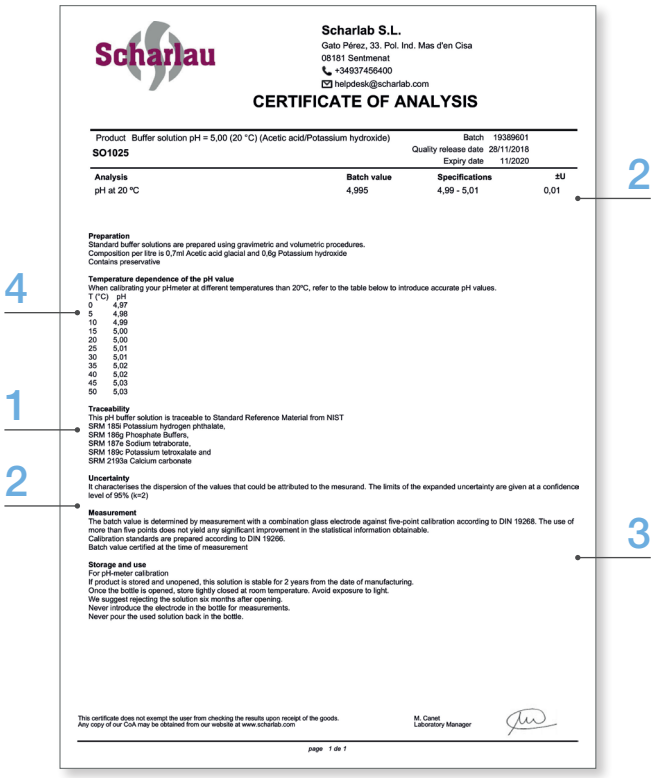
Scharlau

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 ºC	4,995	4,99 - 5,01	0,01

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Preparation
Standard buffer solutions are prepared using gravimetric and volumetric procedures.
Composition per litre is 0,7ml Acetic acid glacial and 0,6g Potassium hydroxide
Contains preservative

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Temperature dependence of the pH value
When calibrating your pHmeter at different temperatures than 20ºC, refer to the table below to introduce accurate pH values.

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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Traceability
This pH buffer solution is traceable to Standard Reference Material from NIST
SRM 185i Potassium hydrogen phthalate,
SRM 186g Phosphate Buffers,
SRM 187e Sodium tetraborate,
SRM 189c Potassium tetroxalate and
SRM 2193a Calcium carbonate

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Uncertainty
It characterises the dispersion of the values that could be attributed to the mesurand. The limits of the expanded uncertainty are given at a confidence level of 95% (k=2)

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

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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 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 www.scharlab.com

M. Canet
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. 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, except for solutions pH 10, 11, 12 and 13, where two point calibration is performed and uncertainty is max. ± 0,02 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.

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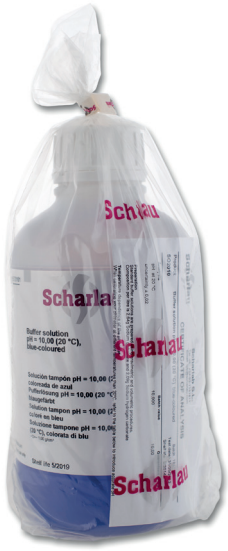
Standard buffer solutions (20 °C)

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	Art. No.
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 phtalate	SO1004
pH 4,01 ± 0,01 (20 °C)	Potassium hydrogen phtalate	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: Some article numbers 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	Art. No.
20 °C	pH 4,00 ± 0,01 (20 °C) (red)	Potassium hydrogen phtalate	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
	pH 4,00, 7,00, 10,00 (20 °C) (coloured)	Kit buffer solutions (6 x 1 l)	KT0001
25 °C	pH 4,00 ± 0,01 (25 °C) (red)	Potassium hydrogen phtalate	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	Bottles		250 ml
			500 ml
			1 litre
NOTE: Some article numbers may not be available in all containers			

pH buffer Kit for the semiannual consumption of your pH-meter. The Kit contains two bottles of 1 liter of standard buffered colored solution of pH 4,00, pH 7,00 and pH 10,00.

With the **Scharlau pH Insurance** service, you receive a buffer Kit when you take out the insurance and a second kit after six months, thus covering your annual consumption. To request this service contact helpdesk@scharlab.com. If your consumption is higher or you have more than one pH-meter, indicate it when placing your order and we will offer you a customized insurance.

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

How many times did you dispose of an unfinished buffer bottle because you were not sure of its accuracy?
If your answer is a number, you need **Monobuf®**

Monobuf®

Ready-to-use standard buffer solutions packaged in single doses. Our Monobuf® packaging allows you to open a new buffer solution "bottle" every time you perform a calibration.

Without Monobuf®:

1. Open a new bottle of standard buffer solution.
2. Write on the label the date of opening.
3. Pour the solution from the original bottle to a smaller measuring vessel.
4. Label the vessel and write down the pH and date to keep it identified in the laboratory. Often this solution is used for a number of calibrations for a few days.
5. Do the measurement.

With Monobuf® everything is easier:

1. Take one of the 30 ml containers in the Monobuf® box.
2. Do the measurement.

Description	Composition	Capacity	Art. No.
Monobuf® pH 4,00 ± 0,01 (20 °C) (red)	Potassium hydrogen phtalate	12 x 30 ml	SO2040
Monobuf® pH 7,00 ± 0,01 (20 °C) (yellow)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	12 x 30 ml	SO2070
Monobuf® pH 10,00 ± 0,02 (20 °C) (blue)	Sodium carbonate/Sodium hydrogen carbonate	12 x 30 ml	SO2100
Monobuf® Mix pH 4,00, pH 7,00, pH 10,00 (20 °C)		12 x 30 ml	SO2200

"Use fresh buffer solutions to calibrate your pH-meter"
This is always recommended by pH-meter manufacturers

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	Art. No.
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

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Download here the leaflet:

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