

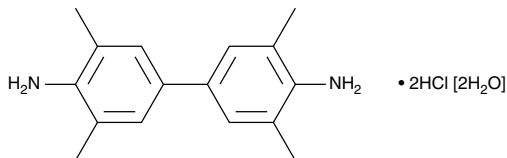
Product Information



TMB (hydrochloride hydrate)

Item No. 70450

CAS Registry No.: 207738-08-7
Formal Name: 3,3',5,5'-tetramethyl-[1,1'-biphenyl]-4,4'-diamine, dihydrochloride, dihydrate
MF: $C_{16}H_{20}N_2 \cdot 2HCl [2H_2O]$
FW: 349.3
Purity: $\geq 98\%$
Stability: ≥ 1 year at $-20^\circ C$
Supplied as: A crystalline solid
UV/Vis.: λ_{max} : 295 nm



Laboratory Procedures

For long term storage, we suggest that TMB (hydrochloride hydrate) be stored as supplied at $-20^\circ C$. It should be stable for at least one year.

TMB (hydrochloride hydrate) is supplied as a crystalline solid. A stock solution may be made by dissolving the TMB (hydrochloride hydrate) in an organic solvent purged with an inert gas. TMB (hydrochloride hydrate) is soluble in DMSO. The solubility of TMB (hydrochloride hydrate) in DMSO is approximately 1.7 mg/ml.

TMB (hydrochloride hydrate) is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, TMB (hydrochloride hydrate) should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. TMB (hydrochloride hydrate) has a solubility of approximately 30 $\mu g/ml$ in a 1:300 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

TMB is an aromatic amine that undergoes ready oxidation by the higher oxidation states of heme peroxidases (compounds I and II) thereby serving as a reducing co-substrate. One electron oxidation of TMB results in a radical cation that forms a charge-transfer complex with the unoxidized compound. This charge transfer complex absorbs at 652 nm ($\epsilon = 39,000$).¹ The completely oxidized form (diimine) absorbs at 450 nm ($\epsilon = 59,000$) and is formed by two sequential one-electron oxidations of TMB.^{1,2} Thus the stoichiometry of oxidation is 0.5 mole charge transfer complex ($\lambda_{max} = 652$ nm) or 1 mole of diimine ($\lambda_{max} = 450$ nm) formed (or TMB oxidized) per mole of hydroperoxide reduced by the peroxidase.

References

1. Josephy, P.D., Eling, T., and Mason, R.P. The horseradish peroxidase-catalyzed oxidation of 3,5,3',5'-tetramethylbenzidine. Free radical and charge-transfer complex intermediates. *J. Biol. Chem.* **257**, 3669-3675 (1982).
2. Marquez, L.A. and Dunford, H.B. Mechanism of the oxidation of 3,5,3',5'-tetramethylbenzidine by myeloperoxidase determined by transient- and steady-state kinetics. *Biochemistry* **36**, 9349-9355 (1997).

Related Products

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WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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Cayman Chemical

Mailing address

1180 E. Ellsworth Road
Ann Arbor, MI
48108 USA

Phone

(800) 364-9897
(734) 971-3335

Fax

(734) 971-3640

E-Mail

custserv@caymanchem.com

Web

www.caymanchem.com