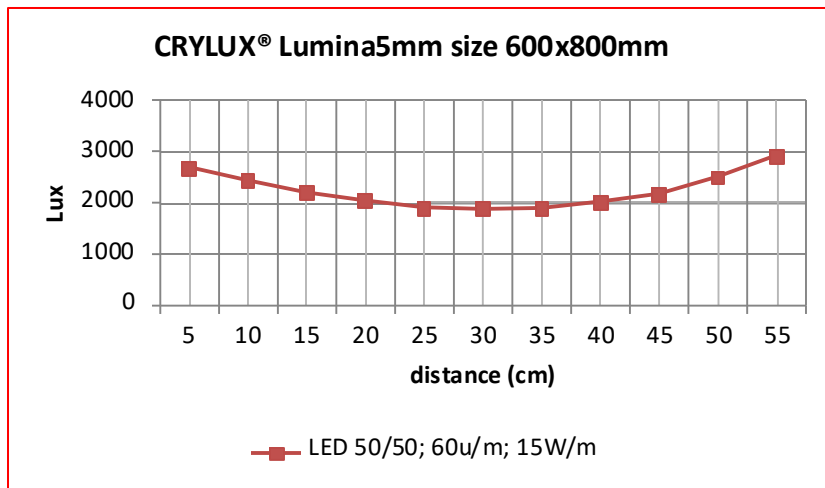
Graphic 1



Graphic 2

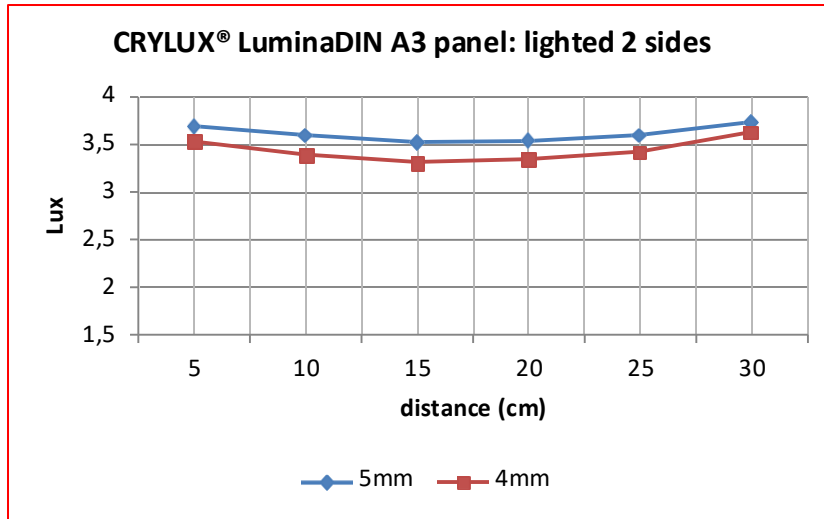
Graphics 1 and 2 were built up using a CRYLUX® Luminasheet in 8 mm thickness. Frame dimensions were 850 x 600 mm, sheet was illuminated by 2 tubes (OSRAM FQ 39W/860).

