

Contents

1. General

- Introduction
- High quality borosilicate glass
- Production and quality assurance
- General information coated slides



2. Technical support

3. Application notes

4. Coated slides

Aminosilane coating

- Nexterion® Slide AStar
- Nexterion® Slide A+

Aldehydesilane coating

- Nexterion® Slide AL

Epoxyilane coating

- Nexterion® Slide E

3-D thin film coating

- Nexterion® Slide H
- Nexterion® Slide P

Nitrocellulose coating

- Nexterion® Slide NC

Reflective optical coating

- Nexterion® HiSens Slides



5. Multi-well formats

- Multi-well slide format
- Multi-well microplate format

6. Reagents & kits

- Nexterion® reagents
- Nexterion® kits

7. Uncoated slides

- Nexterion® Glass B
- Nexterion® Glass D



8. Custom formats

9. Ordering information

Introduction

SCHOTT AG

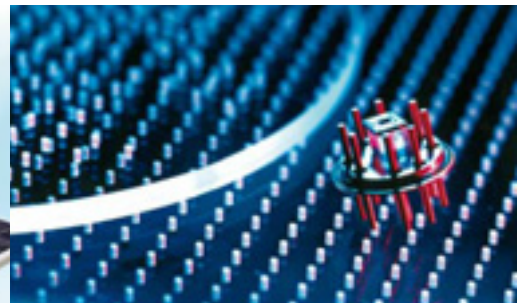


SCHOTT in Mainz

SCHOTT is an international technology company with the core purpose to improve how people live and work through expert solutions in specialty materials, components and systems. The main areas of focus are pharmaceutical packaging, the household appliances industry, optics and opto-electronics, information technology, consumer electronics, lighting, automotive engineering, life sciences and solar energy.

SCHOTT has manufacturing facilities and sales offices close to its customers in all major markets, with approximately 17,000 employees located in 41 countries around the world.

Ever since the co-founder, Otto Schott, first laid the foundation for the modern specialty glass industry, applications related research and technology development have been important prerequisites for the company's success. SCHOTT's technological and economic expertise goes hand in hand with their social and environmental responsibility.



SCHOTT's products are used in a broad range of applications including pharmaceutical packaging, laboratory & chemistry, automotive, display & electronics, optics and sensor technology. As a specialty glass manufacturer, SCHOTT develops new and innovative products by working closely with its customers and partners to offer the highest quality product solutions tailored to customer requirements. SCHOTT constantly strives to meet and exceed the high expectations associated with its name and reputation as one of the world's leading specialty glass manufacturers.

Customers all over the world appreciate SCHOTT's commitment to pioneering high quality solutions for advanced technologies.

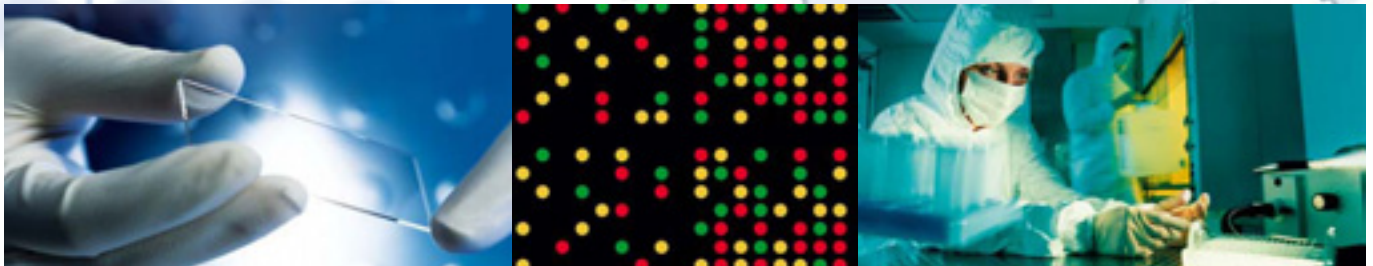
Product group Microarray solutions



SCHOTT in Jena

In 2002, SCHOTT established a new unit called Microarray Solutions to produce a range of microarray products under the brand name Nexterion® in order to meet the needs of the growing biochip market. This product group created a unique competence center for microarray applications in Jena, Germany, fusing SCHOTT's experience in the high precision processing of glass and thin film coating technology with a highly skilled life science team.

The strategic goal of SCHOTT is to establish Nexterion® as the leading brand of microarray products for all DNA and protein microarray printing applications through a strong commitment to quality and innovation.



Since its formation, this new unit has dynamically expanded its product portfolio of microarray slides and reagents for DNA and protein microarrays. This is a result of developing new products in-house and acquiring the Quantifoil microarray business in 2003. SCHOTT now offers customers the most comprehensive product range of both coated and uncoated microarray surfaces in the world, as well as optimized kits and reagents for spotting and hybridizing microarrays. The products are marketed under the brand name Nexterion® or supplied as OEM products.

The SCHOTT Microarray Solutions group is based in Jena, an award winning biotech cluster in Germany. There are significant benefits from the synergies gained by having international sales and marketing, R&D and state-of-the-art production facilities all on the same site. Using an interdisciplinary team of scientists, including glass technologists, physicists, biologists and chemists, and a strong commitment to innovation, SCHOTT develops new microarray products and formats.

As a long established manufacturer of technical glass, SCHOTT is able to maintain stringent control over all process steps, from initial glass production right through to the supply of the products to the end user. All Nexterion® products are manufactured according to the most stringent industry standards, guaranteeing that customers receive the highest quality, most reproducible products.

To support SCHOTT's ongoing commitment to the biotech market, a dedicated customer application support group was established. A team of technical experts is available to answer any technical queries and, if necessary can undertake in-house protocol development and testing.



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SCHOTT
glass made of ideas

High quality borosilicate glass – The solid foundation behind Nexterion® Microarray Slides from SCHOTT



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 the Nexterion® MTP-96 microplate. All slides are laser-cut to create straight robust edges.

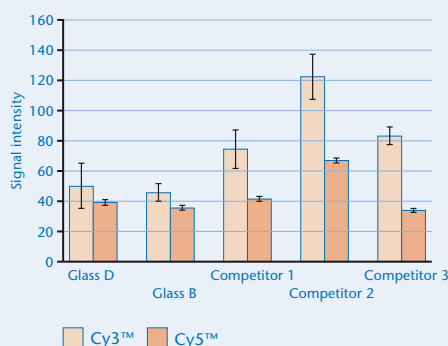
Additional information on different glass types and more detailed specifications can be found in the section “Uncoated slides”.

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.

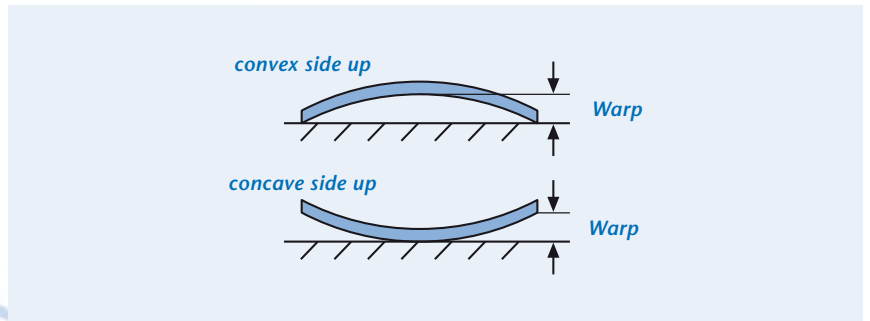


*Autofluorescence of Nexterion® Glass D
and Glass B vs. competitors*

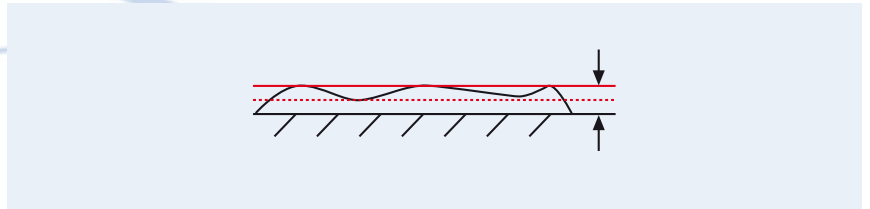
Flatness

Flatness is an extremely important characteristic for microarray slides, as microarrays are typically printed with pins that have to come into contact with the slide surface to deposit 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.

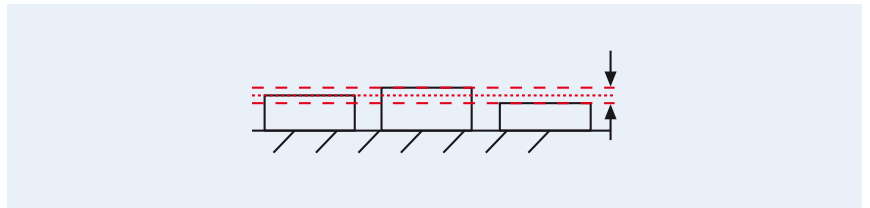
Bow and warp



Intra-slide thickness deviation



Inter-slide thickness tolerance



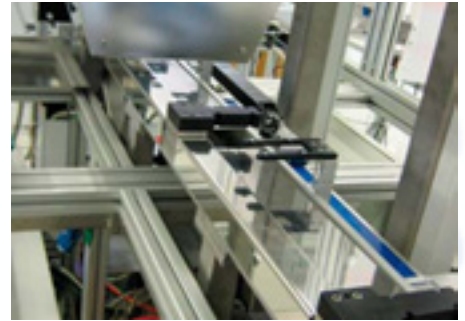
Laser cutting

All uncoated and coated slides 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.

Left: edge of a laser cut slide
Right: edge of a conventional slide

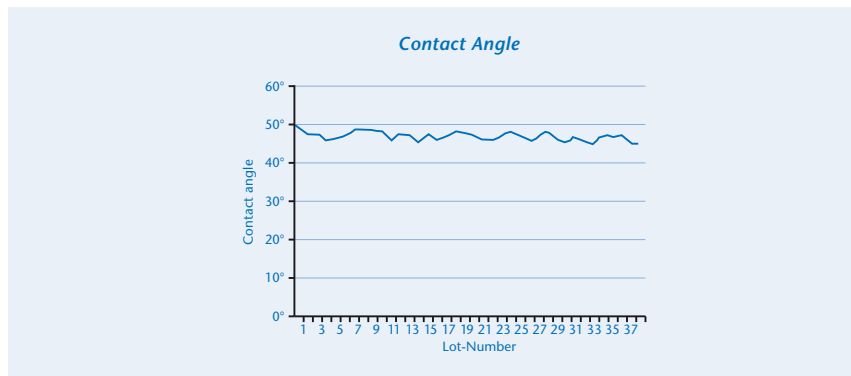


Production and quality assurance



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 the world's most modern 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 Microarray Solutions unit successfully implemented the DIN EN ISO 9001:2000 quality management system in June 2006, as part of SCHOTT's commitment to offering the highest quality products.

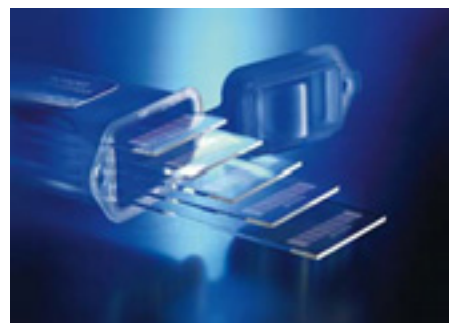


The contact angle of SCHOTT Nexterion® coated slides is controlled within every batch and from batch to batch. High consistency is a major criteria for our quality control process.

Unique features of the advanced production facility

- DIN EN ISO 9001:2000 certificated production process.
- Use of borosilicate glass manufactured from high purity raw materials to produce slides with an extremely low auto-fluorescence.
- An automated laser-cutting process produces glass slides with tight geometric tolerances, as well as smooth edges free of chips or micro-fractures.
- A 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.

General information coated slides



Nexterion® coatings

SCHOTT offers a wide range of functional coating chemistries for DNA and protein microarraying.

Nexterion® coated slides are available with a standard functional coating, or also with an additional reflective dielectric layer (Nexterion® HiSens slides). These innovative, next generation microarray slides were developed to identify low expressor genes, or low-abundant proteins by offering a significant increase in sensitivity over traditional transparent glass slides. The functional coating and protocol are the same as for standard slides (see “Reflective optical coating” section).

The following table indicates the most appropriate slide coating for specific microarray applications (Nexterion® MTP 96-well, MPX 16-well or optically coated HiSens version of the recommended Nexterion® coating are also available):

Probe type	Functional coating	Nexterion® coating	Comments
Oligonucleotides	Epoxy silane	E	First choice for all types of oligonucleotide arrays
	Aminosilane	AStar/A+	Popular option for oligonucleotide arrays
	3-D thin film	H or P	Suitable for short amino-modified oligos (≤ 25 mers)
cDNA/PCR	Aminosilane	AStar/A+	
	Epoxy silane	E	
	Aldehydesilane	AL	Alternative for amino-modified cDNA/PCR probes
Bacterial artificial chromosomes (BAC)	3-D thin film	P	Use with amino-modified BACs
	Aminosilane	AStar/A+	
	Epoxy silane	E	
	Aldehydesilane	AL	Use with amino-modified BACs
Peptides	3-D thin film	P	Compatible with DMSO print buffer
	Epoxy silane	E	
	Aldehydesilane	AL	Alternative for robust peptide probes
	Nitrocellulose	NC	
Antibodies, Proteins	Nitrocellulose	NC	Optimal preservation of protein structure functionality
	3-D thin film	H or P	Can be used with HiSens coatings
Cells/Tissues	3-D thin film	H or P	Optimal environment for cells and tissues
Cell lysates	Nitrocellulose	NC	High loading capacity

Barcoding

Nexterion® coated slides are available with or without a barcode. The types of barcodes available are either a label barcode or a special laser bonded foil barcode.

The barcodes are fully compatible with commercial automated hybridization stations, and are robust enough to withstand standard hybridization and washing procedures.

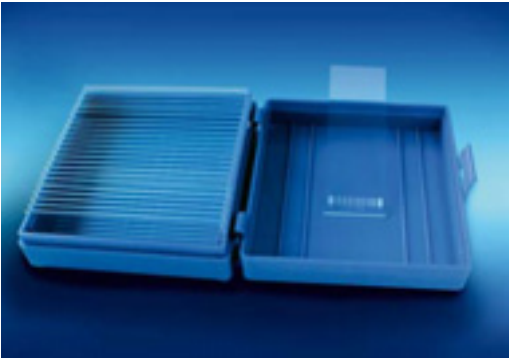
The barcodes conform to code 128, and are readable with all commonly available microarray scanners and hand-held barcode readers.



Packaging

Nexterion® coated slides are packed in convenient 25 or 30-slide containers for high throughput applications. The boxes are made of a specially developed plastic material to minimize out-gassing, and maintain the slide coating properties. The slide boxes are sealed in tough protective laminated foil pouches under an inert atmosphere.

The specially developed packaging protects the slides from damage due to breakage and external contamination. It also offers protection from the adverse effects of light and humidity during transportation and long-term storage.



25-slide box



Box for 5 MTP plates or 30 slides

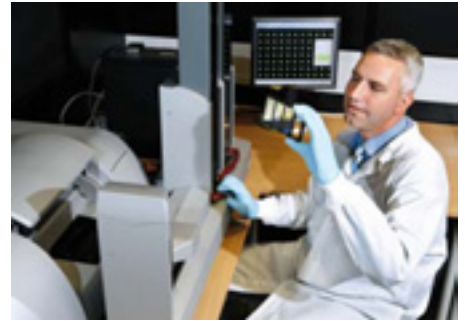


5-slide box



Laminated foil pouch with an inert atmosphere to provide a protective environment

Application and technical support



Introduction

The Nexterion® microarray slides and reagents are typically used in “open platform” microarray systems, where users have a wide range of choices of hardware, software and protocols. To help ensure that customers get the best performance from the Nexterion® microarray products SCHOTT has established technical support teams in Europe and North America to provide worldwide customer assistance.

Facilities

SCHOTT has a fully equipped molecular biology and protein biochemistry laboratory at the main production site in Jena, Germany. The laboratories are equipped for printing, hybridizing, and scanning microarrays in a number of formats. These facilities are invaluable for troubleshooting technical issues, and replicating customer slide processing conditions to solve microarray application problems.



Technical assistance

The experts at SCHOTT can offer support and advice in many aspects of the microarray process including:

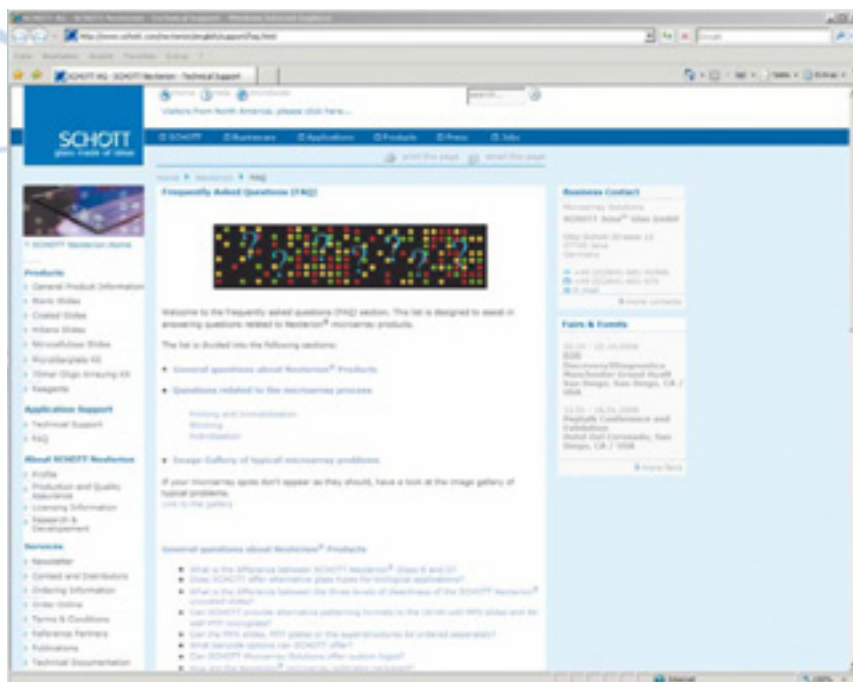
- Selection of the most appropriate coating for particular applications
- Selection of optimum printing conditions
- Print buffer selection
- Selection of hybridization reagents and conditions
- Optimized process parameters for automated hybridization stations
- Trouble shooting slide processing issues

The technical support team may be contacted via e-mail, or by telephone for a rapid response. For more in-depth trouble shooting telephone based conferences, or on-site visits could be arranged. The field based technical support personnel have a direct link to the applications and product development group in Germany to ensure a rapid resolution of technical problems.

