

# pH Buffers Solutions



## Guaranteed Traceability

Reagecon's pH buffer standards are directly traceable to the IUPAC pH scale by an unbroken chain of traceability. Reagecon achieve this traceability through a series of comparisons, with the key reference materials being Standard Reference Materials (SRMs) manufactured by NIST.

For proof of traceability, all of these comparisons must be made in a technically - valid manner and the accuracy of each step must be quantified by calculating the associated Uncertainty of Measurement. Reagecon's pH buffer standards meet the ISO definition of traceability: "The ability to relate measurements back to a stated reference (usually an international standard) through an unbroken chain of comparisons, each having stated uncertainties of measurement." Reagecon's traceability claims are guaranteed by our accreditation to ISO 17025.

## Why use traceable pH buffers?

Your pH measurements can only be as good as the pH buffers that you use. If your pH calibration is made using traceable pH buffers then you have a direct link to the International pH scale for your measurements. Without this link, you are not entitled to report your measurements in pH units so the number displayed on your pH meter is just that - a number and is not a pH value. The common link that is achieved by traceability allows **comparability** of results regardless of:

- When the measurements were made
- Where the measurements were made
- What instrumentation was used to make the measurements

Traceable analysis is necessary for consistency and universal acceptance of your pH results - including acceptance by regulatory bodies.

## Fully Accredited

In addition to the certification to ISO9001:2008, Reagecon's pH analysis is also accredited to ISO 17025 - "General requirements for the competence of testing and calibration laboratories". Reagecon's accreditation to ISO17025 gives independent proof of three key areas:

- Our pH analysis is technically valid and is carried out in a thoroughly controlled manner by highly - qualified staff.
- Our claims over the accuracy of our pH analysis are valid and we have properly quantified our accuracy in our Uncertainty of Measurement calculations.
- Our pH analysis is traceable to NIST SRMs. It is important to note that NIST do not police claims of traceability to their SRMs. Any manufacturer of pH buffers can claim that their buffers are traceable to NIST, but only manufacturers that are accredited to ISO17025 have independent proof of their traceability.

Reagecon's accreditation is indicated by the Irish National Accreditation Board (INAB) logo on our Certificates of Analysis for pH Buffers. Accreditation by INAB and all other accreditation boards validated to accredit ISO 17025 are mutually recognised as being directly equivalent.

Why take chances with your pH buffer supplier's traceability? By using buffers from a manufacturer that holds ISO17025 accreditation you have a guarantee of traceability.

## Stability

Reagecon's pH buffers have been specially formulated to ensure their stability. The packaging bottles that we use have also been selected and tested to provide maximum stability. We have conducted stability trials on both freshly-opened and part-full bottles of our pH buffers to validate their shelf-life - an example is given in Figure 2. This demonstrates that Reagecon's pH buffers will stay within their specification limits up to the stated expiry date regardless of when the bottle was first opened (provided that the pH buffer is stored in accordance with good laboratory practice). Most of Reagecon's pH buffers have an expiry date of either 2 years or 3 years from the date of manufacture.

This means that our pH buffers' expiry dates are an absolute value and they have a long "Active Life". We do not quote a short usage period after opening the bottle and there is no need to record by hand an "Opened on date" and a "Use by date". With Reagecon's pH buffers you just open the bottle and use the contents - with other manufacturers' pH buffers you need to record these extra dates and may need to dispose of most of the contents of the bottle at the end of its short "Active Life".

