

Diffusive Microlens Array

Diffusive microlens array optical component spreads a point light source into a tophat distribution

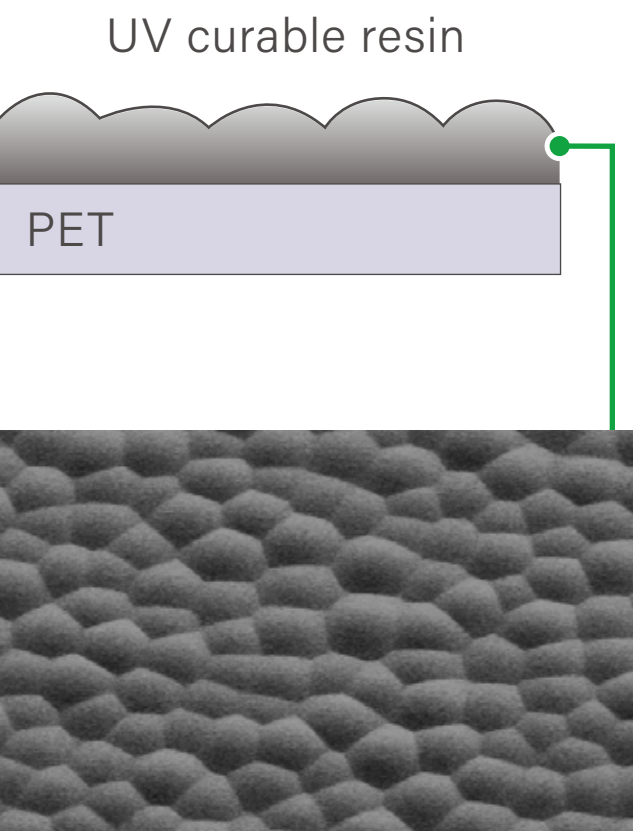
Product Name Diffusive Microlens Array

Features



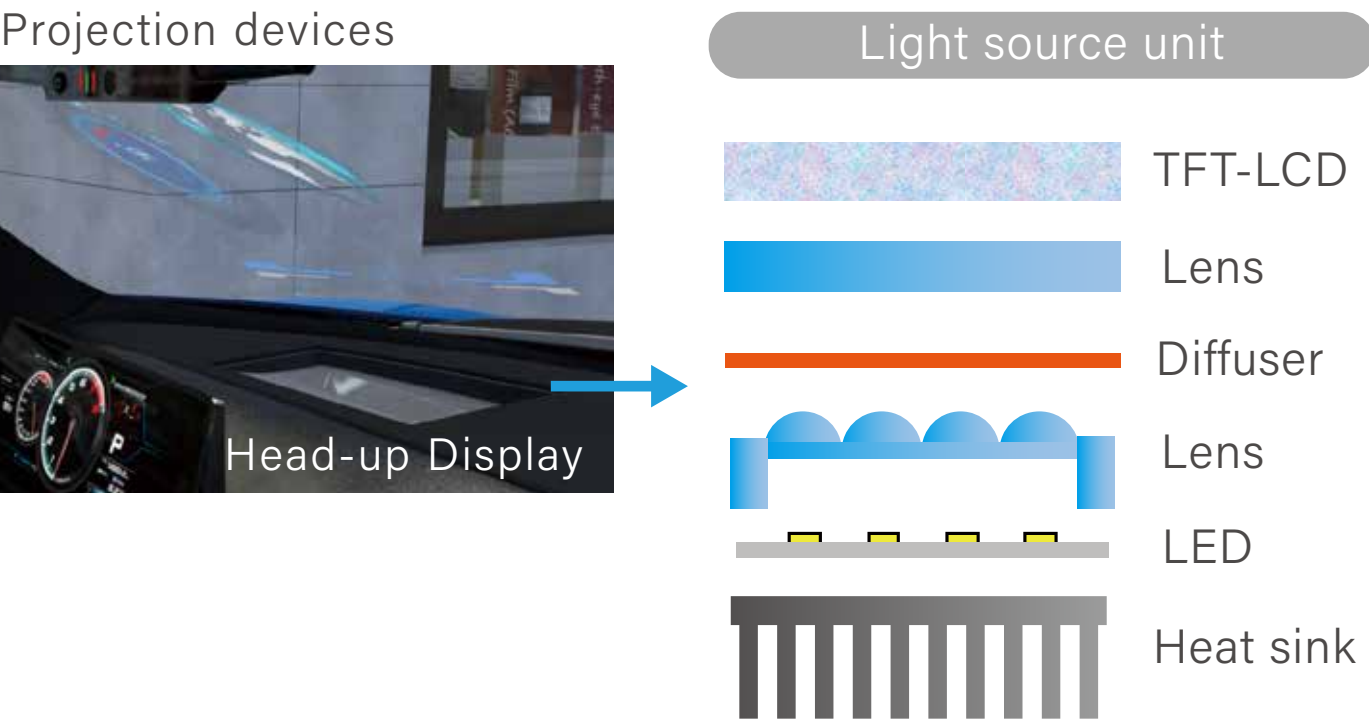
- Designed diffusive microlens array structure with micron sized lenses on surface of base film.
- Excellent top-hat diffusive property with reduced MURA of projected image compared to coated Diffuser film or Frosted Diffuser (Glass).

