

## XFD680 BCN

Catalog Number: 70610

Unit Size: 1 mg

### Product Details

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

### Chemical Properties

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Appearance	Solid
Molecular Weight	N/A
Soluble In	DMSO

### Spectral Properties

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Excitation Wavelength	681 nm
Emission Wavelength	704 nm

### Applications

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XFD680 BCN, a clickable derivative of XFD680, is a bright near-infrared fluorescent dye used for labeling peptides, oligonucleotides, and other biomolecules via click chemistry. Structurally similar to Alexa Fluor™ 680 (Thermo Fisher Scientific), it demonstrates high fluorescence quantum yield, good photostability, and aqueous solubility. Its fluorescence remains stable over a wide pH range (4–11), and it supports high molar ratio protein conjugation with minimal self-quenching, resulting in bright and consistent signals. The dye's long-wavelength emission reduces interference from autofluorescence, allowing accurate detection in complex samples. XFD680 is optimized for red laser excitation, compatible with spectral flow cytometers, and suitable for applications including fluorescence imaging, flow cytometry, multiplexed western blotting, and super-resolution microscopy such as STORM.

To improve conjugation performance, XFD680 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.