

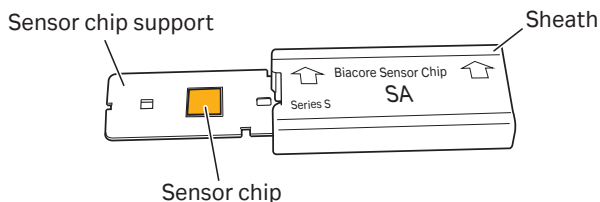
# Series S Sensor Chip SA

## Instructions for Use

### Product description

Product code:                29104992 (package of one sensor chip)  
                                      BR100531 (package of three sensor chips)  
                                      29699621 (package of ten sensor chips)

Storage:                        The use-before date applies to chips stored at 2°C to 8°C in unopened pouches.



The sensor chip is fixed to a polystyrene sensor chip support. Each cassette, consisting of a sensor chip and sheath assembly, is packed in a separate pouch and sealed under a nitrogen atmosphere.

**Note:**            *For research use only.*

# Application areas

Series S Sensor Chip SA is designed to bind biotinylated molecules for interaction analysis in Biacore™ systems. The surface consists of a carboxymethylated dextran matrix pre-immobilized with streptavidin and is ready for fast, high-affinity capture of biotinylated ligands, such as peptides, proteins, and nucleic acids. Series S Sensor Chip SA provides a convenient alternative to covalent coupling for ligands that are difficult to immobilize directly or do not withstand covalent immobilization. Controlled biotinylation enables orientated capture.

For updates on applications and scientific publications, refer to [cytiva.com/biacore](http://cytiva.com/biacore).

## Preparation of biotinylated ligand

Substitution levels of one biotin residue per ligand molecule or less are recommended for capture using Series S Sensor Chip SA. In general, procedures supplied with commercial biotinylation reagents tend to give higher substitution levels. When using N-hydroxysuccinimide (NHS)-biotin reagents for ligand biotinylation, reduce the concentration of reagent to less than 1 mole of biotinylation reagent per mole of ligand.

It is essential that excess biotinylation reagent is removed from the ligand preparation before capture, to avoid competition with the biotinylated ligand for the binding site on Series S Sensor Chip SA. Separate the biotinylated ligand from excess reagent using for example size-exclusion chromatography (micro-spin columns are recommended for volumes below 120 µL to minimize dilution). Use two cycles of separation to make sure that no free reagent remains in the ligand preparation.

## Preparations for immobilization

The following preparations require a running buffer that has been filtered (0.22 µm), and degassed for systems that do not have an integrated buffer degasser.

### Cleaning the flow system

Make sure that the flow system is clean before docking Series S Sensor Chip SA, particularly after experiments using other biotinylated molecules. Follow the steps below to perform a flow system cleaning.

**Note:** *Perform any cleaning steps before docking Series S Sensor Chip SA.*

Step	Action
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1	Run the maintenance tool <b>Desorb</b> .
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Step	Action
2	If the <b>Sanitize</b> maintenance tool has been run, prime all buffer inlets that will be used in analysis with running buffer.
	<b>Note:</b> <i>The chip surface is sensitive to sodium hypochlorite residues.</i>
	<b>Note:</b> <i>Do not use plain water as running buffer at this stage.</i>

## Preparations for use

Step	Action
1	Allow the sealed sensor chip pouch to equilibrate at room temperature for 15 to 30 minutes to prevent condensation on the chip surface.
2	Prepare the Biacore instrument with running buffer.
3	Open the sensor chip pouch. Make sure that the sensor chip support remains fully inserted into the sheath at all times.
4	Dock the sensor chip in the instrument as described in the <i>Operating Instructions</i> .
	<b>Note:</b> <i>Store undocked sensor chips in closed containers.</i>

## Immobilization of the ligand

Biotinylated ligand is immobilized on Series S Sensor Chip SA by non-covalent capture (binding to streptavidin).