Structure



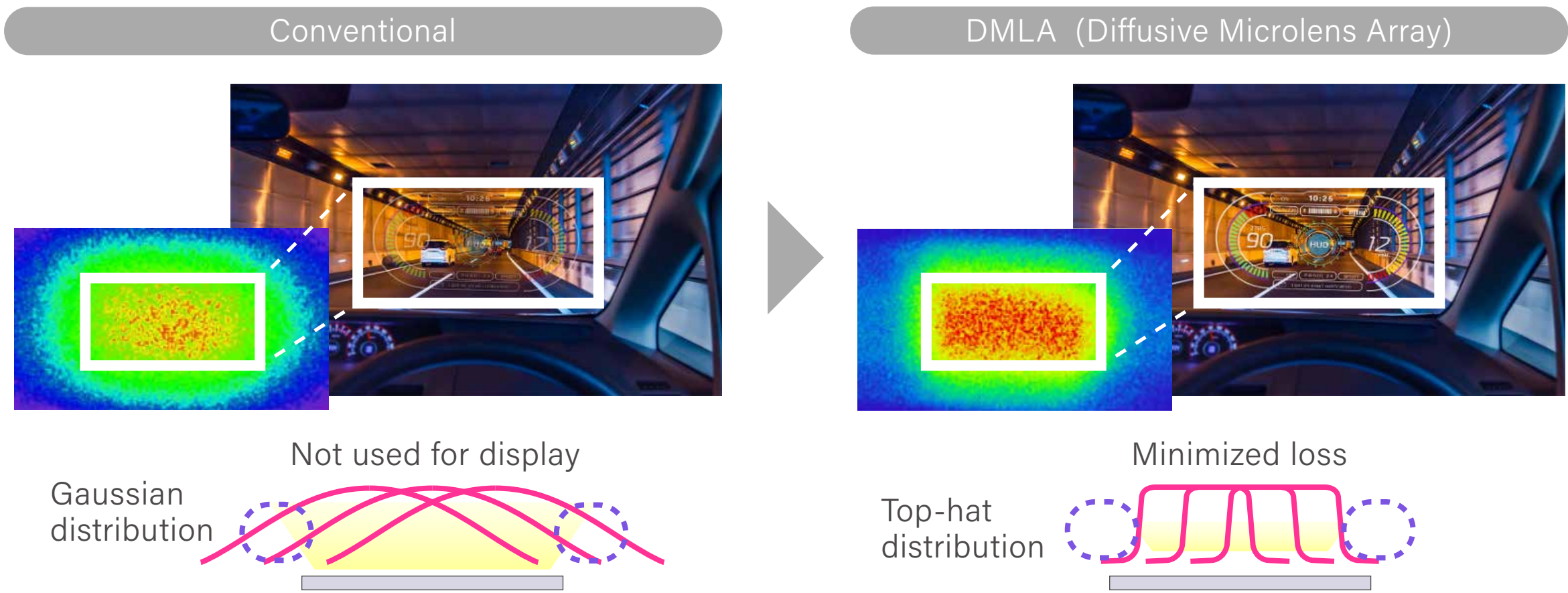
Applications

Suitable for automotive head-up displays, sensors, consumer projectors