### pH 10.012 Stability Study

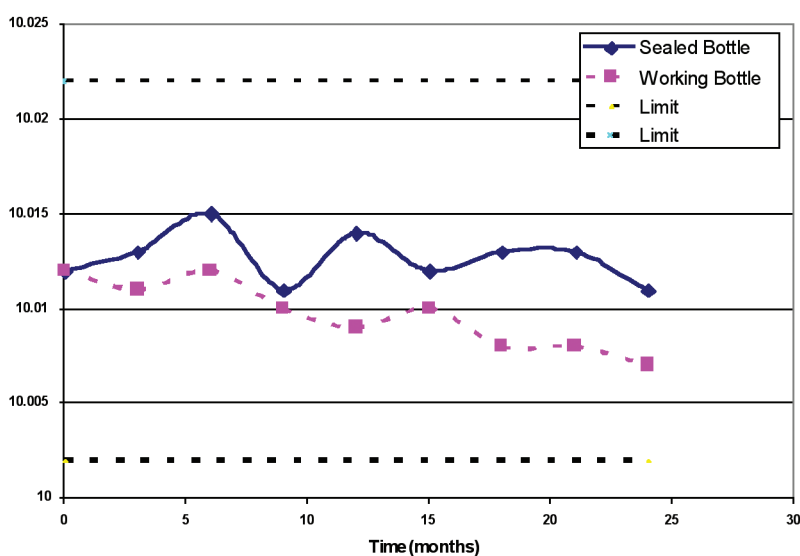


Figure 2: Stability Data for Reagecon pH 10.012 @ 25°C

## Packaging Options

Besides regular bottles, Reagecon offer pH buffers in a wide variety of convenient packaging options:

- **Twin-neck bottles.** These bottles are ideal for use with portable pH meters. Their integral calibration chamber prevents contamination and removes the need to carry a separate measuring container or to decant buffers for use in the field.
- **Bag-in-Box containers.** This packaging consists of a cardboard box with a collapsible plastic liner. This offers a space-saving alternative to bottles and reduces the amount of packaging waste for disposal. Every Bag-in-Box container is supplied with a tap to allow the contents to be easily dispensed.
- **Capsules.** The presentation of pH buffers in capsule format is an innovative concept developed by Reagecon, and offers several advantages
- **RECAL Buffers.** RECAL is a range of pH Buffers in a wide mouth disposable container which can be used for direct calibration of the electrode and then discarded on completion.

## Extensive Range of pH values

Reagecon manufacture the most comprehensive range of pH reagents in the world; these are designed to suit all end user requirements. These include laboratory grade buffers, the Professional Range (buffer standards as per N.I.S.T/DIN and high resolution buffers), low ionic strength buffers and pH buffer capsules. We are delighted to add several new offerings that include buffers to calibrate Antimony electrodes, Sterile Buffers and colour coded pH buffers with a three decimal place specification. All are manufactured to exacting specifications with an extended shelf life and cover the pH range of pH 1.00 to pH 13.00 inclusive. All are supplied with a detailed Certificate of Analysis which outlines traceability to N.I.S.T (the N.I.S.T SRM(s) Lot No. is stated on the certificate). Temperature dependence data is printed on the label as are lot numbers and expiry dates.

## Calibration Buffers

Reagecon pH Buffers are pre-programmed into the instruments of most major manufacturers.

## Control Buffers

For increased confidence in their test measurements, analysts should regularly measure the pH of a Control Standard. If an acceptable value is obtained from the Control Standard measurement then the analysts, can have improved confidence that their test measurements will be correct. Reagecon's extensive range of pH buffers means that there will be a Reagecon pH buffer which can be used as a control buffer for all pH applications.

## pH Buffers - 20°C

*Clear, Colourless pH Buffer Solutions. Tested at 20°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.*

Description	Product No. 500ml	Product No. 1L	Product No. 5L
Buffer Solution pH 1.00 ± 0.02 @ 20°C	10105	1010	5010
Buffer Solution pH 2.00 ± 0.02 @ 20°C	10205	1020	5020
Buffer Solution pH 3.00 ± 0.02 @ 20°C	10305	1030	5030
Buffer Solution pH 4.00 ± 0.01 @ 20°C	10405	1040	5040
Buffer Solution pH 4.00 ± 0.01 @ 20°C (Phthalate free)	CC10405	CC1040	CC5040
Buffer Solution pH 5.00 ± 0.01 @ 20°C	10505	1050	5050
Buffer Solution pH 6.00 ± 0.01 @ 20°C	10605	1060	5060
Buffer Solution pH 6.80 ± 0.01 @ 20°C	10685	1068	5068
Buffer Solution pH 7.00 ± 0.01 @ 20°C	10705	1070	5070
Buffer Solution pH 8.00 ± 0.01 @ 20°C	10805	1080	5080
Buffer Solution pH 9.00 ± 0.01 @ 20°C	10905	1090	5090
Buffer Solution pH 10.00 ± 0.01 @ 20°C	11005	1100	5100
Buffer Solution pH 11.00 ± 0.05 @ 20°C	11105	1110	5110
Buffer Solution pH 12.00 ± 0.05 @ 20°C	11205	1120	5120
Buffer Solution pH 13.00 ± 0.05 @ 20°C	11305	1130	5130

