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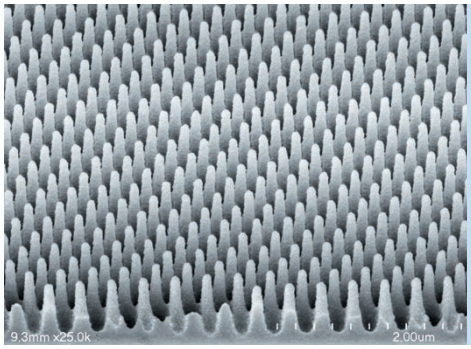
High Performance Antireflective Molds

HT-AR-06



High-performance AR structures

HT-AR-06 surface structures reduce the reflectivity from polymer surfaces down to below 0.6%. Our state of the art nano-optical imprinting molds represent the result of years of optical design work and cutting edge origination process development. HT-AR-06 molds have been specifically designed for high-performance AR applications used in R&D work, as well as for product and process development. Molds are available up to a size of 100mm x 100mm. HT-AR-06 is a successive development of the HT-AR-09 series.

How HT-AR works

Imprinted HT-AR nanostructures are able to modify the optical properties of any formable material and reduce the reflection from this surface. As opposed to AR-coatings no additional material is required to be applied. Thus there is no costly coating process required. The AR effect is just achieved by modification of the surface topography on a sub-wavelength scale through nano-imprinting. HT-AR nanostructures make use of the bio-inspired moth-eye effect. The surface topography creates a graded-index profile, which reduces visual reflectance of a surface with n=1.5 from 4% down to below 0.6% in the HT-AR-06 version.

HT-AR applications

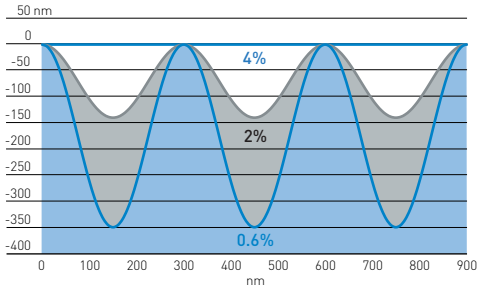
- Optical components, windows and covers in optical systems
- Surfaces and covers of flat panel displays and other display surfaces
- Transparent covers used in industrial equipment, automotive, consumer electronics, architecture
- Optical films
- Thin film and organic photovoltaics

Users of HT-AR molds

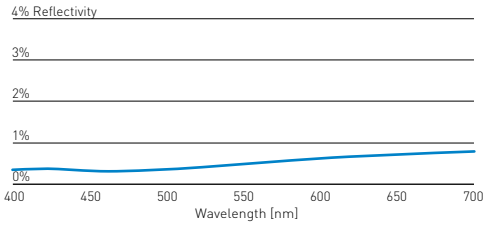
- Film manufacturers – for product and process development work
- R&D institutes – for research activities on nanostructured surfaces
- Manufacturers of equipment for injection molding, thermal embossing and roll-to-roll production – as a reference to demonstrate the technical capabilities and homogeneity of their production processes

HT-AR standard molds are for use in Research & Development.
Commercial use requires a royalty agreement.

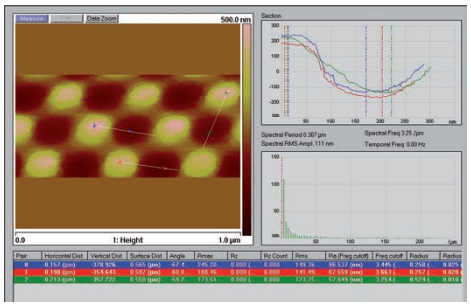
Reflectivity vs. structure depth



Visual Reflectivity



AFM Scan



Specifications

	HT-AR-06
Optical function	AR High Performance
Grating type	Hexagonal Array
Pitch	300 nm
Average depth	300 nm
Peak-to-peak	345 nm
Material	Nickel
Mold thickness	100 µm – 300 µm
Expected %R PMMA	Less than 0.6%
Mold size	**70 mm x 70 mm**
Active area	**50 mm x 50 mm**

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update 07.2024