

# High quality borosilicate glass –

The solid foundation behind NEXTERION® Microarray Slides from SCHOTT



Visual quality inspection

## Introduction

SCHOTT Microarray Solutions has exclusive access to 1.0 mm thick BOROFLOAT® 33 glass (Glass B) for the NEXTERION® microarray coated substrates. BOROFLOAT® 33 is a borosilicate glass that offers high chemical resistance, low fluorescence, and excellent flatness. The glass is precision cut into the microscope slide format for standard NEXTERION® slides and other formats, such as standard microplate or custom formats. All slides are laser-cut to create straight robust edges.

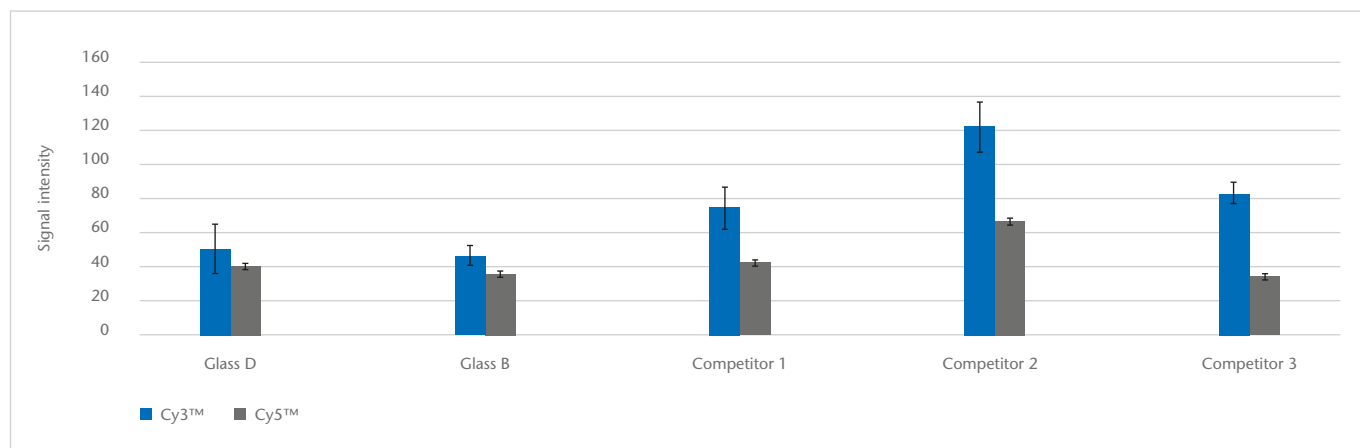
Additional information on different glass types and more detailed specifications can be found in the product flyer “Uncoated slides”.

## Chemical stability

BOROFLOAT® 33 glass exhibits excellent chemical stability and durability. The glass provides an inert support for biomolecule immobilization, and hybridization, and does not leach alkali ions over time. For this reason, borosilicate glasses are highly suited to microarraying applications.

## Fluorescence

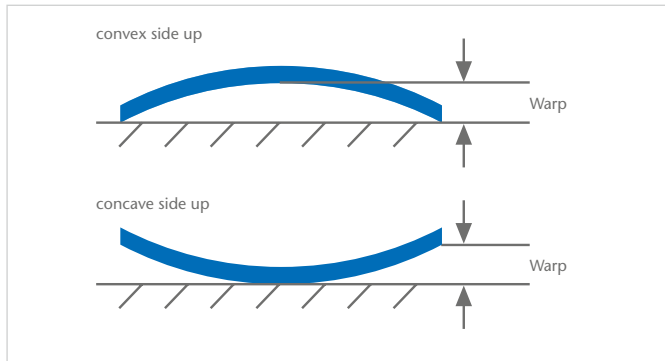
The high-purity borosilicate glass demonstrates extremely low and uniform fluorescence at the Cy3™ and Cy5™ (570 nm and 670 nm) emission wavelengths. The low fluorescence of the glass offers exceptionally low background signals during the scanning of a microarray, thereby maximizing the signal-to-background ratios. Consequently, even very low signal intensities, such as those from weakly expressed genes, or low abundance proteins, can be reliably detected.



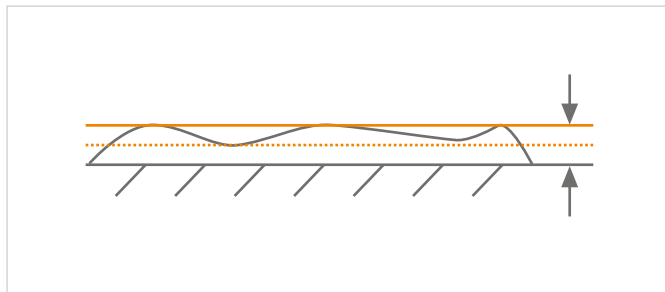
Autofluorescence of NEXTERION® Glass D and Glass B vs. competitors

### Flatness

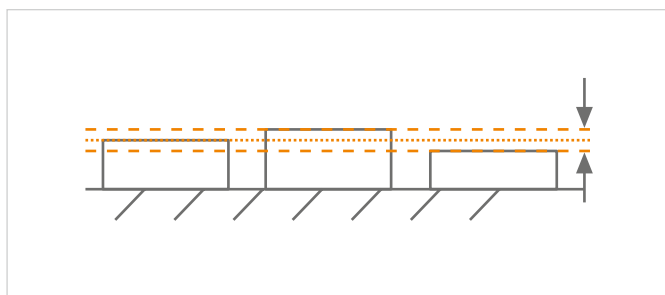
Flatness is an extremely important characteristic for microarray slides, especially as the printing process requires a plain slide surface to precisely deposit the probes. BOROFLOAT® 33 is manufactured by a float glass process to produce an exceptional flatness of  $\leq 50 \mu\text{m}$  and a high quality surface finish. "Flatness" is defined by SCHOTT as the accumulated overall possible thickness deviation. This includes warp, intra-slide thickness deviation, and inter-slide thickness tolerance.



