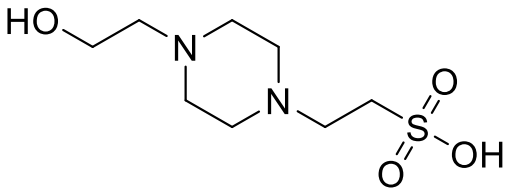


Product data sheet



MedKoo Cat#: 464325 Name: HEPES CAS: 7365-45-9 Chemical Formula: C ₈ H ₁₈ N ₂ O ₄ S Exact Mass: 238.0987 Molecular Weight: 238.302		
Product supplied as:	Powder	
Purity (by HPLC):	≥ 98%	
Shipping conditions:	Ambient temperature	
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.	

1. Product description:

HEPES is a zwitterionic sulfonic acid buffering agent; one of the twenty Good's buffers. HEPES is widely used in cell culture, largely because it is better at maintaining physiological pH despite changes in carbon dioxide concentration (produced by aerobic respiration) when compared to bicarbonate buffers, which are also commonly used in cell culture.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
Water	178.77	750.17

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.20 mL	20.98 mL	41.96 mL
5 mM	0.84 mL	4.20 mL	8.39 mL
10 mM	0.42 mL	2.10 mL	4.20 mL
50 mM	0.08 mL	0.42 mL	0.84 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Wang X, Wang Y, Yin L, Zhang Q, Wang S. Surfactant-free synthesis of fluorescent platinum nanoclusters using HEPES buffer for hypochlorous acid sensing and imaging. RSC Adv. 2022 Apr 4;12(17):10395-10400. doi: 10.1039/d1ra09064j. PMID: 35424968; PMCID: PMC8978884.
2. van der Lienden MJC, Aten J, Boot RG, van Eijk M, Aerts JMFG, Kuo CL. HEPES-buffering of bicarbonate-containing culture medium perturbs lysosomal glucocerebrosidase activity. J Cell Biochem. 2022 May;123(5):893-905. doi: 10.1002/jcb.30234. Epub 2022 Mar 21. PMID: 35312102; PMCID: PMC9314694.

In vivo study

1. Peltz M, Milchgrub S, Jessen ME, Meyer DM. Effect of pyruvate and HEPES on rat lung allograft acidosis and cell death after long-term hypothermic storage. Transplant Proc. 2010 Sep;42(7):2771-6. doi: 10.1016/j.transproceed.2010.06.004. PMID: 20832585; PMCID: PMC2954414.
2. Desaphy JF, Joffre M. Inhibitory effect of internal sodium and HEPES on the voltage-dependent potassium conductance of rat Leydig cells. Biochim Biophys Acta. 1996 Nov 13;1285(1):9-13. doi: 10.1016/s0005-2736(96)00133-2. PMID: 8948469.

7. Bioactivity

Biological target:

Product data sheet



HEPES, a nonvolatile zwitterionic chemical buffering agent, is broadly applied in cell culture. HEPES is effective at pH 6.8 to 8.2. HEPES is also a potent inducer of lysosome biogenesis.

In vitro activity

HEPES-buffered medium markedly influences processing of GCase, its lysosomal degradation, and the total cellular enzyme level. HEPES-containing medium was also found to reduce maturation of other lysosomal enzymes (α -glucosidase and β -glucuronidase) in cells. The presence of HEPES in bicarbonate containing medium increases GCase activity in GD-patient derived fibroblasts, illustrating how the supplementation of HEPES complicates the use of cultured cells for diagnosing GD.

Reference: J Cell Biochem. 2022 May;123(5):893-905. <https://pubmed.ncbi.nlm.nih.gov/35312102/>

In vivo activity

Among stored groups, improved pH regulation (by adding HEPES) and increased metabolism (by adding pyruvate) appeared to correlate with cellular survival. Lungs stored in Perfadex with bicarbonate buffer alone had significantly greater cell death than all other groups. Improved buffer capacity (Perfadex/HEPES Group) or the addition of pyruvate (Pyruvate Group) improved lung preservation to a similar degree compared to Perfadex alone ($p < .05$). The least cell death among stored lungs was encountered when allografts were stored in pyruvate and HEPES supplemented preservation solution.

Reference: Transplant Proc. 2010 Sep;42(7):2771-6. <https://pubmed.ncbi.nlm.nih.gov/20832585/>

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.