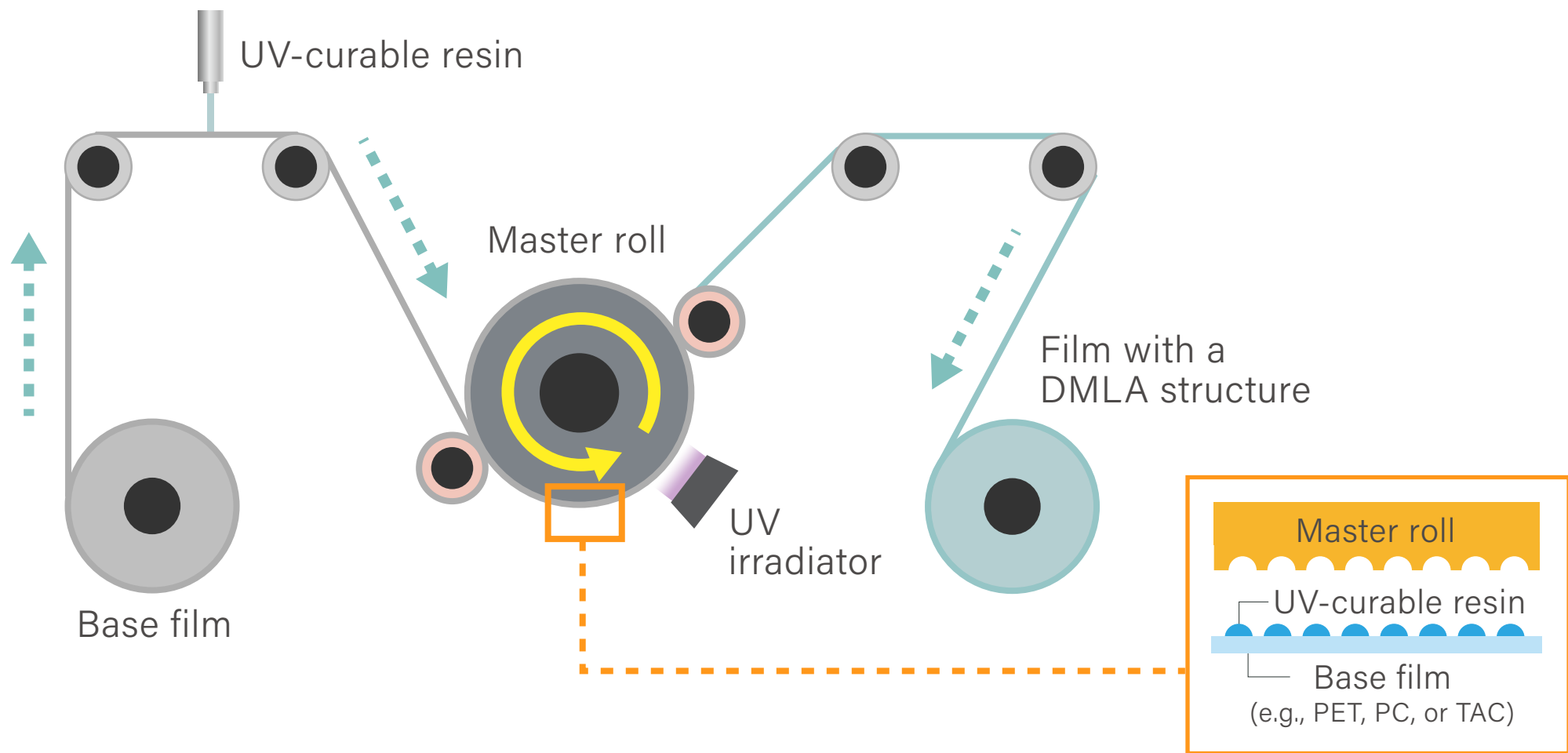
Effect

Concept for LCD type AR-HUD

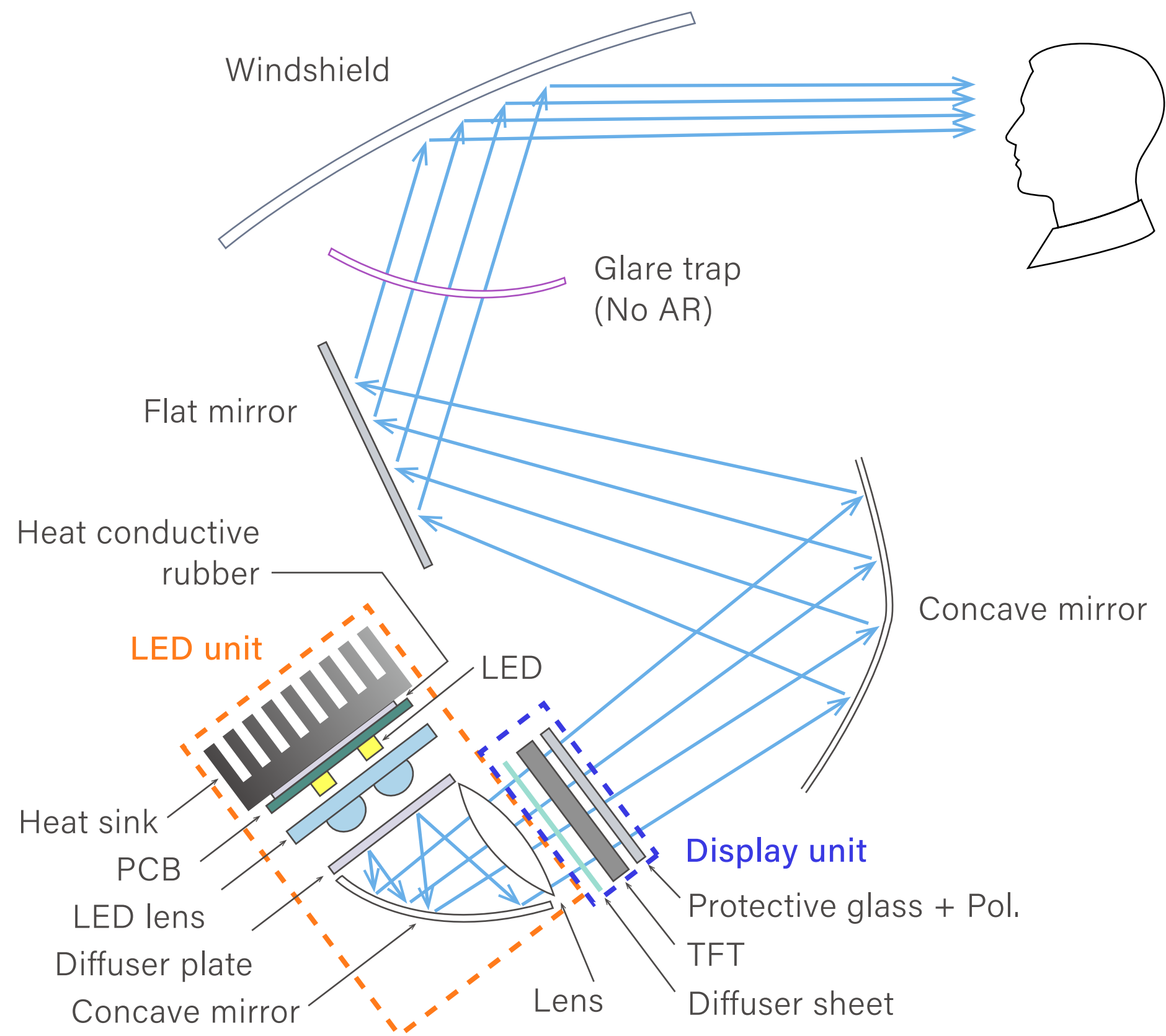


Fabrication

