

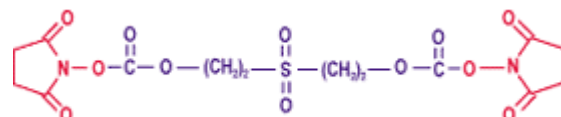
# BSOCOES, Sulfo-BSOCOES

## Homobifunctional cleavable cross-linkers

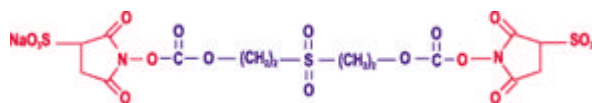
### Product Description

Base cleavable homobifunctional amine reactive crosslinker

**Catalog number:** UP28069A, 100mg  
**Name:** **BSOCOES**  
**Formula :** Dithio-bis(Succinimidyl Propionate)  
 $C_{14}H_{16}N_2O_{12}S$ , CAS: 57683-72-4 , **M.W.= 436.35**



**Catalog number:** UP26531A, 100mg (Inquire for availability)  
**Name:** **Sulfo-BSOCOES**  
**Formula :** Bis(2-(3-sulfo-N-succinimidyl-oxy-carbonyloxy)ethyl)sulfone  
 $C_{14}H_{14}N_2O_{18}S_3Na_2$ , **M.W.= 640.44**



**Storage :** +4°C, desiccated , protect from moisture and light. (L)

### Introduction

**Cross-linkers** are chemical reagents used to conjugate molecules together by a covalent bond. Several atoms separate the 2 molecules, forming the 'spacer arm'. The conjugate associates the characteristics and biological activities of each component.

Cross-linkers have become important tools for the preparation of conjugates used in a lot of immunotechnologies, and for protein studies (structure, interactions, activity, degradation...). **Homobifunctional** cross-linkers present 2 identical reactivities. The choice of the reactivities is determinant to the design of the right conjugate. Considering the final result, an important other thing is the nature and length of the spacer. BSOCOES crosslinkers react toward amines, through the succinimide group, and contain a **alkaline cleavable** linkage.

Uptima offers a high quality BSOCOES and its sulfonated form to answer the needs of coupling proteins and peptides for research studies in biology, and for biological- and immuno-assays like (other cross-linkers are available):

- Obtention of conjugates
- Obtention of oligomeric conjugates : poly-peptides
- Immobilization on polystyrene or glass surfaces for immunoassays and biosensors
- Grafting peptides onto gels for chromatography separations
- Grafting haptens onto cells and particules (beads) for diagnostics...
- Ligand / receptors studies (Pilch 1979, Zarling 1980, Bouizar 1986)

### Scientific and Technical Information

- BSOCOES is soluble in organic solvents (25mM in DMSO), Sulfo-BSOCOES is soluble in water.
- The chemical group N-hydroxysuccinimide (NHS) reacts in aqueous phase on primary ( $-NH_2$ ) and secondary amines ( $=NH$ ) (in fact on its deprotonated form), optimally at neutral pH or higher : amines present in proteins (Lys amino acid) and in a lower proportion on  $NH_2$  located in terminal peptidic chains. The reaction occurs in few minutes in organic media at room temperature, and also in aqueous buffers but in competition with hydrolysis, that increases with pH, and with the high dilutions of the molecule that should be coupled. The reaction with amines occurs typically at pH 6.5-8.5 in 1 hour. It forms a stable amide bond, releasing N-hydroxysuccinimide.
- The sulfonyl moiety ( $NaSO_3$ ) introduces a hydrophilic group, that allows the product not to cross biological membranes. An other interest of the sulfonyl group is to permit the solubilisation of the product directly in aqueous buffers, avoiding the use of organic solvents like DMSO or DMF, which are possibly nocive to cells or applications.
- The spacer arm of BSOCOES extends over 13 Angstroms. It contains a disulfide bridge is relatively stable, allowing some analysis, but undergoes a slow hydrolysis in aqueous buffers: half-life of ester linkage is ca 5 hours at pH 7.0.

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FT-UP28069

- The -S(O<sub>2</sub>)- bridge can be cleaved by reducing agents, for example at pH 11.6, 2 hours, 37°C, within 1-2 hours (Zarling 1980). This is taken to good account for releasing crosslinked ligands from receptors in complex samples before SDS-PAGE, or for recovery of bound ligand after phase separation with suitable support.
- Protocols may be found in the literature (see above). As general guidelines,

-BSOCOES is used to conjugate proteins in solution at 1-10mg/ml in PBS (or other suitable buffer) with a 4-20-fold molar excess crosslinker (usually, final concentration is 0.25-5mM) incubated 30min to 1 hour at room temperature (or +4°C if labile proteins). Reaction is stopped by desalting (after an eventual quenching step with 40mM Glycine i.e.)

-Sulfo-BSOCOES is used to conjugate protein on cell membranes in PBS (NaCl 150mM, phosphate 20mM, pH7.5), using classically 5-10nM protein and 1-2mM crosslinker concentrations for 1 hour at +4°C. Reaction is stopped by washing cells (preferably with cold TBS)

-To cleave the conjugates, the pH can be adjusted to 11.6 with NaOH or Tris 1M. A desalting (or cell wash) step follows.

Other information regarding NHS reactivity are available ([NT-NHS](#): buffers, conditions of use...).

## Other Information

For use *in vitro* only, not for diagnostic.

For any information, please contact Uptima, or your local distributor.

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### Related products :

MaxiBind™ : activated proteins for immunization and screening conjugates

CelluSep : dialysis membranes

Other cleavable homobifunctional amine reactive crosslinkers:

DSP UP18971 (thiol cleavable), DST UP28068 (oxidizer cleavable), EGS UP280067 (mild alkaline cleavable)...

### Literature:

Bouizar Z., Fouchereau-Person M., Taboulet J., Moukhtar M.S. and Milhaud G. Purification and characterization of calcitonin receptors in rat kidney membranes by covalent cross-linking techniques. Eur. J. Biochem. 1986, 155, 141-147.

Howard A., de la Baume S., Giannini T.L., Hiller J.M. and Simon E.J. : Covalent labeling of opioid receptors with human  $\beta$ -endorphin. J. Biol. Chem. 1985, 260, 10833-10839

Pilch P.F., and Czech M.P.; Interaction of crosslinking agents with the insulin effector system of isolated fat cells; J. Biol. Chem. 1979; 254, 3375-3381

Zarling D.A., Watson A. and Bach F.H.; Mapping of lymphocyte surface polypeptide antigens by chemical cross-linking with BSOCOES. J. Immunol. 1980, 124, 913-920.

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