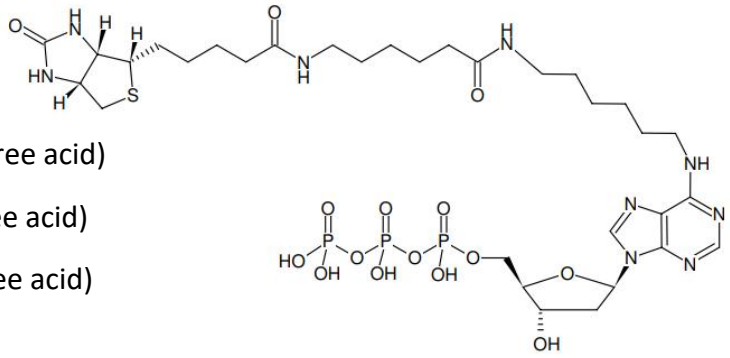
Biotin-14-dATP, purity≥95%

equivalent to Thermo Cat: 19524016

Cat #: BGT-CNU-100

Size: 50nmol(50ul), 200nmol(200ul), 5*200nmol(5x200ul)

Product Specifications



Molecular Formula: $C_{32}H_{54}N_9O_{15}P_3S$ (free acid)

Molecular Weight: 929.81 g/mol (free acid)

Exact Mass: 929.27 g/mol (free acid)

Purity: ≥ 95 % (HPLC)

Supplied as: filtered solution (30 kDa) in 10 mM Tris-HCl pH 7.5

Color: colorless to slightly yellow

Spectroscopic Properties: λ_{max} 266 nm, ε 16.2 L $mmol^{-1}$ cm^{-1} (Tris-HCl pH 7.5)

Description

Biotin-14-dATP is a high-purity biotinylated nucleotide designed for enzymatic incorporation into DNA/cDNA as a substitute for natural dATP. Its 14-atom linker attached to the N^6 position of adenine ensures optimal substrate performance for specific molecular biology applications, enabling the generation of biotin-labeled probes for sensitive detection.

Handling & Storage

- Store at -20 °C for long-term preservation.
- Short-term exposure to ambient temperature (up to 1 week cumulative) is permissible without compromising product quality.
- **Critical Note**: Centrifuge briefly before opening (for volumes ≤ 2 ml) to ensure all solution is collected at the bottom of the tube.

Applications & Usage Guidelines

1 Recommended Applications

Biotin-14-dATP is enzymatically incorporated into DNA/cDNA for probe labeling, with optimal performance in:

- Nick Translation (using DNAse I/DNA Polymerase I) [1]
- Primer Extension (using Klenow fragment) [2]

2 Detection Protocol

Labeled DNA/cDNA probes generated with Biotin-14-dATP can be detected using streptavidin conjugates, including:

- Horseradish Peroxidase (HRP)
- Alkaline Phosphatase (AP)
- Fluorescent dyes
- Agarose/magnetic beads

3 Usage Recommendations

3.1 Nick Translation

- Recommended Biotin-14-dATP/dATP Ratio: 50% Biotin-14-dATP / 50% dATP
- For PCR incorporation (e.g., with Taq polymerase), Biotin-11-dATP is preferred (biotin moiety attached to N7-Deaza position of adenine via an 11-atom linker).

3.2 Optimization Tip

The optimal final concentration of Biotin-14-dATP may vary by application and assay conditions. To achieve maximum product yield and high incorporation rates, we recommend optimizing the Biotin-14-dATP/dATP ratio for your specific experimental setup.

References:

[1] Gebeyehu et al. (1987) Novel biotinylated nucleotide-analogs for labeling and colorimetric detection of DNA. Nucleic Acids Res. 15 (21):4513.

[2] Nagano et al. (2015) Single-cell Hi-C for genome-wide detection of chromatin interactions that occur simultaneously in a single cell. Nature Protocols 10 (12):1987.

[3] Mumbach et al. (2016) HiChIP: Efficient and sensitive analysis of protein-directed genome architecture Nature Protocols 13 (11):919.