SERION coupling kits

Application note

Every biomolecule is different! Many applications require stable immobilization of biomolecules on solid supports, e. g. microspheres. However, standard covalent coupling methods are often laborious and fail in certain cases. Alternatively, intrinsic properties of biomolecules such as charge, H-bond donor/acceptor sites and hydrophobicity can be used to generate multiple attractive interactions resulting in stable coupling.

SERION coupling kits provide a set of water-based **SERION coupling reagents** designed to modify the properties of charged surfaces, e. g. carboxylate or amine surfaces, within ≤ 20 min at room temperature. They can be used to activate commercially available microspheres or **MagSERION carboxy/amine beads.**

Product Description

This application note applies to the following coupling kits:

SERION coupling kits	Code	Description
SERION coupling kit N w/o beads	CKN01	**Coupling kit for negative surfaces** 7 coupling reagents for negative surfaces, blocking buffer
SERION coupling kit N with beads	CKN02	**Coupling kit for negative surfaces** 7 coupling reagents for negative surfaces, blocking buffer, MagSERION carboxy beads
SERION coupling kit P w/o beads	CKP01	**Coupling kit for positive surfaces** 7 coupling reagents for positive surfaces, blocking buffer
SERION coupling kit P with beads	CKP02	**Coupling kit for positive surfaces** 7 coupling reagents for positive surfaces, blocking buffer, MagSERION amine beads

Provided Materials

Kit Components	Description	Quantity
SERION coupling reagents	7 different coupling reagents for positive/negative surface	7 x 5 mL
SERION blocking buffer for coupling reagents	Blocking buffer containing proteins	33 mL
MagSERION carboxy beads	Only included in **SERION coupling kit N with beads** (CKN02) Bead size range: 2.40 µm – 3.70 µm Concentration: 100 mg/mL	2.5 mL (250 mg)
MagSERION amine beads	Only included in **SERION coupling kit P with beads** (CKP02) Bead size range: 2.40 µm – 3.70 µm Concentration: 100 mg/mL	2.5 mL (250 mg)

Safety

For research or manufacturing use only. Not for use in diagnostic procedures.

These products should be used only by trained scientific personnel following standard safety precautions. The products contain preservatives. Refer to the Safety Data Sheets for additional information and handling instructions. Disposal of used or residual material should comply with all applicable local regulations.

The product is not guaranteed DNase, RNase or endotoxin free.

Storage and Stability

Long term storage: 2 – 8 °C. Shipment at room temperature.

No expiry date has been assigned for this product. Users should determine stability in their own system.

Required Materials

Microspheres, e. g. magnetic particles if not provided in kit.

Antigen dilution buffer, e. g. phosphate buffered saline (PBS) pH 7.4 or any suitable buffer for the respective target biomolecule.

Washing buffer, e. g. PBS pH 7.4 containing 0.02 %Vol. Tween 20.

Storage buffer, e. g. buffer containing proteins for stabilization like BSA.

Sonication device, e. g. water bath.

Magnetic separator or **centrifuge** for particle sedimentation.

Roller incubator, rotation wheel or any other device for particle incubation with constant movement.

Workflow-Example for the coupling of target biomolecules to microspheres with SERION coupling reagents

Activation of microspheres

Wash microspheres (particles) twice with washing buffer and re-suspend them with one of the **SERION coupling reagents.**

When using **MagSERION amine beads** or **MagSERION carboxy beads**, disperse the particle stock solution by mild sonication before use. After sonication apply for example 10 mg particles per coupling to a low-binding polypropylene tube and add 1 mL washing buffer. Sediment the particles by magnetic separation or centrifugation (500 x g, 3 min), remove the supernatant and add again 1 mL washing buffer. Repeat the separation of the particles, remove the supernatant and add 1 mL of one of the **SERION coupling reagents** per 10 mg particles. Mix thoroughly and incubate for at least 10 minutes at room temperature with constant movement (e. g. using a roller incubator or rotation wheel).

Preparation of the biomolecule

Optimal coupling concentration and dilution buffer strongly depend on the respective biomolecule. To find the optimal coupling concentration, titration experiments are recommended.

Coupling

Wash the activated particles three times: Sediment the particles as described above, remove the supernatant, add e. g. 1 mL of washing buffer per 10 mg particles and mix thoroughly.

Sediment the particles after the third washing step, remove the supernatant and add the diluted biomolecule, e. g. 1 mL PBS pH 7.4 containing 0.1 mg of the biomolecule per 10 mg particles. Mix thoroughly and incubate for at least 1 hour at room temperature with constant movement (e. g. using a roller incubator or rotation wheel).

Blocking

Wash the coupled particles three times: Sediment the particles as described above, remove the supernatant, add e. g. 1 mL of washing buffer per 10 mg particles and mix thoroughly.

Sediment the particles after the third washing step, remove the supernatant and add e. g. 1 mL blocking buffer (provided within the **SERION coupling kit** or another blocking buffer suitable for the respective biomolecule) per 10 mg particles. Mix thoroughly and incubate for at least 30 minutes at room temperature with constant movement (e. g. using a roller incubator or rotation wheel).

Storage

Wash the blocked particles three times: Sediment the particles as described above, remove the supernatant, add e. g. 1 mL of washing buffer per 10 mg particles and mix thoroughly.

Sediment the particles after the third washing step, remove the supernatant and add a suitable storage buffer for the respective coupled biomolecule. The volume of storage buffer strongly depends on the subsequent assay readout of the coupled particles. Mix thoroughly. Mild sonication prior to further use might be necessary to avoid aggregation.

Blocked particles can usually be stored in liquid phase at 2 - 8 °C.

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