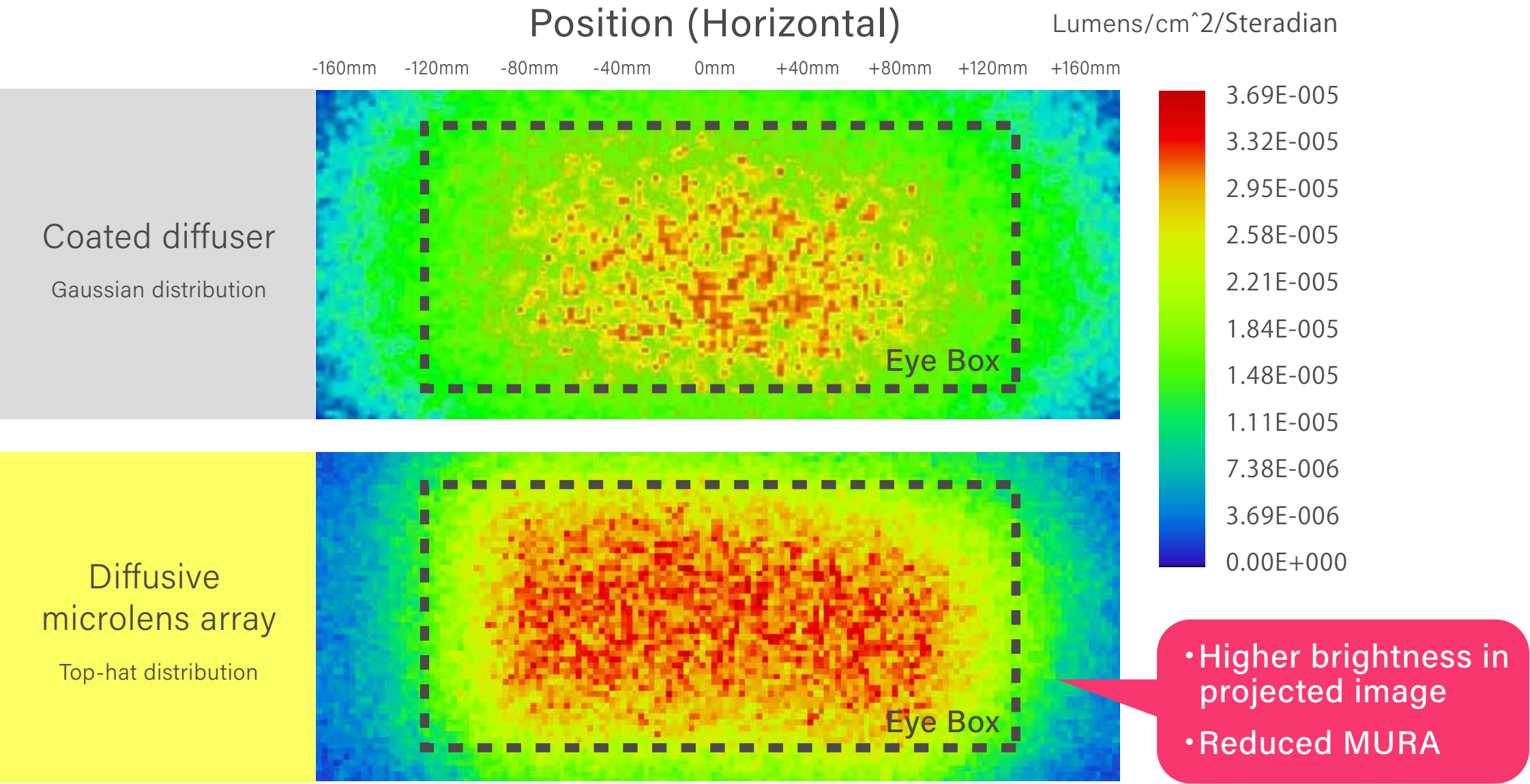
Imprint process with formulated UV-curable resin ensures high temperature stability and good adhesion to substrate.



