

# Useful pH Ranges of Selected Biological Buffers (25° C, 0.1 M)

	pH	6	7	8	9	10	11	Useful pH Range	pKa (at 20°)	pKa (at 25°)	pKa (at 37°)
MES		6.0-6.5						5.5-6.7	6.16	6.10	5.97
BIS-TRIS		6.0-7.0						5.8-7.2	-	6.50	6.36
ADA		6.0-7.0						6.0-7.2	6.65	6.59	6.46
ACES		6.0-7.5						6.1-7.5	6.88	6.78	6.54
PIPES		6.0-7.5						6.1-7.5	6.80	6.76	6.66
MOPSO		6.0-7.5						6.2-7.6	-	6.90	6.75
BIS-TRIS PROPANE		6.0-9.0						6.3-9.5	-	6.8, 9.0	-
BES		6.0-7.5						6.4-7.8	7.17	7.09	6.90
MOPS		6.0-7.5						6.5-7.9	7.28	7.20	7.02
TES		6.0-7.5						6.8-8.2	7.50	7.40	7.16
HEPES		6.0-7.5						6.8-8.2	7.55	7.48	7.31
DIPSO		6.0-7.5						7.0-8.2	-	7.60	7.35
MOBS		6.0-7.5						6.9-8.3	-	7.60	-
TAPSO		6.0-7.5						7.0-8.2	-	7.60	7.39
TRIZMA		6.0-7.5						7.0-9.0	8.20	8.06	7.72
HEPPSO		6.0-7.5						7.1-8.5	-	7.80	6.66
POPSO		6.0-7.5						7.2-8.5	-	7.80	7.63
TEA		6.0-7.5						7.3-8.3	-	7.80	-
EPPS		6.0-7.5						7.3-8.7	-	8.00	-
TRICINE		6.0-7.5						7.4-8.8	8.16	8.05	7.80
GLYCYLGLYCINE		6.0-7.5						7.5-8.9	-	8.20	-
BICINE		6.0-7.5						7.6-9.0	8.35	8.26	8.04
HEPBS		6.0-7.5						7.6-9.0	-	8.30	-
TAPS		6.0-7.5						7.7-9.1	8.49	8.40	8.18
AMPD		6.0-7.5						7.8-9.7	-	8.80	-
TABS		6.0-7.5						8.2-9.6	-	8.90	-
AMPPO		6.0-7.5						8.3-9.7	-	9.00	9.10
CHES		6.0-7.5						8.6-10.0	9.55	9.49	9.36
CAPSO		6.0-7.5						8.9-10.3	-	9.60	9.43
AMP		6.0-7.5						9.0-10.5	-	9.70	-
CAPS		6.0-7.5						9.7-11.1	10.56	10.40	10.02
CABS		6.0-7.5						10.0-11.4	-	10.70	-

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