Technical documentation

Technical support documentation from SCHOTT Microarray Solutions is available in printed form, on request via the customer service department or online (www.schott.com/nexterion), where you can access:

- Frequently asked questions (FAQ) list
- New product information
- Product catalogue
- Technical information including:
 - Optimized protocols
 - Application notes
 - Instruction manuals for multi-well printing
- Distributor contact details and links
- Reference partner list
- Cited publication list
- Material safety data sheet



For rapid technical assistance please contact our technical support at:

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Aminosilane coating

Nexterion® Slide A+ and Slide AStar



Overview

Type of coating	Immobilization method	Typical probes	Ordering information			
			Nexterion® product	Barcode option	Item number	Slides per pack
Aminosilane 2-D surface	Ionic interaction followed by cross-linking via an additional UV or baking step	<ul style="list-style-type: none">• Long oligo-nucleotides• PCR products• BACs	Slide AStar	None	1177881	25
				Laser	1177882	25
			Slide A+	None	1064875	25
				Laser	1064877	25

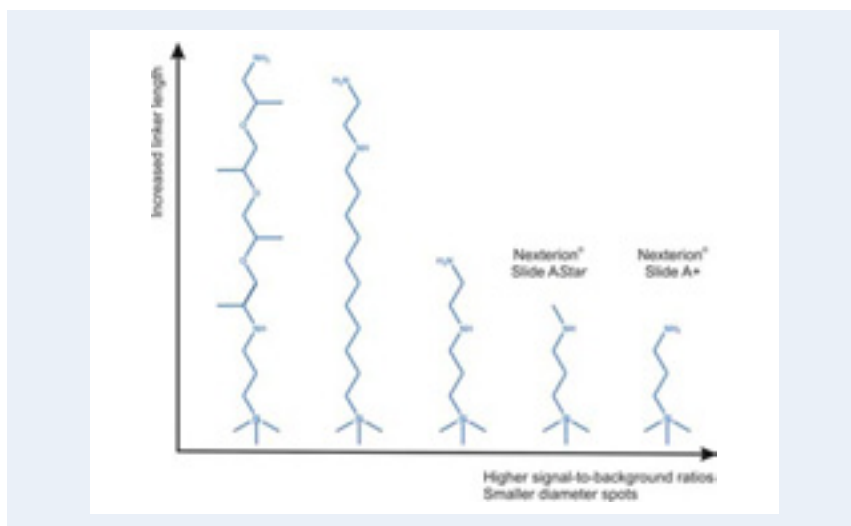
Key product features

- Printed slides have a long shelf life
- Compatible with a wide range of spotting buffers
- Coatings with uniform aminosilane density
- Regular spot uniformity and morphology

Introduction

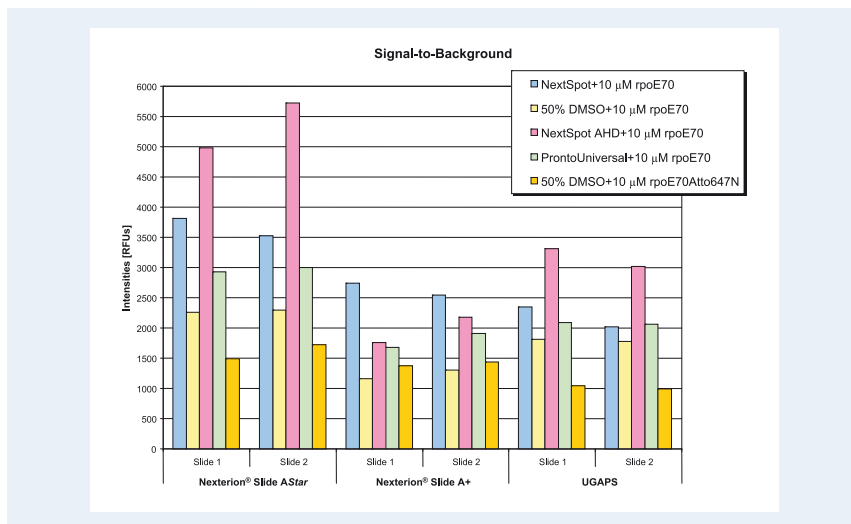
Aminosilane coated slides remain the most popular choice for printing PCR products, and long oligonucleotides, despite the emergence of innovative three-dimensional microarray surfaces, and other “active” surface chemistries such as epoxysilane. SCHOTT is committed to providing the best aminosilane microarray slides on the market, and offers two types of aminosilane slides, Nexterion® Slide A+, and Slide AStar. Aminosilane surfaces provide available amine groups for initial ionic attachment of the negatively charged phosphate groups in the DNA backbone. Conventional wisdom is that longer aminosilane molecules with multiple amino groups produce higher signal-to-background ratios, as their higher positive charge will bind more DNA to the slide surface. However, recent research at SCHOTT has shown that the situation is actually more complicated than this, and that while surfaces with a higher charge do bind more DNA, they are also more difficult to block effectively, resulting in significantly higher non-specific binding. The higher levels of non-specific binding have a negative effect leading to poorer signal-to-background ratios.

Comparison of aminosilane structures



The two aminosilane slides now offered by SCHOTT are based on very short chain aminosilanes that demonstrate high signal intensities, and exceptionally low background signals, when compared with other commercially available aminosilane slides.

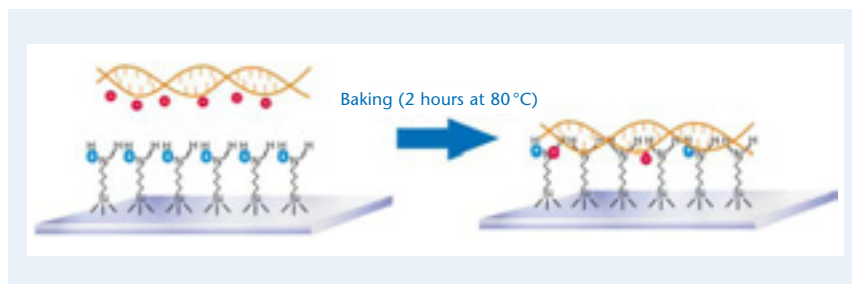
Diagram showing signal-to-background ratios compared to market leading aminosilane slide



Immobilization chemistry

Aminosilane coated slides have a high concentration of primary amino-groups available at the surface. These groups become protonated and therefore positively charged when placed in contact with a near-neutral, aqueous solution. Negatively charged probe molecules, such as DNA, will initially form multiple ionic interactions with the positively charged amino surface coating. Additional amino-modifications of the nucleic acids are not required, but such modifications do not interfere with the immobilization. After spotting, the

probes are covalently linked to the slide surface by either heating, or a brief exposure to ultraviolet (UV) light. Other types of negatively charged biomolecules may also be coupled to aminosilane surfaces.



Typical applications

- ArrayCGH
- Transcriptional profiling
- SNP genotyping
- Splice variant detection
- DNA methylation profiling

Suitable probe types

- BACs or PACs
- Oligonucleotides ≥ 40 mers
- PCR fragments
- cDNA

Product details

Reproducible results

SCHOTT slides are manufactured from a high quality, low intrinsic fluorescence borosilicate glass. The glass slides are cleaned and coated in a class 100, environmentally controlled clean room to ensure contamination and artifact free surfaces. The aminosilane coatings are applied using a unique, and innovative method developed and optimized by SCHOTT, that allows the production of large lot sizes with excellent intra-lot, and inter-lot reproducibility. Each slide lot is tested using both physical and functional quality control checks. The density of the aminosilane groups in the coatings remains uniform over the entire surface of the slides, and is optimized to maximise the DNA binding capacity. The surface hydrophobicity is tightly controlled to optimize the performance with both contact and non-contact microarray printers. The Slide A+ surface is more hydrophobic than the AStar surface, resulting in smaller spots, making it ideally suited for printing higher density arrays.

Nexterion® Slide A+, and Slide AStar are compatible with the most commonly used aminosilane protocols and a wide range of spotting buffers. This makes it easy to evaluate and switch to the Nexterion® aminosilane slides from competitor slides.

Selecting the most suitable Nexterion® aminosilane coating

Choosing the best SCHOTT aminosilane slide for the application depends on a number of factors. One important factor is the buffer used for printing the arrays. SCHOTT has developed a printing buffer system (Nexterion® Spot A HD – see “Reagents & kits” section) for printing high-density arrays of up to 50k spots on the SCHOTT aminosilane slides. The buffer system is designed to minimize sample evaporation during long print runs.

	Nexterion® Slide A+	Nexterion® Slide AStar
Compatible print buffers	<ul style="list-style-type: none"> • Nexterion® Spot A HD • Nexterion® Spot • 3x SSC • 3x SSC containing 1.5 M betaine • 25–50% DMSO • Pronto!™ Universal Spotting Solution 	<ul style="list-style-type: none"> • Nexterion® Spot A HD • Nexterion® Spot • 25–50% DMSO • Pronto!™ Universal Spotting Solution
Spot diameter	80 µm (Nexterion® Spot A HD)	90 µm (Nexterion® Spot A HD)
High hydrophobicity	✓ ✓ ✓	✓ ✓
Suitable for high density applications	✓ ✓ ✓	✓ ✓
High signal yield	✓ ✓ ✓	✓ ✓ ✓
Low non-specific binding	✓ ✓	✓ ✓ ✓
High signal to noise	✓ ✓ ✓	✓ ✓ ✓ ✓

Packaging and storage

Nexterion® Slide AStar and A+ are packaged in specially developed compatible plastic boxes, and sealed under an inert atmosphere, to ensure the substrates have a long and stable shelf life. The slides are ready-to-use from the box, and are stable for up to 12 months when stored at room temperature in the sealed packaging.

Format

Nexterion® Slide AStar and A+ are available in packs of 25-slides with optional code 128 barcodes enabling automated sample tracking. The AStar and A+ aminosilane coating are also available in 16-well slide and 96-well microplate formats. For further information refer to the section on “Multi-well formats”.

Protocols

Nexterion® Slide A+ and Slide AStar protocols are available on the Nexterion® web site.

Compatible reagents

Protocol step	Recommended Nexterion® products	Alternatives	Additional information
Spotting	Nexterion® Spot (1066029) Nexterion® Spot A HD (1168809)	<ul style="list-style-type: none"> • Pronto!™ Universal Spotting Solution • 25–50% DMSO • 3x SSC (A+ only) • 3x SSC containing 1.5 M betaine (A+ only) 	<p>Recommended Spotting Concentrations: Oligonucleotides 2–20 µM PCR Products 0.5–1 mg/mL</p> <p>Recommended Spotting Conditions: Constant 40–50% relative humidity at 20 to 25 °C</p>
Blocking	Nexterion® Block A Kit (100 mL 1206704, 500 mL 1206717)		
Hybridization	Nexterion® Hyb (Formamide free) (1066075) (A+ only) Nexterion® Oligo Hyb (with formamide) (1116890)	3–5x SSC + 0.1% SDS	Add competitor DNA if appropriate

Nexterion® Aminosilane Slide Processing Kit (order code: 1209008) (for 25 slides)

SCHOTT Microarray Solutions offers a kit with pre-prepared reagents for the blocking, hybridization and washing of 25 aminosilane coated slides printed with oligonucleotides.

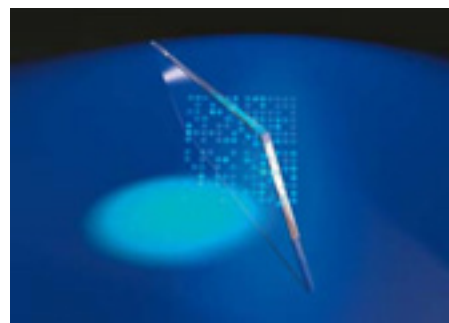
Process step	SCHOTT product	Quantity
Blocking	Nexterion® Block A Kit	500 mL
Hybridization	Nexterion® Oligo Hyb	10 mL
Washing	Nexterion® Wash A	1000 mL
	Nexterion® Wash B	100 mL

Important information about patents

Using arrays based on SCHOTT Nexterion® products for dual color analysis on a single array in which at least two different samples are labeled with at least two different labels may require a license under one of the following patents: U.S. patent nos. 5.770.358 or 5.800.992 or 6.225.625 and U.S. patent no. 5.830.645. Manufacturing and use of probe arrays may require a license under the following patents: U.S. patent nos. 6.040.138 or 5.445.934 or 5.744.305 and under the following patents owned by Oxford Gene Technology Ltd. ("OGT"): European patent no. EP 0.373.203, U.S. patent nos. 5.700.637 and 6.054.270 and Japanese patent nos. 3393528 and 3386391 ("The OGT patents"). Other patents may apply. The purchase of Nexterion® products does not convey any license under any of the OGT patents or any of the other patents referred to. For all applications SCHOTT North America Inc. and SCHOTT Jenaer Glas GmbH make no representation or warranty that the practice of its technology and products or any improvement will not infringe or violate any domestic or foreign patent of any third party. To inquire about licensing under the OGT patents, please contact OGT at licensing@ogt.co.uk.

Aldehydesilane coating

Nexterion® Slide AL



Overview

Type of coating	Immobilization method	Typical probes	Ordering information			
			Nexterion® product	Barcode option	Item number	Slides per pack
Aldehydesilane 2-D surface	Amine reactive chemistry Covalent binding	Amino-modified PCR products, BACs and oligonucleotides	Slide AL	None	1064874	25
				Laser	1064876	25

Key product features

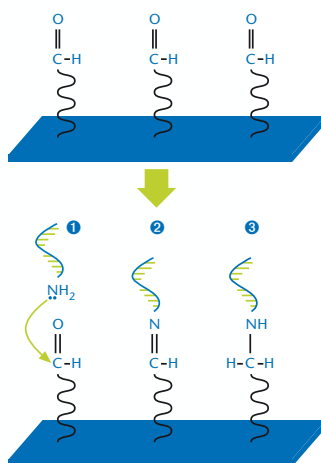
- Stable and covalent binding of probes such as amino-modified nucleic acids, cells, and peptides
- Optimal accessibility of probes through specific end-point attachment

Introduction

Nexterion® Slide AL offers a good alternative to Nexterion® Slide E (Epoxy silane slides) when an efficient covalent, and directed binding of amino-modified bio-molecules is required. Nexterion® Slide AL is coated with an “active” slide chemistry coating that chemically binds bio-molecules to provide a high binding capacity, and minimize non-specific binding. The uniform surface features aldehyde groups that readily react with primary amines. Both 5’ or 3’ amine modified PCR products, and oligonucleotides work well with this surface chemistry. The covalent bond formed at the terminus of the nucleic acid offers both stability, and maximal base pairing opportunity. The covalent binding diminishes sample loss during the course of experiments, and permits more harsh wash steps, which reduce background, and allow for greater sensitivity. Additional immobilization steps, such as baking or UV cross-linking, are not required for immobilization. Furthermore, peptides, proteins (such as antibodies), cells, and tissues can be immobilized on Nexterion® Slide AL via random binding to amine sites on the probes. The slides are easy to use, and are compatible with all commercially available arraying and scanning instruments.

Immobilization chemistry

The DNA product is spotted onto the aldehydesilane slide. The primary amino linkers (NH₂) on the DNA attack the aldehyde groups to form covalent bonds (Schiff's base). The attachment is stabilized by a dehydration reaction.



To minimize fluorescent background, unreacted aldehyde groups are reduced to non-reactive primary alcohols by treatment with sodium borohydride. In addition, this step reduces the double bond between the probe and surface, producing an irreversible covalent immobilization. Additional steps for immobilization, such as baking, or UV cross-linking, are not required.

Typical applications

- Array CGH using whole genome tiling path BAC arrays
- miRNA expression profiling
- Indel oligonucleotide arrays for genotyping
- 16S rRNA-based taxonomic microarray
- Protein-DNA interaction studies
- Protein-protein interaction studies

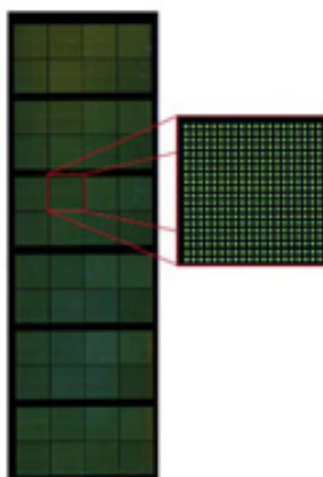
Suitable probe types

- Amine-PCR products and BACs
- Amino-modified oligonucleotides
- Small protein fragments such as peptides
- Cells and tissues

Product details

Highly reproducible coating

Nexterion® Slide AL is produced using an innovative process developed by SCHOTT to produce a consistent and reproducible coating. All slides are individually examined for physical defects and the presence of particles before and after coating.



The density of the aldehyde groups on the coating remain constant over the entire surface of the slides, and has been optimized to provide the optimal binding capacity. The surface hydrophobicity is tightly controlled to optimize the performance with both contact and non-contact printers.

High intra-slide reproducibility of Nexterion® Slide AL
(20 k array of BSA labelled with Atto 547)

Packaging and storage

Nexterion® Slide AL are packaged in chemically stable plastic boxes and sealed in an inert atmosphere. The slides are ready-to-use from the box, and are stable for 9 months in the sealed packaging when stored at room temperature.

Format

The slides are available in packs of 25-slides with optional code 128 barcodes enabling automated sample tracking. The aldehydesilane coating is also available in 16-well slide and 96-well microplate formats. For further information refer to the section on “Multi-well formats”.

Protocols

Separate Nexterion® Slide AL protocols are available for DNA or protein microarray applications.

