

# BARLO<sup>®</sup> CAST

## lumina

Technical datasheet



## BARLO CAST LUMINA

### 1. PRODUCT IDENTIFICATION

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BARLO CAST lumina is the brand name of Quinn Plastics PMMA cast sheet with special light diffusion characteristics.

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

Its innovative characteristics make BARLO CAST lumina the right choice for the development of new designs in decoration, lighting and publicity.

BARLO CAST lumina is available in thickness: 6,8,10 and 15 mm.

Although optimum light performance result will be obtained with 10 mm sheets, depending on design, frame size, light output and budget, clients can choose an alternative thickness, to best fit their needs.

### 2. CHARACTERISTICS

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BARLO CAST 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.

### 3. APPLICATIONS

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

### 4. FABRICATION AND FINISHING TECHNIQUES

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BARLO CAST 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.

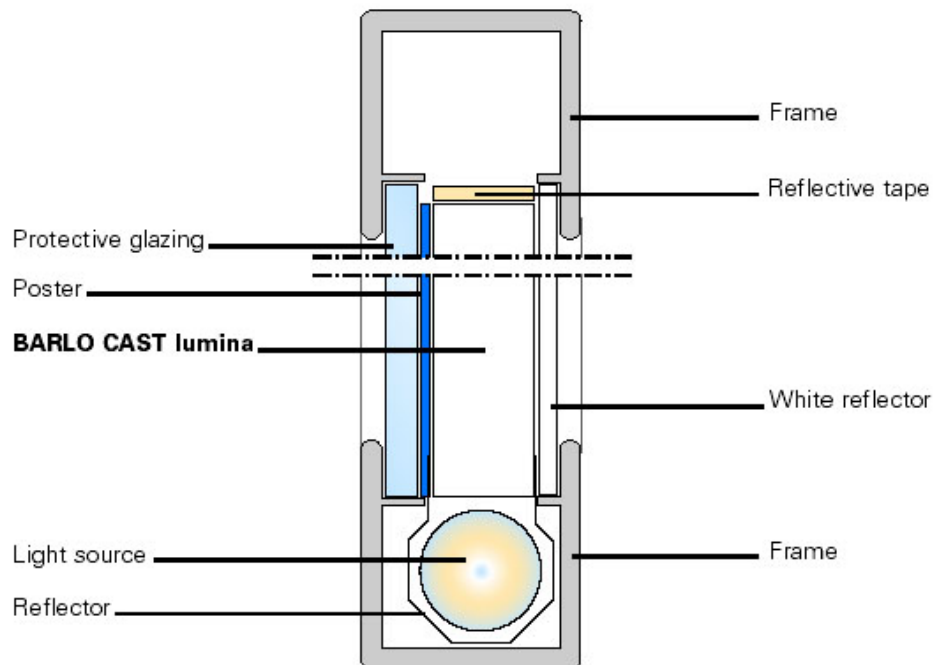
## 5. TECHNICAL INFORMATION

PROPERTY	METHOD	UNITS	BARLO CAST
<b>GENERAL</b>			<b>LUMINA</b>
Density	ISO 1183	g/cm <sup>3</sup>	1.19
Rockwell Hardness	ISO 2039-2	M - scale	105
<b>MECHANICAL</b>			
Flexural Modulus	ISO 178	MPa	3000
Flexural Strength	ISO 178	MPa	125
Tensile Modulus	ISO 527	MPa	3300
Tensile Strength	ISO 527	Mpa	75
Elongation	ISO 527	%	6
<b>THERMAL</b>			
Vicat Temp. (VST/B 50)	ISO 306	°C	115
Heat Deflection Temp. (A)	ISO R 75	°C	105
Specific Heat Capacity (60°C)	ISO 3146	J/gK	2.16
Coefficient of linear thermal expansion	ISO 11359-2	K <sup>-1</sup> x10 <sup>-5</sup>	7
Thermal conductivity	DIN 52612	W/mK	0.19
Degradation temperature		°C	> 280
Max. service temperature continuous use		°C	80
Max. service temperature short term use		°C	90
