

Good's buffers (biological buffers)

Products Description / Overview

Organic biological buffers replace mineral buffers advantageously in many applications. Aminoethane and aminopropane sulfonic acids, developed and popularized by Good, are now popular for biological research and analysis. Good's buffers have the following characteristics:

- | | |
|--|--|
| 1) High water-solubility | 2) Low cell membrane permeability |
| 3) Consistent acid-base dissociation constants | 4) Low metal chelating capability |
| 5) High chemical stability | 6) Low absorption spectra in UV and visible regions. |

Buffering agent	MW (g/mol)	useful pH range pKa (20°C)	pKa (25°C)	pKa (37°C)	cat.number
MES buffer	213.2(h)	pH 5.2-7.1 pKa=6.16	6.15	5.97	14035
Bis-Tris buffer	209.2	pH 5.8-7.2 -	6.5	6.36	36832
ADA buffer	190.1	pH 6.0-7.2 pKa=6.65	6.59	6.46	N1339
ACES buffer	182.2	pH 6.1-7.5 pKa=6.88	6.78	6.54	N1234 AH085
PIPES buffer	243(a) 335.4(h)	pH 6.1-7.5 pKa=6.80	6.76	6.66	UP06198
MOPSO buffer	225.3(f) 247.2(n)	pH 6.2-7.6 -	6.9	6.75	28148/N1420
Bis-6Tris Propane buffer	282.3	pH 6.3-9.5 -	6.8-9		24721
BES buffer	213.2 235.2(n)	pH 6.4-7.8 pKa=7.17	7.09	6.90	
MOPS buffer	209.3 231.2(n)	pH 6.5-7.9 pKa=7.13	7.20	7.02	06200
TES buffer	229.2 251.2(n)	pH 6.8-8.2 pKa=7.50	7.40	7.16	N1413
HEPES buffer	238.3 260.28(n)	pH 6.8-8.2 pKa=7.55	7.48	7.31	06194
DIPSO buffer	261.3	pH 7.0-8.2 -	7.60	7.35	28146
MOBS buffer	223.3	pH 6.9-8.3 -	7.6	-	BP361
TAPSO buffer	259.3 281.3(n)	pH 7.0-8.2 -	7.6	7.39	28150
HEPPSO buffer	268.3(a)	pH 7.1-8.5 -	7.8	6.66	28147
POPSO buffer	362.4(a) 406.3(n)	pH 7.2-8.5 -	7.8	7.63	28149
EPPS (HEPPS) buffer	252.3(a) 268.3(f)	pH 7.3-8.7 -	8.00	-	N1432
Tricine buffer	380.4(h)	pH 7.4-8.8 pKa=8.16	8.05	7.80	70611

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Gly-Gly buffer	132.1	pH 7.5-8.9 -	8.20	-	01829
Bicine buffer	163.17(f)	pH 7.6-9.0 pKa=8.35	8.26	8.04	T3162
HEPBS buffer	263.3(f)	pH 7.6-9.0 -	8.30	-	S5175
TAPS buffer	243.3	pH 7.7-9.1 pKa=8.31	8.40	7.18	70501
AMPD buffer	105.1(f)	pH 7.8-9.7	8.80	-	00188
TABS buffer	257.3(f)	pH 8.2-9.6 -	8.9	-	1F688
AMPSO buffer	249.3	pH 8.3-9.7 -	9.00	9.10	61281 60653
CHES buffer	207.3	pH 8.6-10.0 9.3 - 9.7	9.49	9.36	62519 62506
CAPSO buffer	237.3 259.3(n)	pH 8.9-10.3 -	9.60	9.43	62519
AMP buffer		pH 9.0-10.5 -	9.70	-	-
CAPS buffer	221.3(f)	pH 9.7- 11.1 pka=10.24	10.40	10.78	06190
CABS buffer	235.3(f)	pH 10.0-11.40	10.70	-	1F687

(a): MW of anhydrous compound

(h) hydrated compound

(f) free acid compound

(n) Na salt compound

Please inquire for specification, and other salt forms or solutions..