Optics design



Simulation Results



Simulation Conditions

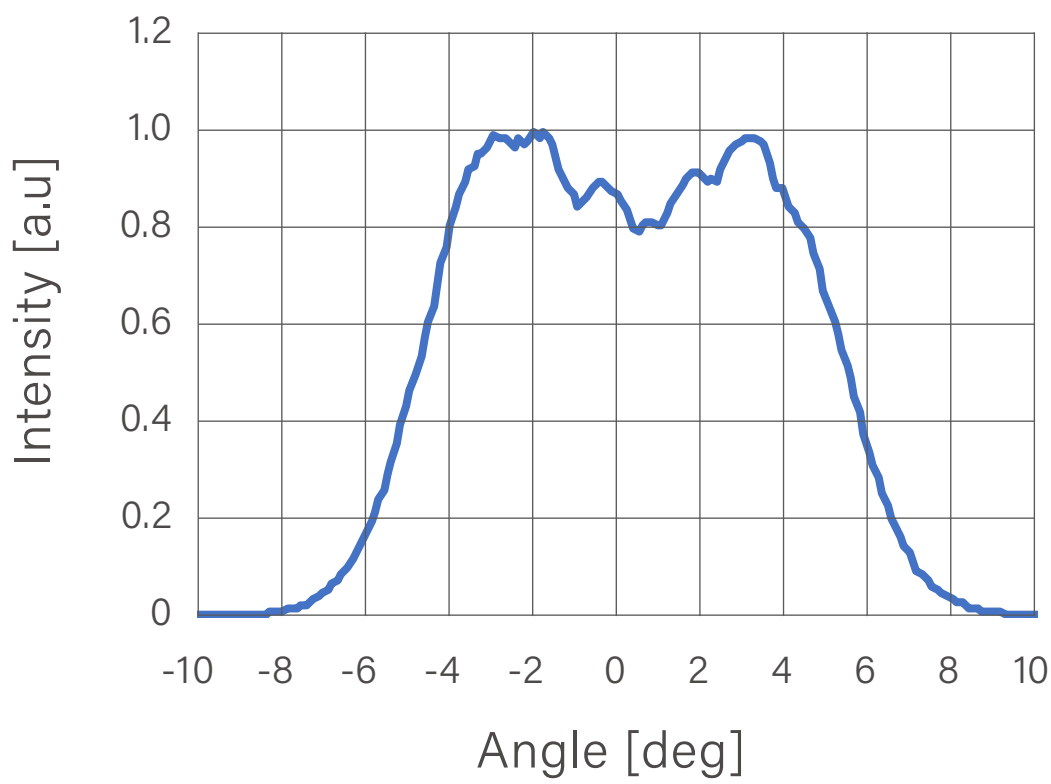
Set value	Set value
Diffuser type	• Coated diffuser: 5 deg • Diffusive micro lens array: 8 deg
Screen size	200mm(V) x 400mm(H)
Field of view	7°(V) x 3°(H)
Virtual image distance	2.6 m
Magnification	4.7 times

