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Frontier Specialty Chemicals, Inc. **Technical Data Sheet**
P.O. Box 31
Logan, UT 84323-0031
Phone: 1-435-753-1901

Catalog Number: **T790**

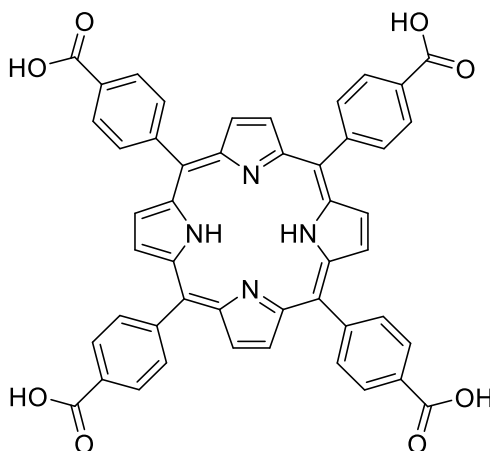
www.frontiersci.com

sales@frontiersci.com

For research use only
Not intended or approved for
diagnostic or therapeutic use.

Product Name: meso-Tetra(4-carboxyphenyl)porphine

Catalog Number: T790



Sizes Available: 250 mg, 500 mg, 1 g, 5 g, 10 g and larger sizes available

Molecular weight: 790.8 g/mol

Molecular Formula: C₄₈H₃₀N₄O₈

CAS Number: 14609-54-2

Storage: Store at room temperature and protect from light.

Synonyms:

14609-54-2, meso-Tetra(4-carboxyphenyl)porphine, TCPP, 4,4,4,4-(Porphine-5,10,15,20-tetrayl)tetrakis(benzoic acid), Tetrakis(4-carboxyphenyl)porphyrin, Tetracarboxyphenylporphine, MFCD00064860, Tetrakis (4-carboxyphenyl) porphyrin, UNII-E9892W6IMC, ChEMBL374342, E9892W6IMC, 4-[10,15,20-tris(4-carboxyphenyl)-21,23-dihydroporphyrin-5-yl]benzoic acid, 4,4',4'',4'''-(Porphine-5,10,15,20-tetrayl)tetrakis(benzoic acid), 5,10,15,20-Tetrakis(4-carboxyphenyl)-21H,23H-porphine, MTCPP, YSZC167, SCHEMBL709532, tetra(4-carboxyphenyl)porphine, CCRIS 8701, HSDB 8470

Field of Interest: Metal-Organic-Frameworks MOF'S, Photodynamic Therapy, Self-Assembly, Solar Cells,

Background: meso-Tetra(4-carboxyphenyl)porphine, TCPP is a synthetic porphyrin bearing four carboxy groups which make this compound extremely useful for the construction of metal-organic-frameworks^{1,2}. TCPP was used to synthesize a porphyrinic zirconium-based MOF that could be used as a fluorescence sensor for Cd(II) and Br-ions³. TCPP was used as a light-addressable potentiometric sensor for DNA methylation⁴. TCPP was found to bind to CD320, the cellular receptor for cobalamin/transcobalamin II in cancer cells⁵. TCPP was used to produce a porphyrin supramolecular array along with meso-tetrakis(4-dimethylamino)porphine on a Au(111) surface⁶. TCPP has been used as a photosensitizer on nanoparticulate TiO₂ for solar energy conversion⁷.

References:

- 1) Rajasree, S.S., Li, X., Deria, P.; Physical Properties of Porphyrin-based crystalline metal-organic frameworks. *Communications Chemistry* 4, 47, 2021. <https://doi.org/10.1038/s42004-021-00484-4>
- 2) Chen, J., Zhu, Y., Kaskel, S.; Porphyrin-Based Metal_Organic Frameworks for Biomedical Applications. *Angew. Chemie. Int. Ed.* 2021, 60, 5010-5035. <https://doi.org/10.1002/anie.201909880>
- 3) Moradi, E., Rahimi, R., Farahani, Y.D., Safarifard, V.; Porphyrinic zirconium-based MOF with exposed pyrrole Lewis base site as a luminescent sensor for highly selective sensing of Cd²⁺ and Br ions and THF small molecule. *Journal of Solid State Chemistry* 2020, 282, 121103. <https://doi.org/10.1016/j.jssc.2019.121103>
- 4) Jia, Y., Li, F., Jia, T., Wang, Z.; Meso-tetra(4-carboxyphenyl)porphine-Enhanced DMA Methylation Sensing Interface on a Light-Addressable Potentiometric Sensor. *ACS Omega* 2019, 4, 7, 12567-12574. <https://doi.org/10.1021/acsomega.9b00980>
- 5) Elzi, D.J., Bauta, W.E., Sanchez, J.R., Das, T., Mogare, S., Fatland, P.Z., Iza, M., Pertsemliadis, A., Rebel, V.T.; Identification of a novel mechanism for meso-tetra(4-carboxyphenyl) porphyrin (TCPP) uptake in cancer cells. *The FASEB Journal*. 2021;35:e21427. <https://doi.org/10.1096/fj.202000197R>
- 6) Sanchez-Munoz, E., Garate-Morales, J.L., Sandoval-Lira, J., Hernandez-Perez, J.M., Aguilar-Sanchez, R.; Porphyrin Supramolecular Arrays Formed by Weakly Interacting Meso-Functional Groups on Au(111). *Molecules* 2019, 24(18), 3326; <https://doi.org/10.3390/molecules24183326>
- 7) Cherian, S., Wamser, C.C.; Adsorption and Photoactivity of Tetra(4-carboxyphenyl)porphyrin (TCPP) on Nanoparticulate TiO₂. *J. Phys. Chem. B* 2000, 104, 15, 3624–3629. <https://doi.org/10.1021/jp994459v>

Hazardous Properties and Cautions: The toxicological and pharmacological properties of this compound are not fully known. For further information see the SDS on request **meso-Tetra(4-carboxyphenyl)porphine**

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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