Lighting performance CRYLUX™ Lumina

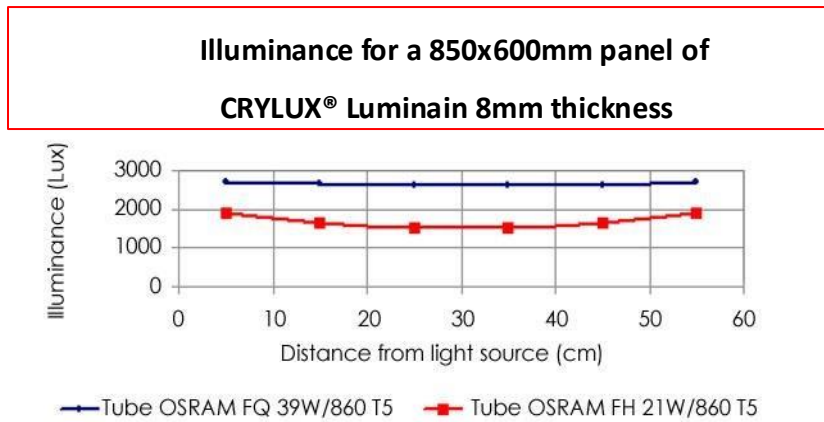


Graphic 3

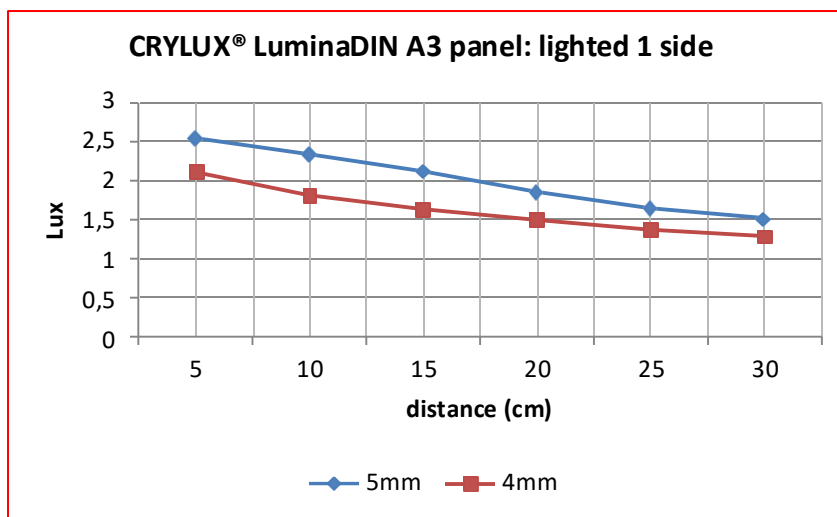




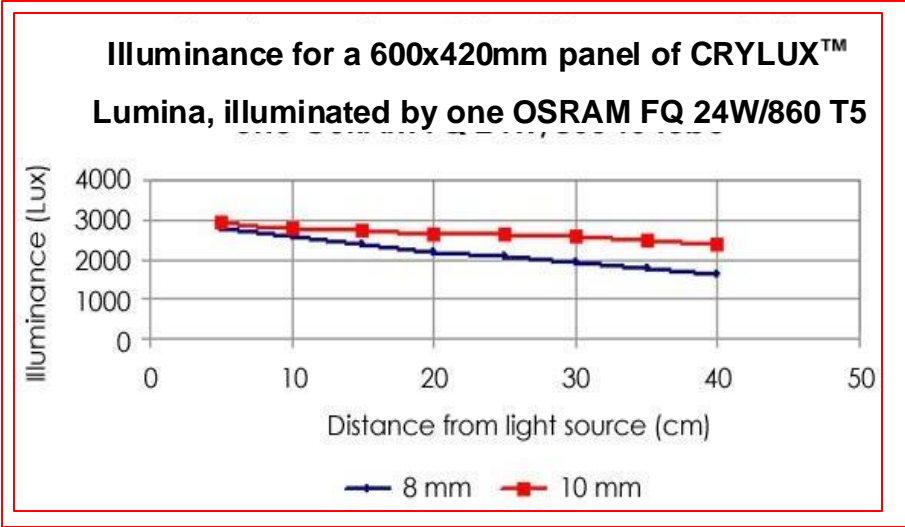
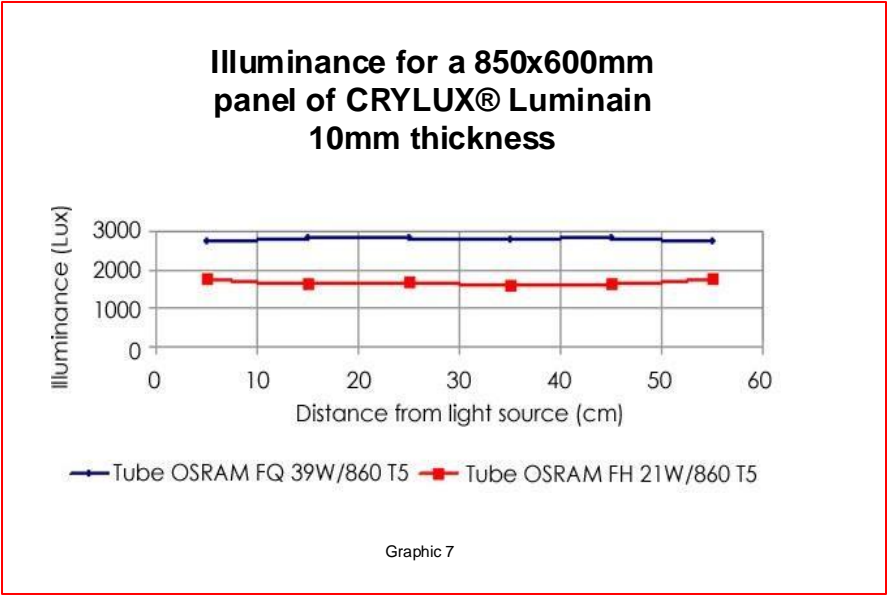
Graphic 4



Graphic 5



Graphic 6



Any modification in sheet thickness, light source or frame dimensions, will affect the final results.

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