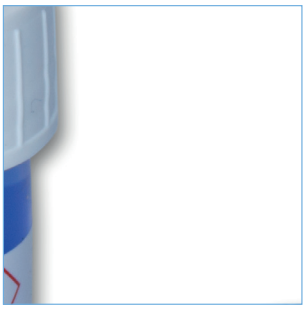
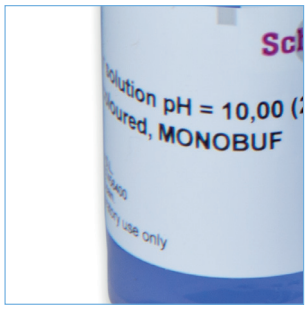
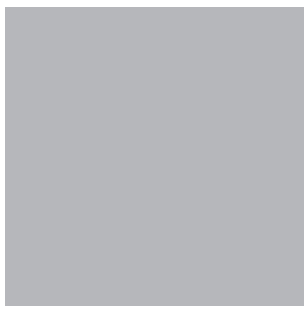
Scharlau

The wise choice



Standard buffer solutions for pH-meter calibration

Reliable ■ Traceable to NIST ■ Tested according to DIN 19266 and DIN 19268 ■ Supplied with certificate

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, reliable 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.

Packaging

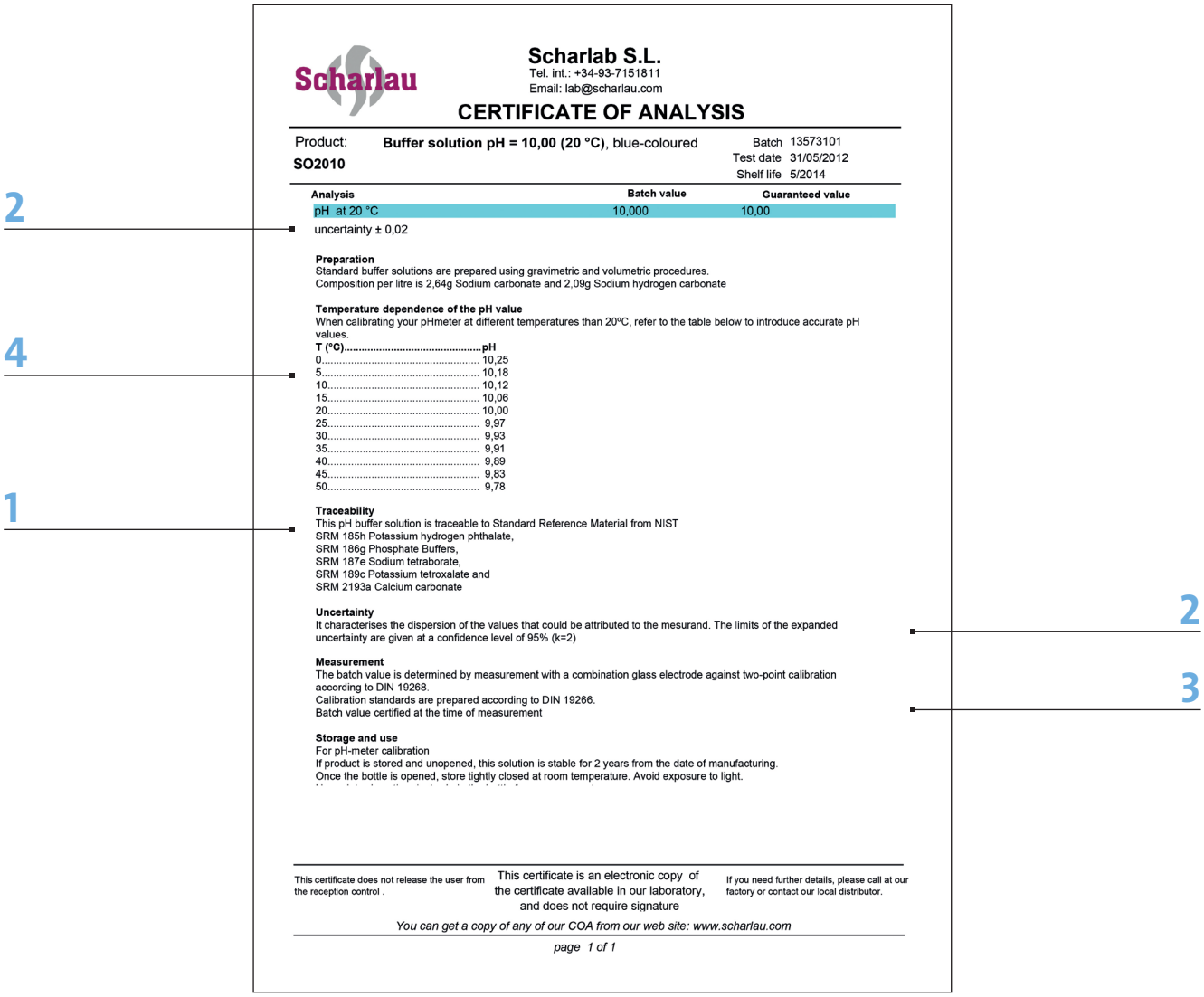
Our standard buffer solutions are bottled in HDPE bottles and delivered in a plastic bag together with their certificate of analysis.

