

# TSAT

33063

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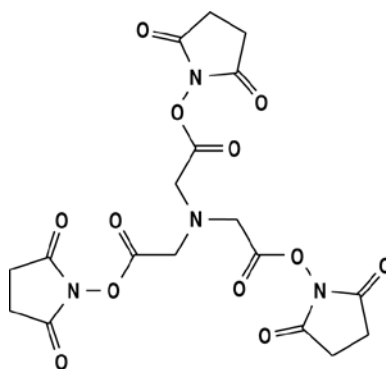
Number	Description
33063	TSAT (Tris-succinimidyl aminotriacetate), 50mg Formula: C <sub>18</sub> H <sub>18</sub> O <sub>12</sub> Molecular Weight: 482.36

**Storage:** Upon receipt store at 4°C, protected from moisture. Product is shipped at ambient temperature.

## Introduction

Thermo Scientific TSAT is a water-insoluble, tri-functional *N*-hydroxysuccinimide ester (NHS ester) crosslinker that provides a core molecule for construction of dendritic polymers. NHS esters (Figure 1) react with primary amines to form covalent amide bonds. NHS ester hydrolysis is a competing reaction that increases with increasing pH and occurs more readily in dilute protein or peptide solutions.

Although  $\alpha$ -amine groups present on the N-termini of peptides react with NHS esters,  $\alpha$ -amines are seldom available on a protein; therefore, the reaction with  $\epsilon$ -amine of lysine is important. However, crosslinking proteins that display biological activity (i.e., enzymes, antibodies, etc.) may lose activity upon conjugation. Activity loss may be a result of the change in conformation of the protein molecule when an NHS ester crosslinker reacts with primary amine groups on the surface of the molecule. Activity loss may also occur when lysine groups involved in binding substrate (in the case of an enzyme) or an antigen (in the case of an antibody) are modified by the crosslinker.



**Figure 1.** Molecular structure of TSAT.

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## Important Product Information

- TSAT is moisture-sensitive. Store product at 4-8°C in a desiccator. To avoid moisture condensation onto the product, vial must be equilibrated to room temperature before opening.
- Prepare TSAT immediately before use. The NHS ester moiety readily hydrolyzes and becomes non-reactive; therefore, stock solutions cannot be prepared for storage. Discard any unused reconstituted cross-linker.
- TSAT is water-insoluble and must first be dissolved in DMSO or DMF and then added to an aqueous reaction medium. Up to 10% (v/v) of the organic solution may be added to the buffered reaction.

**Note:** Because TSAT is hydrophobic, a microprecipitate may form when it is added to the aqueous medium, which results in a cloudy appearance. Nevertheless, the reaction will proceed efficiently and the microprecipitate may disappear during conjugation.

- The NHS ester couples with primary amines in target molecules at pH 7-9 to form stable amide bonds. A suggested reaction buffer is 0.1M sodium phosphate, 0.15M NaCl, pH 7.2. Avoid amine-containing buffers such as Tris or glycine as they will compete with the NHS ester reaction. Hydrolysis of the NHS ester is a competing reaction and increases with increasing pH.

## Related Thermo Scientific Products

<b>33033</b>	<b>Sulfo-SBED, 10mg</b>
<b>28372</b>	<b>BupH™ Phosphate Buffered Saline Packs, 40 packs</b>
<b>69576</b>	<b>Slide-A-Lyzer™ MINI Dialysis Units, 10K MWCO</b>
<b>66382</b>	<b>Slide-A-Lyzer Dialysis Cassette Kit, 10K MWCO</b>
<b>43230</b>	<b>Dextran Desalting Columns, 5K MWCO, 5 × 5mL</b>

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Current product instructions are available at [www.thermoscientific.com/pierce](http://www.thermoscientific.com/pierce). For a faxed copy, call 800-874-3723 or contact your local distributor.

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