Software
ZEMAX OpticStudio

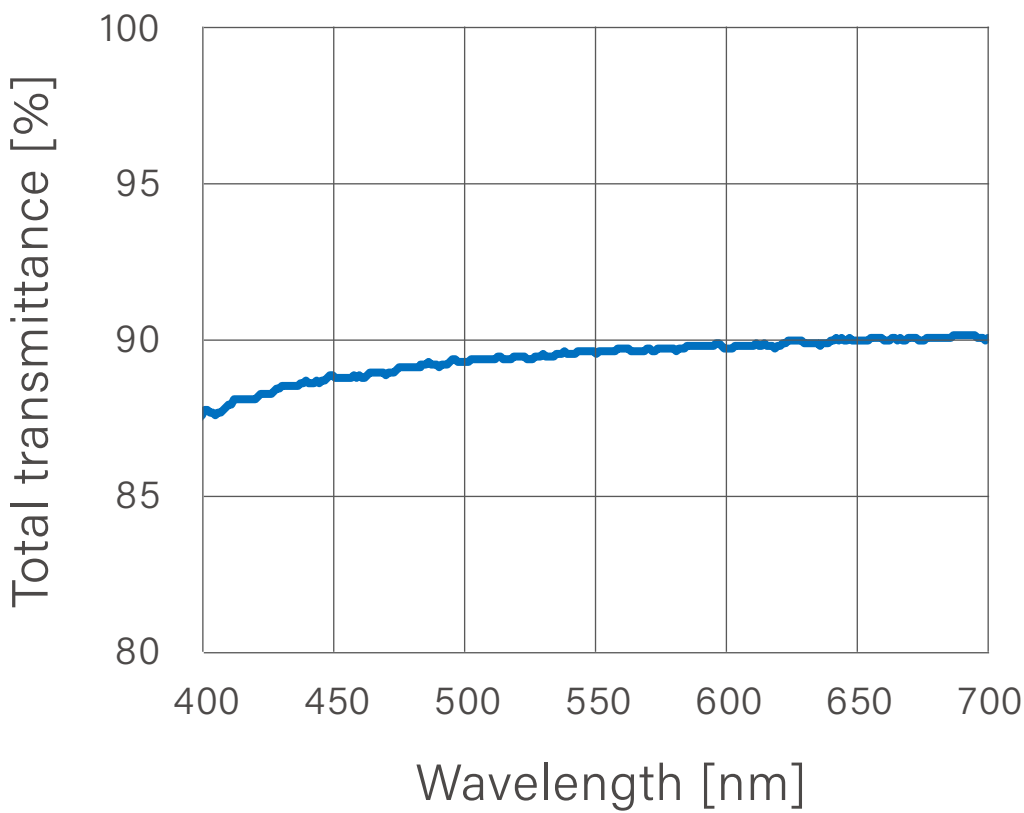
Properties

Diffusive angle (FWHM): 10.2 deg, Total transmittance: 89.4%

Diffusion property



Transmittance

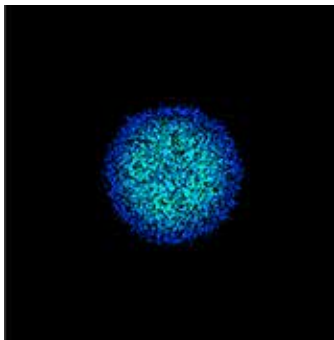


Diffuser sample

Material: PET

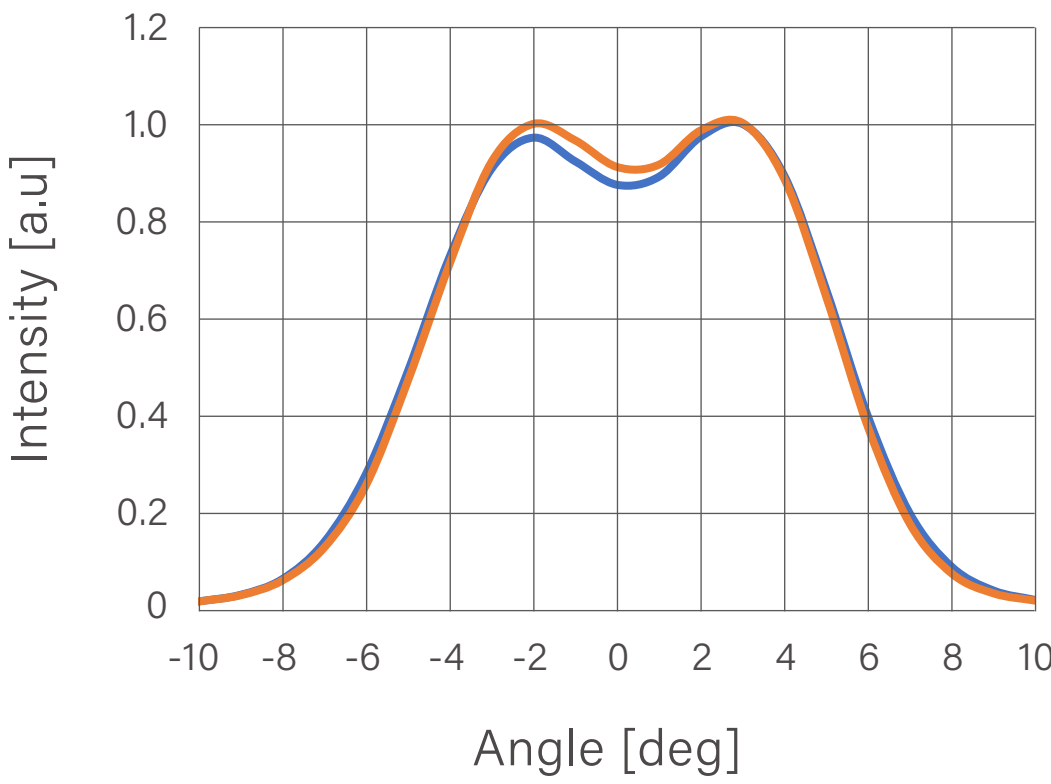
Circular type

FWHM angle : 10deg

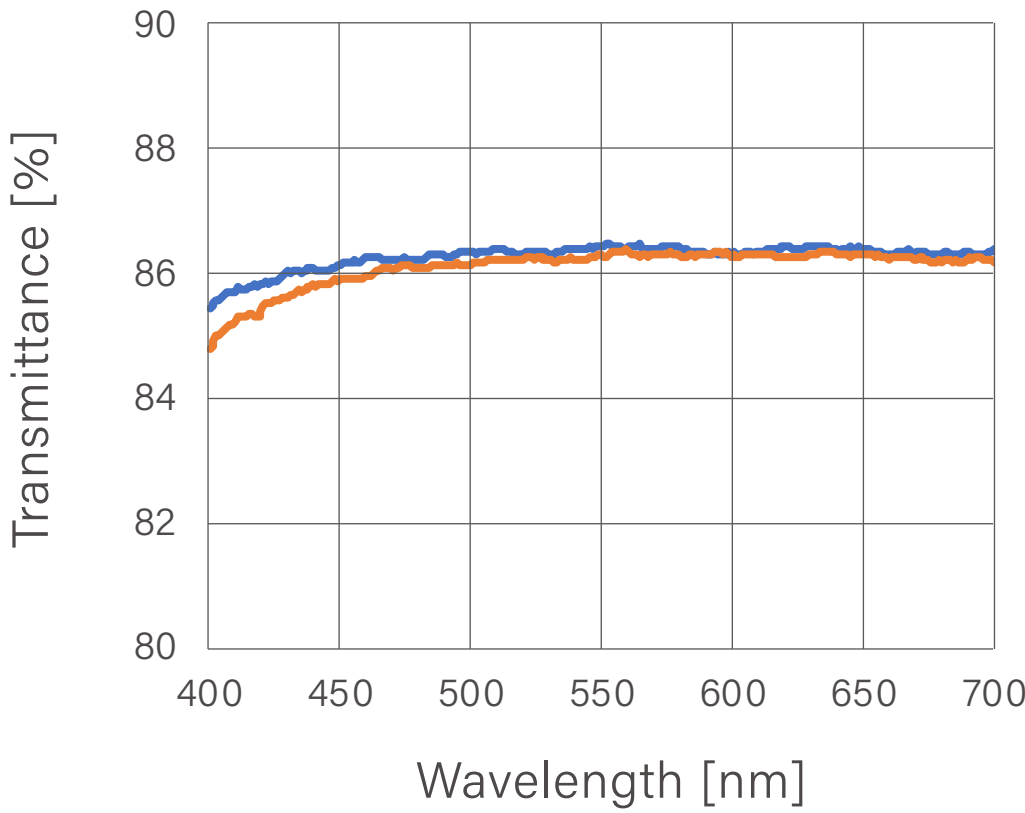


