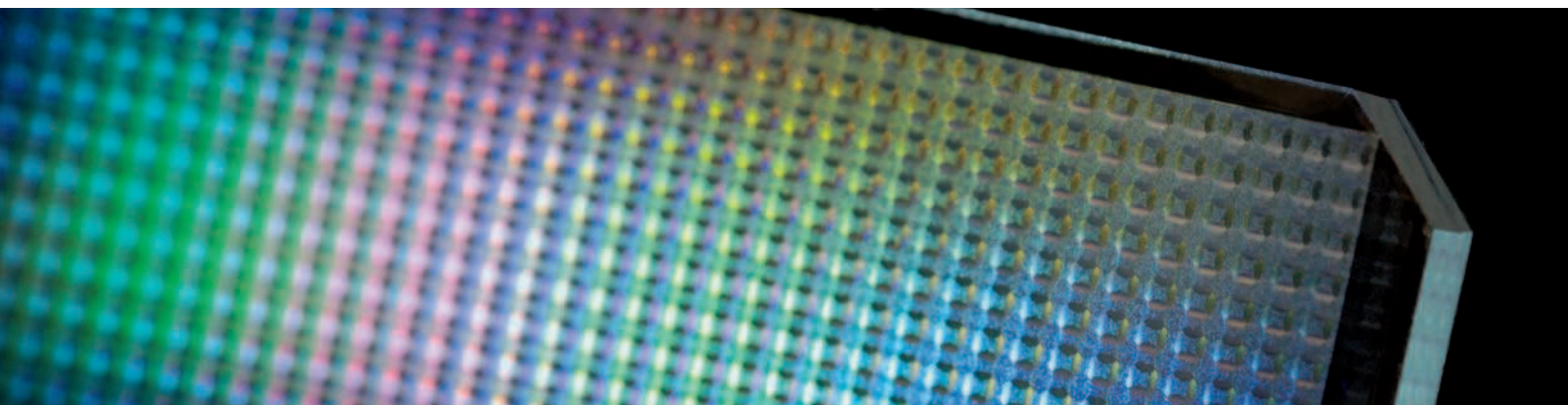




## Diffractive Optical Elements for off-axis Illumination



Multipole pupil illumination patterns are required to achieve the highest resolution in mask projection systems.

Diffractive Optical Elements (DOE) by Jenoptik efficiently generate such patterns with high precision and uniformity. The use of high-quality materials for the Jenoptik DOE results in high lifetime even under intense ultraviolet laser irradiation.

#### Features:

- Precise, homogeneous multipole illumination
- Arbitrary illumination patterns
- Highest efficiency by multilevel diffractive structures
- Cost-efficient binary DOE
- High damage threshold and lifetime
- Custom design with short delivery time.

#### Applications:

- Semiconductor equipment
  - Lithography (OAI, SMO)
  - Inspection
- Laser materials processing
- Laser measuring systems

# Diffraction Optical Elements for off-axis Illumination

## Specifications

Wavelengths:	193 nm to 2.5 $\mu$ m
Max. efficiency:	94 % (multilevel)* / 78 % (binary)*
Max. N A (@ $\lambda = 193$ nm):	0.05 (multilevel) / 0.6 (binary)
Intensity profiles:	arbitrary geometries and profiles
Pole balance:	< 1 %
Pole uniformity:	< 5 %
Zero order:	< 0.1 % (multilevel) / < 0.25 % (binary)
Clear aperture:	< 120 mm x 120 mm
Materials:	UV grade Fused Silica, crystalline Quartz
AR-Coating:	On request
Product number:	029110

\* AR coated

### High-end DOEs in different categories

category 0:

category 1:

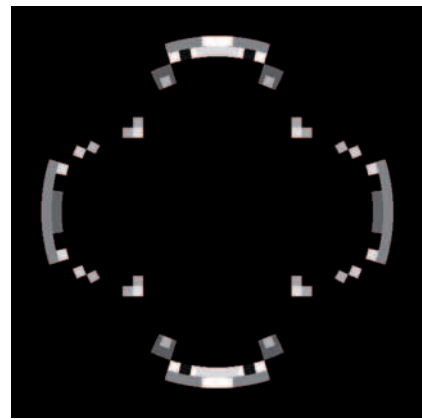
category 2:



Few poles with only two intensities



Few poles with more than two intensities (Grayscale)



Many small poles, many intensity values, matrix-like (pixelated) description (used for the SMO process)

It is our policy to constantly improve the design and specifications. Accordingly, the details represented herein cannot be regarded as final and binding.



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