Material

Polymethylmethacrylat (PMMA)

Specifications

	Test method	Unit	Value
General properties			
Relative density	ISO 1183	-	1.19
Rockwell hardness	ISO 2039-2	M scale	100
Water absorption	ISO 62	%	0.3
Reaction to fire	UL94	-	HB
Length and width tolerance	For default values see table on page 2, smaller tolerances possible after technical consultation		
Thickness tolerance	Gem. ISO 7823-3	%	thickness ≤3mm: ±10% thickness 3-10mm: ±5% smaller tolerances possible after technical conultation
Mechanical properties			
Tensile strength	ISO 527 (5 mm/min)	MPa	75
Elongation of break	ISO 527 (5 mm/min)	%	>4
Bending strength	ISO 178 (2 mm/min)	MPa	>115
Young's modulus	ISO 178 (2 mm/min)	MPa	3200
Impact strength (Charpy, uncrenated)	ISO 179	kJ m^{-2}	12
Impact strength (Izod)	ISO 180/1A	kJ m^{-2}	2
Thermal properties			
Vicat softening point	ISO 306 A	°C	>105
Thermal expansion coefficient	ASTM D696	X 10^{-1} K^{-1}	7.7
Optical properties			
Transmission	ASTM D1003	% (3mm)	>92
Refractive index	ISO 489 A	-	1.49
Electrical properties			
Surface reistance	IEC 93	Ω.m^{-2}	>10^{14}
Dielectric strength	IEC 243	kV.mm^{-1}	15

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Length and width tolerance

dimension in mm	tolerances in mm
smaller than 30	± 0.2
over 30 to 120	± 0.3
over 120 to 400	± 0.5
over 400 to 1000	± 0.8
over 1000 to 2000	± 1.2
over 2000 to 3000	± 2

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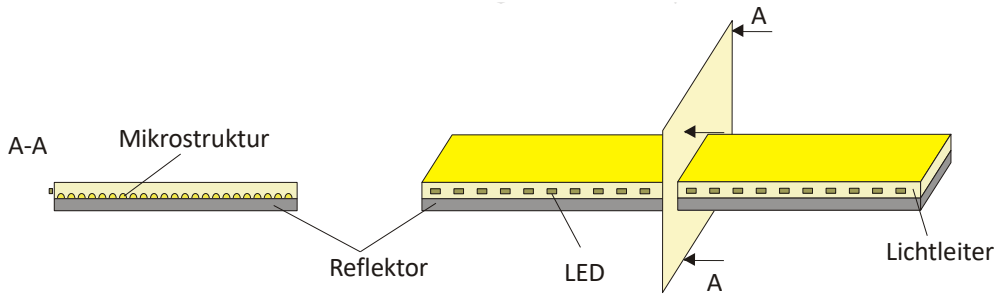
Cleaning and handling

For the highest level of efficiency and uniformity no particles such as dust or finger prints are allowed on the surface. This especially is crucial for the area close to the LED input. The light guides are cleaned before shipment. If further cleaning is needed prior to the final assembly, using conventional glass cleaner is recommended. Highly concentrated alcohol like isopropanol, acetone or ethanol can damage the material.

Assembly

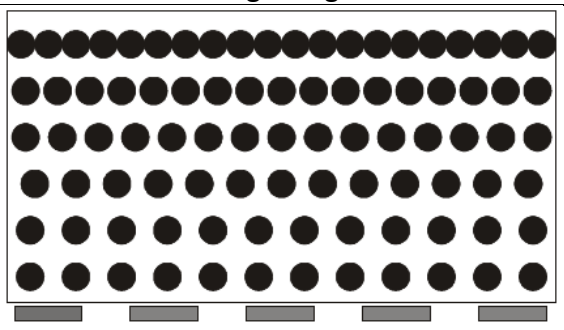
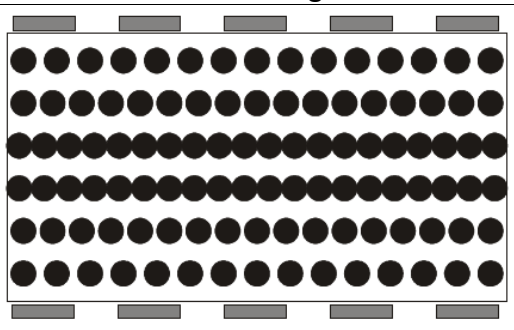
The structured side of the light guide should face towards the reflector/case. The light guide should be mounted free of mechanical tension. For maximized efficacy the distance between the edge of the light guide and the LEDs should be minimized.



In most cases a protection film is applied on the non-structured side of the light guide. This film should be removed prior to the assembly.

Structure pattern

The light guides are individually adjusted for specific application. Therefor the structural design was developed based on provided technical data (e.g. light distribution, type, layout and number of LEDs). Modifications of the data the function of the light guide could be affected.
For single edge in put the LED are to be mounted on the edge with the lower dense structure pattern.
In case of double-edge light input the pattern is symmetric.

Single edge	Double edge
	

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