Storage: Room temperature (R)

Introduction to buffers

Biological buffers allow the pH of an aqueous solution to remain constant while the concentration of hydrogen ions present changes.

traditional buffering systems, like carbonate and phosphate buffers, are widely used, but are often not appropriate for many biological systems. These reagents do not buffer effectively above pH 7.5, and can interfere with some biological reactions. Some of the early alternatives, such as Tris and glycylalcyne, buffer effectively at higher pH levels but often show cytotoxic effects. These buffers are also of very limited use below pH 7.5.

Dr. Norman Good et al. in 1966 described a series of zwitterionic buffers that addressed the above limitations, for research in biology and biochemistry. Typically, these "**Good's buffers**" have pKa values at or near physiological pH, are non-toxic to cells, and are not absorbed through cell membranes. The concentration, temperature, and ionic composition of the medium has minimal affect on the buffering capacity. These buffers are resistant to enzymatic and nonenzymatic degradation. Furthermore, they are essentially transparent to visible and ultraviolet light, and they are relatively inexpensive. These so-called "Good's Buffers" are widely used in cell culture and other biological applications. Since then, additional zwitterionic buffers (AMPSO, CAPSO, DIPSO, HEPPSO, MOPSO, and POPSO) have been developed. These compounds offer even further improvements in water solubility, high chemical stability, and compatibility in a number of biological systems (Ferguson et al., 1980).

Reference: Good, N.E., et al. (1966) Hydrogen Ion Buffers for Biological Research. *Biochemistry* 5(2), 467-477

Good's buffers characteristics

Good's buffers characteristics include: pKa value between 6.0 and 8.0, high solubility, non toxicity, limited effect on biochemical reactions, very low absorbance between 240 nm and 700 nm, enzymatic and hydrolytic stability, minimal changes due to temperature and concentration, limited effects due to ionic or salt composition of the solution, limited interaction with mineral cations, and limited permeability of biological membranes.

$$\text{pH} = \text{pKa} + \log \frac{[\text{A}^-]}{[\text{HA}]}$$

Henderson-Hasselbach Equation:

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Buffer requirements

In biological experiments, it is important to maintain the pH of the solutions used, i.e. most biological reactions occur at a neutral pH while some reactions (i.e. peroxidase enzyme) or processes (coating on polystyrene) need acidic or alkaline pH. Mixtures of appropriate weak acids and their conjugate bases, known as buffering agents, are usually used.

The biological buffers needs to be effective in the neutral range from 6 to 8 pH, in order to be useful for cell culture in vitro, enzyme assays and some electrophoretic applications at physiological pH. Furthermore, universally applicable buffers for biochemistry must be water soluble, not interfere with biological processes or biological membranes (penetration, solubilization, adsorption on surface, etc.), should not produce chelates or have known complex-forming tendency with metal ions (which are essential in biological systems), be non-toxic and have a very low U.V. absorption at wavelength >260 nm.

To meet these requirements, Dr. Good developed several aminoethane and aminopropane sulfonic acids that are now widely used for biological research and analysis. Good's buffers have the following characteristics:

Buffer choice

To choose a buffering agent, the pKa value (pH at which the acid and the base forms are equimolar, hence giving a neutral total charge) should be near the pH range in which the biological reaction should be carried.

Secondarily, the compatibility of the buffer with the biological system, if already documented, should be considered.

Products specifications

(by alphabetic order)

ADA

ADA is useful to buffer at pH 6.0-7.2 (pKa:6.65). ?

CAS:[26239-55-4], N-(2-Acetamido)iminodiacetic acid, N-(Carbamoylmethyl)iminodiacetic acid

MW: 190.16 (Z)

Soluble at 0.5M in 1M NaOH at 20°C

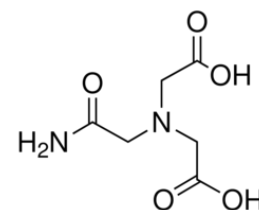
Heavy Metals (ppm) < 10 Loss on Drying (%) 1.0

pKa (@ 20 Deg C) 6.10 - 7.10 Purity (%) 99.0

Residue after Ignition (%) 0.1 Solubility (10%, 1N NaOH) (P/F)

N1339A, 25g

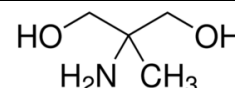
N1339B, 100g



AMPD (2-amino-2-methyl-1,3-propanediol)

AMPD is a useful buffer at pH 7.8-9.7, in a SDS-gradient gel electrophoresis system for polypeptide of 1500 to 100000 Da, as a spacer in isotachopheresis of proteins, and as a buffer for the determination of alkaline phosphatase activity.