Bow and warp



Intra-slide thickness deviation



Inter-slide thickness tolerance

### Laser cutting

All uncoated and coated substrates are cut to size using an innovative laser system to obtain precise, and highly accurate cut edges with no micro-cracks. A laser beam precisely heats the glass followed by a jet of cold liquid. This thermally induced tension causes a fissure in the glass. This results in the highest possible quality cut, in terms of edge quality and strength. Laser cut edges have a high strength that resists subsequent fragmentation or chipping. This helps to ensure the microarray slide surface remains free of particle contamination.



Edge of a laser cut slide

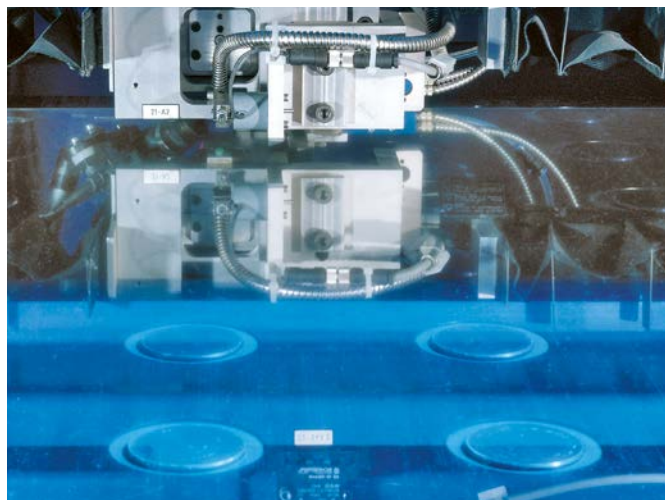


Edge of a conventional slide

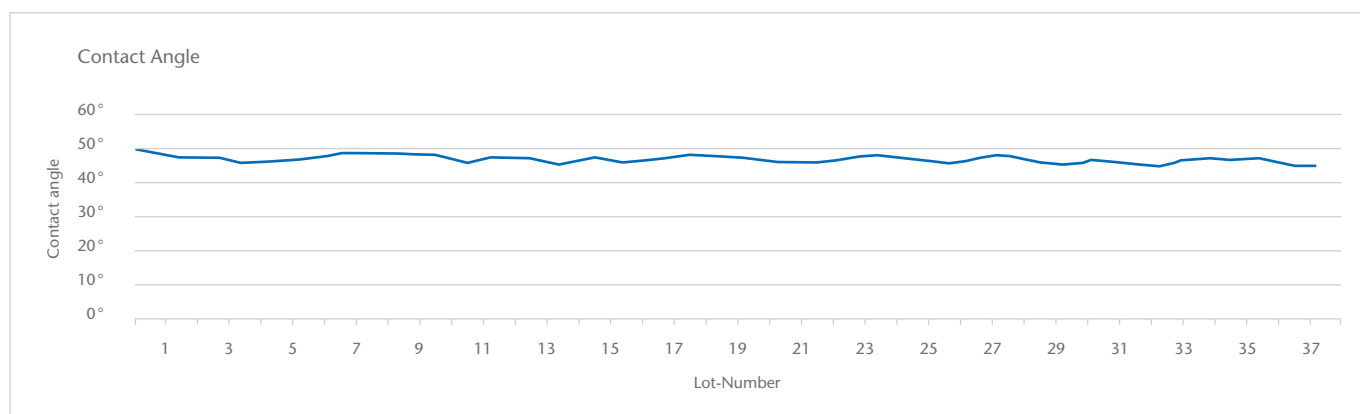
## Production and quality assurance

### State-of-the-art production facility for premium quality microarray slides and reagents

SCHOTT pursues a policy of continued technical excellence to deliver high quality products and services. The company is dedicated to product consistency and reliability – providing scientists with highly reproducible microarray slides. To ensure this, SCHOTT uses only high quality glass substrates and operates a modern and efficient microarray slide production plant. This manufacturing facility, located in Jena, one of Germany's leading biotech clusters, is equipped with state-of-the-art production technology and runs a stringent quality control system. The SCHOTT Technical Glass Solutions GmbH successfully implemented the DIN EN ISO 9001 quality management system, as part of SCHOTT's commitment to offering the highest quality products.



Laser cutting of glass



The contact angle of SCHOTT NEXTERION® coated slides is controlled within every batch and from batch to batch. High consistency is a key criterion for our quality control process.

### Unique features of the advanced production facility

- DIN EN ISO 9001 certified production process.
- Use of borosilicate glass manufactured from high purity raw materials to produce slides with extremely low auto-fluorescence.
- Innovative laser-cutting process produces glass slides with tight geometric tolerances, as well as smooth edges free of chips or micro-fractures.
- Highly efficient automated glass cleaning process is used prior to coating to ensure contamination free surfaces.
- Clean slide surfaces are maintained throughout the entire production process, with all steps carried out under class 100 cleanroom conditions.
- Extensive intra-slide and batch-to-batch consistency tests are performed to ensure the highest possible product reproducibility.
- 100% quality control system ensures geometric precision, and slides free of visible defects and particles.
- Slides are packaged in specially designed slides boxes and sealed in laminated foil pouches for protection during transportation and storage.

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glass made of ideas