Compatible reagents

Protocol step	Recommended Nexterion® products	Alternatives	Additional information
Spotting	Nexterion® Spot (1066029)	Nexterion® Spot + detergents like cetyltrimethylammonium-bromid, Triton X-100, sarcosyl, Tween or SDS with a final concentration between 0.005 and 0.05 % (to increase the spot size)	Recommended Spotting Concentrations: PCR products: 0.1–1 µg/µL Oligonucleotides: 10–20 µM Peptides: 100–500 µg/mL Recommended Spotting Conditions: Constant relative humidity 40–50 % at 20–24°C (68 to 75°F). Spotting solutions may be used with, or without protein-stabilizing agents
		3x SSC	
		3x SSC + 1.5 M betaine (low evaporation buffer for long spotting runs)	
Chemical deactivation	–	1.0 g NaBH ₄ in 300 mL PBS and 100 mL ethanol	
Hybridization	Nexterion® Hyb (formamide free) (1066075) Nexterion® Oligo Hyb (with formamide) (1116890)	3–5x SSC + 0.1 % SDS	Add competitor DNA if appropriate

Nexterion® Slide AL Evaluation Kit
(order code: 1066026)

Nexterion® Slide AL is easy to use, but as this type of slide chemistry may be less familiar to some researchers, a dedicated Nexterion® Slide AL Evaluation Kit is available. The kit consists of slides with test oligonucleotides and optimized reagents, allowing new users to carry out a test print and hybridization.

Process step	SCHOTT product	Quantity
Spotting	Nexterion® Slide AL	10 slides
	Nexterion® Spot	10 mL
Hybridization	Nexterion® Hyb	10 mL
	Oligo test probe	2 nmol
	Oligo test target	3 pmol

Important information about patents

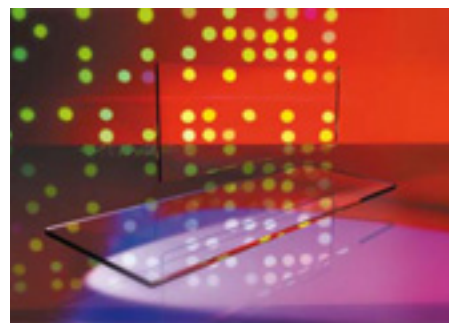
Using arrays based on SCHOTT Nexterion® products for dual color analysis on a single array in which at least two different samples are labeled with at least two different labels may require a license under one of the following patents: U.S. patent nos. 5.770.358 or 5.800.992 or 6.225.625 and U.S. patent no. 5.830.645. Manufacturing and use of probe arrays may require a license under the following patents: U.S. patent nos. 6.040.138 or 5.445.934 or 5.744.305 and under the following patents owned by Oxford Gene Technology Ltd. ("OGT"): European patent no. EP 0.373.203, U.S. patent nos. 5.700.637 and 6.054.270 and Japanese patent nos. 3393528 and 3386391 ("The OGT patents"). Other patents may apply. The purchase of Nexterion® products does not convey any license under any of the OGT patents or any of the other patents referred to. For all applications SCHOTT North America Inc. and SCHOTT Jenaer Glas GmbH make no representation or warranty that the practice of its technology and products or any improvement will not infringe or violate any domestic or foreign patent of any third party. To inquire about licensing under the OGT patents, please contact OGT at licensing@ogt.co.uk.

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SCHOTT
glass made of ideas

Epoxysilane coating

Nexterion® Slide E



Overview

Type of coating	Immobilization method	Typical probes	Ordering information			
			Nexterion® product	Barcode option	Item number	Slides per pack
Epoxysilane 2-D surface	Amino-, thiol- and hydroxyl-reactive chemistry Covalent binding	<ul style="list-style-type: none"> Amino-modified or unmodified oligos, mRNA, PCR and BACs Proteins 	Slide E	None	1066643	25
				Laser	1064016	25

Key product features

- Covalent and directed binding of DNA and proteins
- Multi-purpose microarray slide coating
- Hydrophobic coating enables the spotting of high-density arrays
- Stability of the epoxy chemistry supports long print runs

Introduction

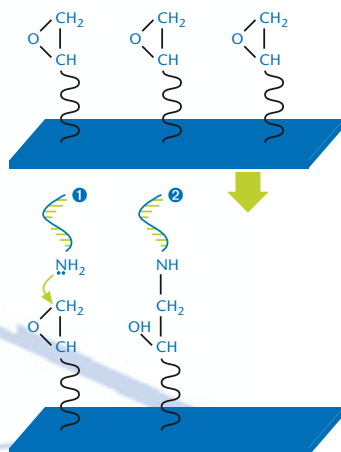
Nexterion® Slide E is the market leading epoxysilane coated slide from SCHOTT. The slides are manufactured from high quality borosilicate glass that has an ultra flat surface and low inherent fluorescence. The glass is coated with a multi-purpose epoxysilane layer that will covalently bind most types of bio-molecules including amino- and non-modified DNA, RNA, and proteins. The defect-free surface features a uniform epoxysilane layer that provides a high covalent coupling efficiency together with a very low background. The slides are easy to use, and are fully compatible with all commercially available arraying and scanning instruments.

Typical applications

- Transcriptional profiling
- MicroRNA
- Array-CGH
- SNP detection
- ZIP-code universal microarray
- Pathogen identification
- Subtelomere arrays
- Functional protein arrays
- Protein profiling arrays

Immobilization chemistry

The diagram shows a schematic representation of an amino-modified DNA molecule coupling to Nexterion® Slide E. Amino-modified nucleic acids bind via the terminal amino group, as well as via exocyclic amino groups of the bases, and hydroxyl groups of the sugar-phosphate backbone. Unmodified nucleic acids will bind to an epoxysilane surface with almost the same efficiency via the exocyclic amino groups of the bases, and hydroxyl groups of the backbone. Other bio-molecules such as proteins bind via their exposed amine-, thiol- and hydroxyl-groups.



The reaction with the epoxy group is rapid and irreversible and no additional baking or UV cross-linking steps are required. Any unreacted epoxy group may be chemically deactivated after printing to significantly reduce non-specific binding of the target molecules to the slide surface. Molecular spacers between the glass slide and the epoxy groups facilitate interactions between the printed bio-molecules and their binding partners in solution.

Suitable probe types

- Amino-modified oligonucleotides 20–70 mers
- Unmodified oligonucleotides 20–70 mers
- Amino-modified PCR products
- ZIP-code oligonucleotides
- PCR products
- BAC/PACs
- L-DNA
- cDNA
- RNA
- Serum samples
- Antibodies
- Peptides
- Glycans

Product details

Highly reproducible coating

Nexterion® Slide E is produced using an innovative proprietary process developed by SCHOTT to produce a uniform and reproducible epoxysilane coating on both sides of a high quality borosilicate glass slide. All slides are individually examined for physical defects and the presence of particles before and after coating. The epoxysilane surface is applied in tightly controlled, class 100 clean room facility, resulting in coated slides with highly uniform surface properties and low auto-fluorescence.

Fully optimized surface

Nexterion® Slide E provides excellent spot morphologies and reproducible spot sizes with a variety of commonly used spotting buffers. The surface chemistry is robust and stable, and remains active even during very long print runs. The density of the epoxy groups in the coating is constant over the entire surface of the slides, and has been optimized to provide uniform spot size and shape and the optimal binding capacity. Another important parameter, surface hydrophobicity, is also tightly controlled to optimize the performance of the slides with both contact and non-contact printers.

Packaging and storage

Nexterion® Slide E are packaged in chemically stable plastic boxes and sealed under an inert atmosphere. The slides are ready-to-use from the box, and are stable for 12 months in the sealed packaging when stored at room temperature.

Format

The slides are available in packs of 25 slides with optional code 128 barcodes enabling automated sample tracking. The identical epoxysilane coating is also available in 16-well slide and 96-well microplate multi-well formats. For further information refer to the section on “Multi-well formats”.

Protocols

Separate Nexterion® Slide E protocols are available for DNA and protein microarray applications.

Compatible reagents

Process step	SCHOTT products	Alternatives	Remarks
Spotting	Nexterion® Spot (1066029)	Nexterion® Spot + detergents like Cetyltrimethylammoniumbromide, Triton X-100, sarcosyl, Tween or SDS with a final concentration between 0.005 and 0.05 % (to increase the spot size)	Recommended Concentrations: Oligonucleotides: 10–20 µM PCR products: 0.1–0.5 µg/µL
	Nexterion® Spot LE Kit (low evaporation buffer) (1117902)		
	3x SSC		
Chemical deactivation of unreacted Epoxy groups	Nexterion® Block E (100 ml 1066069) (1000 ml 1066071)	50 mM ethanolamine + 0.1 % SDS in 0.1 M Tris, pH 9.0	
	Nexterion® Oligo Pre-Hyb (1116889)		
Hybridization	Nexterion® Hyb (1066075)	3–5x SSC + 0.1 % SDS	No formamide
	Nexterion® Oligo Hyb (1116890)		Contains formamide
Washing steps	Nexterion® Wash A and B		

For customers with probes dissolved in DMSO, please refer to the SCHOTT Nexterion® Internet site or contact our technical support team for further assistance

Nexterion® Slide E Evaluation Kit
(order code: 1117570)

Nexterion® Slide E is easy-to-use, but as this type of slide chemistry may be less familiar to some researchers, a dedicated Nexterion® Slide E Evaluation Kit is available. The kit consists of slides with test oligonucleotides and optimized reagents, allowing new users to carry out a test print and hybridization.

Process step	SCHOTT product	Quantity
Spotting	Nexterion® Slide E	10 slides
	Nexterion® Spot	10 mL
	Nexterion® Spot LE Kit (Low Evaporation Buffer)	10 mL
Blocking	Nexterion® Block E	100 mL
Hybridization	Nexterion® Hyb	10 mL
	Oligo test probe	2 nmol
	Oligo test target	3 pmol

**Nexterion® Epoxy Slide Oligo
Processing Kit (order code: 1209009)**
(for 25 slides)

SCHOTT Microarray Solutions offers a kit with pre-prepared reagents for the chemical deactivation, hybridization and washing of 25 printed epoxysilane coated slides. The reagents in the kit are optimized for use with slides printed with 20 to 70 mers oligonucleotides.

Process step	SCHOTT product	Quantity
Blocking	Nexterion® Oligo Pre-Hyb	500 mL
Hybridization	Nexterion® Oligo Hyb	10 mL
Washing	Nexterion® Oligo Wash A	1000 mL
	Nexterion® Oligo Wash B	100 mL

Important information about patents

Using arrays based on SCHOTT Nexterion® products for dual color analysis on a single array in which at least two different samples are labeled with at least two different labels may require a license under one of the following patents: U.S. patent nos. 5.770.358 or 5.800.992 or 6.225.625 and U.S. patent no. 5.830.645. Manufacturing and use of probe arrays may require a license under the following patents: U.S. patent nos. 6.040.138 or 5.445.934 or 5.744.305 and under the following patents owned by Oxford Gene Technology Ltd. ("OGT"): European patent no. EP 0.373.203, U.S. patent nos. 5.700.637 and 6.054.270 and Japanese patent nos. 3393528 and 3386391 ("The OGT patents"). Other patents may apply. The purchase of Nexterion® products does not convey any license under any of the OGT patents or any of the other patents referred to. For all applications SCHOTT North America Inc. and SCHOTT Jenaer Glas GmbH make no representation or warranty that the practice of its technology and products or any improvement will not infringe or violate any domestic or foreign patent of any third party. To inquire about licensing under the OGT patents, please contact OGT at licensing@ogt.co.uk.

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SCHOTT
glass made of ideas

Three-dimensional thin film coating

Nexterion® Slide H



Overview

Type of coating	Immobilization method	Typical probes	Ordering information			
			Nexterion® product	Barcode option	Item number	Slides per pack
Thin film 3-D polymer surface	Amine reactive chemistry Covalent binding	<ul style="list-style-type: none">• Proteins• Amino-linked glycans• Amino-linked oligonucleotides	Slide H	Laser	1070936	25

Key product features

- Ideal substrate for printing protein, amino-modified glycans or oligonucleotide microarrays
- High probe loading capacity
- Exceptionally wide dynamic range
- Very low non-specific binding characteristics
- Optimal preservation of native structure and biological activity of protein probes
- Compatible with all common microarray printers and scanners

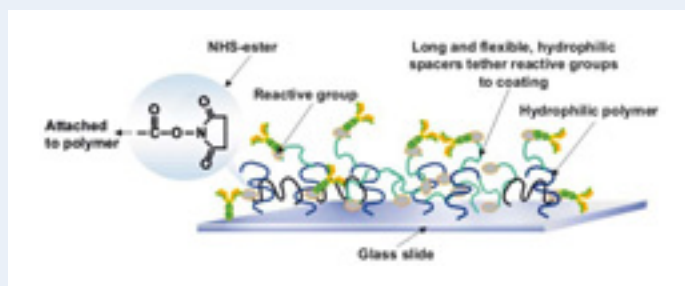
Introduction

SCHOTT launched Nexterion® Slide H as a dedicated slide surface for printing protein microarrays, as it is ideally suited for the covalent immobilization of peptides and proteins such as antibodies, antibody fragments, enzymes, or receptors. For many protein microarray applications Nexterion® Slide H has proven to be a very attractive alternative to the commonly used nitrocellulose coated slide, especially where low background, or slide transparency are important considerations. Since its introduction, the slide coating has also been successfully used with amino-modified oligonucleotides, and has become the slide of choice for printing amino-linked glycan microarrays. Carbohydrate arrays are a rapidly growing area of microarray research and Nexterion® Slide H is an excellent choice for use in the rapid screening of carbohydrate-protein interactions. The permeable, polymer coating has a large immobilization capacity, and helps to preserve the native three-dimensional structure of complex bio-molecules, thus maintaining conformation and functionality. Nexterion® Slide H produces excellent signal-to-background ratios and an exceptionally wide dynamic range compared to conventional “two-dimensional” coatings through a unique combination of low non-specific binding characteristics, and high probe loading capacity. Even very low intensity signals, such as those obtained from low-abundance analytes, or weakly expressed

genes can be reliably detected and quantified on Nexterion® Slide H. The robust coating matrix is fully compatible with commercial microarray printers and scanners. Simple and robust protocols are available making Nexterion® Slide H easy-to-use.

Immobilization chemistry

The coating on the SCHOTT Nexterion® Slide H consists of a cross-linked, multi-component polymer layer activated with N-Hydroxysuccinimide (NHS) esters to provide covalent immobilization of amine groups. All Nexterion® microarray slides are manufactured from a high quality, low-fluorescence glass coated with low-fluorescence coatings. However, the non-specific binding of assay components still remains an important contributor to the off feature background for many microarray applications. For most types of slide coatings the post-print processing protocol involves a method of adsorptive blocking to reduce non-specific binding, however, these procedures are difficult to perform in a consistent manner.



The Nexterion® Slide H coating has been engineered to exhibit a very low intrinsic non-specific background without the need for blocking. This is achieved by using a polymer based layer that is extremely resistant to non-specific binding. The polymer coating has a three-part structure; NHS-ester reactive groups are attached to the cross-linked hydrophilic polymer layer via long, flexible spacers. The terminal amino group of amino-modified nucleic acids and glycans react immediately and irreversibly with the NHS-ester groups to form a covalent bond. Proteins and other bio-molecules bind via surface-exposed amine-groups. The flexible spacers tether the immobilized bio-molecules in a quasi-liquid environment that maintains the protein specificity and chemical conformation. The high accessibility of the tethered bio-molecules facilitates interactions with their binding targets in solution.

Typical applications

- Proteome expression profiling
- Functional protein arrays
- Transcriptional profiling
- Biomarker discovery
- Detection of protein modifications
- Carbohydrate-protein interactions
- Bacteria serotyping
- Immunoassays

Suitable probe types

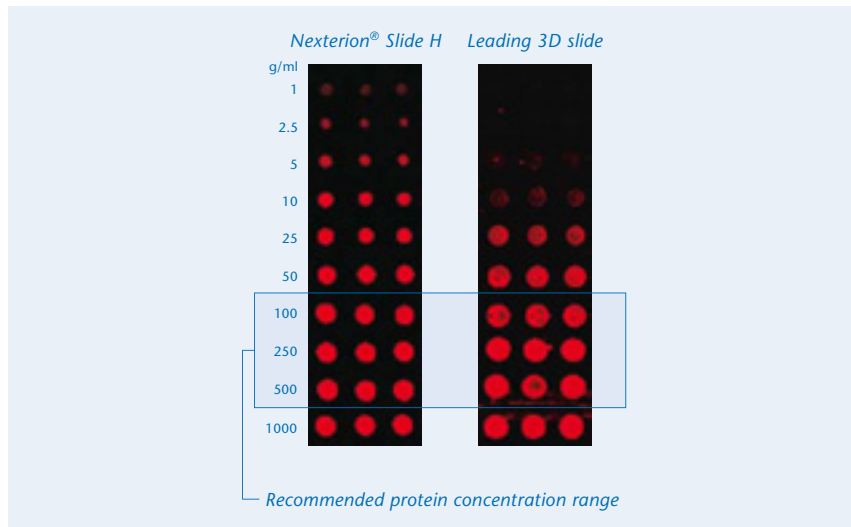
- Antibodies and antibody fragments
- Functional proteins such as enzymes or receptors
- Small protein fragments such as peptides
- Amino-modified oligonucleotides 16 to 70 mers
- Amino-linked glycans
- Cells

Highly reproducible coating

Nexterion® Slide H is fabricated using a proprietary thin-film deposition process optimized by SCHOTT to produce a uniform and reproducible polymer coating on one side of a high quality borosilicate glass slide. All slides are individually examined for physical defects and the presence of particles before and after coating. The surface is applied in a tightly controlled, class 100 clean room facility, resulting in coated slides with highly uniform surface properties and low auto-fluorescence.

Excellent spot morphology and signal-to-background ratios

Nexterion® Slide H provides excellent spot morphologies and reproducible spot sizes over a wide range of probe concentrations for protein, oligonucleotide and other bio-molecule microarray applications.



Product details

Figure shows scanned images of Nexterion® Slide H when evaluated against the market leading three-dimensional competitor slide in an anti-IgG/IgG interaction study using a range of probe concentrations.

