

## Product Data Sheet

Product Name: BDP R6G maleimide

Cat. No.: GC59059

### Chemical Properties

Cas. No. 2183473-32-5

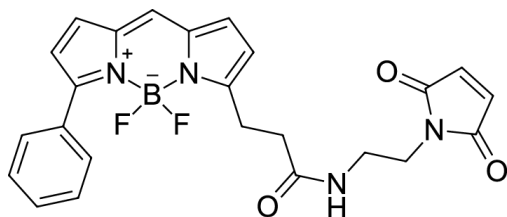
Formula  $C_{24}H_{21}N_4BF_2O_3$  M.Wt 462.26

Solubility good in DMF, DMSO, DCM Storage  $-20^{\circ}C$ , protect from light.

General tips For obtaining a higher solubility, please warm the tube at  $37^{\circ}C$  and shake it in the ultrasonic bath for a while. Stock solution can be stored below  $-20^{\circ}C$  for several months.

Shipping Condition Evaluation sample solution: ship with blue ice. All other available size: ship with RT, or blue ice upon request.

Structure



### Protocol

#### Experimental Protocol for Protein Labeling with BDP R6G Maleimide

This protocol is adapted from research data and provided for reference only. Adjustments may be necessary based on specific experimental requirements.

(1) Protein Solution Preparation: Dissolve the target protein in a degassed buffer free of thiol-containing compounds (concentration: 1–10 mg/mL, pH=7.0–7.5). If the protein contains disulfide bonds, add a 10- to 100-fold molar excess of TCEP reducing agent and incubate at room temperature for 20–30 minutes.

(2) Dye Stock Solution Preparation: Prepare a 10 mM stock solution of BDP R6G maleimide in anhydrous DMSO or DMF. Vortex to dissolve completely and protect from light (recommended to use immediately after preparation).

(3) Labeling Reaction: Add the dye stock solution to the protein solution at a dye-to-protein molar ratio

**Caution: Product has not been fully validated for medical applications. For research use only.**

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of 10:1 to 20:1. Flush the reaction vial with inert gas, seal tightly, and incubate in the dark with gentle agitation for 2 hours at room temperature or overnight at 4°C.

(4) Purification and Degree of Labeling (DOL) Determination: Remove unreacted dye via gel filtration or HPLC. Measure the absorbance of the conjugate at 530nm (for BDP R6G maleimide) and 280nm (for the protein). Calculate the DOL using the correction formula:  $A_{280}(\text{corrected}) = A_{280}(\text{measured}) - (A_{530} \times 0.18)$ .

### Precautions:

- (1) Perform all operations protected from light. Aliquot and store the dye stock solution at –20°C.
- (2) The protein labeling buffer must be thoroughly degassed to prevent oxidation of thiol groups, which may reduce labeling efficiency.
- (3) For your safety and health, please wear a lab coat and disposable gloves during operation.

### References:

[1] BenchChem. BDP R6G Maleimide for Single-Molecule Imaging: Application Notes and Protocols. 2025.

### Background

BDP R6G maleimide is a high-performance, thiol-reactive fluorescent dye with an excitation maximum of 530nm and an emission maximum of 548nm, offering exceptional brightness and photostability. BDP R6G maleimide enables site-specific labeling of cysteine residues in proteins or other thiol-containing biomolecules via its maleimide functional group, which is a critical requirement for precise single-molecule Förster resonance energy transfer (smFRET) and other single-molecule detection techniques. BDP R6G maleimide is suitable for applications such as smFRET, single-molecule tracking (SMT), and fluorescence microscopy of proteins<sup>[1]</sup>.

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