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Sulfo-SMCC

A water-soluble amine-to-sulfhydryl crosslinker with a medium-length cyclohexane spacer arm (8.3 angstroms).

Thermo Scientific Pierce Sulfo-SMCC is a very popular, water-soluble, amine-to-sulfhydryl crosslinker that contains NHS-ester and maleimide reactive groups at opposite ends of a medium-length cyclohexane spacer arm (8.3 angstroms).

Sulfosuccinimidyl-4-(*N*-maleimidomethyl)cyclohexane-1-carboxylate (Sulfo-SMCC) is a water-soluble, non-cleavable and membrane impermeable crosslinker. It contains an amine-reactive *N*-hydroxysuccinimide (NHS ester) and a sulfhydryl-reactive maleimide group. NHS esters react with primary amines at pH 7-9 to form stable amide bonds. Maleimides react with sulfhydryl groups at pH 6.5-7.5 to form stable thioether bonds. The maleimide groups of Sulfo-SMCC and SMCC are unusually stable up to pH 7.5 because of the cyclohexane bridge in the spacer arm. Because it contains the hydrophilic sulfonate moiety, Sulfo-SMCC is soluble up to ~10 mM in water and many commonly used buffers, thus avoiding the use of organic solvents which may perturb protein structure.



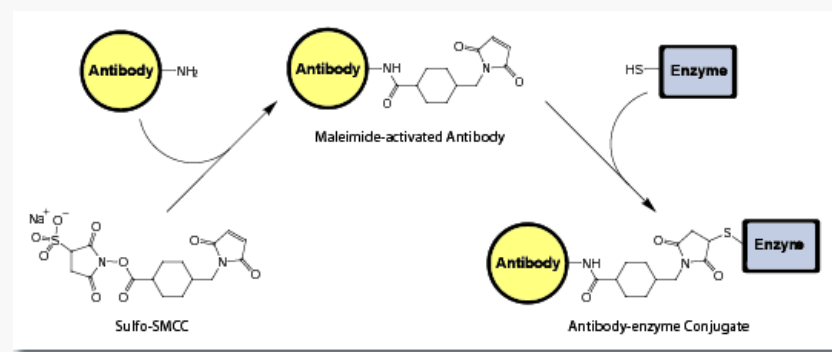
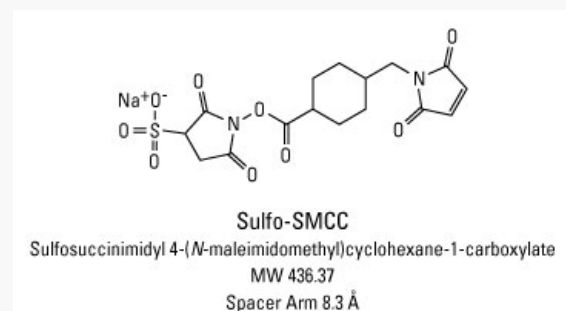
Sulfo-SMCC Highlights

- Amine reactive Sulfo-NHS ester crosslinks rapidly with primary amine-containing molecule
- Sulfhydryl-reactive maleimide reacts with cysteine residues to yield specific conjugates
- Sulfo-SMCC is water soluble, so crosslinking can be done in physiologic solutions
- High purity, crystalline Sulfo-SMCC can be used to create high-purity maleimide-activated derivatives
- Cyclohexane bridge confers added stability to the maleimide group making Sulfo-SMCC the ideal crosslinking agent for maleimide activation of proteins. Maleimide groups are stable for 64 hours in 0.1 M sodium phosphate buffer, pH 7 at 4°C.

Applications for Sulfo-SMCC

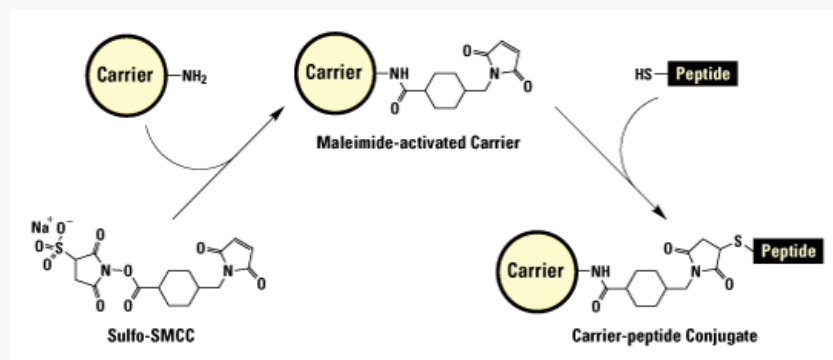
- Ideal crosslinker for enzyme labeling of antibodies, both enzyme activity and antibody specificity can be preserved
- Create specific bioconjugates via one- or two-step crosslinking reactions
- Create sulfhydryl-reactive, maleimide-activated carrier proteins for coupling haptens

Product Details:



Sulfo-SMCC is often used for the preparation of antibody-enzyme and hapten-carrier conjugates. In this type of conjugation, the NHS ester is reacted first with the antibody, excess crosslinking reagent removed

and then the sulfhydryl-containing enzyme molecule is added. This two-step reaction scheme results in formation of specific antibody-enzyme conjugates.