## pH Buffers - 25°C

Clear, Colourless pH Buffer Solutions. Tested at 25°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 1L	Product No. 5L
Buffer Solution pH 1.00 ±0.02 @25°C	1010525	101025	501025
Buffer Solution pH 2.00 ±0.02 @25°C	1020525	102025	502025
Buffer Solution pH 3.00 ±0.02 @25°C	1030525	103025	503025
Buffer Solution pH 4.00 ±0.01 @25°C	1040525	104025	504025
Buffer Solution pH 4.00 ±0.01 @25°C (Phthalate Free)	CC1040525	CC104025	CC504025
Buffer Solution pH 5.00 ±0.01 @25°C	1050525	105025	505025
Buffer Solution pH 6.00 ±0.01 @25°C	1060525	106025	506025
Buffer Solution pH 6.80 ±0.01 @25°C	1068525	106825	506825
Buffer Solution pH 7.00 ±0.01 @25°C	1070525	107025	507025
Buffer Solution pH 8.00 ±0.01 @25°C	1080525	108025	508025
Buffer Solution pH 9.00 ±0.01 @25°C	1090525	109025	509025
Buffer Solution pH 10.00 ±0.01 @25°C	1100525	110025	510025
Buffer Solution pH 11.00 ±0.05 @25°C	1110525	111025	511025
Buffer Solution pH 12.00 ±0.05 @25°C	1120525	112025	512025
Buffer Solution pH 13.00 ±0.05 @25°C	1130525	113025	513025

## Colour Coded Buffers

Coloured pH Buffer Solutions. Tested at 20°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 1L	Product No. 5L
Buffer Solution pH 4.00 (Red) ±0.01 @ 20°C	10405C	1040C	5040C
Buffer Solution pH 7.00 (Yellow) ±0.01 @ 20°C	10705C	1070C	5070C
Buffer Solution pH 10.00 (Blue) ±0.01 @ 20°C	11005C	1100C	5100C

Coloured pH Buffer Solutions. Tested at 25°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 1L	Product No. 5L
Buffer Solution pH 4.00 (Red) ±0.01 @25°C	1040525C	104025C	504025C
Buffer Solution pH 7.00 (Yellow) ±0.01 @25°C	1070525C	107025C	507025C
Buffer Solution pH 10.00 (Blue) ±0.01 @25°C	1100525C	110025C	510025C

## Twin Neck Bottle Format

pH Buffers are available in an attractive and innovative twin neck bottle. The main advantages of this packaging are:

- No possibility of contamination
- No need for separate measuring container for use in the calibration of the Electrode
- Correct quantity of buffer required for calibration is dispensed into the calibrating chamber giving rise to no waste
- Ideally suited for field work
- Easy to carry
- 250ml, 500ml and 1L sizes available



Coloured pH Buffer solutions in Twin-neck containers with integrated calibrating chamber. Tested at 20°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 1L	Product No. 5L
Buffer Solution pH 4.00 (Red) $\pm 0.01$ @ 20°C	10402CTT	10405CTT	1040CTT
Buffer Solution pH 7.00 (Yellow) $\pm 0.01$ @ 20°C	10702CTT	10705CTT	1070CTT
Buffer Solution pH 10.00 (Blue) $\pm 0.01$ @ 20°C	11002CTT	11005CTT	1100CTT