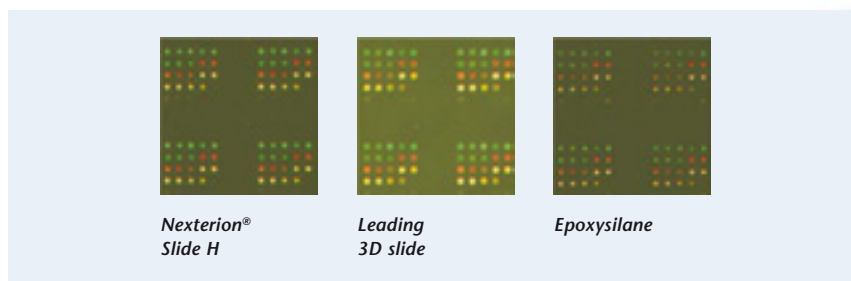


Figure illustrates the superior signal-to-background ratios on Nexterion® Slide H when compared to the market leading three-dimensional slide, and a conventional two-dimensional coating. This was demonstrated in two-color hybridization experiments following the recommended protocols, using amino-modified oligonucleotide probes.

Packaging and storage

Nexterion® Slide H are packaged in chemically stable plastic boxes and sealed under an inert atmosphere. The slides are ready-to-use from the box, and are stable for 12 months in the sealed packaging when stored at –20 °C.

Format

Nexterion® Slide H is available in packs of 25 slides with code 128 barcodes enabling automated sample tracking. The identical coating is also available in a 16-well slide format. For further information refer to the section on “Multi-well formats”.

Protocols

Separate Nexterion® Slide H protocols are available for DNA and protein microarray applications.

Compatible reagents

Process step	SCHOTT products	Alternatives	Recommended concentrations
Spotting (Protein)	Nexterion® Spot PB (1178050)	150 mM phosphate, pH 8.5, 5 % glycerol, 0.1 mg/mL BSA, 0.01 % sarcosyl or Tween20®	Protein concentration 0.1 to 1 mg/mL
Spotting (DNA)	Nexterion® Spot (1066029)	300 mM sodium phosphate (pH 8.5) containing 0.005 % Tween20® and 0.001 % sarcosyl 150 mM sodium phosphate (pH 8.5) containing 0.001 % Tween20®	Oligonucleotides: 20 µM
Chemical deactivation of unreacted NHS-esters	–	50 mM ethanolamine in 50 mM sodium borate buffer pH 8.0–9.0	
Incubation (Protein)	–	137 mM NaCl, 2.7 mM KCl, 4.3 mM Na ₂ HPO ₄ , 1.4 mM KH ₂ PO ₄ , pH 7.5 with 0.5 % Tween20®	
Hybridization (DNA)	Nexterion® Hyb (1066075) Nexterion® Oligo Hyb (1116890)	2x SSC containing 0.1 % SDS and 0.1 % salmon sperm DNA (formamide can be added if required)	

Important information about patents

Using arrays based on SCHOTT Nexterion® products for dual color analysis on a single array in which at least two different samples are labeled with at least two different labels may require a license under one of the following patents: U.S. patent nos. 5.770.358 or 5.800.992 or 6.225.625 and U.S. patent no. 5.830.645. Manufacturing and use of probe arrays may require a license under the following patents: U.S. patent nos. 6.040.138 or 5.445.934 or 5.744.305 and under the following patents owned by Oxford Gene Technology Ltd. (“OGT”): European patent no. EP 0.373.203, U.S. patent nos. 5.700.637 and 6.054.270 and Japanese patent nos. 3393528 and 3386391 (“The OGT patents”). Other patents may apply. The purchase of Nexterion® products does not convey any license under any of the OGT patents or any of the other patents referred to. For all applications SCHOTT North America Inc. and SCHOTT Jenaer Glas GmbH make no representation or warranty that the practice of its technology and products or any improvement will not infringe or violate any domestic or foreign patent of any third party. To inquire about licensing under the OGT patents, please contact OGT at licensing@ogt.co.uk.

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SCHOTT
glass made of ideas

Three-dimensional thin film coating

Nexterion® Slide P



Overview

Type of coating	Immobilization method	Typical probes	Ordering information			
			Nexterion® product	Barcode option	Item number	Slides per pack
Thin film 3-D polymer surface	Amine reactive chemistry Covalent binding	<ul style="list-style-type: none">• Amino-linked BACs, PACs• Antibodies• Proteins• Peptides• Glycans	Slide P	Laser	1167904	25

Key Product Features

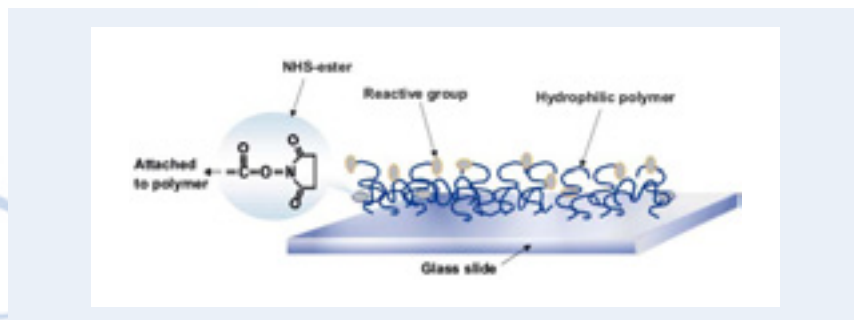
- Ideal substrate for printing amino-modified BACs and antibody microarrays
- High probe loading capacity
- Exceptionally wide dynamic range
- Extremely low non-specific binding characteristics
- Optimal preservation of native structure and biological activity of protein probes
- Compatible with all common microarray printers and scanners

Introduction

SCHOTT specifically developed Nexterion® Slide P as a dedicated slide surface for printing arrays for comparative genomic hybridization (aCGH), as it is ideally suited for the covalent immobilization of long amino-modified DNA molecules such as BAC and PAC clones. Nexterion® Slide P produces excellent signal-to-background ratios and an exceptionally wide dynamic range compared to conventional “two-dimensional” coatings through a unique combination of low non-specific binding characteristics, and high probe loading capacity. Since its introduction, the slide coating has also been successfully used for printing antibody and other protein arrays. The permeable, polymer coating has a large immobilization capacity, and helps to preserve the native three-dimensional structure of complex bio-molecules, thus maintaining conformation and functionality. The robust coating matrix is fully compatible with commercial microarray printers and scanners. Simple and robust protocols are available making Nexterion® Slide P easy-to-use.

Immobilization chemistry

The coating on the SCHOTT Nexterion® Slide P is a three-dimensional, hydrophilic polymer activated with N-Hydroxysuccinimide (NHS) esters to provide covalent immobilization of amine groups. All Nexterion® microarray slides are manufactured from a high quality, low-fluorescence glass coated with low-fluorescence coatings. However, the non-specific binding of assay components still remains an important contributor to the off feature background for many microarray applications. For most types of slide coatings the post-print processing protocol involves a method of adsorptive blocking to reduce non-specific binding, however, these procedures are difficult to perform in a consistent manner.



The Nexterion® Slide P coating has been engineered to exhibit an extremely low intrinsic non-specific background without the need for blocking. This was achieved by using a special polymer that is extremely resistant to non-specific binding. During in-house tests run by SCHOTT, Nexterion® Slide P had the lowest background signal of any microarray slide coating ever tested. The polymer coating has a three-dimensional structure; with NHS-ester reactive groups attached to a hydrophilic polymer backbone. The terminal amino group of amino-modified nucleic acids react immediately and irreversibly with the NHS-ester groups to form a covalent bond. Proteins and other complex bio-molecules bind via surface-exposed amino-groups. The polymer coating maintains the immobilized bio-molecules in a quasi-liquid environment that maintains the protein specificity and chemical conformation. The three-dimensional polymer structure, combined with the end-point attachment chemistry, orients the immobilized bio-molecules away from the glass facilitating the interactions of the attached bio-molecules with their binding targets in solution.

Typical applications

- Array comparative genomic hybridization (aCGH)
- Antibody profiling
- Protein expression profiling
- Functional protein arrays
- Characterization of binding molecules
- Biomarker discovery
- Substrate profiling

Compatible reagents

Process step	SCHOTT products	Alternatives	Recommended concentrations
Spotting (Protein)	Nexterion® Spot PB (1178050)	150 mM phosphate, pH 8.5, 5% glycerol, 0.1 mg/mL BSA, 0.01 % sarcosyl or Tween20®	Protein concentration 0.1 to 1 mg/mL
Spotting (DNA)	Nexterion® Spot (1066029)	100 mM borate (pH 8.0), 50% DMSO	Oligonucleotides: 20 µM
Spotting (Peptides)		10–50% DMSO	
Chemical deactivation of unreacted NHS-esters	–	50 mM ethanolamine in 50 mM sodium borate buffer pH 8.0–9.0	
Incubation (Protein)	–	137 mM NaCl, 2.7 mM KCl, 4.3 mM Na ₂ HPO ₄ , 1.4 mM KH ₂ PO ₄ , pH 7.5 with 0.5 % Tween20®	
Hybridization (DNA)	Nexterion® Hyb (1066075) Nexterion® Oligo Hyb (1116890)	2x SSC containing 0.1 % SDS and 0.1 % salmon sperm DNA	

Important information about patents

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SCHOTT
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Nitrocellulose coating

Nexterion® Slide NC



Overview

Type of coating	Immobilization method	Typical probes	Ordering information				
			Nexterion® product	Number of pads per slide	Barcode option	Item number	Slides per pack
Nitrocellulose 3-D structure	Passive absorption through non-specific interactions	Proteins	Slide NC-W	1	Label	1178057	20
			Slide NC-D	1	Label	1178058	20
			Slide NC-W 16	16	None	1178059	5
			Slide NC-D 16	16	None	1178060	5

Key product features

- High binding capacity
- Excellent spot morphology
- Exceptional surface for long-term storage of many printed proteins
- Compatible with contact and non-contact microarray printers

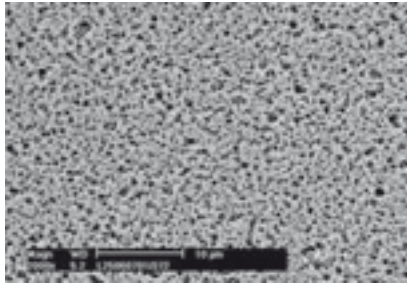
Introduction

Protein microarray technology provides a robust way to study protein function in a rapid, economical, and system-wide fashion. Protein microarrays are playing an increasingly important role in proteomic research, as well as moving into the areas of drug discovery and clinical diagnostics. For many of these protein array applications, the slide surface of choice is nitrocellulose. The unique properties of cellulose nitrate polymers, such as high affinity, and high capacity for protein binding, together with their micro-porous structure makes this material an ideal substrate for protein array applications.

To meet the needs of this rapidly expanding market, SCHOTT has joined forces with Sartorius Stedim Biotech, to develop a range of innovative nitrocellulose-coated microarray slides. Sartorius Stedim Biotech is the perfect co-development partner for this product line, as they have been manufacturing cellulose nitrate membranes for over seventy years. Nitrocellulose formulations from Sartorius Stedim Biotech have proven their reliability over the years, in Western Blots, and in diagnostic membranes, such as for pregnancy tests. The diagnostic membrane production expertise of Sartorius Stedim Biotech has been combined with SCHOTT's microarray slide production know-how to produce protein microarray slides of superior quality, with high reproducibility.

Immobilization surface

Scanning electron microscope photograph of SCHOTT Sartorius Stedim three-dimensional nitrocellulose surface illustrating the uniformity of the pore structure



The performance of nitrocellulose-coated slides is strongly dependent on the internal membrane structure as well as surface quality. The Nexterion® NC slides use a nitrocellulose coating developed by Sartorius Stedim Biotech specifically for protein microarray applications.

The three-dimensional structure and pore size has been optimized to offer a high binding affinity for proteins, and to better stabilize their active conformation. The SCHOTT nitrocellulose slide membranes are manufactured using a newly developed casting process, where solvents are evaporating from a mix of different cellulose nitrate polymers, and additives, to form the unique micro-porous structure. During manufacture, the thickness, and physical characteristics of the coating are tightly controlled, these together with a surface finishing process allow the reproducible manufacturing of slides with an outstanding consistency and performance.

White and dark grey Nexterion® nitrocellulose slide

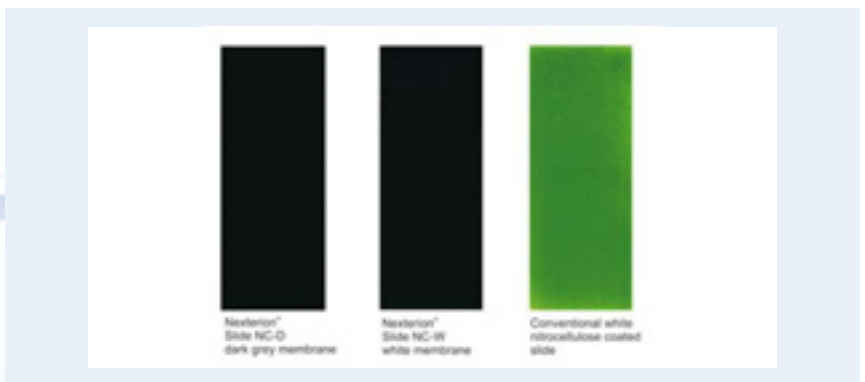


In addition to the standard white nitrocellulose surface, SCHOTT can offer an innovative dark grey membrane slide. This newly developed surface demonstrates a very low, and homogenous auto-fluorescence to achieve a significantly improved dynamic range. Conventional white nitrocellulose films scatter and reflect large amounts of excitation and emission light,

leading to high background fluorescence. To overcome this problem, Sartorius Stedim Biotech has developed a new process to generate grey membranes which absorb the scattered light, significantly reducing the background auto-fluorescence.

Background signals of Nexterion® Slide NC-W and NC-D in comparison to a commercially available nitrocellulose coated slide.

*Scanned with Axon Scanner Genepix 4000 B,
Scan parameters: 532 nm, laser power: 33%,
PMT gain: 500*



Typical applications		
• Sandwich arrays	• Cytokine detection	• Protein-DNA interactions
• Antibody profiling	• Protein binder arrays	• Biomarker profiling
• MicroSpot ELISA	• Protein substrate profiling	• Serological assays
• Reverse phase assays	• Protein activity screening	• Enzyme profiling

Suitable probe types
• Antibody
• Proteins
• Glycans
• Glycoproteins
• Lectins
• Antigens

Product details

High binding capacity

The three-dimensional micro-porous structure of nitrocellulose provides a much higher surface area for binding in comparison to two-dimensional organo-silane coatings. In addition, the nitrocellulose surface binds proteins in a non-covalent, but irreversible manner and the three-dimensional environment helps to maintain the proteins in their biologically active conformation.

Robust and smooth membrane surface free of dust and defects

The surface of Nexterion® Slide NC is robust enough for use with contact printers, but is sufficiently absorbent to allow a high binding capacity and good spot morphology.

Excellent spot morphology

Nitrocellulose is naturally hydrophobic, and this can be a disadvantage in microarraying where it can lead to inconsistent sample volumes being deposited by contact printers. During manufacture the membranes are impregnated with a surfactant, to ensure an optimal surface for microarray printing. The surfactant type and concentration have been carefully selected to ensure a low auto-fluorescence, and to meet the requirements of consistent micro-spot printing.

Instrument compatibility

The SCHOTT nitrocellulose slides are compatible with both contact and non-contact microarray printers. The white membrane is compatible with all detection methods including fluorescent, chemi-luminescent, radiographic, and colorimetric. On the dark grey slide the protein spots are clearly visible, giving an immediate indication of the quality of the printing.

Long term stability

Nexterion® NC slides are ready-to-use from the box, and are stable for over one year under ambient conditions.

It is well documented that nitrocellulose provides an excellent surface for the long-term storage of many printed proteins, especially for antibodies and antigens.

Compatible reagents

Process step	SCHOTT products
Spotting (Proteins)	Nexterion® Spot PB (1178050)

For blocking, hybridization and washing no pre-made Nexterion® reagents are available. Please check the appropriate slide protocol for recommendations.

SCHOTT Nexterion® Slide NC product range

There are four nitrocellulose-coated glass slides in the product range, offering a choice of either single pad, or 16-pads, and two types of nitrocellulose.

The conventional format for DNA arrays has become standardized around the microscopic glass slide, and now the same instrumentation is being used to print and scan protein microarrays. The dimensions of the glass slides used for the SCHOTT nitrocellulose slides are industry standard 75.6 x 25.0 x 1.0 mm. The glass is a high quality, extremely flat borosilicate glass with a low intrinsic auto-fluorescence.

The spacing and locations of the pads are exactly the same as industry standard nitrocellulose slides allowing the use of standard slide processing equipment.

Single pad slides

a) Nexterion® Slide NC-W

White nitrocellulose-coated glass slides with a single pad 21 by 51 mm. Supplied with a code 128 label barcode for ease of identification and reliable tracking.



Dimensions of Nexterion® Slide NC single pad

b) Nexterion® Slide NC-D

Dark grey nitrocellulose-coated glass slides with a single pad 21 by 51 mm. Supplied with a code 128 label barcode.

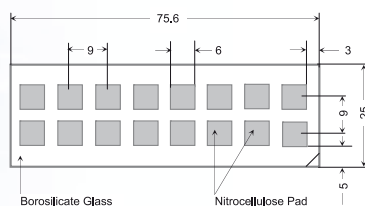
16-pad slides

c) Nexterion® Slide NC-W 16

White nitrocellulose-coated glass slides with 16 pads each 6 by 6 mm. Pad centre-to-centre spacing: 9 mm. Corner orientation mark.

d) Nexterion® Slide NC-D 16

Dark grey nitrocellulose-coated glass slides with 16 pads each 6 by 6 mm. Pad centre-to-centre spacing: 9 mm. Corner orientation mark.



Dimensions of Nexterion® Slide NC 16 pad

The well spacing of the 16 array pads makes the NC slide fully compatible with standard microarray printing instruments.

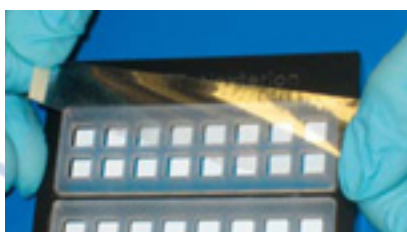
Incubation chambers and slide holder

The use of either single-use gasket chambers, or re-usable silicone incubation chambers, is recommended for carrying out the post-printing incubation reactions.