### General recommendations

- If possible, include detergent in the running buffer used for immobilization. HBS-EP+ is recommended as running buffer.
- Condition the sensor surface with three consecutive one-minute injections of 1 M NaCl in 50 mM NaOH before ligand is immobilized. Make sure that conditioning is performed on both the active and the reference surface.
- Include a wash using 50% isopropanol in 1 M NaCl and 50 mM NaOH after each ligand injection. This solution does not pass over the sensor surface. Prepare the wash solution by mixing equal volumes of isopropanol and 2 M NaCl in 100 mM NaOH, and use within a week. This wash is not needed for the Biacore 4000 SPR system.

**Note:** *In systems with serial flow cells (FC), it is important to avoid carry over of biotinylated ligand from one immobilization to a consecutive flow cell. For best performance, perform separate immobilizations for each flow cell, starting with FC4, followed by FC3, FC2, and FC1.*

## Immobilization

Inject the biotinylated ligand. Ligand concentrations may be as low as in the pM range. Ligands usually bind rapidly to the streptavidin and equilibrium binding is achieved with short contact times, typically 1 minute. To control the immobilization level for ligands requiring short contact times, adjust the ligand concentration. Use a low flow rate to reduce consumption of ligand. For PCR products, include NaCl at a concentration of 0.5 M or higher in the ligand buffer and use longer contact times, typically up to 30 minutes.

## Blocking remaining streptavidin sites

Injection of reagent to block remaining streptavidin sites after ligand immobilization is recommended in Biacore 4000 SPR system. Amino-PEO-biotin at 50  $\mu$ M in running buffer is recommended as a blocking reagent. Unmodified biotin is not sufficiently soluble in aqueous buffers to provide satisfactory blocking conditions.

Injection of blocking reagent in systems with serial flow cells is not recommended, since the blocking reagent might carry over to adjacent flow cells and reduce the ligand immobilization capacity.

For more detailed information on immobilization strategies and procedures, refer to *Biacore Sensor Surface Handbook (BR100571)*.

## Interaction analysis

Interaction analysis is performed by injection of samples over the sensor chip surface. Analyte molecules in the injected sample bind directly to the captured ligand.

For details on experimental protocols and methodology, refer to Biacore handbooks and [cytiva.com/biacore](http://cytiva.com/biacore).

## Run conditions

### Running buffer

Series S Sensor Chip SA is compatible with all Cytiva running buffers used with Biacore systems

### Analysis temperature

Series S Sensor Chip SA is designed for use at 25°C.

## Start-up cycles

For best assay performance, run 1 to 3 start-up cycles using sample or buffer as analyte and identical settings as for the analysis cycles.

## Regeneration

Regenerate the surface by removing the analyte from the captured ligand. Conditions should be chosen to achieve complete dissociation of the analyte without affecting the binding characteristics of the ligand. The surface of Series S Sensor Chip SA is resistant to a wide range of agents for this purpose (see information below). The choice of regeneration procedure may be limited by the stability of the ligand.

Avoid using basic regeneration solution if possible. In some cases, exposure to basic conditions has been seen to cause leaching of the biotinylated ligand from the sensor surface with contamination of downstream flow cells as a result.

For more detailed information on regeneration strategies, refer to *Biacore Sensor Surface Handbook (BR100571)*.

## Chemical resistance

The surface of Series S Sensor Chip SA is resistant to one-minute pulses of many commonly used agents. For information on common agents compatible with Series S Sensor Chip SA, see the table below.

Agent	Concentration
Acetonitrile	30%
DMSO	10%
DTE	0.1
EDTA	0.35 M
Ethanol	70%
Ethanolamine	1 M
Ethylene glycol	100%
Formamide	40%
Formic acid	20%
Glycine pH 1.5 to 3.0	100 mM
HCl	100 mM
Imidazole	300 mM
MgCl <sub>2</sub>	4 M
NaOH	100 mM
NaCl	5 M
SDS	0.5%
Surfactant P20	5%
Urea	8 M

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