

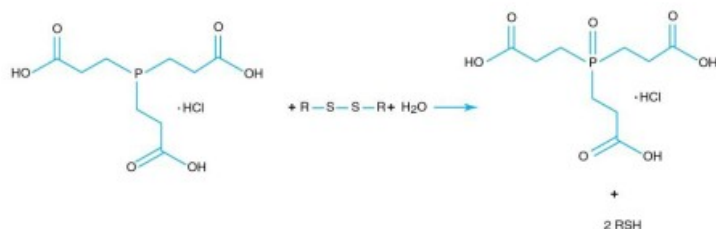


TCEP hydrochloride - 10 g

Stable reducing agent for crystallization trials

Product codes:

Reference: HR 2801



Product gallery:



Product description:

- Highly soluble
- Odorless and non-volatile
- Effective at acidic and alkaline pH

TCEP hydrochloride is Tri(2-carboxyethyl)phosphine hydro-chloride.

TCEP hydrochloride is an odorless, non-volatile reducing agent that is more stable and effective than DTT or 2-Mercaptoethanol. Unlike DTT, TCEP hydrochloride retains its reducing power at acid pHs (pH 5) and at pHs above 7.5 and is stable in air. TCEP hydrochloride is soluble in water to 310 grams per liter. For most applications, 5-50 mM TCEP provides sufficient molar excess to effectively reduce peptide or protein disulfide bonds within a few minutes at room temperature. TCEP hydrochloride is unreactive toward other functional groups found in proteins. Unlike DTT (dithiothreitol), TCEP hydrochloride does not contain a free thiol, and therefore does not require removal before reaction with thiol-reactive reagents. TCEP reduces disulfides but apparently not mercury-thiol bonds. TCEP hydrochloride is compatible with many heavy atoms and may be used during heavy atom derivatization. TCEP hydrochloride is more stable at a higher pH and at higher temperatures than is DTT and for a longer period of time in buffers without metal chelators such as EGTA. With TCEP, removal of the reducing agent is not necessary prior to most applications, (e.g. histidine-tagged protein purification, protein crystallization).

TCEP is typically very soluble in aqueous buffers at nearly any pH. Therefore, working



concentrations and 10X stock solutions may be readily prepared in most aqueous buffers. TCEP is stable in aqueous, acidic, and basic solutions. When TCEP is dissolved directly in water, the resulting pH is approximately 2.5. TCEP is not very stable in phosphate buffers, especially at neutral pH. Therefore, if TCEP is to be used in PBS buffers, prepare the working solution immediately before use. TCEP may be used as a substitute loading buffer for SDS-PAGE; use a final concentration of 50 mM TCEP. Since TCEP is charged in solution, it is not compatible for use in isoelectric focusing.

A 10 mM TCEP hydrochloride concentration can reduce the pH of a 100 mM buffer by approximately 0.5 pH units; 1 mM TCEP hydrochloride concentration reducing the pH of a 100 mM buffer by 0.05 pH units.

Stability in Solution

TCEP is stable in aqueous acidic and basic solutions. When TCEP is dissolved directly in water the resulting pH is 2.5. Various buffers may be used for the reductions. Studies indicate that no change in concentration occurs after 24 hour incubation at room temperature in 100 mM HCL, 100 mM NaOH, or any of the following 50 mM buffers Tris HCl (pH 7.5, 8.5, 9.5), HEPES(pH 6.8, 8.2), Borate(pH 8.2, 10.2), and CAPS (pH 9.7, 11.1). Even after weeks in these buffers, less than 20% of the TCEP was oxidized.

TCEP is not particularly stable in phosphate buffers, especially at neutral pH. Experiments indicate that TCEP completely oxidizes within 72 hours in 0.35M phosphate-buffered saline (PBS), pH 7.0. Approximately 50% oxidation occurs in the same amount of time in 0.15M PBS, pH 8.0. Only minimal oxidation occurs in PBS at pH > 10.5 or 6.0. Therefore, if TCEP is to be used in PBS buffers, prepare the working solution immediately before use.

Solid TCEP hydrochloride is supplied packaged in argon to minimize oxidation.

Molecular formula $C_9H_{15}O_6P \cdot HCl$

Molecular weight 286.65

CAS [51805-45-9]

Beilstein Registry Number 3724376

Purity ?99.0%

Stable at room temperature for up to 2 years after receipt.

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Product features:

CRF - TIPO: TCEP hydrochloride