Sheet forming temp. range		°C	110-130
<b>IMPACT STRENGTHS</b>			
Izod (notched)	ISO 180	kJ/m <sup>2</sup>	-
Charpy (notched)	ISO 179	kJ/m <sup>2</sup>	2
Charpy (unnotched)	ISO 179		15
<b>ELECTRICAL</b>			
Dielectric constant (50 HZ)	DIN 53483		3.6
Volume Resistivity	DIN 53482	Ω.cm	10 <sup>15</sup>
Surface Resistivity	DIN 53482		10 <sup>14</sup>
Dielectric strength	DIN 53481	Ω	30
Dissipation Factor (50 HZ)	DIN 53483	kV/mm	0.06
<b>RESISTANCE TO CHEMICALS</b>			
<p>BARLO CAST lumina sheets 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 BARLO CAST lumina.</p>			

## 6. WHY USE LUMINA TECHNOLOGY?

- 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, CCFLs...
- 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



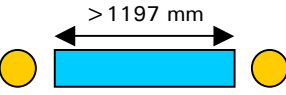
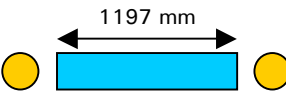
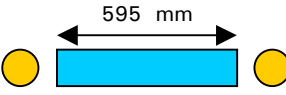
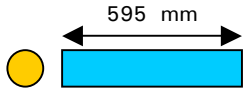
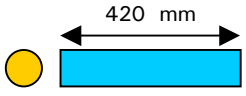
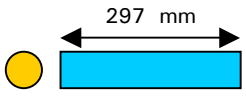
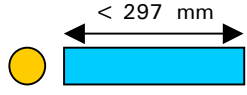
## 8. SPECIAL RECOMMENDATIONS

In order to maximise the performance of BARLO CAST lumina, the following points should be taken into consideration:

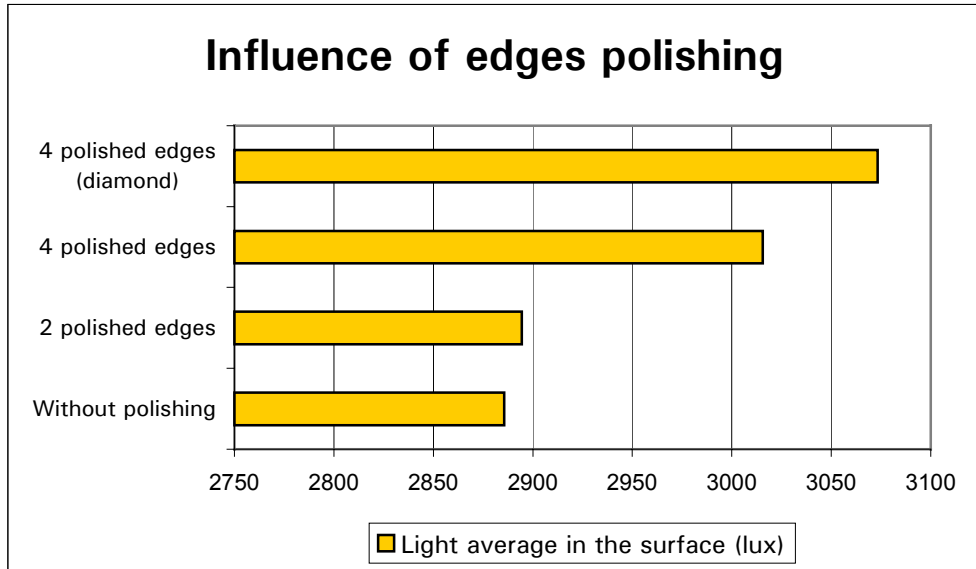
- For best results, edges should be polished, preferably with a diamond wheel. A high luminosity effect is obtained when polishing the four edges of the sheet (see Graphic 1).  
Once the edges are polished, they should be completely flat. Any curvature in the edge could cause a loss of light (due to 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 BARLO CAST lumina sheet. This white material should have maximum light reflection and minimal light absorption. We recommend our reference BARLO CAST 3014.
- When the sheet is illuminated by one or two edges only, the other non-illuminated edges must be covered with a reflective adhesive tape.
- BARLO CAST lumina sheets 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.

