



*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.

Scharlau 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.



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CERTIFICATE OF ANALYSIS																									
Product: Buffer solution pH = 5,00 (20 °C) (Acetic acid/Potassium hydroxide)		Batch: 19389601																							
SO1025		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																						
<b>Preparation</b> Standard buffer solutions are prepared using gravimetric and volumetric procedures. Composition per litre is 0,7mol Acetic acid/glycol and 0,6g Potassium hydroxide. Contains preservative.																									
<b>Temperature dependence of the pH value</b> When calibrating your pHmeter at different temperatures than 20°C, refer to the table below to introduce accurate pH values.																									
<table border="1"> <thead> <tr> <th>T (°C)</th> <th>pH</th> </tr> </thead> <tbody> <tr><td>5</td><td>4,97</td></tr> <tr><td>10</td><td>4,98</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>				T (°C)	pH	5	4,97	10	4,98	15	5,00	20	5,00	25	5,01	30	5,01	35	5,02	40	5,02	45	5,03	50	5,03
T (°C)	pH																								
5	4,97																								
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35	5,02																								
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45	5,03																								
50	5,03																								
<b>Traceability</b> This pH buffer solution is traceable to Standard Reference Material from NIST SRM 185f Potassium hydrogen phthalate, SRM 186f Phosphate Buffer, SRM 187f Sodium tetraborate, SRM 188f Potassium tetroborate and SRM 2193a Calcium carbonate																									
<b>Uncertainty</b> It characterises the dispersion of the values that could be attributed to the measurand. The limits of the expanded uncertainty are given at a confidence level of 95% (k=2).																									
<b>Measurement</b> 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.																									
<b>Storage and use</b> 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 rejecting the solution six months after opening. Never introduce the electrode in the bottle for measurements. Never pour the used solution back in the bottle.																									
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 <a href="http://www.scharlab.com">www.scharlab.com</a> .																									
			M. Canal Laboratory Manager																						
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## Packaging

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

## 1. Trazabilidad

Todas nuestras soluciones tamponadas estándar son directamente trazables a los materiales estándar de referencia de NIST (National Institute of Standards and Technology, USA). Compramos materiales de referencia estándar primarios de NIST y medimos nuestras soluciones tampón directamente con ellos. Este procedimiento asegura una correcta trazabilidad a 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 3 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.

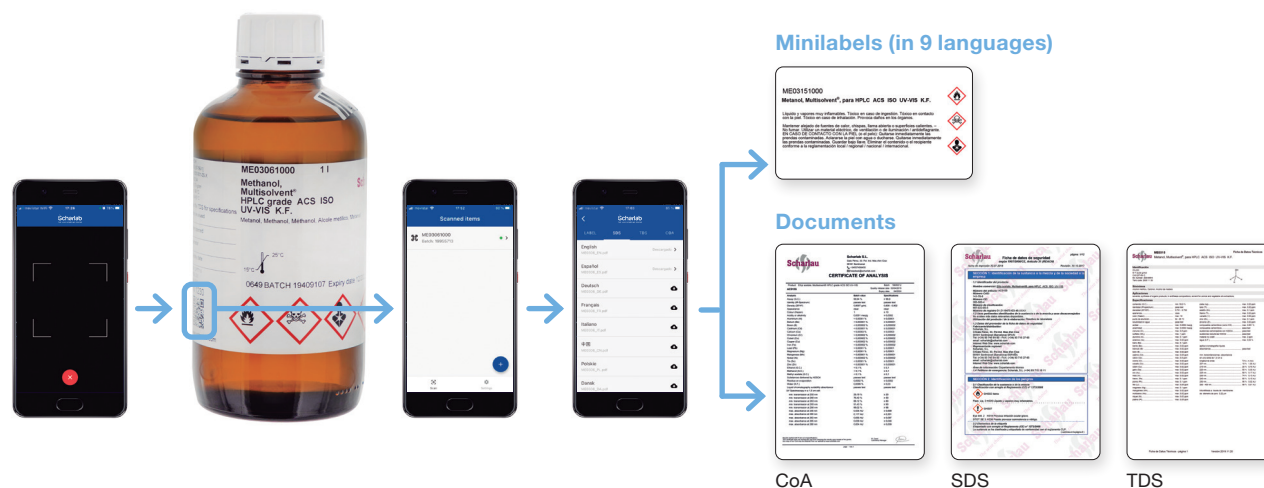
Description	Capacity	Reference
Potassium chloride, solution 3 mol/l	250 ml	PO02050250
Potassium chloride, solution 3 mol/l	1 l	PO02051000
Potassium chloride, solution 3,5 mol/l with silver chloride	250 ml	PO02060250

## Scharlab Reader App

**The Scharlab Reader App lets you obtain technical documents and mini safety labels by simply scanning the QR code on your Scharlau bottle.** Instantly, at any time, users can download mini safety labels, Certificates of Analysis (CoA), Technical Data Sheets (TDS) and Safety Data Sheets (SDS) for their Scharlau products.

- The SDS are available in 16 languages (English, Spanish, German, French, Italian, Chinese, Polish, Danish, Portuguese, Australian English, Finnish, Greek, Hungarian, Norwegian, Romanian and Swedish) and the mini safety labels in 9 languages (English, Spanish, German, French, Italian, Chinese, Polish, Danish and Portuguese).

- The mini safety labels include colour hazard symbols, hazard indications (H) and precautionary statements (P). As they are downloaded from our website, the user can always access the most updated versions.
- The user interface is available in 6 languages (Spanish, English, Italian, French, German and Portuguese).



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Internal use

Visit our website:



F-TAPHEN23