



Light Diffusion Grades

Fast Facts

Combining Light Transmission and Diffusion for LED Lighting Applications

LED manufacturers and designers know how difficult it is to find a material that hides the LED source while permitting light to be transmitted at optimal levels. This is important not only to aesthetics, but it ensures optimal energy efficiency – a key goal of LED lighting technology. Styron has been focused on this challenge for nearly 10 years and offers a complete portfolio of resins to meet the needs of an assortment of LED Lighting applications. Available in CALIBRE™ Polycarbonate Resins and EMERGE™ Advanced Resins, Styron materials feature quality, consistency and reliability. Ask about customization too, for your most difficult applications.

Advantages and Benefits

Balancing Light Transmission and Diffusion

Styron's proprietary light diffusion grades offer an outstanding balance of light transmission, light diffusion and whiteness to provide uniform light distribution while hiding LED "hot spots" across a wide range of thickness values for the fabricated lens or diffuser. Table 1 provides transmission at various thicknesses for our light diffusion / ignition resistant grades.

Excellent Toughness

High impact and heat resistance are necessary to provide the durability needed to protect costly LED light sources. Styron grades feature exceptional toughness which allows down gauging potential comparable to or better than acrylic.

Ignition Resistance

Styron light diffusion / ignition resistant grades are available in a wide range of performance levels. Table 1 indicates UL ratings at various thicknesses from V-0 to V-2 from .5mm to 1.5mm.

UV Stability

Styron resins offer various levels of ultraviolet (UV) light resistance to help reduce the potential for color shift, loss of surface gloss and property performance over time.

Attractive Appearance

With an opalescent white base color and the ability to help hide hot spots, all Styron resins produce aesthetically appealing lighting and signage. Materials are available in both white and custom colored applications.

Table 1: Available Styron CALIBRE™ Polycarbonate Resins and EMERGE™ Advanced Resins for LED Lighting

Product	Light Transmission (%) ¹	Haze (%) ¹	LD50 ²	UL 94 Listing	Processing methods	Applications
EMERGE™ 8130-6 IC1300080	71 (1 mm)	102	42	V-0 @ 1.0 mm, f1 ³	Extrusion, injection molding, injection blow molding	LED retrofit tubes and bulbs
	55 (2 mm)	102	57			
	45 (3 mm)	102	NA			
EMERGE™ 4350-7 IC1300068	72 (1 mm)	99	NA	V-2 @ 0.5 mm, f1	Extrusion, injection molding, injection blow molding	LED retrofit tubes and bulbs
	56 (2 mm)	99	58			
	47 (3 mm)	99	NA			
EMERGE™ 4350-22 IC1300069	93 (1 mm)	NA	NA	V-2 @ 0.5 mm, f1	Injection molding	Down light covers
	82 (2 mm)	NA	20			
	70 (3 mm)	NA	29			
CALIBRE™ 302V-6 LD HC18010009	50 (3 mm)	103	55	V-2 @ 1.5 mm	Extrusion	LED Signage, channel letters
	25 (4.5 mm)	103	60			
CALIBRE™ 303-15 HC18010014	88 (1 mm)	94	NA	HB	Injection molding	Frosted light covers, dome lights
	79 (2 mm)	101	NA			
	69 (3 mm)	101	NA			

¹ ASTM D1003 test method.

² Half power angle measured by Optical goniophotometer. Angle at which light intensity is 50 % of light intensity at zero angle.

³ f1 rating for thickness >= 1.5 mm



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Applications

Troffers, lenses, signage, diffusers, fluorescent light replacement covers

Processing Methods

Extrusion, injection molding, injection blow molding

Focused on Meeting Your Needs

Styron CALIBRE™ Polycarbonate Resins and EMERGE™ Advanced Resins are specifically designed for applications that balance light transmission and diffusion. Custom formulations are no problem. Styron collaborates with customers in the Lighting industry to ensure that the materials selected meet the specific needs of each application including property performance, part design, manufacturing and regulatory requirements.

Contact Information

Commercial

Bill Marshall
Senior Account Executive
Styron LLC
Kingsley, MI

+1 231-263-0260
WBMarshall@styron.com

Pam White
Account Executive
Styron LLC
Yorktown Heights, NY

+1 914-526-4289
pmwhite@styron.com

Technical

Kersten Terry
Research Scientist R&D
Styron LLC
Midland, MI

+1 989-636-3857
terryka@styron.com

Distributor

Melissa Such
Distribution Channel Manager
Styron LLC
Maple Grove, MN

+1 763-478-3077
MSuch@styron.com

Committed to the electrical and lighting industry. In addition to its light diffusion / ignition resistant grades, Styron offers a full portfolio of CALIBRE™ Polycarbonate Resins and EMERGE™ Advanced Resins for use in LED Lighting and other electrical applications.

For more information contact us at 1-888-STYRON1 (1-888-789-7661) or visit us online at <http://www.styron.com/na/en/industries/electrical/>.