



# News Letter

## Nikon's i-line glass with high resistance to solarization

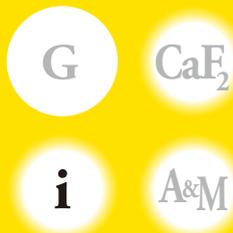
### •Optical design support with a wide variety of products

When natural light passes through a triangular prism, the light is divided into seven colors similar to a rainbow. This is because of a phenomenon known as dispersion. This demonstrates that different wavelengths of light have a different refractive index. Engineers involved in optical design need to design lenses by combining various optical materials, as dispersion is influenced by optical materials such as glass, etc.

The semiconductor lithography systems field, one of the more cutting-edge areas of optical design, requires high-performance lenses in order to project refined mask patterns. When a super-high-pressure mercury-vapor lamp at i-line (wavelength: 365 nm) is used as the light source for semiconductor lithography systems, specialized i-line optical glass is the most suitable for the lens.

Nikon started the development of i-line glass as early as 1983, and now offers a wide variety of i-line glass that meets the range of customer needs.

The refractive index and dispersion are the two factors that determine the performance of optical glass. Generally, when the refractive index of optical glass is higher, dispersion becomes higher, conversely, when dispersion is suppressed, the refractive index becomes lower. Therefore, different types of glass are used in combination. Nikon manufactures a wide variety of i-line glass products, ranging from the high refractive index type to the low dispersion type. This gives greater flexibility in lens design and has been well received among our customers.



Nikon's i-line glass with wide variation



### •Integrated system production and flexible response to customer's specifications

Nikon's i-line glass has superior resistance to solarization. When a super-high-pressure mercury-vapor lamp is used as a light source, solarization in lenses can be a problem. When solarization occurs, it may cause a deterioration in quality with the lens transmittance gradually changing during use. But Nikon's i-line glass can be used without that concern.

In addition, when manufacturing optical glass of a large size, extremely advanced manufacturing and measuring technologies are needed to ensure the glass retains its required optical properties. As distortion is likely to occur when dealing with large sizes, the glass needs time to cool down. Therefore, both data and experience relating to heat control technology count in this field.

Nikon has not only an abundance of accumulated expertise in the glass and lens field, but also the advantage of increased quality that has been improved by the in-house, integrated system of producing lens materials through manufacturing, grinding, polishing and coating. Nikon offers high-quality i-line glass that meets customer needs, including cost, delivery time and specification.



Nikon's i-line glass with high transmittance at the i-line wavelength

#### Terminology

**[Solarization]** The degree of solarization is indicated as a decrease in transmittance caused by radiation from a super-high-pressure mercury-vapor lamp at the wavelength for which a transmittance of 80% was exhibited before irradiation.

## TOPICS

We are looking forward to seeing you at Nikon's booth at the exhibition.

### LASER World of PHOTONICS CHINA

Date: March 17-19 (Tues.-Thurs.), 2015 Venue: Shanghai New International Expo Centre (China)

Inquiries NIKON CORPORATION Glass Business Unit

10-1, Asamizodai 1-chome, Minami-ku, Sagami-hara, Kanagawa 252-0328 Japan  
Phone: +81-42-740-6746  
e-mail: Glass.Sales@nikon.com Website: <http://www.nikon.co.jp/glass/>