FSD™ Fluors NHS ester Series:

Technical Information and Protocol

Description

FSD Fluor™ is a new generation of dye series with superb fluorescence intensity and high quantum yield comparing to traditional dyes. The fluorescence intensity after binding to biomolecules such as antibody, nucleotide, and protein maintains still excellent, FSD Fluor™ series is ideal for variety of biochemical and biological analytical applications with a less amount of dye conjugate. FSD Fluor™ series equipped with a variety of reactive groups and covers the full fluorescence spectral range from UV to NIR, these dyes are ideal for fluorescence spectroscopy and biological studies. With superior fluorophores and the wide spectral range, FSD Fluor™ dyes are suitable for every filter and are designed to meet the requirements for complex detection in the field of life science research.

Key Features:

- ✓ Superior Fluorescence Intensity: Outshines any other spectrally similar dyes.
- ✓ Excellent Stability: Maintains outstanding fluorescence even after conjugation to biomolecules, surpassing other comparable fluorophores.
- ✓ High Quantum Yield: Offers significantly higher efficiency than traditional dyes.
- ✓ Versatility: Available with a variety of reactive groups for diverse applications.
- ✓ Comprehensive Spectral Coverage: Spanning the full fluorescence range from visible to NIR.

Table 1. BioActs FSD™ Fluors NHS ester Product Specifications

Product name	λ_{Ex} (nm)	λ_{Em} (nm)	Packing Unit	Catalog number
FSD Fluor™ 488 NHS ester	495	519	1mg / 5mg / 25mg	KOSC1002
FSD Fluor™ 555 NHS ester	554	567	1mg / 5mg / 25mg	KOSC1003
FSD Fluor™ 594 NHS ester	590	618	1mg / 5mg / 25mg	KOSC1001
FSD Fluor™ 647 NHS ester	651	667	1mg / 5mg / 25mg	KOSC1315
FSD Fluor™ 680 NHS ester	679	696	1mg / 5mg / 25mg	KOSC1515
FSD Fluor™ 750 NHS ester	752	774	1mg / 5mg / 25mg	KOSC1702
FSD Fluor™ 800 NHS ester	777	792	1mg / 5mg / 25mg	POSC1803

Storage and Handling

- FSD™ Fluors NHS ester must be stored away from direct light and kept at -20°C.
- For FSD™ Fluors NHS ester dissolved in DMF (Dimethylformamide) or DMSO (Dimethyl sulfoxide), ensure storage at -20°C.

✓ Note: The appropriate solvent (DMF or DMSO) depends on the product. Refer to product specifications for details.

Experimental Procedure

Required Materials

- Dye stock solution: 10 mg/mL FSD™ Fluors NHS ester solution (prepared with the recommended solvent: DMF or DMSO, depending on the product)
- Buffer: PBS (pH 7.2-7.4) or HEPES buffer (amine-free buffer)
- Coupling buffer: 1 M carbonate-bicarbonate buffer, pH ~9.5
- Purification tools: Dialysis membrane or desalting column

Protocol

1. Protein Preparation
- Dissolve the protein to be labeled in an amine-free buffer at room temperature.
- Recommended protein concentration: 1–5 mg/mL (2 mg/mL is optimal).
2. Buffer Adjustment
- Add coupling buffer to the protein solution (#1) at 1/10 of its volume and mix gently.
3. Dye Conjugation
- Add the dye stock solution to the mixture (#2) at a molar ratio of 5–30 (protein to dye).
- Stir the reaction mixture for 30–60 minutes at room temperature.
4. Dye Stock Solution Preparation
- Prepare the dye stock solution using the solvent specified for the FSD™ Fluors NHS ester product (DMF or DMSO).
- Check the product-specific guidelines to confirm the appropriate solvent.
5. Dye Addition Calculation
- Calculate the volume of dye stock solution to add using the following formula:

$$\text{Amount of dye that is added}(\mu\text{L}) = \text{Ratio of reaction} \times \frac{\text{Volume}(\mu\text{L}) \text{ of solution of \#1} \times \text{Concentration}\left({}^{\text{mg}}/_{\text{mL}}\right) \text{ of solution of \#1} \times \text{Molecular weight of Dye}\left({}^{\text{g}}/_{\text{mole}}\right)}{10 \times \text{Molecular weight of protein}\left({}^{\text{g}}/_{\text{mole}}\right)}$$

- Ratio of reaction *: Typically set at 20 for proteins with a molecular weight of 100 kDa, but this may vary based on experimental conditions.

Notes

- Confirm the recommended solvent (DMF or DMSO) for the specific FSD™ Fluors NHS ester product. This information is product-dependent and critical for successful labeling.
- Conduct all steps away from direct light to maintain dye stability.
- Adjust reaction conditions (buffer pH, reaction ratio, etc.) depending on the specific biomolecule and experimental requirements.

- ✓ Need Additional Protocols?

  If you require protocols or guidance for other applications, please contact us. Our team will assist you in accessing technical support and protocols to meet your needs.

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