

3'-O-Azidomethyl-dUTP

Catalog Number: 17228 17229,

Unit Size: 1 umole 10 umoles,

Product Details

Storage Conditions Freeze (< -15 °C), Minimize light exposure,

Expiration Date 12 months upon receiving

Chemical Properties

Appearance Liquid

Molecular Weight 523.18

Soluble In Water

Spectral Properties

Excitation Wavelength N/A

Emission Wavelength N/A

Applications

3'-O-Azidomethyl-dUTP is one of the four essential dNTPs (A, C, G, T) utilized in DNA sequencing by synthesis (SBS). DNA sequencing is a critical tool in biological and medical research, with significant applications in personalized medicine. Among various sequencing methods, SBS has emerged as the leading technique, enabling real-time determination of DNA sequences during the polymerase reaction. The most widely implemented high-throughput SBS technology employs cleavable fluorescent reversible nucleotide terminator sequencing chemistry. This approach modifies each of the four nucleotides (A, C, G, T) by attaching a cleavable fluorophore to the base and capping the 3'-OH group with a reversible chemical moiety, allowing recognition by DNA polymerase as substrates. However, fluorescence-based SBS is limited by read length due to the large fluorescence tags left on the bases of the growing DNA strand. An alternative approach involves using the smaller azidomethyl group on dNTPs as a sequencing tag. The 3'-O-azidomethyl-dNTPs, with their minimal azido label, serve as efficient substrates for DNA polymerase. During the SBS cycles, natural nucleotides are restored after each incorporation and cleavage, resulting in a growing DNA strand that remains unmodified and does not impede subsequent polymerase reactions.