



The wise choice

Standard buffer solutions

for pH-meter calibration



pH value is probably the most common of all routinely performed measurements in laboratories. Since pH-value affects all chemical and biochemical reactions, it is very important to have a reliable measurement. pH-meters measure the voltage developed between two electrodes immersed in the sample and compare that value to a calibration derived from the same electrode pair and known standards. These standard buffer solutions must be accurate and reliable. Scharlab standard buffer solutions are precise, stable and directly traceable to NIST. They are measured performing a five-point calibration according to DIN 19268. Calibration standards are prepared according to DIN 19266.



Scharlab S.L.																											
Gallo Pireze, 33, Pol. Ind. Mas d'en Cies																											
08181 Sant Joan de Vilatorrada																											
T +34937456400																											
E helpdesk@scharlab.com																											
CERTIFICATE OF ANALYSIS																											
Product	Buffer solution pH = 5,00 (20 °C) (Acetic acid/Potassium hydroxide)	Batch	1930901																								
SO102s		Quality release date	28/11/2018																								
		Expiry date	11/2020																								
Analysis	Batch value	Specifications	±U																								
pH at 20 °C	4,995	4,99 - 5,01	0,01																								
<p>Preparation Standard buffer solutions are prepared using gravimetric and volumetric procedures. Composition per litre is 0,7M Acetic acid/glacial and 0,6g Potassium hydroxide Contains preservative</p> <p>Temperature dependence of the pH value When calibrating your pHmeter at different temperatures than 20°C, refer to the table below to introduce accurate pH values.</p> <table border="1"> <thead> <tr> <th>T (°C)</th> <th>pH</th> </tr> </thead> <tbody> <tr><td>0</td><td>4,97</td></tr> <tr><td>5</td><td>4,98</td></tr> <tr><td>10</td><td>4,99</td></tr> <tr><td>15</td><td>5,00</td></tr> <tr><td>20</td><td>5,00</td></tr> <tr><td>25</td><td>5,01</td></tr> <tr><td>30</td><td>5,01</td></tr> <tr><td>35</td><td>5,02</td></tr> <tr><td>40</td><td>5,02</td></tr> <tr><td>45</td><td>5,03</td></tr> <tr><td>50</td><td>5,03</td></tr> </tbody> </table> <p>Traceability This pH buffer solution is traceable to Standard Reference Material from NIST SRM 185c Potassium hydrogen phthalate, SRM 185g Phosphate Buffer, SRM 187c Sodium tartrate, SRM 185c Potassium tartrate and SRM 213a Calcium carbonate</p> <p>Uncertainty It characterizes the dispersion of the values that could be attributed to the measured. The limits of the expanded uncertainty are given at a confidence level of 95% (k=2)</p> <p>Measurement The batch value is determined by measurement with a combination glass electrode against five-point calibration according to DIN 19268. The use of more than five points does not yield any significant improvement in the statistical information obtainable. Calibration standards are prepared according to DIN 19266. Batch value certified at the time of measurement</p> <p>Storage and use For pH-meter calibration If product is stored and unopened, this solution is stable for 2 years from the date of manufacturing. Once the bottle is opened, store tightly closed at room temperature. Avoid exposure to light. We suggest reacting the solution six months after opening. Never introduce the electrode in the bottle for measurements. Never pour the used solution back in the bottle.</p>				T (°C)	pH	0	4,97	5	4,98	10	4,99	15	5,00	20	5,00	25	5,01	30	5,01	35	5,02	40	5,02	45	5,03	50	5,03
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<p>This certificate does not exempt the user from checking the results upon receipt of the goods. Any copy of our CoA may be obtained from our website at www.scharlab.com</p> <p>N. Canal Laboratory Manager</p> <p>page 1 de 1</p>																											

Packaging

Our standard buffer solutions are bottled in HDPE bottles and delivered in a plastic bag together with their certificate of analysis.

1. Traceability

All our standard buffer solutions are directly traceable to standard reference materials from NIST (National Institute of Standards and Technology, USA). We buy certified primary standard reference materials from NIST and we measure our standard buffers directly against them. This assures correct traceability to NIST.

2. Uncertainty

The total uncertainty factor of our standard buffer solutions is max. ± 0,01 pH units.

3. Multi-point calibration

Multi-point calibrations are more precise than two-point or bracketing calibrations. We use five-point calibration whenever possible because the use of more than five points does not yield any significant improvement in the statistical information obtained. In five-point calibration, the cell electromotive force is determined in five standard buffer solutions and a linear regression calculation is performed.

Measurement is done according to DIN 19268.

4. Temperature dependence of the pH

The pH value of a solution depends on the temperature. This is the reason why it is only useful to quote a pH value if the measuring temperature is stated at the same time.

We usually state the pH values of our standard buffer solutions at 20 °C, but we also manufacture the most used pH solutions (pH 4, 7 and 10) at 25 °C.

pH-Temperature dependence tables of our standard buffer solutions are stated in our certificates.

Standard buffer solutions (20 °C)

We offer a broad range of solutions from pH 1 to pH 13 (20 °C).
10 litres Kubitainer available for pH 4, 7 and 10 standard buffer solutions.