CAS:[115-69-5], EC:[204-100-7]; 2-amino-2-methyl-1,3-propanediol); MW:105.15(Z)Purity >99%



00188A, 25g

00188B, 100g

ACES, High purity grade

ACES is used to buffer at pH 6.1-7.5 (pKa:6.88)

N-(2-Acetamido)-2-aminoethanesulfonic acid; CAS:[7365-82-4], MW:182.2 (Z)

Soluble at 0.1M in water at 20°C

Abs.@280nm (5%, Water) 0.02

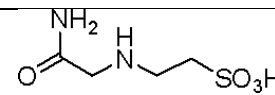
pKa @25C 6.58 - 6.98

pH (1%, Water) @25C 3.6 - 4.4

Purity (%) 99.0 Water (Karl Fisher) (%) 1.0

N1234A, 100g

N1234B, 500g

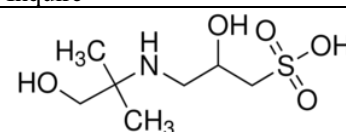


ACES K salt

AH085 - Inquire

AMPSO

AMPSO buffers in the pH 8.3-9.7 range (pKa: 9.0 at 25°C).



AMPSO free acid

N-(1,1-Dimethyl-2-hydroxyethyl)-3-amino-2-hydroxypropanesulfonic acid

CAS:[269-991-7]; EC:[269-991-7]; MW: 227.28 (Z)

AMPSO, sodium salt

N-(1,1-Dimethyl-2-hydroxyethyl)-3-amino-2-hydroxypropanesulfonic acid Na salt

61281A - Inquire

60653A, 25g

60653B, 100g

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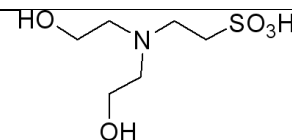
CAS:[102029-60-7]; EC:[]; MW: 249.3 (Z)

Abs.@260nm (2.5%, Water) 0.06
 Identification (IR) (P/F): PASS
 Solubility (10%, Water) : PASS

Abs.@280nm (2.5%, Water) 0.05
 Moisture (KF) : 4% Purity: 96%

BES

BES is used to buffer at pH 6.4-7.8 (pKa:7.1)



BES, Na salt

N,N-Bis(2-hydroxyethyl)-2-aminoethanesulfonic acid sodium salt

CAS:[66992-27-6]; EC:[-]; MW: 235.23

Soluble at 1M at 20°C in water

Xi

61864A, 25g

61864B, 100g

Heavy Metals (as Pb): <5ppm

Purity (anhydrous) : >99%

Loss on Drying: <1.0%

Solubility (33%, w/v solution): PASS

BES, free acid

CAS:[10191-18-1]; EC:[]; MW: 213.25 (Z)

BA785, Inquire

Bicine, high purity grade

Bicine is a low temperature electrophoresis buffer; buffer of stable substrate of serum guanase. It is used to buffer at pH 5.8-7.2 (Pka: 8.35).

CAS:[150-25-6], N,N-Bis(2-hydroxyethyl)glycine], Bis(2-hydroxyethyl)amino-tris(hydroxymethyl) methane; MW:163.17 (Z)

Soluble at 1M in water at 20°C

Xi

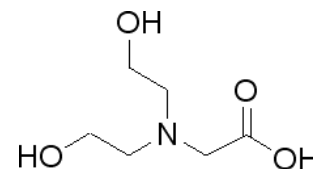
Moisture (Karl Fischer) (%) 1.0

O.D.@280nm (0.1M, Water) 0.05

Solubility (20%, Water) (P/F)

O.D.@260nm (0.1M, Water) 0.05

pH (1%, Water) @25C 4.2 - 5.5 Purity (%) 99.0



T31622, 100g

T31623, 1Kg

BisTris, Ultrapure

Bis-(2-Hydroxyethyl)amino-tris(Hydroxymethyl)Methane

CAS: [6976-37-0]; MW: 209.2 (Z)

Ultrapure grade (>99.0%; no DNase, Protease,)

