

XFD647 BCN

Catalog Number: 70609

Unit Size: 1 mg

Product Details

Storage Conditions	Freeze (< -15 °C), Minimize light exposure
Expiration Date	12 months upon receiving

Chemical Properties

Appearance	Solid
Molecular Weight	N/A
Soluble In	DMSO

Spectral Properties

Excitation Wavelength	650 nm
Emission Wavelength	671 nm

Applications

XFD647 BCN, a clickable derivative of XFD647, is a bright far-red fluorescent dye used for labeling peptides, oligonucleotides, and other biomolecules via click chemistry. Structurally similar to Alexa Fluor™ 647 (Thermo Fisher Scientific), it is efficiently excited by the 594 nm or 633 nm laser lines and is compatible with RFP filters like Cy5, making it well-suited for applications such as fluorescence microscopy and flow cytometry. XFD647 exhibits excellent aqueous solubility and pH stability across a wide range (pH 4–10), ensuring robust signal reproducibility under diverse experimental conditions. The dye enables high-degree conjugation to biomolecules with minimal self-quenching, resulting in enhanced fluorescence intensity and signal stability.

To improve conjugation performance, XFD647 BCN incorporates a PEG spacer, which reduces steric hindrance and minimizes potential interference with target binding sites. This design maximizes conjugation efficiency while preserving the biological activity of the resulting conjugate. The bicyclononyne (BCN) moiety enables strain-promoted azide–alkyne cycloaddition (SPAAC) with azido groups, forming stable triazole linkages under catalyst-free conditions. In addition, unlike dibenzocyclooctyne (DBCO), BCN also reacts efficiently with tetrazines through an inverse electron-demand Diels–Alder (IEDDA) reaction. This reaction is rapid, selective, and bioorthogonal, allowing labeling of biomolecules under physiological conditions without the need for metal catalysts or disruption of native biological processes.