Attaching the SCHOTT Nexterion® 16-well superstructure to a Nexterion® NC-W 16 slide



Attaching the self-adhesive sealing strip to seal the wells



a) Nexterion® 16-well superstructure and sealing strip

This is a self-adhesive silicone superstructure designed for single use, that creates sixteen, 7 by 7 mm wells around the nitrocellulose pads. The low fluorescent adhesive binds tightly to the glass surface creating a leak-proof seal around each well. The self-adhesive sealing strip allows the wells to be sealed prior to further processing. The superstructure may be removed prior to scanning.

b) Nexterion® MPX-4 tray holder for four slides

The Nexterion® MPX-4 tray is designed to hold up to four Nexterion® Slide NC 16-pad slides, together with the Nexterion® 16-well self-adhesive superstructures.



SCHOTT Nexterion® MPX-4 tray for the rapid processing of up to 4 slides

The 9 mm pad spacing on the Nexterion® NC Slides allows the use of automated liquid handling systems, or multi-channel hand-held pipettes. The external dimensions of the MPX-4 tray conforms to the SBS microplate standard allowing the high throughput processing of up to 64 arrays simultaneously.

c) Other commercially available incubation chambers

The dimensions and locations of the pads on the SCHOTT single-pad, and 16-pad slides are fully compatible with other commercially available incubation chambers.

Compatible accessories

Item	SCHOTT product	Grace Biolabs*	Whatman**
Nexterion® Slide NC-D/NC-W Single pad slide incubation chamber	–	SecureSeal* Hybridization chambers Internal 53 x 22 mm Order code: SA2657	Single-Well Incubation Chamber Order code: 10486137
Nexterion® Slide NC-D/NC-W 16-pad slide incubation chamber	Nexterion® 16-well self-adhesive superstructure and sealing strip Single use Order code: 1178061	1. ProPlate* slide module Order code: 204862 2. SecureSeal* Hybridization chambers 16 chambers 7 x 7 mm 9 mm spacing Order code: SA 16S-0.5	16-Well Array Incubation Chamber Order code: 10486046
Holder for processing single slides	–	–	Chip Clip** Slide-Holder Order code: 10486081
SBS compliant microplate holder for processing 4 slides	Nexterion® MPX-4 tray Reusable Order code: 1180496	Flexwell* slide tray Order code: 204970	FAST** Frame Multi-Slide. Plate Order code: 10486001

* Trademarks of Grace Biolabs

** Trademarks of Whatman Group

Ordering information

SCHOTT Nexterion® nitrocellulose-coated slides

Item	Color of nitrocellulose	Number of pads per slide	Size of pads [mm]	Code 128 label Barcode	Quantity per pack	Material number
Nexterion® Slide NC-W	White	1	21 x 51	Yes	20	1178057
Nexterion® Slide NC-D	Dark grey	1	21 x 51	Yes	20	1178058
Nexterion® Slide NC-W 16	White	16	6 x 6	No	5	1178059
Nexterion® Slide NC-D 16	Dark grey	16	6 x 6	No	5	1178060

SCHOTT Nexterion® 16-well incubation chambers and MPX-4 tray

Item	Size	Compatible slide	Quantity per pack	Material number
Nexterion® 16-well self-adhesive superstructure and sealing strip	7 x 7 mm wells each 9 mm spacing, 75 x 25 mm strip	Nexterion® Slide NC-W 16 Nexterion® Slide NC-D 16	5 of each	1178061
Nexterion® MPX-4 tray	Holds up to 4 slides	All Nexterion® Slides	1	1180496

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SCHOTT
 glass made of ideas

Reflective optical coating

Nexterion® HiSens Slides



Overview

Type of coating	Ordering information			
	Nexterion® product	Barcode option	Item number	Slides per pack
Reflective optical coating available with most of Nexterion® functional coatings	HiSens uncoated	None	1141518	25
		Label	1141519	25
	HiSens AStar	None	1178045	25
		Label	1178046	25
	HiSens A+	None	1139673	25
		Label	1141515	25
	HiSens AL	None	1139827	25
		Label	1141514	25
	HiSens E	None	1125813	25
		Label	1137332	25
	HiSens H	None	1141517	25
		Label	1139829	25
	HiSens P	None	1178051	25
		Label	1178052	25

Key product features

- Significantly improved signal to background ratios for identifying low-expressor genes or low-abundant proteins
- Easy implementation with standard slide protocols
- Compatible with all common microarray equipment
- Reduced target concentrations
- Reduced reagents and dye costs
- Preservation of Cy3/5™ ratios – comparable to data from conventional slides
- Chemically stable reflective coating

Introduction

The majority of microarray users prefer to use fluorescent dyes as labels in their experiments, as these dyes typically offer the most sensitivity and also enable detection of two or more different dyes simultaneously. Unfortunately, microarray scanners do not operate at their maximum efficiency with fluorescent dyes, as the detectors only acquire a small proportion of the total emitted fluorescence.

There are a number of factors that contribute to the inefficient signal capture:

- Only a proportion of the total excitation light is absorbed by the microarray spots, with most passing through the glass slide.
- On standard non-reflective slides, there is weak but “destructive” interference of the excitation light waves, leading to a lower fluorescent emission.
- The light emitted by the fluorescent dyes attached to the target molecule is undirected and lost through the back of the transparent glass.

To address these problems, SCHOTT utilized its extensive optical glass coating expertise to develop the next generation of microarray slides – Nexterion® HiSens (High Sensitivity).

Immobilization chemistry

Nexterion® HiSens Slides are available with most of the Nexterion® functional coatings.

Suitable probe types

The functional coating on Nexterion® HiSens Slides is identical to the respective coating on Nexterion® Slides. Please refer to the table in the section “General information coated slides” in order to find the appropriate coating chemistry for your specific application.

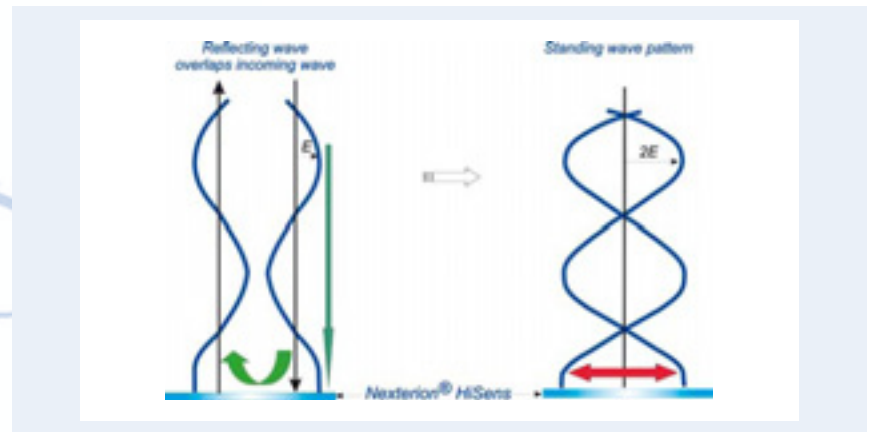
Product details

The Nexterion® HiSens product is an innovative microarray slide based on an ultraflat, high quality borosilicate glass slide coated with reflective dielectric layers (patent pending). The reflective layers on Nexterion® HiSens significantly enhance sensitivity and signal response. The characteristics of the reflective layers have been optimized for the fluorescent wavelengths most commonly used in microarray experiments, and will simultaneously improve the performance in both the Cy3™ and Cy5™ channels. The slide is produced according to industry standard slide dimensions and is available with SCHOTT’s standard high quality functional coatings for DNA and protein microarraying. This means that the Nexterion® HiSens Slide is fully compatible with all microarray printing technologies and most slide processing protocols, allowing customers a smooth transition from industry-standard transparent microarray slides.

The Nexterion® HiSens coating is able to enhance signal amplification by exploiting several optical effects:

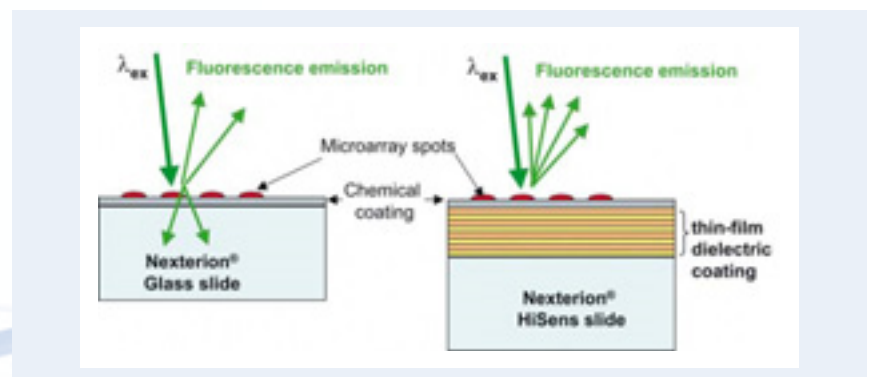
1. Fluorescence enhancement and reflection of excitation light

On a standard glass microarray slide, the fluorescently labelled spots absorb only some of the excitation light. By placing a dielectric coating beneath the spots, this “lost” light is reflected back onto the spots. In addition, the multiple layers of the HiSens coating have been specifically designed so that the incoming and reflected excitation light waves overlap and interfere with each other. The interference is constructive at the slide surface, enhancing the excitation by a theoretical factor of up to 6.3 times.



2. Reflection of the emission light

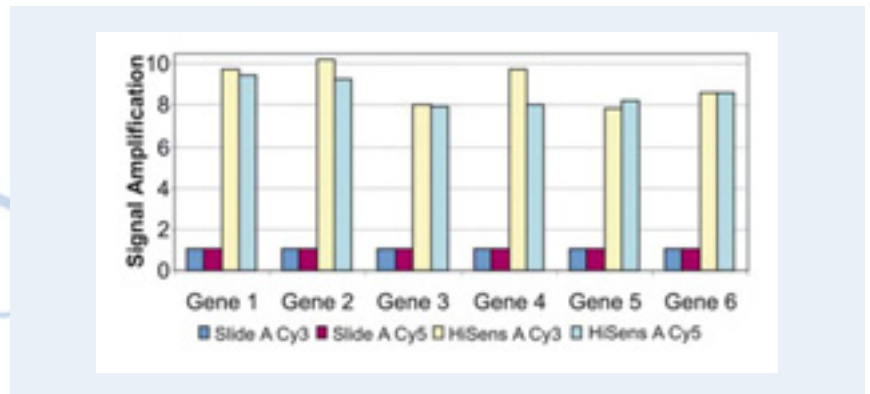
The fluorescence emission in the Cy3™ and Cy5™ channels from the labelled spots is redirected towards the detector rather than being lost by passing through the glass or by scattering. This effectively doubles the detected fluorescence signal.



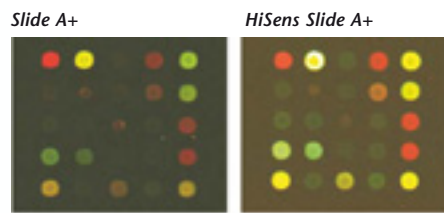
Taken together, these effects can theoretically enhance the fluorescence signal by up to 12.6 times when compared to standard transparent microarray slides.

Increased sensitivity

Significant increases in fluorescent signal intensities and signal-to-background ratios have been demonstrated with the Nexterion® HiSens E and A+ products, the first two slide surfaces launched by SCHOTT in the HiSens range in 2006 (all slide surfaces are now available). The functional coatings are identical to the standard Nexterion® slides and were processed with standard slide processing protocols. The results clearly exhibit the same impressive spot size and morphology that users typically associate with Nexterion® Slide E and Slide A+, but the signal intensity is significantly enhanced thanks to the HiSens coating.



Identical oligonucleotide probes were printed on Nexterion® HiSens A+ and the standard Nexterion® Slide A+. The slides were hybridized and scanned on

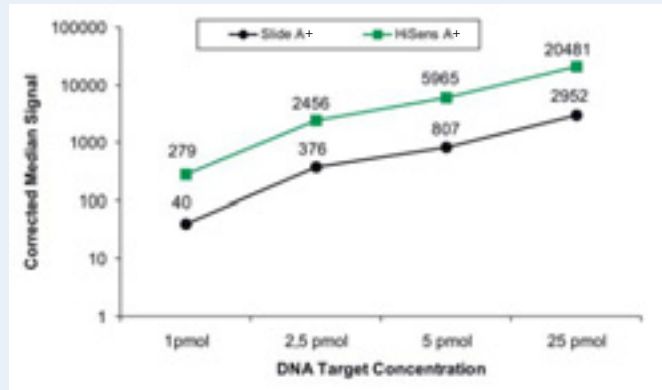


an Axon 4000B scanner with identical settings. Images of the Nexterion® HiSens reflective coating are compared to standard Slide A+. The Nexterion® HiSens A+ data was normalized against the standard Nexterion® Slide A+. An 8 to 10 fold increase in signal-to-background ratios was obtained with the Nexterion® HiSens reflective coating compared to the standard Nexterion® Slide A+.

Improved signal response

Nexterion® HiSens is the ultimate microarray slide for microarray applications where the target material is at a low concentration or cannot be reliably amplified, for example with mRNAs or low abundant proteins. The Nexterion® HiSens coating may be used to produce reproducible signals at a much lower target concentration than with conventional slides.

The graph shows that for a DNA microarray application, between two and ten fold less target was required to produce the same signal intensity with Nexterion® HiSens as with a conventional aminosilane microarray slide, resulting in potentially significant cost savings for users.



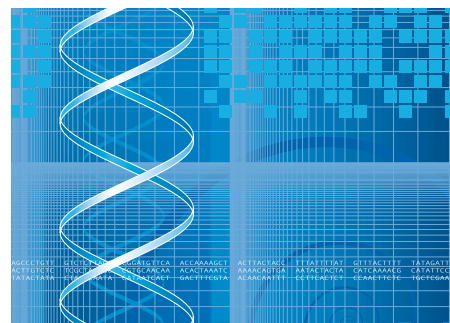
Preservation of dye ratios

The reflective layers in the Nexterion® HiSens coating have been designed to enhance the performance of both the Cy3™ and Cy5™ channels equally. The Cy3™ to Cy5™ ratios are preserved, allowing use of standard data normalization methods and direct comparison with data previously produced on conventional slides.

Important information about patents

Using arrays based on SCHOTT Nexterion® products for dual color analysis on a single array in which at least two different samples are labeled with at least two different labels may require a license under one of the following patents: U.S. patent nos. 5.770.358 or 5.800.992 or 6.225.625 and U.S. patent no. 5.830.645. Manufacturing and use of probe arrays may require a license under the following patents: U.S. patent nos. 6.040.138 or 5.445.934 or 5.744.305 and under the following patents owned by Oxford Gene Technology Ltd. ("OGT"): European patent no. EP 0.373.203, U.S. patent nos. 5.700.637 and 6.054.270 and Japanese patent nos. 3393528 and 3386391 ("The OGT patents"). Other patents may apply. The purchase of Nexterion® products does not convey any license under any of the OGT patents or any of the other patents referred to. For all applications SCHOTT North America Inc. and SCHOTT Jenaer Glas GmbH make no representation or warranty that the practice of its technology and products or any improvement will not infringe or violate any domestic or foreign patent of any third party. To inquire about licensing under the OGT patents, please contact OGT at licensing@ogt.co.uk.

Multi-well formats



Overview

Formats	Immobilization method	Typical applications
16-well slide 96-well SBS microplate	Various	<ul style="list-style-type: none">• Surveillance chips• Virus or bacterial identification• Molecular diagnostics• Dose response studies

Key product features

- Simultaneous analysis of multiple biological samples in one microarray experiment
- Excellent reproducibility compared to conventional single-array applications
- Optimal use of limited sample material
- Substantial reductions in cost per experiment
- Compatible with standard commercial printing, liquid handling and scanning equipment

Introduction

Multi-well microarray substrates allow the parallel analysis of multiple biological samples against focused subsets of probes. The multi-well format permits a number of versatile assay designs such as multiplexed experiments, side-by-side comparisons, or replicate experiments to be performed. Additional advantages of using multiple well formats include higher array-to-array reproducibility and lower experimental costs when compared to conventional single-array substrates. SCHOTT can offer multi-well coated substrates in two formats: Nexterion® MPX-16-wells on a 75.6 mm x 25.0 mm glass slide, or the Nexterion® MTP-96-wells in microplate format. The MPX-16 slide is fully compatible with standard microarray slide printers and scanners, whereas the MTP-96 conforms to the SBS standard format commonly used in clinical diagnostics and drug discovery. The multi-well formats are available with functional chemistries and coatings that are identical to the standard Nexterion® slides, allowing assays to be easily transferred to the high throughput multi-well formats.