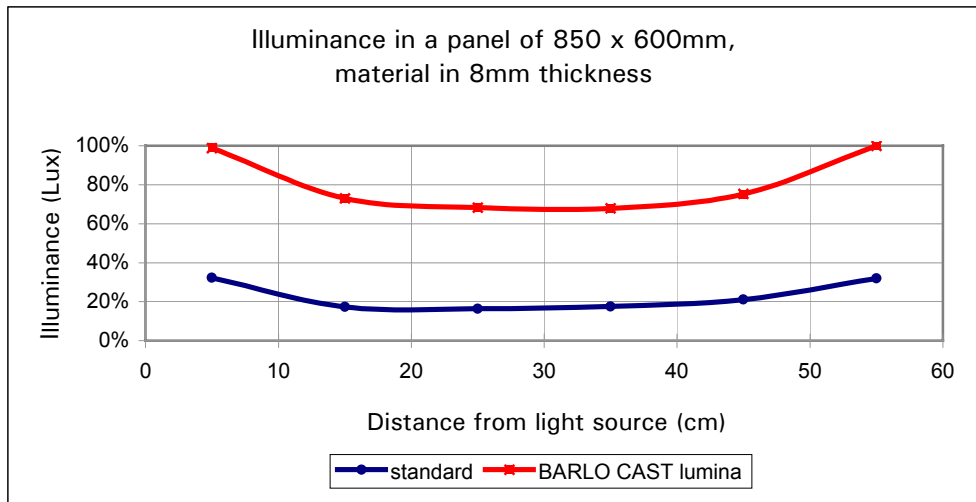
**Recommended thickness (depending on the application)**

Panel size	Panel dimension in mm	Light source configuration	BARLO CAST 'lumina'	
			Optimal thickness	Acceptable thickness
> A0			15 mm	-
A0	1197 x 840		15 mm	10 mm
A1	840 x 595		10 mm	8 mm
	840 x 595		15 mm	-
A2	595 x 420		10 & 8 mm	6 mm
A3	420 x 297		10 mm	6 mm
< A3			6 mm	-

