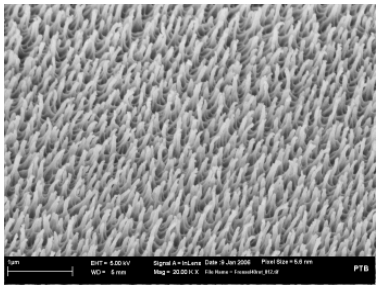
PLASMAR® DIRECT (PAR)

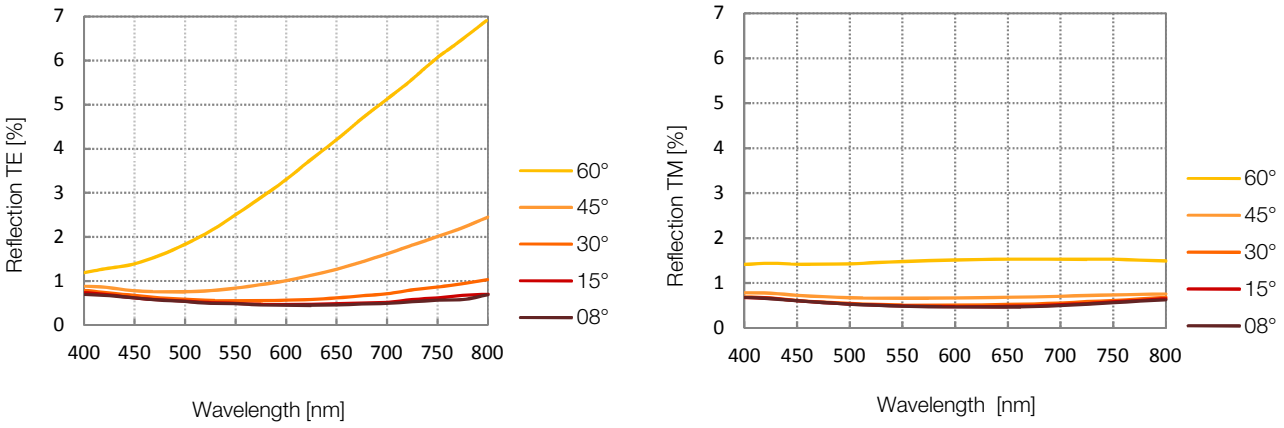
PlasmAR® is our latest development in the field of antireflective nanostructures. It is a stochastic structure which can be molded or directly applied into a plastic part.



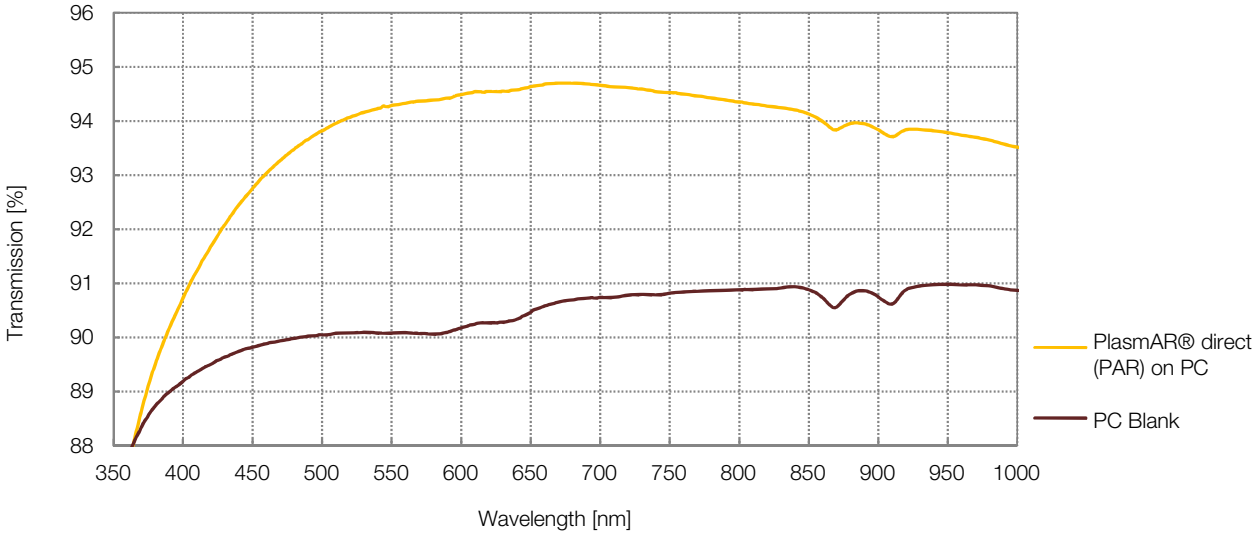
PlasmAR® has a broadband antireflection effect. Due to ist stochastic arrangement, PlasmAR® nanostructure does not show any specific coloured reflexes and it is angularly independent for an incidence angle of up to 45°

The directly created PlasmAR®-strukture (PAR) can be applied to plano curved as well as microstructured surfaces. It is possible to structure different polymers up to a size of 940 mm in diameter (37“).

Principle curve: Reflection (TM) + (TE) of a PlasmAR® direct (PAR) -structured interface under different angles of incidence



Principle curve: Transmission of a PlasmAR® direct (PAR) structured PC part, one sided (optimized for 654 nm)



Engineered to Manage Light ™

ORAFOL® Fresnel Optics

PLASMAR® DIRECT (PAR)

In general, antireflective nanostructures are very sensitive to mechanical contact and it is thus recommended to use these types of products only when they are not exposed. But we – ORAFOL Fresnel Optics GmbH – managed to raise the mechanical and thermal resistance of the PlasmAR®-structure to the level of the non-structured part by applying an inorganic covering layer.

Properties of PlasmAR® direct (PAR):

- reduced losses (reflection, stray light and absorption)
  - single wavelengths: ~ 85%
  - VIS on plano surfaces: 70 - 85%
  - VIS on structured surfaces: 60 – 80% [1]
- sensitive to mechanical contact, especially to shear loads
- with covering layer: limiting load at 20 strokes with 5N (ca. 175kPa) with microfiber cloth
  - resistant to thermal shock
  - resistant to thermal loading up to the softening temperature of the respective substrate
- climate resistant according to DIN EN ISO 9022-14-06 (70°C to -40°C, 5 cycles)
- climate resistant according to DIN EN ISO 9022-16-01 (23°C/ 40°C – 85% / 92% relative humidity, 5 cycles)
- custom designs possible
  - single wavelengths and wavelength ranges
  - different substrate materials
  - combination with hard coating (HC)

[1] for PMMA at 380nm – 780nm; depending on structure

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ORAFOL Fresnel Optics GmbH
Flurstedter Marktweg 13 • 99510 Apolda • Germany
Tel.: +49 3644 5011 0 • Fax: +49 3644 501150
E-Mail: sales@fresnel-optics.de • www.fresnel-optics.de

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