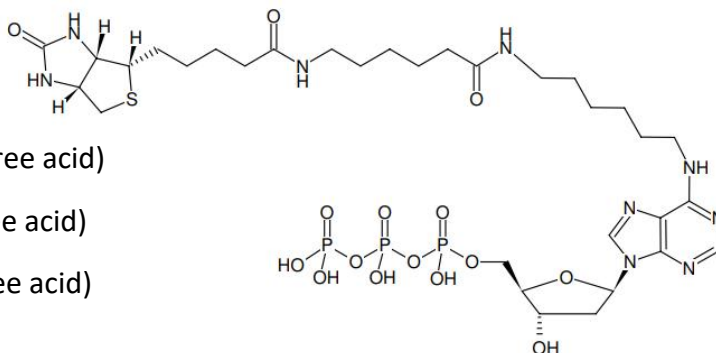


Biotin-14-dATP, purity $\geq 95\%$ **equivalent to Thermo Cat: 19524016****Cat #:** BGT-CNU-100**Size:** 50nmol(50ul), 200nmol(200ul), 5*200nmol(5x200ul)**Product Specifications**

Molecular Formula:	C ₃₂ H ₅₄ N ₉ O ₁₅ P ₃ S (free acid)
Molecular Weight:	929.81 g/mol (free acid)
Exact Mass:	929.27 g/mol (free acid)
Purity:	$\geq 95\%$ (HPLC)
Supplied as:	filtered solution (30 kDa) in 10 mM Tris-HCl pH 7.5
Color:	colorless to slightly yellow
Spectroscopic Properties:	$\lambda_{\max}$ 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 N⁶ 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.