1. Traceability

All our standard buffer solutions are directly traceable to standard reference materials from NIST. We buy certified primary standard reference materials from NIST (National Institute of Standards and Technology, USA) 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.



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Email: lab@scharlau.com

CERTIFICATE OF ANALYSIS

Product: **Buffer solution pH = 10,00 (20 °C)**, blue-coloured
SO2010

Batch 13573101
Test date 31/05/2012
Shelf life 5/2014

Analysis	Batch value	Guaranteed value
pH at 20 °C	10,000	10,00

uncertainty ± 0,02

Preparation
Standard buffer solutions are prepared using gravimetric and volumetric procedures.
Composition per litre is 2,64g Sodium carbonate and 2,09g Sodium hydrogen carbonate

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	10,25
5	10,18
10	10,12
15	10,06
20	10,00
25	9,97
30	9,93
35	9,91
40	9,89
45	9,83
50	9,78

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

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 two-point calibration according to DIN 19268.
Calibration standards are prepared according to DIN 19266.
Batch value certified at the time of measurement

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.

This certificate does not release the user from the reception control .

This certificate is an electronic copy of the certificate available in our laboratory, and does not require signature

If you need further details, please call at our factory or contact our local distributor.

You can get a copy of any of our COA from our web site: www.scharlau.com

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2
4
1
2
3

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 stated temperature.
pH - Temperature dependence tables of our standard buffer solutions are printed in our certificates and labels.

Standard buffer solutions (20°C)

We offer a broad range of solutions from pH 1 to pH 13 (20°C).

Product	Composition	Capacity	Cat. no.
Standard buffer solution pH 1 ± 0,01 (20°C)	Glycine/Sodium chloride/Hydrochloric acid	250 ml	SO11010250
Standard buffer solution pH 1 ± 0,01 (20°C)	Glycine/Sodium chloride/Hydrochloric acid	1 l	SO11011000
Standard buffer solution pH 2 ± 0,01 (20°C)	Citric acid/Sodium hydroxide/Hydrochloric acid	250 ml	SO10220250
Standard buffer solution pH 2 ± 0,01 (20°C)	Citric acid/Sodium hydroxide/Hydrochloric acid	1 l	SO10221000
Standard buffer solution pH 3 ± 0,01 (20°C)	o-Phosphoric acid/Sodium hydroxide	250 ml	SO10230250
Standard buffer solution pH 3 ± 0,01 (20°C)	o-Phosphoric acid/Sodium hydroxide	1 l	SO10231000
Standard buffer solution pH 4 ± 0,01 (20°C)	Potassium hydrogen phtalate	250 ml	SO10040250
Standard buffer solution pH 4 ± 0,01 (20°C)	Potassium hydrogen phtalate	500 ml	SO10040500
Standard buffer solution pH 4 ± 0,01 (20°C)	Potassium hydrogen phtalate	1 l	SO10041000
Standard buffer solution pH 4 ± 0,01 (20°C)	Potassium hydrogen phtalate	5 l	SO1004005P
Standard buffer solution pH 4,01 ± 0,01 (20°C)	Potassium hydrogen phtalate	250 ml	SO10050250
Standard buffer solution pH 4,01 ± 0,01 (20°C)	Potassium hydrogen phtalate	1 l	SO10051000
Standard buffer solution pH 5 ± 0,01 (20°C)	Acetic acid/Potassium hydroxide	250 ml	SO10250250
Standard buffer solution pH 5 ± 0,01 (20°C)	Acetic acid/Potassium hydroxide	1 l	SO10251000
Standard buffer solution pH 6 ± 0,01 (20°C)	Potassium dihydrogen phosphate/Sodium hydroxide	250 ml	SO10060250
Standard buffer solution pH 6 ± 0,01 (20°C)	Potassium dihydrogen phosphate/Sodium hydroxide	1 l	SO10061000
Standard buffer solution pH 7 ± 0,01 (20°C)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	250 ml	SO10070250
Standard buffer solution pH 7 ± 0,01 (20°C)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	500 ml	SO10070500
Standard buffer solution pH 7 ± 0,01 (20°C)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	1 l	SO10071000
Standard buffer solution pH 7 ± 0,01 (20°C)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	5 l	SO1007005P
Standard buffer solution pH 7,02 ± 0,01 (20°C)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	250 ml	SO10080250
Standard buffer solution pH 7,02 ± 0,01 (20°C)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	1 l	SO10081000
Standard buffer solution pH 7,02 ± 0,01 (20°C)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	5 l	SO1008005P
Standard buffer solution pH 8 ± 0,01 (20°C)	di-Sodium tetraborate/Calcium chloride/Hydrochloric acid	250 ml	SO10180250
Standard buffer solution pH 8 ± 0,01 (20°C)	di-Sodium tetraborate/Calcium chloride/Hydrochloric acid	1 l	SO10181000
Standard buffer solution pH 9 ± 0,01 (20°C)	Boric acid/Potassium chloride/Sodium hydroxide	250 ml	SO10090250
Standard buffer solution pH 9 ± 0,01 (20°C)	Boric acid/Potassium chloride/Sodium hydroxide	1 l	SO10091000
Standard buffer solution pH 9 ± 0,01 (20°C)	Boric acid/Potassium chloride/Sodium hydroxide	5 l	SO1009005P
Standard buffer solution pH 10 ± 0,02 (20°C)	Sodium carbonate/Sodium hydrogen carbonate	250 ml	SO10100250
Standard buffer solution pH 10 ± 0,02 (20°C)	Sodium carbonate/Sodium hydrogen carbonate	1 l	SO10101000
Standard buffer solution pH 10 ± 0,02 (20°C)	Sodium carbonate/Sodium hydrogen carbonate	5 l	SO1010005P
Standard buffer solution pH 11 ± 0,02 (20°C)	Boric acid/Sodium hydroxide/Potassium chloride	250 ml	SO11410250
Standard buffer solution pH 11 ± 0,02 (20°C)	Boric acid/Sodium hydroxide/Potassium chloride	1 l	SO11411000
Standard buffer solution pH 12 ± 0,02 (20°C)	di-Sodium hydrogen phosphate/Sodium hydroxide	250 ml	SO11420250
Standard buffer solution pH 12 ± 0,02 (20°C)	di-Sodium hydrogen phosphate/Sodium hydroxide	1 l	SO11421000
Standard buffer solution pH 13 ± 0,02 (20°C)	Potassium chloride/Sodium hydroxide	250 ml	SO11430250
Standard buffer solution pH 13 ± 0,02 (20°C)	Potassium chloride/Sodium hydroxide	1 l	SO11431000