Sulfo-SMCC is the reagent of choice for creating stable maleimide-activated carrier proteins that will spontaneously react with sulfhydryls. In this application, the NHS ester of Sulfo-SMCC is reacted with lysine residues on the carrier protein, converting them to reactive maleimides. These relatively stable maleimide-activated intermediates may be lyophilized and stored for later conjugation to a hapten.

Properties of Sulfo-SMCC	
Molecular formula	$\text{C}_{16}\text{H}_{17}\text{N}_2\text{O}_9\text{SNa}$
Molecular weight	436.37
Spacer arm length	8.3 Å (9 atom)
CAS Number	92921-24-9
Storage conditions	-20°C, protect from moisture, use only fresh solutions
Reactive groups:	NHS ester, reacts with primary amines at pH 7.0-9.0
	Maleimide, reacts with sulfhydryls at pH 6.5-7.5
Sulfo-SMCC Specifications. We manufacture Sulfo-SMCC to the highest specifications to produce the most specific bioconjugates and maleimide-activated proteins, ensure the integrity of your data and to provide you with the highest degree of crosslinking consistency. Each lot of Sulfo-SMCC is tested to meet the following minimum specifications.	
Identity	IR scan shows only peaks characteristic of the structure and functional groups of Sulfo-SMCC crosslinker
Purity	≥ 90% by quantitative NMR (the highest standard for crosslinker purity)
Solubility	≥ 10 mg/ml in DI water

References:

- Muller L. et al. (2010) Evolutionary gain of function for the ER membrane protein Sec62 from yeast to humans. *Mol. Biol. Cell.* 21, 691-703.
- Dickgreber N. et al. (2009) Targeting antigen to MHC class II molecules promotes efficient cross-presentation and enhances immunotherapy. *J. Immunol.* 182, 1260-9.
- Kersemans V. et al. (2008) Drug-resistant aml cells and primary aml specimens are killed by ^{111}In -anti-CD33 monoclonal antibodies modified with nuclear localizing peptide sequences. *J. Nucl. Med.* 49, 1546-54.
- Duval M. et al. (2008) A bispecific antibody composed of a nonneutralizing antibody to the gp41 immunodominant region and an anti-CD89 antibody directs broad human immunodeficiency virus destruction by neutrophils. *J. Virol.* 82, 4671-4.
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- Brinkmann M. M. et al. (2007) The interaction between the ER membrane protein UNC93b and TLR3, 7, and 9 is crucial for TLR signaling. *J. Cell Biol.* 177, 265-75.
- Kehoe J. W. et al. (2006) Using phage display to select antibodies recognizing post-translational modifications independently of sequence context. *Mol. Cell. Proteomics.* 5, 2350-63.

Related Products:

[SMCC](#)
[Bioconjugate Techniques](#) (book)
[Maleimide Activated Carrier Proteins and Kits](#)

Ordering Information

Product #	Description	Pkg. Size	Instructions	MSDS	CofA	Price
22122	Sulfo-SMCC Formulation: Sulfosuccinimidyl 4-(N-maleimidomethyl)cyclohexane-1-carboxylate; powder solid	1g				\$2,029.00 Add to Cart

	<i>Sufficient For: 2292mL of typical 1X (1mM) reaction solution, or approx. 500 uses at 2mg reagent per use</i>					
22322	Sulfo-SMCC Formulation: Sulfosuccinimidyl 4-(N-maleimidomethyl)cyclohexane-1-carboxylate; powder solid <i>Sufficient For: 115mL of typical 1X (1mM) reaction solution, or approx. 25 uses at 2mg reagent per use</i>	50mg				\$154.00 Add to Cart ▶
22322B	Sulfo-SMCC Formulation: Sulfosuccinimidyl 4-(N-maleimidomethyl)cyclohexane-1-carboxylate; powder solid	Custom				Bulk Quote ▶
22622	Sulfo-SMCC, No-Weigh Format Formulation: Sulfosuccinimidyl 4-(N-maleimidomethyl)cyclohexane-1-carboxylate; solid <i>Sufficient For: 37mL of typical 1X (1mM) reaction solution (total), or 8 separate uses</i>	8 x 2mg				\$149.00 Add to Cart ▶

