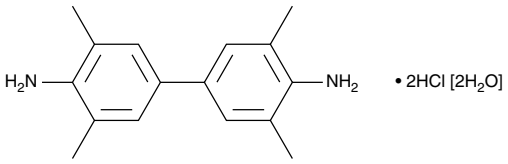
Product Information

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: ≥98%
Stability: ≥1 year at -20˚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°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 µg/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 (ε = 39,000).[1] The completely oxidized form (diimine) absorbs at 450 nm (ε = 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 (λ_{max} = 652 nm) or 1 mole of diimine (λ_{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 myeloperxidase determined by transient-and steady-state kinetics. *Biochemistry* **36**, 9349-9355 (1997).

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