Immobilization chemistry

Nexterion® coating	Type	Nexterion® MPX-16 Item number	Nexterion® MTP-96 Availability
None	Uncoated glass	1079386	✓ Also available without 96-well patterning
AStar	Aminosilane	1178047	✓
A+	Aminosilane	1078353	✓
AL	Aldehydesilane	1078355	✓
E	Epoxysilane	1078354	✓ Also available without 96-well patterning
H	3-D thin film polymer with NHS-ester	1091524	Not available in this format
P	3-D thin film polymer with NHS-ester	1178053	Under development
NC-W	White nitrocellulose	1178059	Under development
NC-D	Dark grey nitrocellulose	1178060	Under development

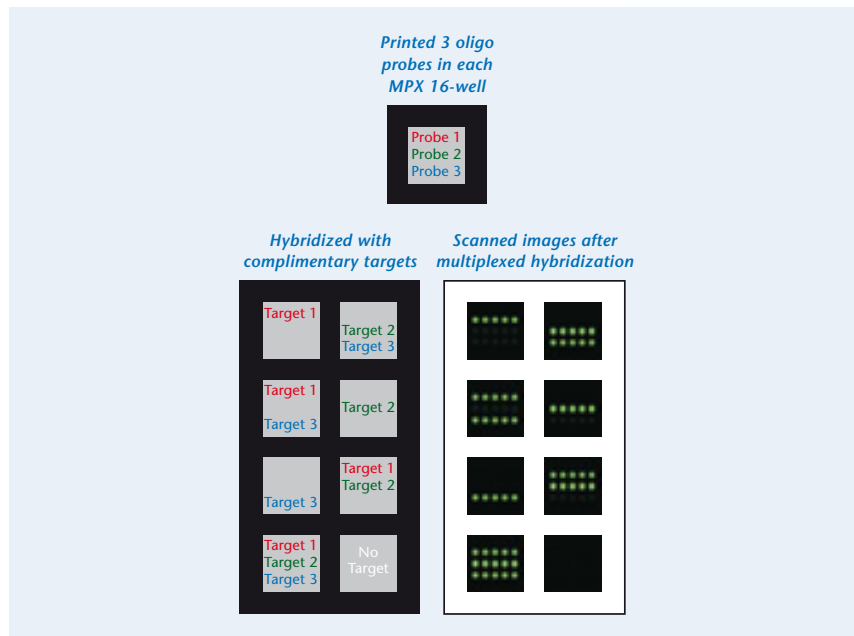
Product details

Hydrophobic multi-well patterning

The microarray quality glass substrates are printed with either a 16- or 96-well hydrophobic patterning, and are available with a number of functional coatings, making the both formats suitable for most microarray applications using DNA, proteins, or other bio-molecules as probes. The black patterning material serves several important functions, one of which is to create the individual wells that act as a hydrophobic barrier preventing cross contamination between the arrays. The well pattern also serves as a registration aid for probe deposition, and a reproducible surface for the adhesion of the silicone superstructure. The absence of well rims makes Nexterion® multi-well substrates compatible with all microplate arrayers and significantly reduces print times compared to substrates that have recessed wells. The patterned glass substrates have a corner indicator to provide an unambiguous orientation mark. Most modern robotic arrayers are equipped to handle the 96-well microplate formats, and many have pre-programmed definitions for both the Nexterion® MPX-16 slides and Nexterion® MTP-96 plates, simplifying the set up process for users. Information on compatible arrayers and detailed instructions for printing into the Nexterion® multi-well formats are available on request.

Avoidance of cross-contamination

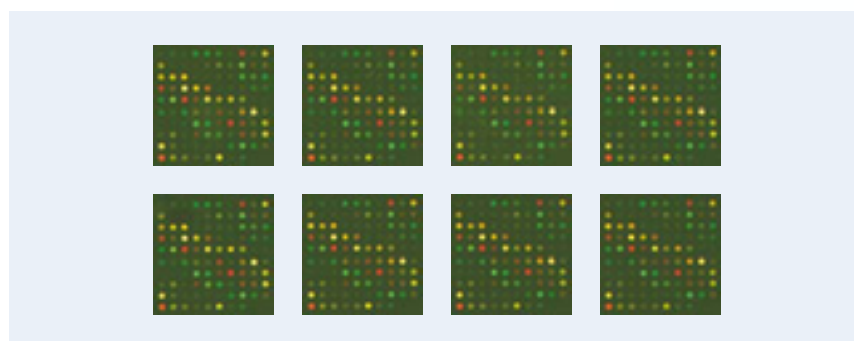
Cross contamination is avoided during multiplexed hybridization as a result of the 16- or 96-well hydrophobic patterning, and the use of the optional self-adhesive silicone superstructures.



The figure shows a pictorial representation of sub-array wells from Nexterion® Slide MPX-16 that were first printed with three distinct nucleic acid probes and then hybridized with various combinations of three complementary, fluorescent-labeled targets. No cross contamination was observed.

Intra-slide reproducibility

Nexterion® multi-well coated substrates allows users to obtain microarray data with exceptionally high reproducibility. This was demonstrated by hybridizing multiple 10x10 DNA arrays with fluorescent-labeled cDNA targets using Nexterion® Slide MPX-16. Correlation coefficients were obtained by comparing the normalized signal intensity from spots in different subarray wells. An average correlation coefficient of 0.96 was obtained after pair wise comparison of all eight-subarray wells.



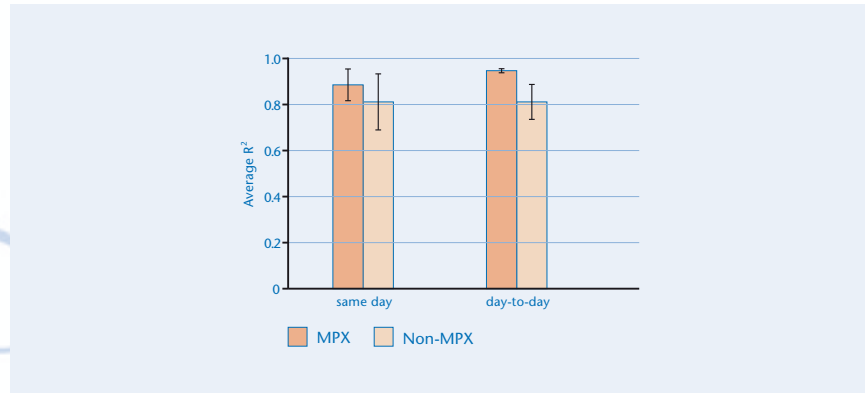
Exceptional reproducibility

Virtually identical subarrays in each well of one Nexterion® Slide MPX-16.

Inter-slide reproducibility

The excellent inter-slide reproducibility offered by Nexterion® multi-well coated substrates is attributable to the simultaneous analysis of all subarray assays, and to the improved sample mixing during hybridization within the wells of the superstructure. The figure shows the average correlation coefficient (R^2) obtained with Nexterion® Slide MPX-16 (indicated as MPX) and conventional slides (indicated as Non-MPX). Experiments were conducted as described in the previous figure, but now using multiple slides for same day and day-to-day experiments.

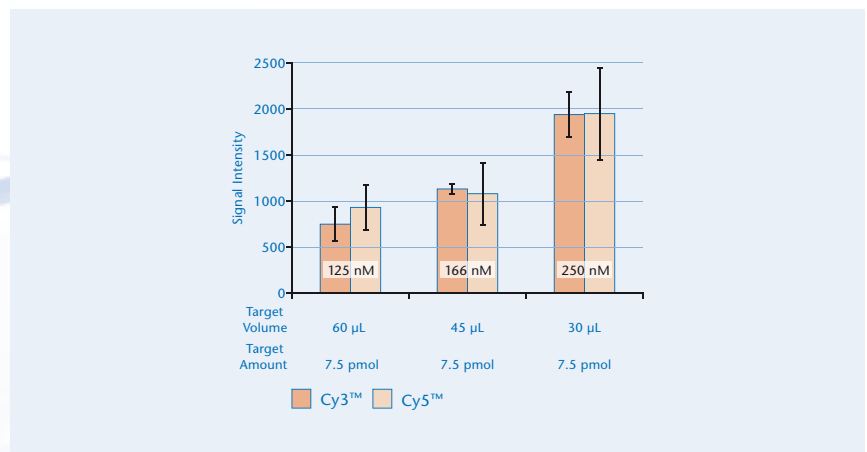
Inter-slide reproducibility



Optimal use of limited target material

The Nexterion® multi-well coated substrates allow lower target solution volumes to be used compared to conventional slides. Identical probe sets in separate subarray wells of Nexterion® Slide MPX-16 were hybridized with 7.5 pmol of fluorescent-labeled target (house-keeping gene: GAPDH), which was dissolved in different volumes (60, 45, 30 μ L) of hybridization solution. The figure demonstrates that a reduction in target volume results in increased target concentration and thus in improved signal intensities. Nexterion® Slide MPX also offers cost savings by reducing the amount of target material required without any loss of sensitivity (assuming that the target volume and target amount are reduced equally, keeping the concentration consistent).

Improved sensitivity



Multi-well slide format

Nexterion® MPX-16 Slides



Key product features

- Standard slide format compatible with all standard commercial microarray printing, liquid handling and scanning equipment
- Simultaneous analysis of 16 biological samples on one slide
- Excellent reproducibility compared to conventional single-array applications

The special 16-well architecture of Nexterion® Slide MPX allows the parallel analysis of multiple biological samples against focused subsets of probes on a single slide. The dimensions of the microarray slide are fully compatible with all microarray printers and scanners, allowing users to run multiple samples on a single slide without any additional hardware.

High quality glass substrate

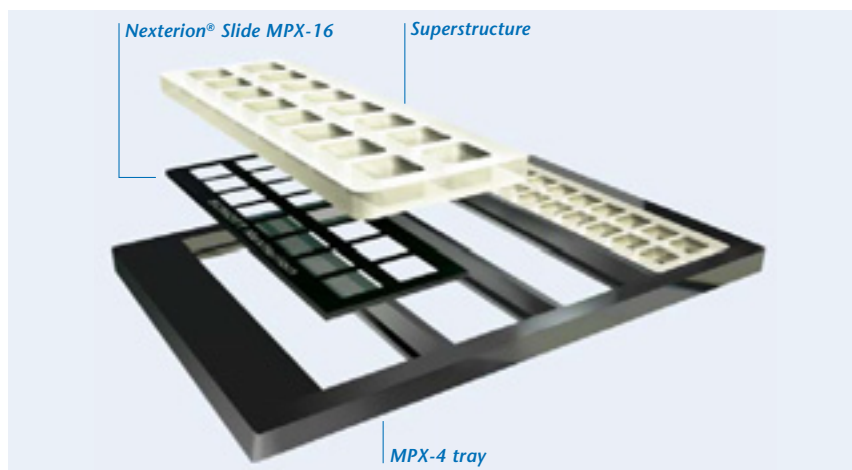
The ultra flat, glass slide is manufactured from low auto-fluorescent borosilicate glass with the dimensions 75.6 mm x 25.0 mm x 1 mm. The uniform flatness of the borosilicate glass ensures highly reproducible contact printing and scanning across the wells. The glass slides are partitioned into 16 wells by an ultra-hydrophobic patterning layer. The dimensions and locations of the wells are fully compatible with standard microarray printing parameters.

Introduction

Product components



*Dimensions of Nexterion® Slide MPX-16.
All dimensions are given in mm.*



16-well silicone superstructure and sealing strip

The optional superstructure is self-adhesive, and adheres to the 16-well patterning of the glass slide, increasing the well volume to between 30 and 130 μL . Placing the adhesive on the superstructure rather than on the glass slide, avoids the risk of adhesive contamination in the wells. The clear self-adhesive sealing strip seals all the individual wells during hybridization preventing evaporation and cross contamination. If necessary, the superstructure and sealing strip may be removed prior to scanning.

MPX-4 four slide microplate adaptor

An SBS microtiter plate sized adaptor, holding up to four MPX, slides is offered separately. This adaptor allows the use of 8-channel pipettors or microplate washers, for automated high-throughput processing of Nexterion® Slide MPX.

Packaging and storage

Nexterion® MPX slides are available as 5-slide packs sealed in stable plastic boxes under an inert atmosphere. The slides are ready-to-use from the box. The exact shelf life of the slides is determined by the coating and is indicated on the external packaging. The 16-well superstructures are not included with the slides and must be ordered separately.

Product	Item number	Pieces per pack
Nexterion® MPX-4 tray	1180496	1
Nexterion® 16-well self-adhesive superstructure and sealing strip	1178061	5

Multi-well microplate format

Nexterion® MTP-96 microarraying products



Key product features

- SBS compliant microplate format
- MTP-96 glass plate easily detaches from the plate holder for spotting and scanning flexibility
- Maximum printable area of 6 mm x 6 mm allows over 1600 features per well
- High optical transmission and low auto fluorescence glass for optimal performance
- Available as a complete microtiter plate, or as individual components with or without well patterning and/or functional chemistry
- Compatible with all contact or non-contact microplate arrayers

Introduction

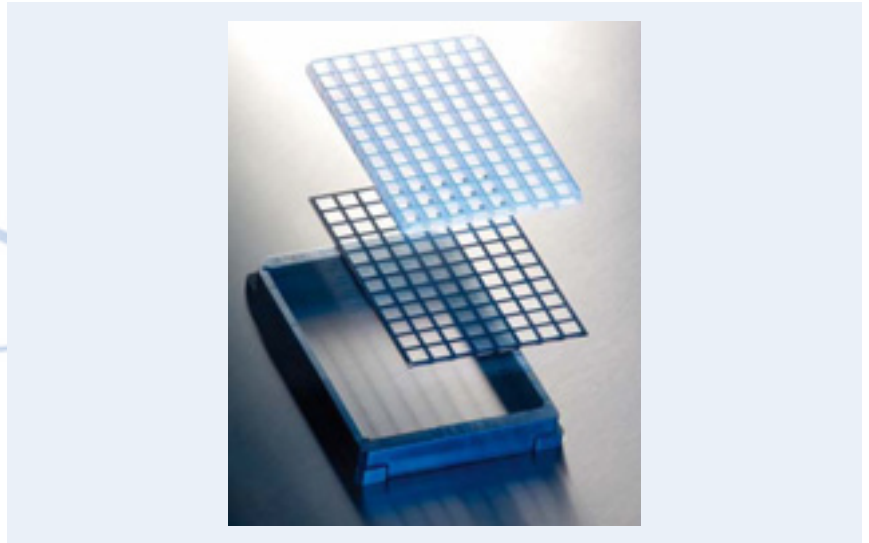
The microtiter plate format is a standard research tool for clinical diagnostics and drug discovery. The advantages associated with this format are obvious and include, high sample throughput, cost savings and compatibility with automated handling systems. In recent years, there have been efforts to make the microplate format available for microarraying with the emergence of high-resolution plate scanners and compatible arrayers. However, there are clearly a number of limitations with the conventional 96-well polymeric and glass bottom microtiter plates currently being utilized in microarraying, including:

- Microarray print heads cannot access the entire well area because the wells are recessed. This limits the number of features per well and arrayer compatibility.
- The depth of the wells, and the subsequent additional z-axis travel, makes printing time consuming.
- The intra-well print area may be restricted due to the contamination of the well edges with bonding adhesive. In addition, adhesive out gassing can affect functional coating performance.
- The round wells have a smaller printable area than the square MTP wells.
- Difficulty associated with applying functional coatings to plastic plates.
- Conventional plastic microplates suffer from poor optical transparency and flatness.

The SCHOTT Nexterion® MTP microarraying products were specifically developed to overcome these limitations. The system is designed to offer users a high degree of flexibility and is available either as a complete microtiterplate kit or as individual kit components. The MTP-96 system consists of three main components: a microarray quality 96-well patterned glass substrate, a 96-well silicone superstructure and a microtiter plate holder and lid.

Product components

The three main components comprising the MTP-96 system are available as a complete kit, or as separate items:

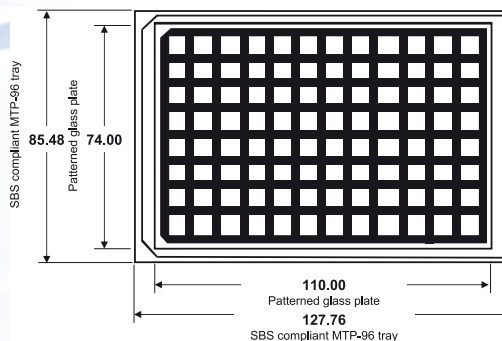


Three components of the MTP-96 system

High quality glass substrate

Microarray plate scanners typically read fluorescence signals from the spots through the bottom of the microplate. The Nexterion® MTP-96 glass plate has a high transmittance of over 92% and exceptional optical clarity for wavelengths used in fluorescence-based microarray assays. The plates are manufactured by melting extremely pure raw materials to ensure an excellent internal glass quality with absence of inclusions, bubbles, streaks or other defects. The ultra flat, glass plate is manufactured from low auto-fluorescent borosilicate glass with the dimensions 74 mm x 110 mm x 1 mm. The uniform flatness of the microplate glass ensures highly reproducible contact printing and scanning across the wells. The microarray quality glass plate

is available with or without a 96-well hydrophobic patterning, and with a number of functional coatings, making it suitable for all microarray applications using DNA, peptide or protein probes. The glass plate may be printed separately or in the microtiter plate tray holder.



Nexterion® MTP-96 dimensions

96-well silicone superstructure

The optional superstructure is self-adhesive and adheres to the 96-well patterning on the glass plate, increasing the well volume to between 30 and 130 μL . Placing the adhesive on the superstructure rather than on the glass plate, avoids the problem of adhesive contamination in the wells.

Microtiter plate holder with lid

The SBS (Society for Biomolecular Screening) compliant rigid polycarbonate holder supports the glass substrate and superstructure. It also acts as an alignment jig when attaching the superstructure. The holder has molded alpha/numeric well labels for easy identification. The four fixing pins firmly hold the glass plate at the four corners of the microtiter plate holder ensuring the glass is kept flat. The lid and sealing film limit sample contamination and evaporation during processing.

Instrument compatibility

Information on compatible microplate scanners and detailed instructions for printing into the Nexterion[®] MTP-96 plates are available on request.

Technical instructions

Further information about printing and processing the MTP-96 plates are available in the FAQ section of the Nexterion[®] web site.

Packaging and storage

Nexterion[®] MTP-96 glass plates are available in single plate kits, or as 5-plate packs sealed in stable plastic boxes under an inert atmosphere. The plates are packaged separately to the plastic MTP components to avoid any changes to the coatings caused by outgassing. The exact shelf life of the plates is determined by the coating and is indicated on the external packaging.

Important information about patents

Using arrays based on SCHOTT Nexterion[®] products for dual color analysis on a single array in which at least two different samples are labeled with at least two different labels may require a license under one of the following patents: U.S. patent nos. 5.770.358 or 5.800.992 or 6.225.625 and U.S. patent no. 5.830.645. Manufacturing and use of probe arrays may require a license under the following patents: U.S. patent nos. 6.040.138 or 5.445.934 or 5.744.305 and under the following patents owned by Oxford Gene Technology Ltd. ("OGT"): European patent no. EP 0.373.203, U.S. patent nos. 5.700.637 and 6.054.270 and Japanese patent nos. 3393528 and 3386391 ("The OGT patents"). Other patents may apply. The purchase of Nexterion[®] products does not convey any license under any of the OGT patents or any of the other patents referred to. For all applications SCHOTT North America Inc. and SCHOTT Jenaer Glas GmbH make no representation or warranty that the practice of its technology and products or any improvement will not infringe or violate any domestic or foreign patent of any third party. To inquire about licensing under the OGT patents, please contact OGT at licensing@ogt.co.uk.