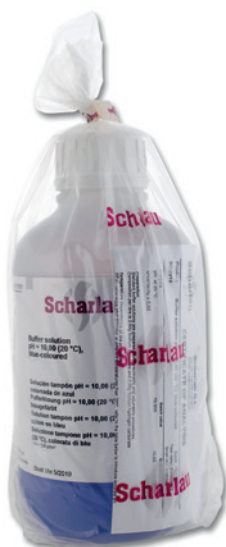
pH Buffer	Composition	Reference
pH 1,00 ± 0,01 (20 °C)	Hydrochloric acid/Sodium chloride	SO1101
pH 2,00 ± 0,01 (20 °C)	Citric acid/Sodium hydroxide/Hydrochloric acid	SO1022
pH 3,00 ± 0,01 (20 °C)	o-Phosphoric acid/Sodium hydroxide	SO1023
pH 4,00 ± 0,01 (20 °C)	Potassium hydrogen phthalate	SO1004
pH 4,01 ± 0,01 (20 °C)	Potassium hydrogen phthalate	SO1005
pH 5,00 ± 0,01 (20 °C)	Acetic acid/Potassium hydroxide	SO1025
pH 6,00 ± 0,01 (20 °C)	Potassium dihydrogen phosphate/Sodium hydroxide	SO1006
pH 7,00 ± 0,01 (20 °C)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	SO1007
pH 7,02 ± 0,01 (20 °C)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	SO1008
pH 8,00 ± 0,01 (20 °C)	Boric acid/Potassium chloride/Sodium hydroxide	SO1028
pH 9,00 ± 0,01 (20 °C)	Boric acid/Potassium chloride/Sodium hydroxide	SO1009
pH 9,26 ± 0,01 (20 °C)	di-Sodium tetraborate decahydrate	SO1092
pH 10,00 ± 0,02 (20 °C)	Sodium carbonate/Sodium hydrogen carbonate	SO1010
pH 11,00 ± 0,02 (20 °C)	Boric acid/Sodium hydroxide/Potassium chloride	SO1141
pH 12,00 ± 0,02 (20 °C)	di-Sodium hydrogen phosphate/Sodium hydroxide	SO1142
pH 13,00 ± 0,02 (20 °C)	Potassium chloride/Sodium hydroxide	SO1143
Packaging	Bottles	250 ml
		500 ml
		1 litre
	Kubitainer	10 litres

NOTE: References may not be available in all containers



Coloured standard buffer solutions

The coloured solutions are easily identified by the users and avoid mistakes in the laboratory due to a wrong buffer selection. They are also widely used in field analysis. We offer coloured solutions measured at 20 °C and 25 °C.



	pH Buffer	Composition	Reference	
20 °C	pH 4,00 ± 0,01 (20 °C) (red)	Potassium hydrogen phthalate	SO2004	
	pH 7,00 ± 0,01 (20 °C) (yellow)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	SO2007	
	pH 10,00 ± 0,02 (20 °C) (blue)	Sodium carbonate/Sodium hydrogen carbonate	SO2010	
	25 °C	pH 4,00 ± 0,01 (25 °C) (red)	Potassium hydrogen phthalate	SO3004
		pH 7,00 ± 0,01 (25 °C) (yellow)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	SO3007
		pH 10,00 ± 0,02 (25 °C) (blue)	Sodium carbonate/Sodium hydrogen carbonate	SO3010
Packaging			250 ml	
	Bottles		500 ml	
			1 litre	

NOTE: References may not be available in all containers

All our standard buffer solutions are delivered together with its Certificate of Analysis

The shelf life of our standard buffer solutions is typically 2 years

Electrode filling solutions

In addition to the buffers, we offer our electrode filling solutions based on potassium chloride, for a proper maintenance of the pH-meter.

Description	Capacity	Reference
Potassium chloride, solution 3 mol/l	250 ml	PO02050250
Potassium chloride, solution 3 mol/l	1 l	PO02051000
Potassium chloride, solution 3,5 mol/l with silver chloride	250 ml	PO02060250

NEW RANGE



pH Standards measured according to ISO/IEC 17025



If you require pH standards measured according to ISO/IEC 17025, please consult our specific brochure.



Scharlab S.L.
Gato Pérez, 33. Pol. Ind. Mas d'en Cisa.
08181 Sentmenat, Barcelona, Spain
Tel.: +34 93 745 64 00 - Fax: +34 93 715 27 65
E-mail: helpdesk@scharlab.com

Scharlab Italia S.r.l.
Via Alcide De Gasperi 56.
20070 Riozzo Di Cerro al Lambro (Mi), Italy
Tel.: +39 02 9823 0679 / +39 02 9823 6266
Fax: +39 02 9823 0211
E-mail: customerservice@scharlab.it

Scharlab Philippines, Inc.
4/F Unit K, No. 35 Sto. Niño Street corner Roosevelt Ave.
Barangay San Antonio, Quezon City 1105, Philippines.
Phone - Fax: +63 2 529 5726
E-mail: infophilippines@scharlab.ph

Scharlab Brasil SA
Estrada do Campo Limpo, 780
São Paulo
Tel.: (11) 5512 5744 - Fax: (11) 5511 9366
E-mail: scharlab@scharlab.com.br

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