GSH07,

DNase (P/F): NONE

Melting Point: 102 - 106°C

pH (1.0%, Water) @25C: 8.8 - 9.6

Protease (P/F): NONE

RNase (P/F): NONE

Identification (IR) (P/F): PASS

Moisture (KF): 1.0%

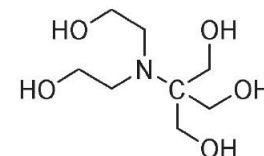
pKa @25C: 6.45 - 6.65

Purity (Titration): 99.0%

Solubility (1.0%, Water) (P/F): PASS

36832A, 100g

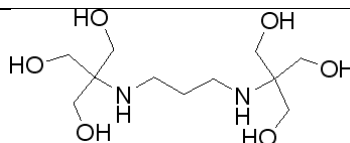
36832B, 250g



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BisTris propane

1,3-Bis[tris(hydroxymethyl)methylamino]propane
CAS:[64431-96-5]; EC:[264-899-3]; MW: 282.33 (Z)



24721A, 25g
24721B, 100g

CABS

CABS has a useful range of 9.7-11.1 (-pHa: 10.5 at 25°C)

4-(Cyclohexylamino)-1-butanefulfonic acid

CAS:[161308-34-5]; MW: 235.35.

1F6870, inquire

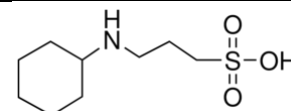
CAPS

CAPS has a useful range of 9.7-11.1 (-pHa: 10.5 at 25°C)

N-cyclohexyl-3-aminopropanesulfonic acid

CAS:[1135-40-6]; EC:[214-492-1]; MW: 221.32

06199B, 500g



melting point: >300 °C(lit.) Purity : >99% 2.1 g/10 ml water

CAPSO

CAPSO has a useful range of 8.9-10.3 (pKa: 9.6 at 25°C)

N-cyclohexyl-2-hydroxyl-3-aminopropanesulfonic acid; 3-(cyclohexylamino)-2-hydroxyl-1-propanesulphonic; CAS:[73463-39-5]; MW: 237.32 (Z)

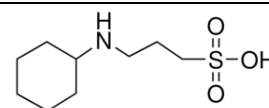
Purity > 99%; 2.1 g/10 ml water

CAPSO Na salt

3-(Cyclohexylamino)-2-hydroxy-1-propanesulfonic acid sodium salt

CAS:[102601-34-3]; MW: 259.30 (Z)

62519A, 25g
62519B, 100g



625061, 25g - inquire

CHES

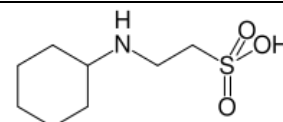
CHES has a useful range of 8.6–10 (pKa: 9.3).

N-Cyclohexyl-2-aminoethanesulfonic acid; N-Cyclohexyltaurine;

CAS:[103-47-9]; EC:[203-115-6]; M:207.28 (Z)

Purity>99%; Soluble 10% in water

21640A, 100g
21640B, 500g



pKa @25C: 9.3 - 9.7 (3 & 7.5 & 9.5) Purity: 99.0% Solubility (10%, Water): PASS
! GSH07

DIPSO

DIPSO is used to buffer at pH 7.0-8.2 (pKa: 4.0-5.5 (20 °C, 0.1 M in H₂O))

N,N-Bis(2-hydroxyethyl)-3-amino-2-hydroxypropanesulfonic acid

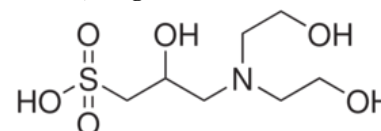
CAS:[68399-80-4]; EC:[269-992-2]; MW:261.3 (Z)

>98% pure; Soluble at 0.1M in wter at 20°C

Heavy Metals (as Pb): <0.0005%
Purity: 98%
Water (KF): <7%

Melting Point: 189 – 192°C
Solubility (25%, Water): PASS

21846B, 100g



DIPSO sodium salt

64058 – inquire

EPPS: see HEPPS

Gly-Gly

Gly-Gly is used to buffer at pH 7.5-8.9 (pKa:8.30)

Diglycine; Glycyl-glycine

CAS:[556-50-3]; EC:[2091278]; MW: 132.12 (Z)

Soluble at 1M in water at 20°C

01829A, 100g
01829B, 1Kg

HEBPS

HEBPS is an homolog of HEPES and EPPS with higher pKa (pKa: 8.30), used to buffer at pH 7.6-9.0