Reagents & kits

Nexterion® reagents



The quality of the results from a microarray experiment is dependent on many factors, the substrate utilized for printing, the printing buffer, the labeling method employed, and the blocking and hybridization conditions utilized. For this reason, SCHOTT Microarray Solutions provides a range of ready-to-use reagents optimized to get the best performance from the Nexterion® coated slides.

Nexterion® Reagents for processing coated slides:

Nexterion® coating	Spotting		Blocking	Hybridization	Washing
	Spotting buffer	Low evaporation buffer			
AStar/A+	Nexterion® Spot	Nexterion® Spot A HD	Nexterion® Block A	Nexterion® Oligo Hyb Nexterion® Hyb (A+ only)	*
			Nexterion® Aminosilane Slide Processing Kit (includes all reagents for blocking, hybridization and washing)		
AL	Nexterion® Spot	*	*	Nexterion® Hyb Nexterion® Oligo Hyb	*
E	Nexterion® Spot Nexterion® Spot PB (Protein applications)	Nexterion® Spot LE kit	Nexterion® Block E Nexterion® Oligo Pre-Hyb	Nexterion® Hyb Nexterion® Oligo Hyb	*
			Nexterion® Epoxy Slide Oligo Processing Kit (includes all reagents for blocking, hybridization and washing)		
H	Nexterion® Spot PB	*	*	Nexterion® Hyb (DNA applications)	*
P	Nexterion® Spot PB	*	*	Nexterion® Hyb (DNA applications)	*
NC	Nexterion® Spot PB	*	*	*	*

* No pre-made Nexterion® reagent available. Please check the appropriate slide protocol for alternative recommendations.

Nexterion® spotting buffers

Introduction

SCHOTT Microarray Solutions offers a range of optimized spotting buffers that are compatible with the Nexterion® slide surfaces. Although many users printing DNA and protein microarrays opt to work with commonly used spotting buffers, such as 3X SSC and 50% DMSO (most of which work well with the Nexterion® coated substrates), SCHOTT has received many requests for fully optimized spotting buffers to significantly reduce the time and effort typically associated with spotting buffer validation. SCHOTT not only offers a standard spotting buffer that works well with most slide surfaces, but we also now offer new low evaporation spotting buffers to solve one of the most commonly observed problems associated with using aqueous spotting buffers.

The choice of the spotting buffer plays an important role in binding capacity and spot morphology. Therefore it is extremely important to fully test slides with the appropriate buffer

Nexterion® Spot (order code: 1066029)

DNA spotting buffer

Nexterion® Spot is a robust spotting buffer that is suitable for use with most Nexterion® coated slides. The reagent is a modified phosphate buffer with a pH of 9.0 and is supplied as a 2x concentrated solution. This buffer ensures excellent spot morphology, high signal intensities, and results in medium to small spot diameters. In addition, Nexterion® Spot offers users the option of “tuning” the size of the printed spot by adding varying volumes of detergents. Specific instructions on how to modify the printing buffer are available on request, or on the SCHOTT Microarray Solutions website. Nexterion® Spot is available as a 2x concentration in 100 mL packs.

Nexterion® Spot A HD (order code: 1168809)

Low evaporation DNA spotting buffer for aminosilane coated substrates

For many DNA microarray users, the slide surface of choice is still aminosilane despite the increasing use of “active” surface chemistries such as epoxysilane.



Although there are many commercially available spotting buffers already in use for this slide surface, many users report issues with evaporation during long print runs and spots that are too large for producing higher density arrays. To accommodate the needs of these aminosilane slide users, SCHOTT developed an optimized spotting buffer for high density printing applications on Nexterion® aminosilane coated slides.

Using Nexterion® Spot A HD spotting buffer, spots of 80 µm in diameter can be printed consistently with a pitch of 130 µm (with pins with a tip diameter of 50 µm), allowing users to produce up to 50 K arrays with conventional contact printers. The spotting buffer produces spots with excellent spot morphology and signal-to-background ratios. In addition to offering smaller spot sizes for high density arraying, Nexterion® Spot A HD also has impressive low evaporation properties for longer print runs.

Nexterion® Spot A HD has been optimized for use with Nexterion® Slide A+ and Slide AStar. Nexterion® Spot A HD is available as a 1x concentration in 100 mL packs.

Nexterion® Spot LE Kit
(order code: 1117902)

Low evaporation DNA spotting buffer for epoxysilane coated substrates
Higher density arrays usually require extended print runs that typically result in evaporation from the source plates. To enable long print runs on Nexterion® Slide E, SCHOTT developed Nexterion® Spot LE, offering users the same performance features associated with standard Nexterion® Spot, combined with low evaporation. The spot sizes are typically small enough for higher density arrays at between 60–70 µm, however sarcosyl may be added to increase spot size if required. The Nexterion® Spot LE protocol provides full details on the key factors to consider when working with this spotting buffer. SCHOTT recommends printing with split pins at a maximum pitch of 180 µm to obtain 20–25 K spot arrays. Nexterion® Spot LE kit is available as a 1x concentration in 100 mL pack with 10 mL sarcosyl solution.

Nexterion® Spot PB
(order code: 1178050)

Protein spotting buffer

Nexterion® Spot PB was developed as a protein spotting buffer and has been optimized to work with all SCHOTT's dedicated protein slide surfaces, including Nexterion® Slide P, Slide NC, Slide E and Slide H. It provides outstanding spot morphologies and contains no BSA, thus eliminating a component that may compete with low concentration probe samples. Nexterion® Spot PB typically produces spot sizes between 100–160 µm, depending on the slide surface. Nexterion® Spot PB is available as a 2x concentration in 100 mL packs.

Spot morphology and signal intensity strongly depend on following parameters

- Composition of spotting solution
- Compatibility of spotting buffer and slide surface chemistry
- Spot density/pitch
- Nature, concentration, and purity of probe molecule
- Spotting technology
- Environmental conditions
- Immobilization procedures

Blocking reagents

Nexterion® Block A Kit (order code: 100 mL 1206704, 500 mL 1206717)

Easy-to-use reagent for deactivating aminosilane coating after printing

Nexterion® Block A is a highly effective reagent for blocking aminosilane slide surfaces after microarray printing. It is ideal for use with both Nexterion® Slide A+ and Slide AStar, as well as other commercial slides. The reagent is based on the well accepted BSA blocking method, and works by blocking the reactive groups on the slide surface not occupied by the spotted DNA molecules. This significantly reduces any potential non-specific binding of the labeled target, thereby minimizing the background signals on the final microarray. The reagent is supplied as a convenient, pre-made, two-part solution that does not contain any hazardous materials.

Nexterion® Block E (order code: 100 mL 1066069, 1000 mL 1066071)

Highly effective reagent for deactivating epoxy coating after printing


Nexterion® Block E is a blocking solution optimized for Nexterion® Slide E. It reacts rapidly with residual epoxy groups in both the printed and unprinted areas of the slide surface and was developed to ensure high signal intensities with reduced non-specific background, thus increasing overall data reproducibility. SCHOTT Microarray Solutions has demonstrated that Nexterion® Block E is an extremely important component for producing high quality DNA microarrays with very good signal-to-background ratios. Nexterion® Block E is available as a 4x concentration in 100 and 1000 mL packs.

Hybridization buffers

Nexterion® Hyb (order code: 1066075)

Formamide free hybridization buffer

Nexterion® Hyb is a hybridization buffer that has been developed for optimal spot morphology, high signal intensities with reduced non-specific background, and high data reproducibility on Nexterion® slides. Nexterion® Hyb is compatible with many different surface chemistries and hybridization methods and may be used with cDNA or oligonucleotide arrays. The reagent is supplied as a ready-to-use 1x concentrated solution. By avoiding the laborious preparation of multi-component hybridization buffers, Nexterion® Hyb can save users time and effort. The components in the buffer help to stabilize the hybridization process during extended runs, and also reduce background fluorescence. Nexterion® Hyb has a low-viscosity, does not contain formamide and is recommended for applications that cannot tolerate formamide, or that require temperatures greater than 60°C. Nexterion® Hyb is available as a 2x concentration in 100 mL packs.



Nexterion® Oligo Hyb
(order code: 1116890)

Formamide hybridization buffer for oligonucleotides arrays

Nexterion® Oligo Hyb has been optimized for use with epoxy coated (Nexterion® Slide E) slides printed with oligonucleotides 20 to 70 mers long. Nexterion® Oligo Hyb is formulated with formamide. Formamide reduces the melting temperature of DNA-DNA hybrids, and permits users to reduce the hybridization temperature (42°C) while maintaining stringency. The combination of formamide and lower hybridization temperature dramatically reduces evaporation during hybridization. Nexterion® Oligo Hyb is available at a ready-to-use concentration in 100 mL packs.

Reagents & kits

Nexterion® kits



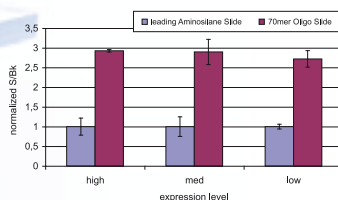
The quality of the results from a microarray experiment is dependent on many factors, the substrate utilized for printing, the printing buffer, the labeling method employed, and the blocking and hybridization conditions utilized. For this reason, SCHOTT Microarray solutions provide a range of complete slide processing kits optimized to get the best performance from the Nexterion® coated slides.

Nexterion® Epoxy Slide Oligo Processing Kit (order code: 1209009) (for 25 slides)

SCHOTT Microarray Solutions offers a kit with pre-prepared reagents for the blocking, hybridization and washing of 25 printed epoxysilane coated slides. The reagents in the kit are optimized for use with epoxy coated slides (e.g. Nexterion® Slide E) printed with 20 to 70 mer oligonucleotides. The Nexterion® Oligo Pre-Hyb offers the advantage combining some of the initial washing and blocking steps thereby reducing the overall processing time. Nexterion® Oligo Hyb contains formamide, which allows for increased hybridization stringency at decreased hybridization temperatures. The kit includes an easy-to-use slide processing protocol.

Superior signal-to-background ratios

Enhanced signal-to-background ratios were observed over the entire dynamic range (as shown by the results from low, medium, and high expressor genes) when 70 mer oligonucleotides were spotted onto the Nexterion® Slide E. The covalent probe binding properties of the slide surface allow the optimal presentation of the probe and therefore improved target accessibility for hybridization. In addition, the reactive groups on the slide surface can be fully deactivated using a blocking reagent greatly reducing the background fluorescence caused by non-specific binding.



The graph shows normalized signal-to-background ratios (S/Bk) for the market leading aminosilane slide and Nexterion® Slide E. Signal-to-background ratios were calculated for three selected genes with different expression levels (low, medium and high). To allow the presentation of all the data in one graph, all the results were normalized against the values obtained for the market leading aminosilane slide.

The Epoxy Slide Oligo Processing Kit contains the following components:

Process step	Components	Reagent concentration	Quantity
Blocking	Nexterion® Oligo Pre-Hyb	Ready-to-use 1x	1 x 500 mL
Hybridization	Nexterion® Oligo Hyb	Ready-to-use 1x	1 x 10 mL
Washing	Nexterion® Oligo Wash A	20x	1 x 1000 mL
	Nexterion® Oligo Wash B	20x	1 x 100 mL

Nexterion® Aminosilane Slide Processing Kit (order code: 1209008) (for 25 slides)

SCHOTT Microarray Solutions also offers a kit for 25 printed aminosilane coated slides (e. g. Nexterion® Slide AStar/A+). The Nexterion® Block A offers the advantage of combining some of the initial washing and blocking steps thereby reducing the overall processing time. Nexterion® Oligo Hyb contains formamide, which allows for increased hybridization stringency at decreased hybridization temperatures. The kit includes an easy-to-use slide processing protocol.

The Aminosilane Slide Processing Kit contains the following components:

Process step	Components	Reagent concentration	Quantity
Blocking	Nexterion® Block A	Ready-to-use 1x	1 x 500 mL
Hybridization	Nexterion® Oligo Hyb	Ready-to-use 1x	1 x 10 mL
Washing	Nexterion® Wash A	20x	1 x 1000 mL
	Nexterion® Wash B	20x	1 x 100 mL

To assist customers evaluating the Nexterion® slide surfaces, SCHOTT offers ready-to-use slide evaluation kits for two of its most commonly used slide surfaces. The Nexterion® Slide Evaluation Kits offer users the opportunity to fully evaluate the slide performance by utilizing the optimized protocol and ready-to-use reagents included in the kit. The kit consists of ten slides with test oligonucleotides, optimized reagents and detailed protocols.

Nexterion® “Active” Slide Chemistry Evaluation Kits

	Components	Quantity
Microarray Slide	Nexterion® Slide E	10 slides
Spotting	Nexterion® Spot	10 mL
	Nexterion® Spot LE Kit (Low Evaporation Buffer)	10 mL
Blocking	Nexterion® Block E	100 mL
Hybridization	Nexterion® Hyb	10 mL
Test probe	Oligo probe	2 nmol
Test target	Oligo target	3 pmol

Nexterion® Slide E Evaluation Kit
(order code: 1117570)

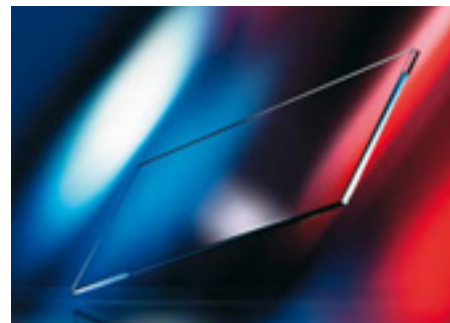
	Components	Quantity
Microarray Slide	Nexterion® Slide AL	10 slides
Spotting	Nexterion® Spot	10 mL
Hybridization	Nexterion® Hyb	10 mL
Test probe	Oligo probe	2 nmol
Test target	Oligo target	3 pmol

Nexterion® Slide AL Evaluation Kit
(order code: 1066026)

Important information about patents

Using arrays based on SCHOTT Nexterion® products for dual color analysis on a single array in which at least two different samples are labeled with at least two different labels may require a license under one of the following patents: U.S. patent nos. 5.770.358 or 5.800.992 or 6.225.625 and U.S. patent no. 5.830.645. Manufacturing and use of probe arrays may require a license under the following patents: U.S. patent nos. 6.040.138 or 5.445.934 or 5.744.305 and under the following patents owned by Oxford Gene Technology Ltd. (“OGT”): European patent no. EP 0.373.203, U.S. patent nos. 5.700.637 and 6.054.270 and Japanese patent nos. 3393528 and 3386391 (“The OGT patents”). Other patents may apply. The purchase of Nexterion® products does not convey any license under any of the OGT patents or any of the other patents referred to. For all applications SCHOTT North America Inc. and SCHOTT Jenaer Glas GmbH make no representation or warranty that the practice of its technology and products or any improvement will not infringe or violate any domestic or foreign patent of any third party. To inquire about licensing under the OGT patents, please contact OGT at licensing@ogt.co.uk.

Uncoated slides



Introduction

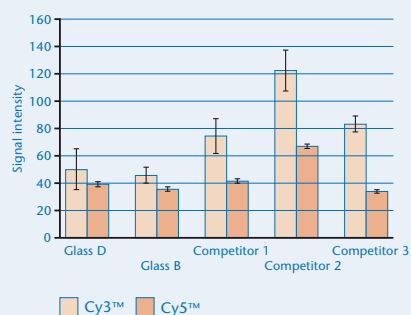
SCHOTT provides two different types of uncoated glass slides, Nexterion® Glass B (Borofloat® 33) and D (D263T), for customers looking to apply their own functional coatings. Both glass materials are borosilicate glasses with high chemical resistance, excellent transmission, low fluorescence, and exceptional flatness and were specially selected by SCHOTT Microarray Solutions as the optimal glass types for microarray related applications. The naturally pristine glass surfaces can be used without any additional polishing steps and all the slides are laser cut to minimize particle contamination.

Nexterion® Glass B

Nexterion® Glass B is a highly chemically resistant borosilicate glass that is produced by melting the purest raw materials. The microfloat process is used for manufacturing this glass type, resulting in a pristine, fire-polished surface that can be used without any additional polishing.

This process allows the production of glass substrates with tight geometric properties. In addition, the fluorescence is particularly low in the range of Cy3™ and Cy5™ emission wavelengths (570 nm and 670 nm), making Nexterion® glass slides the perfect substrate solution for microarray applications.

Autofluorescence Nexterion® Glass D and Glass B vs. competitors



Nexterion® Glass D

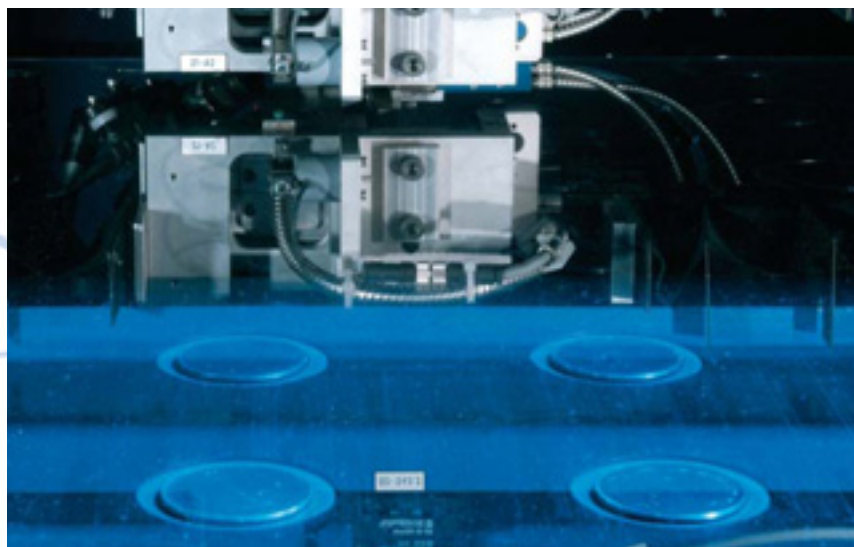
Nexterion® Glass D is a high quality borosilicate glass produced by melting the purest raw materials. It is manufactured by a special down-draw production process that results in fire-polished surfaces that can be used without any additional processing.

The Nexterion® Glass D production process allows SCHOTT to offer glass substrates with extremely tight geometric properties. In addition, the fluorescence is particularly low in the range of Cy3™ and Cy5™ emission wavelengths (570 nm and 670 nm).

