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Frontier Specialty Chemicals, Inc. **Technical Data Sheet**
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Catalog Number: **B610-9**

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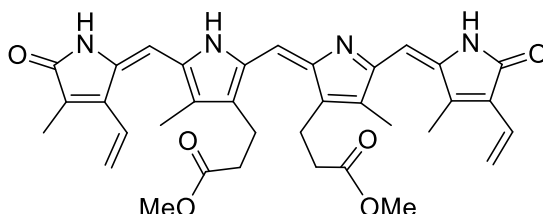
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For research use only

Not intended or approved for
diagnostic or therapeutic use.

Product Name: Biliverdin dimethyl ester

Catalog Number: **B610-9**



Sizes Available: 10 mg, 25 mg, and larger sizes available

Molecular weight: 610.70 g/mol

Molecular Formula: C₃₅H₃₈N₄O₆

CAS Number: 10035-62-8

Storage: Store at room temperature and protect from light.

Synonyms: Biliverdin Dimethyl Ester, Biliverdin Dimethyl Ester

Field of Interest: Heme Oxygenase pathway, Antioxidants, Small ultra-red fluorescent protein (smURFP).

Background: Biliverdin Dimethyl ester is a synthetic derivative of biliverdin, a waste product from the degradation of heme¹. Reduction of biliverdin produces bilirubin, which is then excreted mainly as the glucuronide. Biliverdin is the pigment which is naturally found in green and blue bird egg shells². Biliverdin Dimethyl ester is of interest as a chromophore in far-red fluorescent proteins which are being developed for bio-imaging³. Biliverdin Dimethyl Ester exhibits fluorescence maxima at 710 and 770 nm in ethanol at room temperature⁴. Novel ultra-red fluorescent protein smURFP can be used as a sensor for biliverdin in blood serum⁵. Biliverdin is thought to possess antioxidant properties in mammals, but the mode of action is unclear⁶.

References:

- 1.) Sassa, S.; Biological Implications of Heme Metabolism. *Journal of Clinical Biochemistry*. **2006**, 38, 138-155.
- 2.) Halepas, S., Hamchand, R., Lindeyer, S.E.D., Bruckner, C.; Isolation of Biliverdin IXa, as its Dimethyl Ester, from Emu Eggshells. *J. Chem. Educ.* **2017**, 94, 1533-1537.
- 3.) Liu, Y., Chen, Z., Wang, X., Cao, S., Xu, J., Jimenez, R., Chen, J.; Ultrafast spectroscopy of biliverdin dimethyl ester in solution: pathways of excited-state depopulation. *Phys. Chem. Chem. Phys.*, **2020**, 22, 19903-19912.
- 4.) Braslavsky, S.E., Holzwarth, A.R., Lehner, H., Schaffner, K.; The Fluorescence of biliverdin dimethyl ester. *Helvetica Chimica Acta.*, **1978**, 61, 2219-2222.
- 5.) Zhu, X., Feng, S., Jiang, Z., Zhang, H., Wang, Y., Yang, H., Wang, Z.; An ultra-red fluorescent biosensor for highly sensitive and rapid detection of biliverdin. *Analytica Chimica Acta.*, Volume 1174, 22 August 2021, 338709.
- 6.) Dorazio, S.j., Halepas, S., Bruhn, T., Flaming, K.M., Zeller, M., Bruckner, C.; Singlet oxygen oxidation products of biliverdin IXa dimethyl ester. *Bioorganic & Medicinal Chemistry.*, **2015**, 23, 7671-7675.

Hazardous Properties and Cautions: The toxicological and pharmacological properties of this compound are not fully known. For further information see the SDS on request. **Biliverdin Dimethyl Ester** is manufactured, shipped according to standard practices, and intended for research and development in a laboratory utilizing prudent procedures for handling chemicals of unknown toxicity, under the supervision of persons technically qualified to evaluate potential risks and authorized to enforce appropriate health and safety measures. As with all research chemicals, precautions should be taken to avoid unnecessary exposures or risks.

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