N-(2-Hydroxyethyl)piperazine-N'-(4-butanefulfonic acid)

CAS:[161308-36-7]; ; MW: 266.36 (Z)

S51752, 100g inquire

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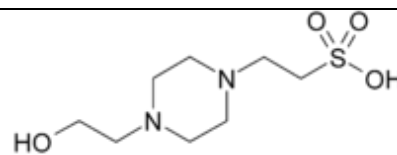


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HEPES

HEPES is an organic chemical buffering agent that is widely used to maintain physiological pH (range pH 6.8-8.2; pKa at 20°C : 7.45-7.65), i.e. in cell culture. HEPES is recommended for the protection of frozen solutions of enzymes from freezing-induced pH changes. Fears that HEPES may serve as a nutrient source for aerobic bacteria have been shown to be unfounded¹.



4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid; 2-morpholinoethanesulfonic acid; 2-(4-morpholino)ethanesulphonic acid; 2-(N-morpholino)ethanesulfonic acid; morpholine-4-ethanesulfonic acid hydrate. CAS:7365-45-9; MW:238.30 (Z)
Mp: >234-238°C; Soluble at 40 g/100 ml (20°C)

Xi

HEPES free acid, Ultrapure
CAS:[7365-45-9]; MW: 238.30 (Z)

Purity > 99%; 40 g/100 ml (20°C)
Xi

Purity (dry basis): ≥99%	Heavy Metals (as Pb): <0.0005%
Iron: <0.0005%	Loss on drying: <0.2%
Residue on ignition:	DNase activity: Not detected
Rnase activity: Not detected	Protease activity: Not detected

UP061940, 250g
061941, inquire other sizes

See [FT-061940\(Hepes\)](#) for more information.

Also available as 1M solution. See [FT-N1466A\(Hepes 1M soln\)](#)

HEPES Sodium salt, Ultrapure
CAS [75277-39-3]; MW: 260.28 (Z)

Purity (dry basis): ≥99%	Heavy Metals (as Pb): <0.0001
Iron: <0.0005%	Loss on drying: 3%
Residue on ignition:	DNase activity: Not detected
Rnase activity: Not detected	Protease activity: Not detected

34941A , 100g

See [FT-061940\(Hepes\)](#) for more information.

HEPPS

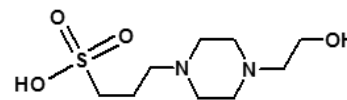
HEPPS or EPPS is used as a buffering agent at pH 7.3-8.7 (pKa: 8.00/piperazine ring); i.e. in biology and biochemistry.

3-[4-(2-Hydroxyethyl)-1-piperazinyl]propanesulfonic acid hydrate; 4-(2-Hydroxyethyl)piperazine-1-(2-hydroxypropanesulfonic acid) Hydrate
CAS [16052-06-5]; EC [240-198-8]; MW:268.33 (252.3/anh.) (z)
>99% pure; Soluble at 1M in water at 20°C

Purity > 99%	Heavy Metals (as Pb): <0.0005%
Melting Point: 236 – 239°C	Moisture (KF): <1%
Purity: 99%	Solubility (1M, Water) : PASS

H315 / H319 / H335 ; P280 / P302+P352 / P304+P340 / P305+P351+P338

N1432A, 100g

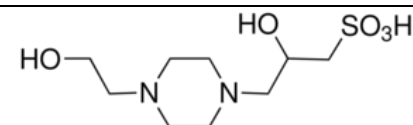


HEPPSO

HEPPSO (EPSO) is used to buffer at pH 7.1-8.5 (pKa: 7.5)

HEPPSO free acid, ultrapure grade

4-(2-Hydroxyethyl)piperazine-1-(2-hydroxypropanesulfonic acid) hydrate
CAS:[68399-78-0]; MW: 268.3(anhydrous)

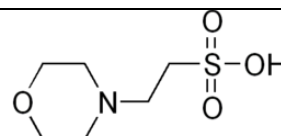


28147A, 25g
28147B, 100g

MES

MES is used as a Good's buffering agent in biology and biochemistry at pH 5.2-7.1 (pKa:6.16). Contains a morpholine ring and a an ethanesulfonic moiety. Melting point is approx. 300 degrees C.

