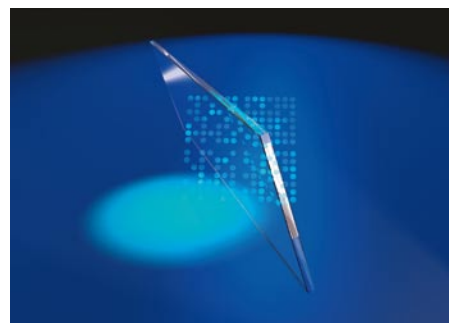


Aldehydesilane coating

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

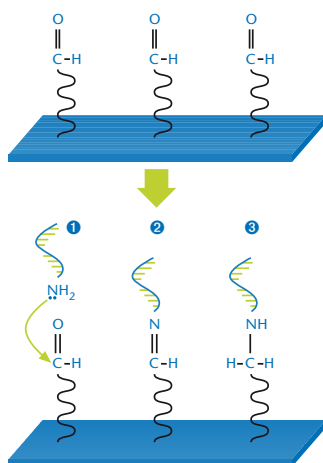
- Stable and covalent binding of probes such as amino-modified nucleic acids, cells, and peptides
- Optimal accessibility of probes through specific end-point attachment

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

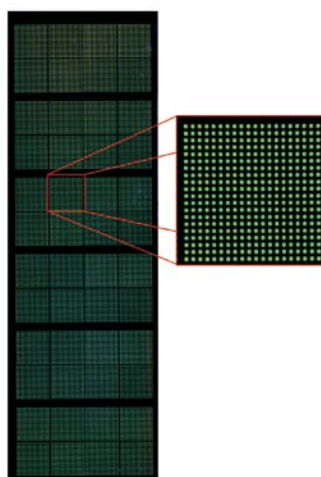
Suitable probe types

- 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 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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