1. Effective Components

These blocking solutions are based on PBS and contain active ingredients. These substances bind to reactive groups and disable further coupling reactions. Simultaneously a surface structure is generated, which can influence the conformation of the coupled protein.
The solutions contain biocides for protection from microbiological spoilage. The biocides are dangerous for water organisms (see safety data sheet). By use in accordance with attended purpose, no danger for laboratory staff and environment is expected.

2. Principle of Function

By coupling antibodies or antigens onto reactive nanoparticles (e.g. magnetic beads or polystyrene etc.) free reactive groups are left. These may cause nonspecific reactions during assays. SeramunBeadBlock solutions contain small, highly reactive molecules that occupy these positions and prevent disturbing reactions. Because of their small size these molecules reaches even poorly accessible areas and no steric hindrance will influence the coupled protein.
The following reactive groups are blocked by the solutions SeramunBeadBlock A, B, C:

- Epoxide
- Carbodiimide activated groups
- Carbodiimide activated groups, stabilized by N-Hydroxysuccinimide (NHS)/N-Hydroxysuccinimide sulfate (sulfo-NHS)
- Aldehyde groups (before reduction with sodium borhydride)

The effect of the solutions SeramunBeadBlock A, B and C is based on the production of different surface charges:
SeramunBeadBlock A produces approximately neutral surface charges,
SeramunBeadBlock B tends to a positive charged surface and
SeramunBeadBlock C produces negative surface charges.
The finally resulting charge and distribution depends from the coupled protein and the surrounding buffer solution.

The solutions are not applicable for coupling reactions via:

- Azide groups
- N-Succimidyl-3-(2-pyridyldithio)propionate (SPDP) and its derivates
- Succimidyl-4-(N-malemidomethyl)cyclohexan-1-carboxylate (SMCC) and its derivates
- Gold surfaces

3. Instructions for Storage, Transport and Filling

The shelf life of the SeramunBeadBlock solutions is 12 months from the date of production. It has to be stored firmly closed at 2 – 8°C.

It is possible to transport the solutions at ambient temperature. Temperatures exceeding 30°C should be avoided. The transport should take less than one week.

Any filling or decanting into other bottles has to be done under low-germ conditions into clean vessels.

Frozen solutions have to be mixed thoroughly after thawing and can be used without any restriction afterwards.

Solutions showing turbidity should not be used, since this might be a sign of contamination.

4. General Instructions for Use

Only qualified staff, who are familiar with the production of immunological tests, is permitted to handle SeramunBeadBlock A, B and C.
Prior to application warm the solutions to room temperature. In case of coupling reactions at different temperature, adjust SeramunBeadBlock also to this temperature.
After coupling reaction remove the beads/nanoparticles from the reaction mixture and suspend it in the 10fold amount (referred to the mass of beads/nanoparticles) of SeramunBeadBlock. Incubate for 15 minutes during slight movement (e.g. overhead mixer, 3 rpm). Subsequently the beads/nanoparticles will be washed once with SeramunBeadBlock and then suspended in storage solution.
In case of coupling reaction via aldehyde groups, the reduction step with sodium borhydride/ sodium cyanoborhydride has to be done before the suspension in storage solution.

For orientation the following recommendations:
SeramunBeadBlock A is be the best choice for proteins with pI between 5 and 9.
SeramunBeadBlock B is advantageous for proteins with higher pI.
SeramunBeadBlock C may improve specificity with proteins or biomolecules with lower pI.
Because every protein behaves individually and sometimes bonding properties are observed, which are not explainable by pI, a trial with all solutions is advisable.

5. Literature

Greg T. Hermanson: Bioconjugate Techniques, Elsevier 2008

Stephen Angeloni et.al.: xMAP® Cookbook, A collection of methods and protocols for developing multiplex assays with xMAP Technology. Luminex Corp. 2013