**9. LIGHTING INFORMATION**



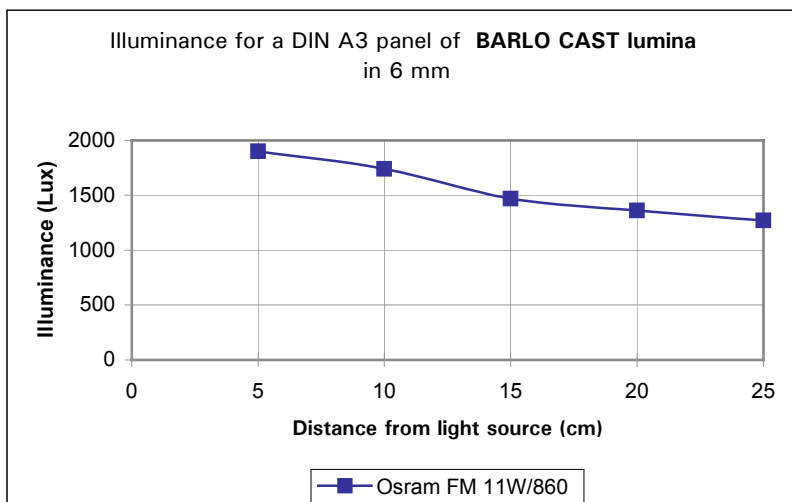
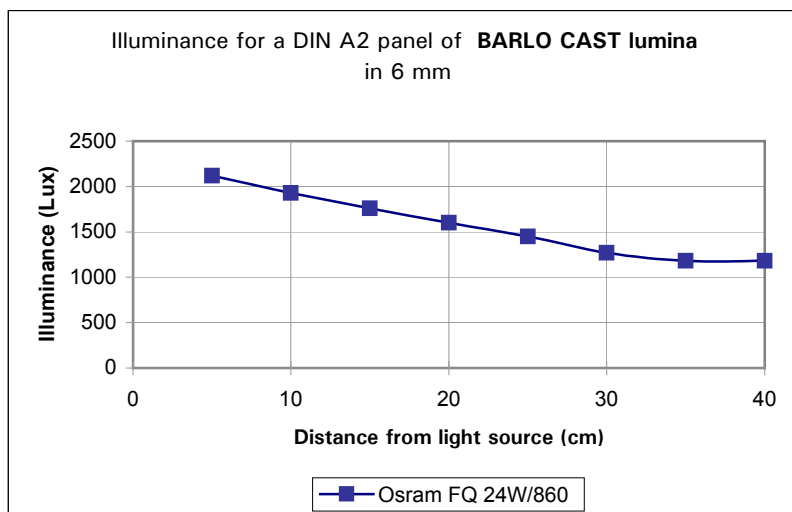
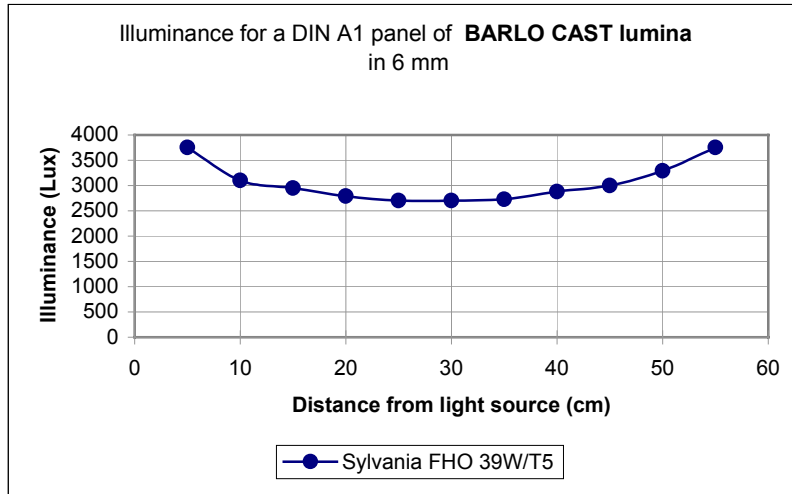
Graphic 1