2-(N-morpholino)ethanesulfonic acid, monohydrate; CAS:[4432-31-9]; MW: 195.24 (Z)
Purity > 99%; Soluble at 2.1 g/10 ml and up to 0.5M in water



14035A, 25g
14035B, 100g
14035C, 500g

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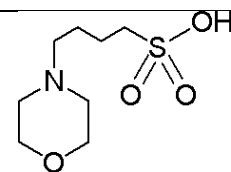
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MOBS

MOBS is an homolog of MES and MOPS with higher pKa/ It is used to buffer solution at pH6.9-8.3 (pKa:7.6)

BP3610, 25g

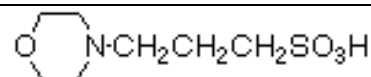


CAS:[117961-20-3]; 4-Morpholinebutanesulfonic acid; 3-(N-Morpholino)butanesulfonic acid hemisodium salt, MW: 223.29

Xi

MOPS

MOPS is used in biology and biochemistry as a buffering agent at pH 6.5-7.9 (pKa:7.28 / morpholine ring); Contains a morpholine ring and a propanesulfonic moiety. MOPS is an excellent buffer for many biological systems at near-neutral pH. e.g. RNA electrophoresis in agarose with formaldehyde gels at 20 mM concentration.



MOPS, Ultrapure

CAS:[1132-61-2]; 3-(N-morpholino) Propane Sulfonic Acid, monohydrate; MW: 209.27
Purity > 99%; 2.1 g/10 ml water

UP062000, 100g

MOPS, Na salt, high purity

CAS:[71119-22-7,79803-73-9]; 4-Morpholinepropanesulfonic acid Sodium salt; MW: 231.25

N1343A, 25g

N1343B, 100g

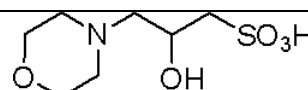
MOPS, hemiNa salt

4-Morpholinepropanesulfonic acid hemisodium salt;
CAS:[117961-20-3]; MW: 220.25

M13581, 100g

MOPSO

MOPSO is used to buffer at pH 6.2-7.6



MOPSO, Sodium salt, biotech grade

3-(N-Morpholino)-2-hydroxypropanesulfonic acid sodium salt, 3-Morpholino-2-hydroxypropanesulfonic acid sodium salt
CAS:[79803-73-9]; EC: [-]; MW: 247.24

N1420A, 25g

N1420B, 100g

Abs. @260nm (2.4%, Water): < 0.04

Melting Point: 263 – 271°C

pH (1%, Water) @25C: 5.1 - 6.1

Solubility (2.4%, Water): PASS

Abs. @280nm (2.4%, Water): < 0.03

Moisture (KF): <1%

Purity: 97%

MOPSO, free acid

β-Hydroxy-4-morpholinepropanesulfonic acid, 3-Morpholino-2-hydroxypropanesulfonic acid
CAS:[68399-77-9]; EC Number 269-989-6; MW: 225.26 (Z)

281481, 100g

PIPES

PIPES is used to buffer at pH 6.1-7.5

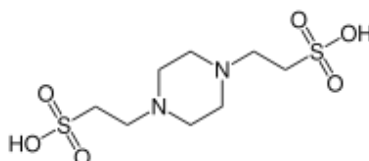
(pKa:6.80)

Piperazine-1,4-bis(2-ethanesulfonic acid);

MW: 335.4 [243(anh.)]

Purity > 99%; 3 g/10 ml 1M NaOH

Xi



UP061980, 100g

UP061981, 250g

Contact your local distributor

uptima@interchim.com

Uptima, powered by



213 Avenue J.F. Kennedy - BP 1140
03103 Montluçon Cedex - France
Tél. 04 70 03 88 55 - Fax 04 70 03 82 60

FT-062000

POPSO

POPSO is used to buffer at pH 7.2-8.5 (pKa: 7.8)

POPSO, free acid, biotech grade

Piperazine-1,4-bis(2-hydroxypropanesulfonic acid) dihydrate;
CAS:[68189-43-5]; MW: 362.42/anhydrous)-398.45 (Z)

Heavy Metals (as Pb) <0.0005% Purity (Anhydrous) >99%
Solubility (25%, 1N NaOH): PASS Water (KF): <10(%)