Reliability

Diffusion property



Transmittance



Diffuser sample

Material: PET

Diffusive angle (FWHM): 10.2 deg

Reliability conditions

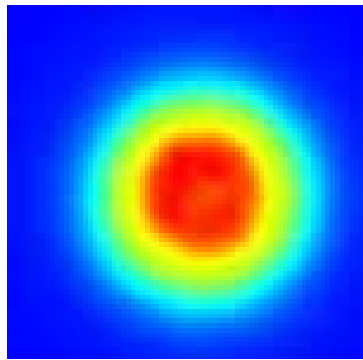
Temperature: 105°C

Time: 500 hours

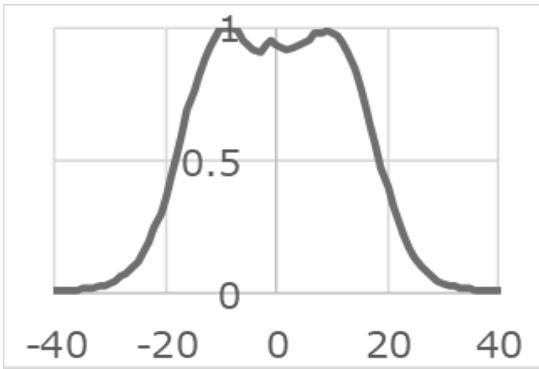
Specifications

Items	Specifications	
Base film material	PET	
Size	200 x 400 mm	
Thickness of base film	100 μm	
Diffusive angle (FWHM)	8°, 10°, 12°	
Beam shape / light distribution	Circular / top-hat type ^{*1} ^{*2}	
Total transmittance	Over 86% @FWHM10°	[*] Depends on diffusive angle with Integral sphere used

*1 Circular



*2 Top-hat type



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The document was created in November 2021.