

LUCITE® DIAKON®

Case Study PMMA for Automotive LED Lighting



Achieve the toughest requirements for the acrylic parts of your automotive LED lighting applications.

Polymer: Lucite® Diakon®

Application: Automotive LED lens, with decorative housing trim

Processing: Co-injection molding

Key Benefits

- Match optical and aesthetic requirements
- Excellent transparency and optical clarity for the clear PMMA grade
- Very high gloss and fully opaque at 1mm for the “jet” black PMMA grade
- Demonstrate excellent resistance to UV and weathering exposure
- Improve impact resistance

The Challenge

Lucite International has been approached to create 2 PMMA materials. Their customer needed to meet precisely defined requirements in both clear and opaque black variants, for use together in co-injection molding automotive LED lighting applications.

Customer requirements:

Clear variant for automotive lighting

- Excellent transparency and optical clarity
- Excellent resistance to UV and weathering exposure
- Impact resistance

Black variant for decorative trims

- Fully opaque at 1mm thick

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- Very high gloss and “jet” black colored
- Weather resistant and impact modified

The Solution

With a strong knowledge in the formulation of acrylics, Lucite International rapidly developed a clear and a black variant matching the customer’s requirements:

Example on clear variant	Customer Target	New Lucite® Diakon® development
Light Transmission	>89.0 %	91.0 %
Haze*	<1.4	0.9
Impact (Notched Izod kJ/m ²)	3.7	3.7
Vicat Softening Point (°C)	> 108	111
UV resistance	WOM 1344 hours	Pass
Water whitening resistance	According automotive norm	Pass
MFI	2.6 – 3.6	3.1

After having confirmed the feasibility of their customer’s requirements, Lucite International worked on the specific formulation of the acrylic materials. They provided the right balance of properties for their automotive customer without compromise on the classic attributes of PMMA.

Lucite International provided development samples with data for prototype tooling manufacture and ensured the maintenance of the properties during the scale up program to full scale production trials.

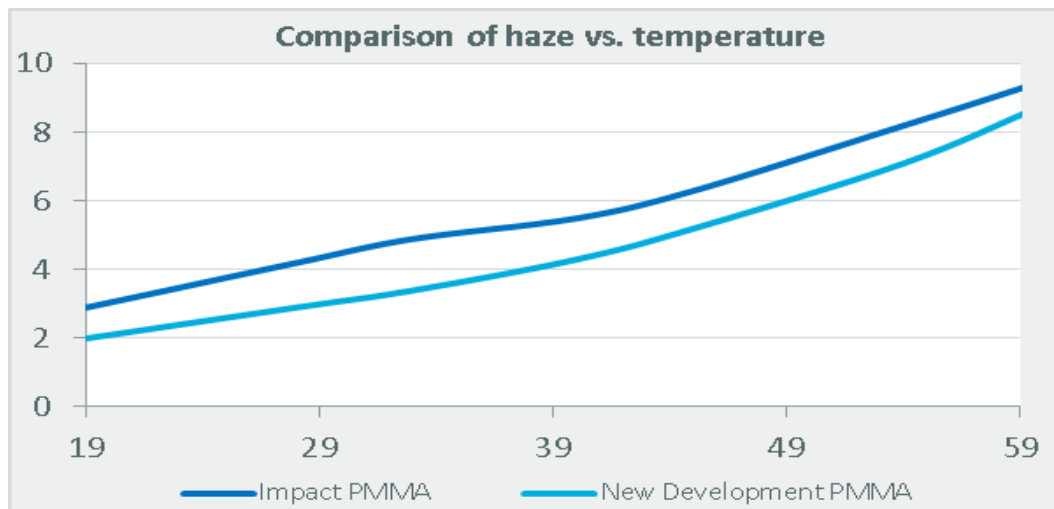


Figure 1: Lucite International match the haze profile required by their customer

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