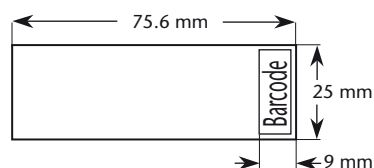
Nexterion® Glass B and D specification

Nexterion® uncoated slides manufactured to the following specifications:

- 25 mm x 75.5 mm ± 0.1 mm
- Thickness 1.0 mm ± 0.05 mm
- Plain cut edges, by using the precise laser cutting process



Laser cutting



The slides are available with or without a barcode (code 128).

Customized features for particular applications are available upon request and include slide orientation marks, non-standard barcodes, customized barcode numbering, company logos, etc. Please enquire for further information.

Three levels of cleanliness

Uncleaned

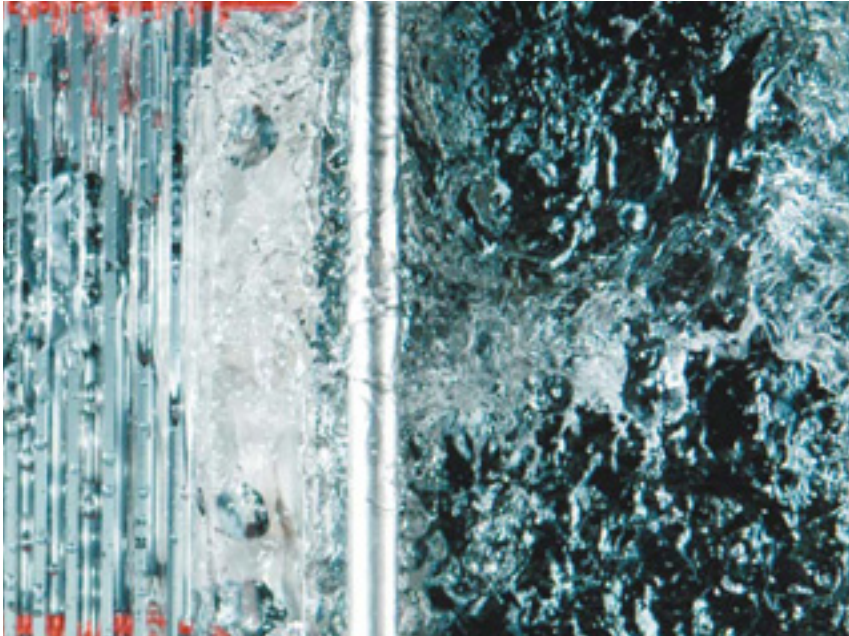
These slides are cleaned using deionised water and a conventional washing system with brushes.

SCHOTT recommends uncleaned slides if the user intends to subject the slides to a thorough cleaning procedure prior to further processing.

Ultrasonically cleaned

SCHOTT offers uncoated slides that are ultrasonically cleaned. The slides are subjected to a 100% quality control process to validate the dimensional tolerances. To remove all particles, debris, and surface contaminants the slides are ultrasonically cleaned under alkaline conditions.

SCHOTT recommends ultrasonically cleaned slides if a basic cleaning procedure is used prior to further processing.



Automated ultrasonic cleaning of slides

Cleanroom cleaned

SCHOTT's highest grade of uncoated slides are ultrasonically cleaned and quality controlled, as detailed in the ultrasonically cleaned section above. In addition, the slide storage boxes used to transport the slides are sealed in protective foil pouches under an inert atmosphere in a class 100 cleanroom environment. The slides can be used immediately from the sealed boxes without subjecting them to a cleaning process.

Cleanroom cleaned slides are recommended if users intend to coat the slides without carrying out any cleaning steps.

Properties Nexterion® Glass B and D

Properties	Nexterion® Glass B (Borofloat® 33)	Nexterion® Glass D (D263T)
Mechanical		
• Density ρ in g/cm ³	2.2	2.51
Optical		
• Refractive indices		
n_e ($\lambda = 546.1$ nm)	1.47311	1.5255
n_d ($\lambda = 587.6$ nm)	1.47140	1.5231
• Dispersion ($n_F - n_C$)	71.9×10^{-4}	96.0×10^{-4}
• Abbe value (v_e)	65.41	55
• Luminous transmittance (τ_{vD65}) (Glass thickness 1.1 mm)	92.7%	91.7% \pm 0.3%
• Stress optical coefficient C in 1.02×10^{-12} m ² /N	4.0	3.4
Chemical		
• Hydrolytic resistance (ISO 719/DIN 12 111)	HGB 1	HGB 1
• Acid resistance (ISO 1776/DIN 12 116)	1	2
• Alkali resistance (ISO 695/DIN 52 322)	A 2	A 2
Thermal		
• Linear thermal coefficient of expansion α (20–300 °C/68–572 °F)	3.25×10^{-6} /K	7.2×10^{-6} /K
• Transformation temperature T_g	525 °C	557 °C

The properties detailed above were calculated using the very latest standards and measuring methods. SCHOTT reserves the right to change the data in keeping with the latest technical standards. Numerical values stated without tolerances are reference values of an average production quality.

All data is intended to be used as a guideline, unless otherwise stated. Please contact us if you require further information.

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SCHOTT
 glass made of ideas

Custom format and coating solutions



Overview

Summary of custom services

- Product development of new substrate coatings to meet specific applications
- Scale up and manufacture of substrates using chemistries developed by customers
- Modification of standard Nexterion® coatings to meet specific applications
- Addition of barcodes, corporate logos, identification and reference marks
- Development and production of alternative glass substrate formats
- Customizable hydrophobic patterning to create multi-well formats
- Coated substrates for diagnostic applications

Introduction

The manufacture of special technical glasses is one of the SCHOTT group's core competencies. SCHOTT produces an extremely wide range of technical glasses, including fused silica, borosilicate, and optical glasses. In addition, SCHOTT has extensive experience in high technology glass processing, and coating technologies. SCHOTT Microarray Solutions can take full advantage of the extensive in-house facilities to offer customers, glass substrates in formats tailor-made for specific life science applications. Customization may range from simply supplying a unique barcode sequences on a standard Nexterion® slide, to a custom coated substrate for a microfluidics application. The production and quality control systems used for manufacturing custom products conform to the ISO 9001-2000 standard.

Typical examples of custom products

- Glass bottomed microplates
- Glass plates for gel electrophoresis cassettes
- Microfluidic chip substrates
- Coated coverslips for DNA analysis, sequencing or gene expression
- Optical coated substrates for label free detection systems
- Conductive Maldi substrates
- SPR biosensors
- Small microarray substrates for use in microcentrifuge tubes

Custom coatings

Applying thin-film coatings to glass substrates is another SCHOTT core competence. Production takes place in a class 100 clean room environment at the SCHOTT facility in Jena, Germany. Extremely high quality standards are maintained for surface finish, flatness, parallelism and absence of surface defects.

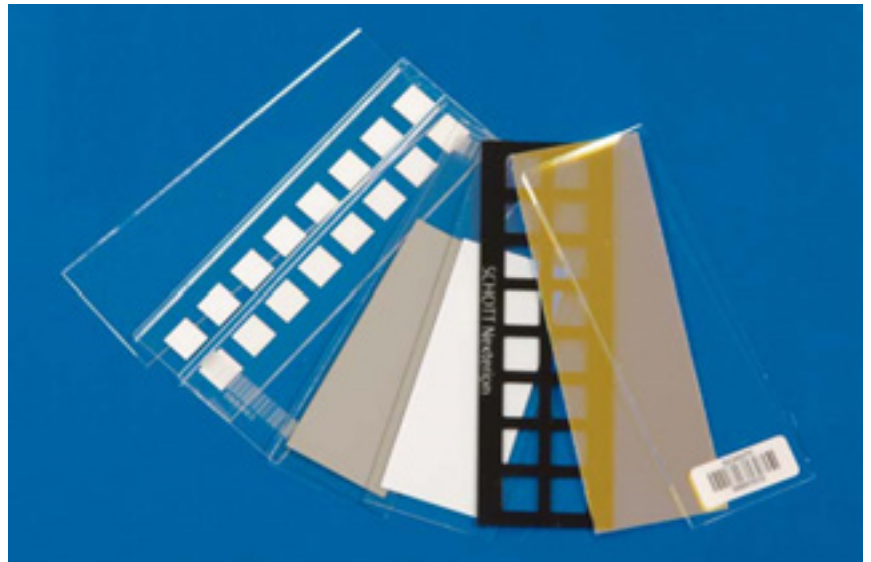
The coating technologies available include:

- Dip coating
- Chemical vapor deposition (CVD)
- Sputter deposition
- Solvent based reactor method
- Spin coating

Any of the standard Nexterion® functional coatings can be applied to just about any custom format. The coatings include:

- Aminosilane
- Aldehydesilane
- Epoxysilane
- 3-D thin film polymer-NHS ester
- Nitrocellulose
- Inorganic coatings such as gold, and other metallic coatings

SCHOTT Microarray Solutions is also able to coat glass substrates with coating chemistries developed by clients.



Logos, fiducial marks and barcodes

SCHOTT can offer customers the opportunity to customize their slides and glass substrates with graphics, logos, company names, barcodes, reference marks, or 2-D matrix codes. These markings may be added at any location on, or within the glass surface, and may feature a combination of items, for example a company logo plus a sequential barcode.



SCHOTT can offer a number of methods for marking the glass substrates. The markings are robust enough to withstand standard biomedical laboratory procedures.

- Laser-bonded foil method produces robust surface markings in black, or other colours.
- A method of printing with hydrophobic ink can be used to produce graphics, logos, as well as multi-well patterns.
- Laser ablation process produces robust marks on the surface of the glass.
- Laser-induced internal marking, introduces markings by the creation of micro-cavities within the glass.

The SCHOTT group produces several hundred different types of glass. The range of glass thicknesses available is very wide, ranging from 30 μm up to 254 mm (depending on the glass type). Substrates may be laser cut into the final size, or partially diced to allow the later separation of individual components.

Glass types and formats



The typical glass types used for life science products include:

- Borofloat® 33 borosilicate glass
- D263T borosilicate glass
- B270 optical glass
- BK7 optical glass
- Fused silica (quartz) wafers

Standard life science formats:

- SBS compliant microplate
- Microscope slide
- Coverslip formats in a range of shapes, dimensions, and thicknesses

Custom formats:

- Rectangular
- Square
- Round

Advanced glass processing

Along with more traditional glass processing methods, such as cutting, grinding, polishing and water jet cutting, SCHOTT has invested heavily in new technologies, such as ultrasonically enhanced drilling for high precision circular holes 400 µm up to 3 mm. Sand blasting permits the creation of round and rectangular holes, caverns and channels, 30 µm up to 1.5 mm in glass substrates.



Please contact us to discuss how we might help you to develop your next product.

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SCHOTT
glass made of ideas

Ordering information

Coated slides

Nexterion® Coated Slides			
Nexterion® product	Barcode option	Item number	Pieces per pack
Slide AStar	None	1177881	25
Aminosilane coating	Laser	1177882	25
Slide A+	None	1064875	25
Aminosilane coating	Laser	1064877	25
Slide AL	None	1064874	25
Aldehyde coating	Laser	1064876	25
Slide E	None	1066643	25
Epoxyasilane coating	Laser	1064016	25
Slide H	Laser	1070936	25
3-D thin film coating			
Slide P	Laser	1167904	25
3-D thin film coating			

Dimensions

All blank and coated slides are available in the following standard format:

75.6 mm x 25.0 mm ($\pm 100 \mu\text{m}$)

Thickness: 1.0 mm ($\pm 50 \mu\text{m}$)

Flatness: $\leq 50 \mu\text{m}^*$

* Tighter flatness tolerances are available on request

Nexterion® Nitrocellulose Coated Slides			
Nexterion® product	Barcode option	Item number	Pieces per pack
Slide NC-W white NC Slide, single pad	Label	1178057	20
Slide NC-D dark grey NC Slide, single pad	Label	1178058	20
Slide NC-W 16 white NC Slide, 16 pads	None	1178059	5
Slide NC-D 16 dark grey NC Slide, 16 pads	None	1178060	5

Nexterion® Reflective Slides			
Nexterion® product	Barcode option	Item number	Pieces per pack
HiSens AStar	None	1178045	25
Aminosilane coating	Label	1178046	25
HiSens A+	None	1139673	25
Aminosilane coating	Label	1141515	25
HiSens AL	None	1139827	25
Aldehyde coating	Label	1141514	25
HiSens E	None	1125813	25
Epoxyasilane coating	Label	1137332	25
HiSens H	None	1141517	25
3-D thin film coating	Label	1139829	25
HiSens P	None	1178051	25
3-D thin film coating	Label	1178052	25

Accessories for Nexterion® Slide NC		
Nexterion® Product	Item number	Pieces per pack
Nexterion® MPX-4 tray	1180496	1
Nexterion® 16-well super-structures and sealing strips	1178061	5

Multi-well formats

Microplate products for arraying			
Nexterion® product	Item number	Pieces per pack	Description
Nexterion® Glass B MTP	1097703	5	<ul style="list-style-type: none"> • Uncoated, unpatterned Glass B, ultrasonically cleaned
Nexterion® Glass B MTP-96	1127430	5	<ul style="list-style-type: none"> • Uncoated, 96-well patterned Glass B
Nexterion® E MTP	1183695	5	<ul style="list-style-type: none"> • Epoxy-coated, unpatterned
Nexterion® E MTP-96	1127429	5	<ul style="list-style-type: none"> • Epoxy-coated, 96-well patterned
Nexterion® MTP-96 Superstructures	1091459	5	<ul style="list-style-type: none"> • 96-well superstructures and sealing strips
Nexterion® MTP-96 Tray	1077526	1	<ul style="list-style-type: none"> • Microtiterplate holder, incl. lid and pins
Nexterion® Glass B MTP Kit	1091363	1	<ul style="list-style-type: none"> • Uncoated, unpatterned Glass B • 96-well superstructures and sealing strips • Microtiterplate holder, incl. lid and pins
Nexterion® Glass B MTP-96 Kit	1127431	1	<ul style="list-style-type: none"> • Uncoated, 96-well patterned Glass B • 96-well superstructures and sealing strips • Microtiterplate holder, incl. lid and pins
Nexterion® E MTP-96 Kit	1127473	1	<ul style="list-style-type: none"> • Epoxy-coated, 96-well patterned Glass B • 96-well superstructures and sealing strips • Microtiterplate holder, incl. lid and pins

Coated Multi-well Slides			
Nexterion® product	Barcode	Item number	Pieces per pack
Slide AStar MPX-16 Aminosilane coating	None	1178047	5
Slide A+ MPX-16 Aminosilane coating	None	1078353	5
Slide AL MPX-16 Aldehyde coating	None	1078355	5
Slide E MPX-16 Epoxysilane coating	None	1078354	5
Slide H MPX-16 3-D thin film coating	None	1091524	5
Slide P MPX-16 3-D thin film coating	None	1178053	5

Accessories for Nexterion® MPX Slides		
Nexterion® product	Item number	Pieces per pack
Nexterion® MPX-4 tray	1180496	1
Nexterion® 16-well superstructures and sealing strips	1178061	5

Nexterion® 16-well superstructures are not supplied with the MPX-16 slides. They must be ordered separately.

Reagents & kits

Reagents			
Nexterion® product	Item number	Pack size	Description
Nexterion® Spot	1066029	100 mL	Phosphate based spotting buffer (2x concentrated)
Nexterion® Spot LE Kit	1117902	100 mL	Low evaporation buffer (1x concentrated), 10 mL 1% sarcosyl
Nexterion® Spot A HD	1168809	100 mL	Low evaporation buffer (1x concentrated) for printing high density arrays on aminosilane coated slides
Nexterion® Spot PB	1178050	100 mL	Protein spotting buffer (1x concentrated)
Nexterion® Block A Kit	1206704	100 mL	Blocking reagent for aminosilane coated slides
	1206717	500 mL	
Nexterion® Block E	1066069	100 mL	"Chemical" blocking reagent for epoxysilane coated slides (4x concentrated)
	1066071	1000 mL	
Nexterion® Hyb	1066075	100 mL	Hybridization solution (1x concentrated)
Nexterion® Oligo Spot	1116888	250 mL	Spotting solution (ready-to-use)
Nexterion® Oligo Pre-Hyb	1116889	1000 mL	Pre-hybridization solution (ready-to-use)
Nexterion® Oligo Hyb	1116890	100 mL	Hybridization solution (ready-to-use)

Kits			
Nexterion® product	Item number	Components	Quantity
Epoxy Slide Oligo Processing Kit (for 25 slides)	1209009	Nexterion® Oligo Pre-Hyb	1 x 500 mL
		Nexterion® Oligo Hyb	1 x 10 mL
		Nexterion® Oligo Wash A	1 x 1000 mL
		Nexterion® Oligo Wash B	1 x 100 mL
Aminosilane Slide Processing Kit (for 25 slides)	1209008	Nexterion® Block A Kit	500 mL
		Nexterion® Oligo Hyb	10 mL
		Nexterion® Wash A	1000 mL
		Nexterion® Wash B	100 mL
Slide E Evaluation Kit	1117570	Nexterion® Slide E	10 slides
		Nexterion® Spot	10 mL
		Nexterion® Spot LE Kit (Low Evaporation Buffer)	10 mL
		Nexterion® Block E	100 mL
		Nexterion® Hyb	10 mL
		Oligo probe	2 nmol
		Oligo target	3 pmol
Slide AL Evaluation Kit	1066026	Nexterion® Slide AL	10 slides
		Nexterion® Spot	10 mL
		Nexterion® Hyb	10 mL
		Oligo probe	2 nmol
		Oligo target	3 pmol

Uncoated slides

Nexterion® product	Barcode option	Item number	Pieces per pack
Glass B uncleaned	None	1017698	25
Glass B ultrasonically cleaned	None	1055132	25
Glass B cleanroom cleaned	None	1025087	25
Glass D uncleaned	None	1095566	25
Glass D ultrasonically cleaned	None	1095567	25
Glass D cleanroom cleaned	None	1095568	25

Barcoded slides are available on request.

Slides may be ordered from:

Microarray Solutions
SCHOTT JENA^{er} Glas GmbH
Otto-Schott-Strasse 13
07745 Jena
Germany
Phone: +49-(0)3641/681-91966
Fax: +49-(0)3641/681-970
coatedsubstrate@schott.com
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