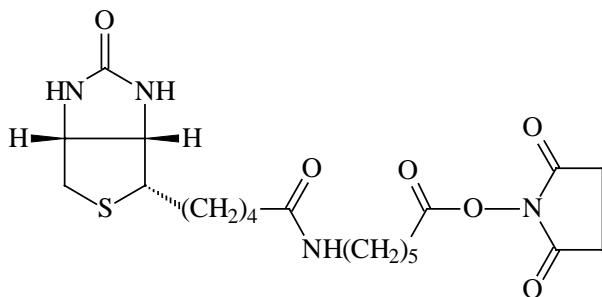


**BIOTINAMIDOCAPROATE N-
HYDROXYSUCCINIMIDE ESTER**
Sigma Prod. No. B2643**CAS NUMBER:** 72040-63-2**SYNONYMS:** Succinimidyl
6-biotinamido)hexanoate; biotinamidocaproate NHS ester**PHYSICAL DESCRIPTION:**

Appearance: white to off-white powder
Molecular formula: C₂₀H₃₀N₄O₆S
Molecular weight: 454.5
Melting range: 169-172°C^{1,2}

STORAGE / STABILITY AS SUPPLIED:

This should be stored frozen and kept dry; it has a shelf-life of two years.

SOLUBILITY / SOLUTION STABILITY:

This product is soluble in anhydrous dimethylformamide (DMF). At 50 mg/ml a clear solution, colorless to light yellow is obtained. Aliquots at 30-50 mg/mL are stable for up to two months in dry solvent, stored at -20°C. Although B2643 is soluble in water at 2 mg/mL with sonication, it is subject to rapid hydrolysis.

GENERAL REMARKS:

Biotin is a commonly used label in a variety of biochemical applications; its affinity for avidin is well-documented.³ Coupling biotin (a small molecule) to biopolymers (large molecules) usually requires a spacer chain to reduce steric hindrance. This product incorporates a 7-atom spacer with the N-succinimide leaving group; it will react with primary amines.^{2,4}

BIOTINAMIDOCAPROATE N-HYDROXSUCCINIMIDE ESTER
Sigma Prod. No. B2643

GENERAL REMARKS: (continued)

Generally, for biotinylation, stock solutions may be prepared in anhydrous DMF at 20 mg/mL; the protein to be labeled should be buffered at pH 7.4-7.5 (50 to 100 mM phosphate buffer, for example). The biotin ester should be added at 15 to 20 mole/mole protein to achieve approximately 5 moles of biotin per mole of protein (approximately 10 μ L of the stock solution per mg protein). The mixture is mixed for 30 to 60 minutes at room temperature. Labeling efficiency is decreased as the product hydrolyzes in water, resulting in a lowering of pH. Reaction products of low molecular weight may be removed by dialysis or by desalting the product on Sephadex G-25.⁶

Sigma offers a number of biotinylation reagents, among them an analog to B2643 that is water-soluble (B1022), one that is aldehyde-specific (B3770), one that is sulfhydryl-specific (B1267) and a convenient biotinylation kit (BK-101).

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3. *Methods in Enzymology*, 184 (1990), "Avidin-Biotin Technology". See additional references available under Biotin, Avidin as individual products.
4. Costello, S.M., *Clinical Chemistry*, 25, 1572-1580 (1982).
5. Hofmann, K. et al., *Biochemistry*, 21, 978-984 (1982). "Avidin binding of carboxyl-substituted biotin and analogues."
6. Sigma production department.

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Biotinylation of calmodulin: Kincaid, R.L., et al., *Methods in Enzymology*, 159, 605-626 [618] (1988).

Spectrophotometric determination of biotin: Green, N.M., *Methods in Enzymology*, 18, 418-424 (1970).

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