

Luminit LSD Scatter Model with Substrate plus Resin

Summary: This article describes how to extract the correct LSD Angle and Transmission light from Luminit's LSD scatter model in OpticStudio when using Polycarbonate as a substrate on a non-injection molded part. For more product information on the Light Shaping Diffuser®, please visit www.luminitco.com.

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Applies to:

OpticStudio

Non-Sequential Ray Tracing

Illumination & Stray Light

Article:

Luminit LSD Scatter Model with Polycarbonate

This article contains supplemental instructions for 'Luminit LSD Scatter Model User Guide' and 'Luminit LSD Scatter Model Transmission', on how to set the model to get the correct transmission values and LSD Angle. Since most illumination analysis require not only the correct pattern, but also the correct amount of light to be part of the data set, we will show you how to set this with the LSD model you are using.

Luminit uses a proprietary resin on top of the substrate. Since the resin index is much different from Polycarbonate, the substrate and resin materials change the transmission characteristics. In order to get the most accurate transmission values and LSD angles, the user must model the resin material on top of the Polycarbonate substrate.

To do this, the **Resin** index information must first be entered into the 'Materials Catalog' under the 'Libraries' tab. User defined materials should be entered into the catalog labeled 'MYGLASS.AGF'.

Luminit's index information for the resin.

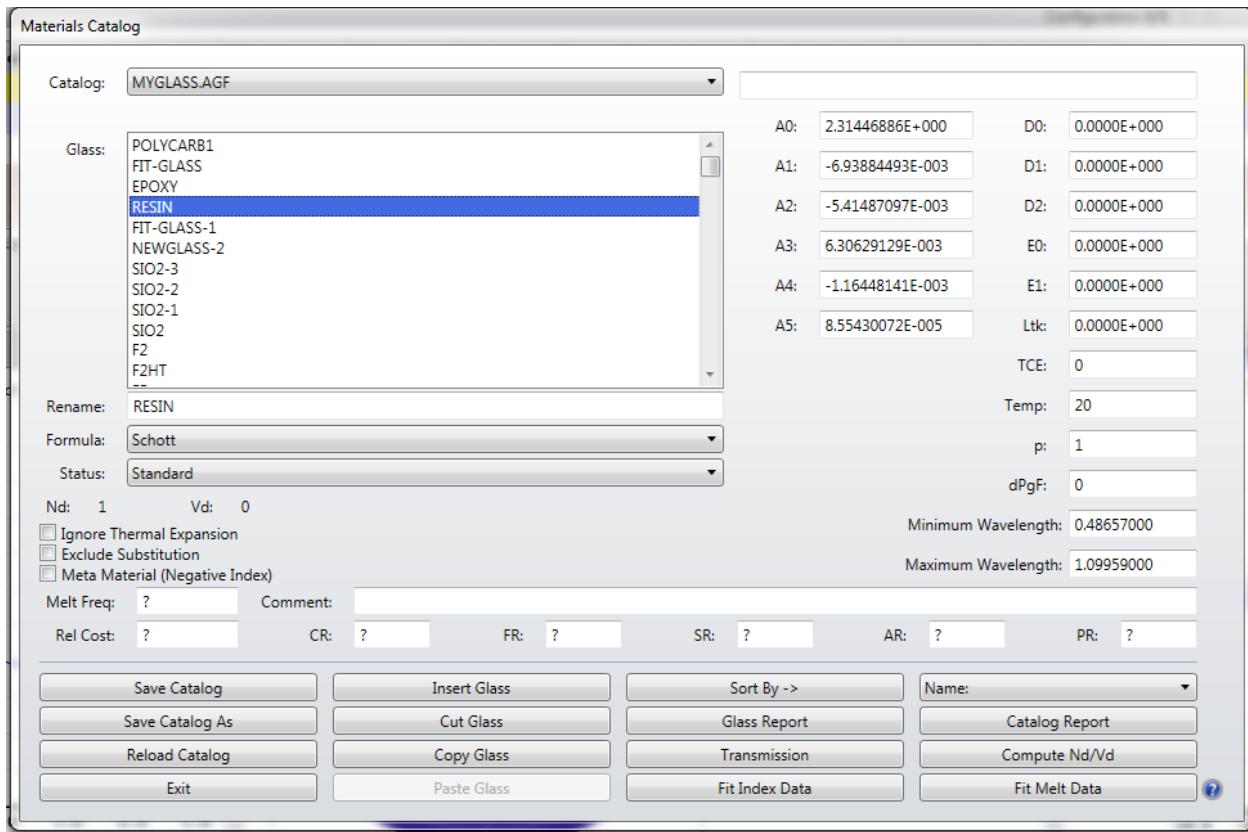


Figure 1: Materials Catalog entry window.

Formula: Schott

A0: 2.31446886E+000, A1: -6.93884493E-003, A2: -5.41487097E-003, A3: 6.30629129E-003,

A4: -1.16448141E-003, A5 8.55430072E-005

For the Polycarbonate material, make sure that the wavelength is in the range of use. If not place a copy of the 'POLYCARB' into the user defined catalog 'MYGLASS.AGF' and change the name to 'POLYCARB1'. Then adjust the **range of wavelength** by having the appropriate **limits** for the 'Minimum Wavelength' and 'Maximum Wavelength'.