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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.

Coloured standard buffer solutions (20°C)

Product	Composition	Capacity	Cat. no.
Standard buffer solution pH 4 ± 0,01 (20°C) (red)	Potassium hydrogen phtalate	250 ml	SO20040250
Standard buffer solution pH 4 ± 0,01 (20°C) (red)	Potassium hydrogen phtalate	1 l	SO20041000
Standard buffer solution pH 7 ± 0,01 (20°C) (yellow)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	250 ml	SO20070250
Standard buffer solution pH 7 ± 0,01 (20°C) (yellow)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	1 l	SO20071000
Standard buffer solution pH 10 ± 0,02 (20°C) (blue)	Boric acid/Potassium chloride/Sodium hydroxide	250 ml	SO20100250
Standard buffer solution pH 10 ± 0,02 (20°C) (blue)	Boric acid/Potassium chloride/Sodium hydroxide	1 l	SO20101000

Coloured standard buffer solutions (25°C)

Product	Composition	Capacity	Cat. no.
Standard buffer solution pH 4 ± 0,01 (25°C) (red)	Potassium hydrogen phtalate	250 ml	SO30040250
Standard buffer solution pH 4 ± 0,01 (25°C) (red)	Potassium hydrogen phtalate	1 l	SO30041000
Standard buffer solution pH 7 ± 0,01 (25°C) (yellow)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	250 ml	SO30070250
Standard buffer solution pH 7 ± 0,01 (25°C) (yellow)	Potassium dihydrogen phosphate/di-Sodium hydrogen phosphate	1 l	SO30071000
Standard buffer solution pH 10 ± 0,02 (25°C) (blue)	Boric acid/Potassium chloride/Sodium hydroxide	250 ml	SO30100250
Standard buffer solution pH 10 ± 0,02 (25°C) (blue)	Boric acid/Potassium chloride/Sodium hydroxide	1 l	SO30101000

All our standard buffer solutions are delivered together with its certificate of analysis

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.

NEW 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. Write down the date of opening on the label.
3. Do the measurement.

Description	Capacity	Cat. no.
MONOBUF pH 4 ± 0,01 (20°C) (red)	12 x 30 ml	SO20400360
MONOBUF pH 7 ± 0,01 (20°C) (yellow)	12 x 30 ml	SO20700360
MONOBUF pH 10 ± 0,02 (20°C) (blue)	12 x 30 ml	SO21000360
MONOBUF MIX pH 4, pH 7, pH 10 (20°C)	12 x 30 ml	SO22000360

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

Quality

Our company has an integrated management system according to ISO 9001: 2008 and ISO 14001: 2004.
A copy of the certificate is available on our website.

Availability

All our products are available from stock.

www.scharlab.com

You can access our online catalogue and get copies of COA, TDS and MSDS whenever you need.

CAT-SOLV12

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