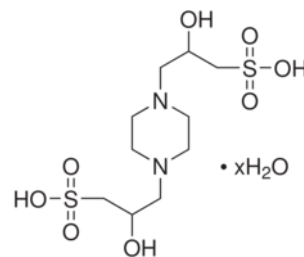
POPSO, sodium salt, ultrapure grade

Piperazine-1,4-bis(2-hydroxypropanesulfonic acid) sodium salt;
CAS:[108321-07-9]; MW: 406.39 (Z) ; Soluble at 1M in in NaON

Heavy Metals (as Pb): 0.0005 % Moisture (KF): <5%
Purity: 97% Solubility (10%, Water): PASS

28149A, 25g
28149B, 100g

69223A, 25g
69223B, 100g

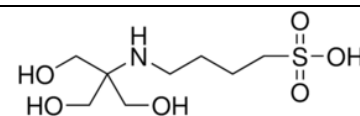


TABS

TABS is used to buffer at pH 8.2-9.6 (pKa:8.9). Homolog of TES and TAPS with higher pKa and similar utility in biological systems.

TABS, Na salt, Biotech grade

N-tris(Hydroxymethyl)methyl-4-aminobutanesulfonic acid
CAS:[54960-65-5]; MW: 257.30 (Z)



1F688, inquire

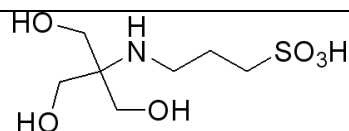
TAPS

TAPS is used to buffer at pH 7.7-9.1 (pKa:8.49)

TAPS, Na salt, Biotech grade

[(2-Hydroxy-1,1-bis(hydroxymethyl)ethyl)amino]-1-propanesulfonic acid
CAS:[91000-53-2]; MW: 243.28 (Z)
Soluble 1M in water at 20°C

DNase: NONE Heavy Metals <0.0005%
Identification : PASS pH (5%, Water) @25C: 3.5 - 6.5
Protease (P/F) NONE Purity: >99%
RNase: NONE Solubility (5%, Water): PASS
Water (KF): 1.0%



705011, 100g

TAPS, free acid, high purity

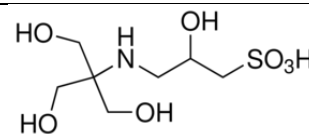
[(2-Hydroxy-1,1-bis(hydroxymethyl)ethyl)amino]-1-propanesulfonic acid; N-Tris(hydroxymethyl)methyl-3-aminopropanesulfonic acid
CAS:[29915-38-6]; MW: 243.28 (Z)

T3169 inquire

FT-062000

TAPSO

TAPSO is used to buffer at pH 7.0-8.2 (pKa:7.6)



TAPSO, free acid

2-Hydroxy-3-[tris(hydroxymethyl)methylamino]-1-propanesulfonic acid;
CAS:[68399-81-5]; MW:259.28 (Z); Xi

28150A, 25g
28150B, 100g

assay: ≥99% (titration)

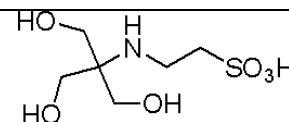
TAPSO, sodium salt

2-Hydroxy-3-[tris(hydroxymethyl)methylamino]-1-propanesulfonic acid Sodium salt;
CAS:[68399-81-5]; MW:281.26 (Z)

705291, inquire

TES

TES is used to buffer at pH 6.8-8.2 (pKa:7.50)



N14130, 25g
N14131, 100g

TES, sodium salt, ultrapure grade

2-[(2-Hydroxy-1,1-bis(hydroxymethyl)ethyl)amino]ethanesulfonic acid;
CAS:[70331-82-7]; MW: 251.24 (Z) ; Soluble at 1M in water at 20°C

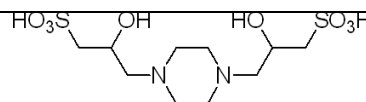
Inquire

TES, free acid

CAS:[7365-44-8]; MW: 229.25

Tricine

Tricine is used to buffer at pH7.4-8.8 (pKa:8.16). It is a buffer component for separation of low molecular weight peptides.



706111, 100g
706112, 500g

Piperazine-N,N'-Bis[2-Hydroxypropanesulfonic Acid] Dihydrate;
CAS:[68189-43-5]; MW:380.44 (Z)