


Specification

2- Amino- 2- Methyl- 1- Propanol for buffer solutions

A0838

Synonym	2-Aminoisobutanol, AMP - Puffer
state of matter	Liquid
Density	0.935 kg/l (20°C)
n 20°C/D	1.4480
useful pH range	pH 8.7 - 10.4
pK_a (25°C)	9.7
Melting range	18 - 26°C
Boiling point	165°C
Formula	C ₄ H ₁₁ NO
M	89.14 g/mol
CAS-No.:	124-68-5
HS-No.:	29221985
EC-No.:	204-709-8
Storage:	RT
LGK:	10 - 13
R:	36/38-52/53
S:	61
	irritant
WGK:	1
Specification	
Assay (titr.)	min. 96 %
pH (0.1 M; H₂O; 25°C)	11.0 - 12.0
Water (K.F.)	max. 0.8 %

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Literature

- (1) Lowry, OH. (1957) *Methods Enzymol.* **4**, 366-381 Micromethods for the assay of enzymes.
- (2) Bretaudiere, J.-P. & Spillman, T. (1984) *Methods Enzym. Anal.* **4**, 75-82 Alkaline phosphatase: IFCC reference method.
- (3) McEuen, A.R. *et al.* (1995) *Biochim. Biophys. Acta* **1267**, 115-121 Regulation of the activity of human chymase.
- (4) Puttige, K. and Nooralabettu, K.P. (2011) *Intern. J. of Scientific & Engineering Res.* **2**, 1-7 Activity of Alkaline Phosphatase during homogenization of shrimp tissue at different buffer conditions.

Comment

The buffer 2-Amino-2-methyl-1-propanol (AMP) has been shown to be very well suited for the determination of the activity of enzymes like alkaline phosphatase (1, 2), lactate and malate dehydrogenase (1). Its useful pH range (pKa 9.69 [25°C]) meets the requirements for the enzyme reactions (alkaline phosphatase pH 10.4; lactate dehydrogenase pH 9.9; malate dehydrogenase pH 10.4; according to ref. 1). Besides, it serves as a phosphate acceptor for alkaline phosphatase. This enzyme requires higher buffer concentrations - concentrations of 1 M will not inhibit the enzyme - to prevent changes in pH by CO₂ from the air. Especially small reaction volumes are sensitive for such influences. AMP can also be used for the determination of the activity of human chymase in a composite buffer system (3).

AMP has a low melting point (18 - 26°C) and has to be liquified at approx. 35°C to prepare a buffer solution. The liquified AMP has a high viscosity, which makes its handling more difficult. If this buffer solution is stored at room temperature and protected from the CO₂ from the air, it is stable for approx. one month (2). The working concentration for use with alkaline phosphatase ranges from 350 - 900 mM (1, 2), for lactate dehydrogenase and malate dehydrogenase at 100 mM (1) and chymase in the composite buffer at 52 mM (3).

To prepare a 896 mM 2-amino-2-methyl-1-propanol (AMP) buffer (pH 10.3) 78 g of AMP are dissolved in 500 ml of deionized water, then 200 ml of 1 M HCl is added, finally made up to 1000 mL in a 1 L volumetric flask using deionised water. [4].