

Technical Data Sheet

HEPES buffer grade

for biochemistry

Order number: 1112

HEPES or 4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid is a zwitterionic organic buffering agent with a pKa of 7.3 (at 37 °C). Its buffering capacity is therefore greatest in the range between pH 6.8 and pH 7.8. HEPES is readily soluble in water (~40 g/100 ml), non-toxic, membrane impermeable and (bio)chemically stable. HEPES does not interfere with biological processes or membrane integrities (penetration, solubilization, surface adsorption, etc.). Its absorption in the UV and visible range (> 260 nm) is extremely low and it shows no tendency to complex metal ions, which underlines its suitability for biochemical assays. HEPES is therefore an important biological buffer widely used to stabilize the pH in enzyme reactions and media for cell and tissue culture. Fears that HEPES could serve as a nutrient source for aerobic bacteria have proven unfounded.

Application

HEPES is widely used in cell and tissue culture, in protein purification, storage (protection against freeze-induced pH changes) and extraction, in electrophoresis, immunoprecipitation, chromatography, for enzyme assays, protein labeling, and many other biological, biochemical and microbiological procedures. Especially when metal ion-containing solutions are used, the use of HEPES as a non-coordinating buffer is recommended.

Caution: HEPES interferes with the Folin-Ciocalteu (Lowry) protein assay. In contrast, the BCA assay and the Bradford assay are not affected.

HEPES is a proven pH stabilizer in cell and tissue culture media - together with or as a replacement for bicarbonate. The addition of HEPES is recommended to ensure stable buffering of the cell culture medium at a pH of 7.2 to 7.6.

The HEPES content in cell culture media can vary from 10mM to 25mM, with 25mM being the most common HEPES concentration. **Caution:** Cell toxicity may occur at concentrations above 100mM.

As a stock solution, 1 M HEPES is prepared in water. Adjust to desired pH with NaOH. HEPES solutions can be sterilized by autoclaving or filtration.



Storage and Stability:

Store HEPES powder and sterile solutions at ambient temperatures.

Aqueous HEPES solutions are resistant to high temperatures but tend to form hydrogen peroxide when exposed to light. To prevent oxidation, solutions containing HEPES should therefore be stored protected from light.

Related products

1194	HEPES for cell biology
1125	Tris Xtrapure for biochemistry
1165	Tris hydrochloride for biochemistry
1457	Bis-Tris for biochemistry
2151	Bicine for biochemistry
1269	Tricine for biochemistry
1086	MES monohydrate for biochemistry
1111	DTT for biochemistry
1123	Protein Ladder (11-245 kDa), prestained for molecular biology
2098	D-PBS (10X) w/o Ca and Mg for cell biology
1429	D-PBS (1X) w/o Ca and Mg (pH 7.4) for cell biology
6085	Hanks' Balanced Salt Solution w/o Ca and Mg, w/o Phenol red, with NaHCO ₃
4673	Earle's Balanced Salt Solution w/o Ca and Mg, with Phenol red and NaHCO ₃

