HEPES

Product Information

Product Name: HEPES; 2-[4-(2-Hydroxyethyl)-1-piperazinyl]ethanesulfonic acid

CAS No: 7365-45-9

Mol. Formula: C8H18N2O4S

Mol. Weight: 238.30

Packaging: 25Kg/ Drum

Appearance: White crystalline powder

Storage: Store at Cool Dry Place. Protect from moisture.

Product Introduction

HEPES, chemically known as 4-(2-hydroxyethyl)piperazine-1-ethanesulfonic acid, functions as a zwitterionic N-substituted aminosulfonic acid buffer, possessing remarkable buffering capacity within the pH range of 6.8-8.2 (with a pKa of 7.48 at 25°C). Widely recognized for its versatility, it is heavily utilized in cell biology, biochemical, and biological research endeavors. One of its notable characteristics is its neutrality towards metal ions, making it a preferred "non-coordinating buffer" that can be safely used in solutions containing metals without compromising their activity. In cell biology studies, HEPES excels at maintaining a stable physiological pH, even amidst fluctuations in carbon dioxide levels, thus surpassing the performance of bicarbonate buffers commonly employed in such settings. Furthermore, HEPES finds itself as a preferred separator in the creation of pH gradients for isoelectric focusing, a technique utilized in protein separation. Its benefits extend beyond these applications, as it has proven invaluable in immunoprecipitation, cell lysis, and live cell imaging, underscoring its indispensability across diverse research areas due to its versatility and minimal interaction with other molecules.

Advantages of HEPES

High-purity product ideal for biochemical and biological research
Excellent water solubility, exhibiting a practical pH range of 6.8 to 8.2 with a pKa of 7.5 at 25 °C
Broad buffering capacity within the pH range of 6.8 to 8.2
Zwitterionic nature at biological pH levels
Remarkable solubility and stability
Minimal absorption in the UV and visible light spectrum
Negligible binding affinity towards metal ions

Applications

1. As a key component of Danieau medium, it effectively prevents melanin pigment formation following gastrulation in zebra-fish embryos.
2. It serves as a crucial element in Hanks' solution, facilitating the degradation testing of iron.
3. It is an integral part of HEPES medium, enhancing the transfection efficiency of cell cultures with plasmids.
4. When combined with RPMI-1640, L-glutamine, FBS, Sodium pyruvate, and β-mercaptoethanol, it supports the cultivation of rat insulinoma cells.
5. It acts as a supplement in TCM199 medium, aiding in the washing of fresh oocytes required for nuclear transfer studies.

Specifications

Assay(Titration, Dry basis)	≥99.0%
Solubility 1M water	Clear, Colorless solution
pH 1% water solution 25°C	4.8~5.6
Water	≤0.5%
Infrared	Complies
Residue on ignition	≤0.1%
A280,0.1M Water	≤0.035
A260,0.1M Water	≤0.045
Iron	≤5ppm
Heavy metals	≤3ppm
Endotoxin 0.2% solution	≤0.1EU/mL
Appearance	White crystalline powder

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