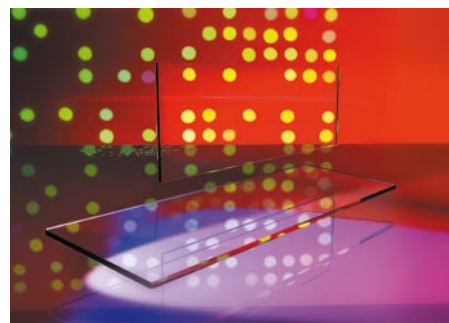


Epoxysilane coating

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

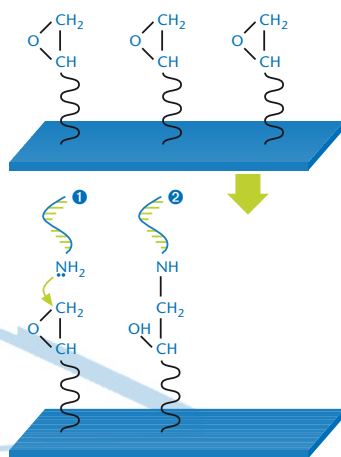
Nexterion® Slide E is the market leading epoxysilane coated slide from SCHOTT. The slides are manufactured from high quality borosilicate glass that has an ultra flat surface and low inherent fluorescence. The glass is coated with a multi-purpose epoxysilane layer that will covalently bind most types 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 no. 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 SCHOTT 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 Technical Glass Solutions 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. Before making or using any oligonucleotide arrays you should contact OGT to discuss a licence. To inquire about licensing under the OGT patents, please contact OGT at licensing@ogt.co.uk.

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