Object information for the resin and substrate

The Resin and Substrate should be listed as two **separate objects**. The Resin can be given a 10 micron thickness. The Polycarbonate substrate should be displaced by the thickness of the resin.

Material	Front R	Z Length	Back R
-	50	10000000	1.000
RESIN	0.200	1.000E-02	0.200
POLYCARB1	0.200	0.100	0.200
	30.000	10.000	181
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Figure 2: The 2 materials are listed separately.

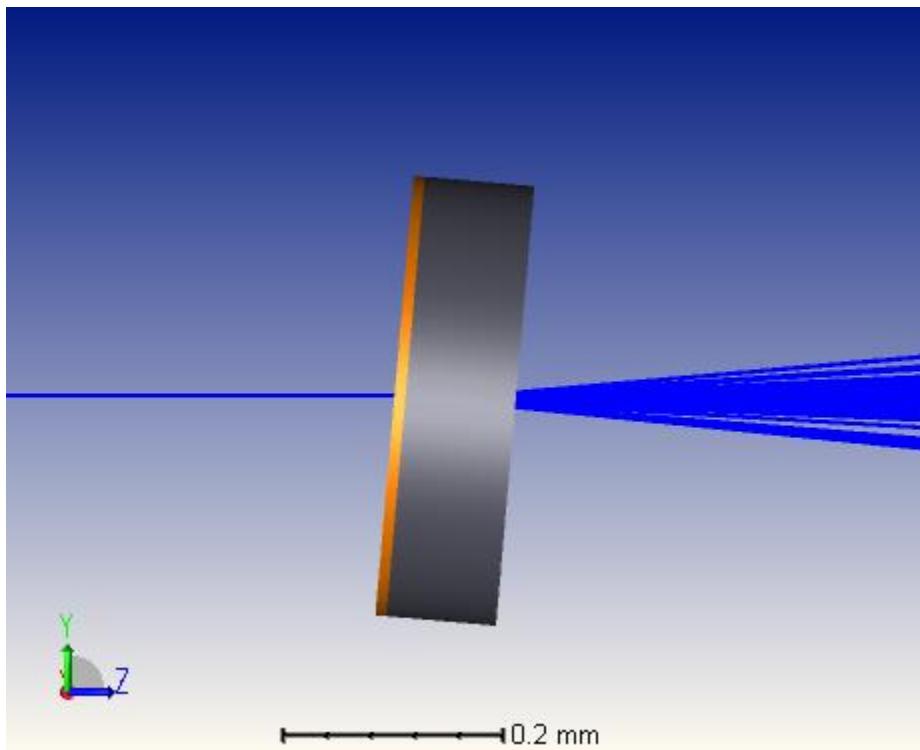


Figure 3: The 2 resin (orange) is on top of the Polycarbonate substrate (gray).

Finally, apply the appropriate coating and scatter characteristics to the outer surface of the resin as called out by the supplementary documents.

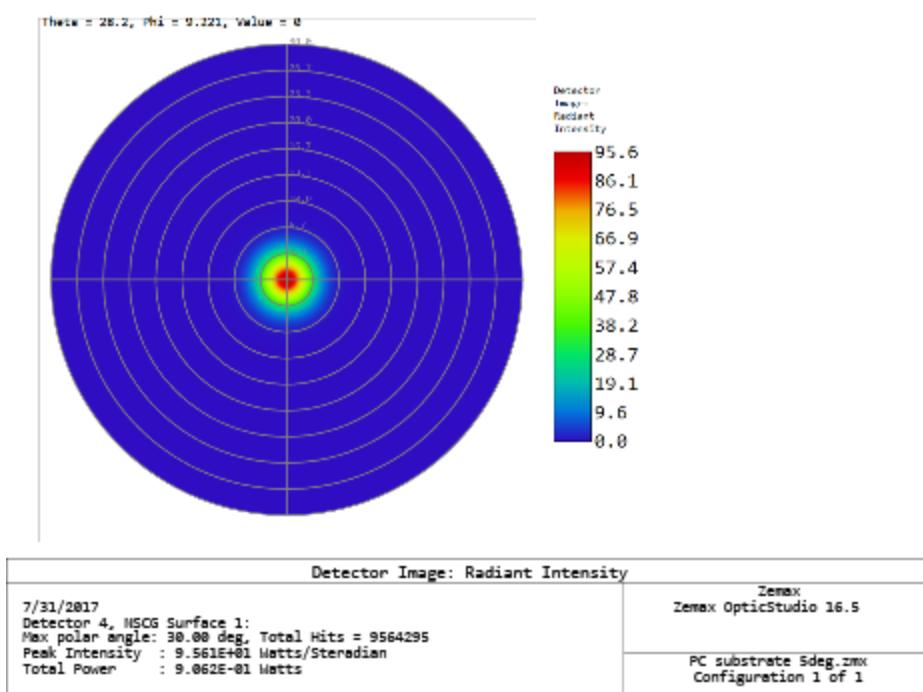


Figure 5: Result of Ray Trace with no coatings. After tracing 10 million rays.

Your results may be different, depending upon the source wavelength, LSD angle and number of rays traced.