



Product Information

MOPS

Cell Culture Tested

Product Number **M 3183**

Store at Room Temperature

Product Description

Molecular Formula: $C_7H_{15}NO_4S$

Molecular Weight: 209.3

CAS Number: 1132-61-2

Melting Point: 283.5 - 284.5 °C¹

pK_a: 7.2 (25 °C)

Effective buffering range: pH 6.5 - 7.9

$\Delta pK_a/\Delta T$: -0.015²

Synonyms: 3-morpholinopropanesulfonic acid,
3-(N-morpholino)propanesulfonic acid, MOPS

This product is cell culture tested (3.14 g/l) and is designated as Biotechnology Performance Certified. It is tested for endotoxin and bioburden levels. This product has been analyzed for the absence of nucleases and proteases.

The zwitterionic buffer MOPS is a structural analog to MES, one of the Good buffers that were developed in the 1960's for general use in biochemistry. Good et al., developed these buffers to meet the following criteria:

- midrange pK_a
- maximum water solubility and minimum solubility in all other solvents
- minimal salt effects
- minimal change in pK_a with temperature,
- chemical and enzymatic stability,
- minimal absorption in visible or UV range
- reasonable ease of synthesis.³

The pK_a of MOPS (7.2) is closer to physiological pH than that of MES (6.1), and thus MOPS may be more suitable as a physiologically relevant buffer.

MOPS buffer has been utilized in cell culture in such systems as *E. coli*, *Cryptococcus neoformans*, cultured human keratinocytes, and thermophilic methanogenic bacteria.^{4,5,6,7} In protein studies, MOPS has been used in an x-ray crystallographic study of the ADP-binding site of succinyl-CoA synthetase from *E. coli*, in the characterization of the Rieske-type ferredoxin BphF, and in an electron microscopy analysis of the engineered protein betabellin-15D.^{8,9,10}

An investigation of the interaction of various buffers, including MOPS, with plasmid sized DNA by free solution capillary electrophoresis has been reported.¹¹ A protocol describes the use of MOPS in an electrophoresis buffer for the separation of RNA in agarose gels.¹² A procedure for preparative-scale separation of proteins by displacement chromatography that incorporates MOPS buffer has been published.¹³

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is soluble in water (500 mg/ml), yielding a clear, colorless solution.

Storage/Stability

Solutions of MOPS are not completely stable when autoclaved in the presence of glucose.¹

References

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8. Joyce, M. A., et al., ADP-binding site of *Escherichia coli* succinyl-CoA synthetase revealed by x-ray crystallography. *Biochemistry*, **39(1)**, 17-25 (2000).
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