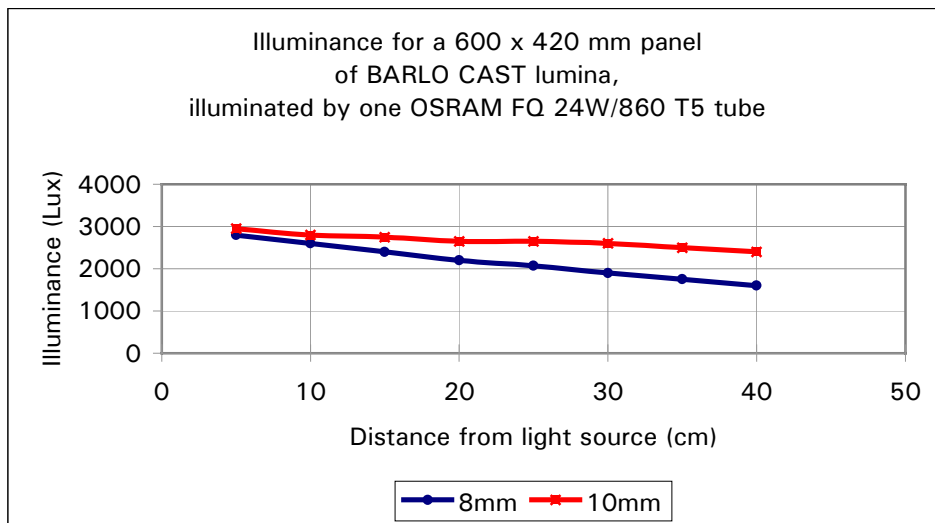
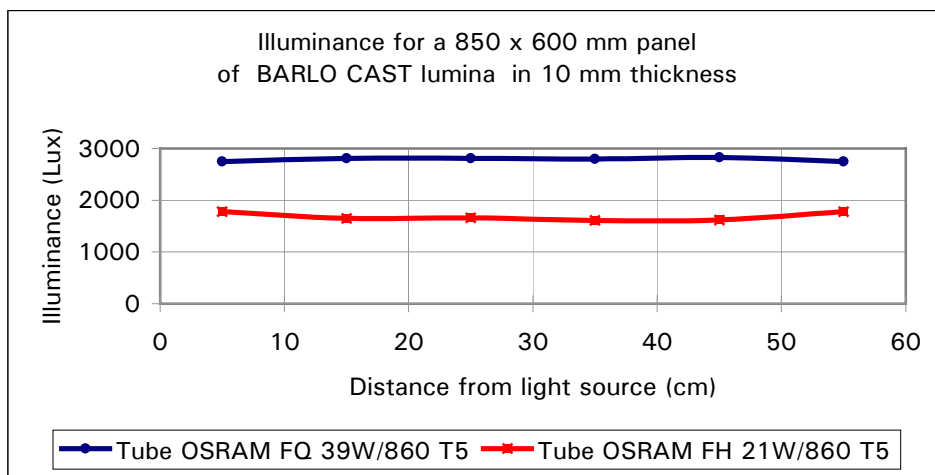
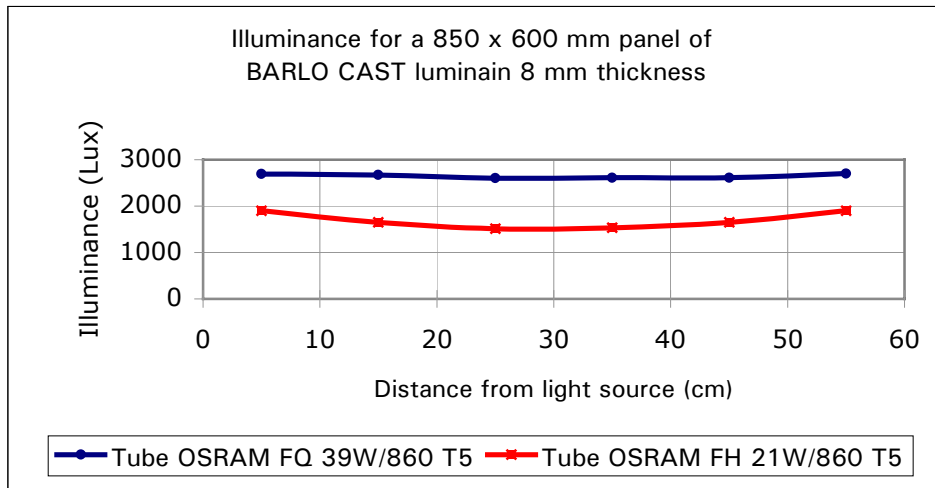


Graphic 2

Graphics 1 and 2 were built up using a BARLO CAST lumina sheet in 8mm thickness. Frame dimensions were 850x600 mm, sheet was illuminated by 2 tubes (OSRAM FQ 39W/860).

**10. LIGHTING PERFORMANCE BARLO CAST LUMINA 6-8-10 mm**





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