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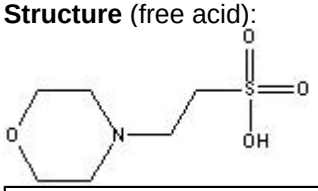
TECHNICAL INFORMATION

Catalog Number: 152453, 152454, 195309, 194835
MES

Structure (free acid):



	Free Acid	Potassium Salt	Sodium Salt
Molecular Formula	$C_6H_{13}NO_4S \cdot H_2O$	$C_6H_{12}NO_4SK$	$C_6H_12NO_2SNa$
Molecular Weight	213.2	233.3	217.2
CAS #	4432-31-9	39946-25-3	711119-23-8
pH (~1% solution)	2.5 to 5.0	9.0 to 10.5	8.5 to 10.5

Synonym: 2-[N-Morpholino] ethanesulfonic acid, sodium salt
pKa: 6.1 @ 25°C
Useful pH Range: 5.5 - 6.7
DpH/DT: -0.011[2]
Metal Binding Constants (log K) @ 20°C for 0.1 M Solution[1,3]:

Mg^{2+}: 0.8
Ca^{2+}: 0.7
Mn^{2+}: 0.7
Cu^{2+}: negligible

Physical Description: White crystalline powder
Solubility: Soluble in water (0.5 M or higher yields a clear and colorless solution). A saturated solution of the free acid form at 0°C is approximately 0.65 M.[1] Sterilization should be done by filtration through a 0.2 micron filter. Autoclaving is not recommended. Autoclaving yields an unidentified yellow by-product.
Description: A zwitterionic buffer. One of the "Good" buffers developed for biological applications. It has the advantages of:

– midrange pKa
– maximum water solubility and minimum solubility in all other solvents
– minimal salt effects
– minimal change in pK with temperature
– chemically and enzymatically stable
– minimal absorption in visible or UV spectral range

Typical Buffer Preparation: A buffer using MES free acid can be prepared by titrating the free acid with sodium hydroxide to the desired pH (pKa ± 1). Alternatively, volumes of equimolar MES free acid and sodium or potassium MES can be mixed to attain the desired pH. Standard mixing tables for stock solutions can be found in *Data for Biochemical Research*.[3]
Availability:

Catalog Number	Description	Size

195309	MES, free acid, monohydrate	10 g 25 g 100 g 250 g 1 kg
194835	MES, free acid, monohydrate, molecular biology reagent	10 g 25 g 100 g 250 g
152453	MES, potassium salt	10 g 25 g 100 g
152454	MES, sodium salt	10 g 25 g 100 g

References:

– Good, N.E., et al., *Biochemistry*, **v. 5**, 467-477 (1966).
– *Methods in Enzymology*, **v. 182**, 24-38 (1990).
– *Data for Biochemical Research***, 3rd Ed.,** Dawson, R.M.C., et al. (eds), Oxford Press, p. 410, 424, 431 (1987).
– Sambrook, et al. (eds), *Molecular Cloning: A Laboratory Manual***, 2nd Ed.,** Cold Spring Harbor Press (1989).
– *Methods in Enzymology*, **v. 87**, 405 (1982).