Coloured pH Buffer solutions in Twin-neck containers with integrated calibrating chamber. Tested at 25°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 1L	Product No. 5L
Buffer Solution pH 4.00 (Red) $\pm 0.01$ @25°C	1040225CTT	1040525CTT	104025CTT
Buffer Solution pH 7.00 (Yellow) $\pm 0.01$ @25°C	1070225CTT	1070525CTT	107025CTT
Buffer Solution pH 10.00 (Blue) $\pm 0.01$ @25°C	1100225CTT	1100525CTT	110025CTT

## pH Buffer Standards NIST values @ 20°C

Clear, Colourless NIST Value pH Buffer Solutions. Tested at 20°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in 500ml bottles. Other pack sizes available upon request.

Product No.	Description	Pack Size
101675	Buffer Solution pH 1.675 @ 20°C	500ml
101677	Buffer Solution pH 1.677 @ 20°C	500ml
103788	Buffer Solution pH 3.788 @ 20°C	500ml
104001	Buffer Solution pH 4.001 @ 20°C	500ml
106881	Buffer Solution pH 6.881 @ 20°C	500ml
107429	Buffer Solution pH 7.429 @ 20°C	500ml
109225	Buffer Solution pH 9.225 @ 20°C	500ml
110062	Buffer Solution pH 10.062 @ 20°C	500ml
112627	Buffer Solution pH 12.627 @ 20°C	500ml

## pH Buffer Standards DIN 19266 values @ 25°C

Clear, Colourless DIN Value pH Buffer Solutions. Tested at 25°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in 500ml bottles. Other pack sizes available upon request.

Product No.	Description	Pack Size
101679	Buffer Solution pH 1.679 @25°C	500ml
103776	Buffer Solution pH 3.776 @25°C	500ml
104005	Buffer Solution pH 4.005 @25°C	500ml
10687	Buffer Solution pH 6.865 @25°C	500ml
107413	Buffer Solution pH 7.413 @25°C	500ml
109180	Buffer Solution pH 9.18 @25°C	500ml
110012	Buffer Solution pH 10.012 @25°C	500ml
112454	Buffer Solution pH 12.454 @25°C	500ml

## High Resolution Buffers colour coded @ 25°C

Coloured High Resolution pH Buffer solutions. Tested at 20°C or 25°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in 500ml bottles. Other pack sizes available upon request.

Product No.	Description	Pack Size
104000C	Buffer Solution pH 4.000 (Red) $\pm 0.010$ @ 20°C	500ml
107000C	Buffer Solution pH 7.000 (Yellow) $\pm 0.010$ @ 20°C	500ml
110000C	Buffer Solution pH 10.000 (Blue) $\pm 0.010$ @ 20°C	500ml
H40525C	Buffer Solution pH 4.000 (Red) $\pm 0.010$ @25°C	500ml
H70525C	Buffer Solution pH 7.000 (Yellow) $\pm 0.010$ @25°C	500ml
H100525C	Buffer Solution pH 10.000 (Blue) $\pm 0.010$ @25°C	500ml

## Technical pH Buffer solutions @ 25°C

Coloured Technical pH Buffer solutions. Tested at 25°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 250ml	Product No. 500ml	Product No. 1L
Technical Buffer Solution pH 2.00 $\pm 0.02$ @ 25°C, (Coloured)	TB2002	TB200	TB2001
Technical Buffer Solution pH 4.01 $\pm 0.02$ @ 25°C, (Coloured)	TB4012	TB401	TB4011
Technical Buffer Solution pH 4.60 $\pm 0.02$ @ 25°C, (Coloured)	TB4602	TB460	TB46001
Technical Buffer Solution pH 7.00 $\pm 0.02$ @ 25°C, (Coloured)	TB7002	TB700	TB7001
Technical Buffer Solution pH 9.21 $\pm 0.02$ @ 25°C, (Coloured)	TB9212	TB921	TB9211
Technical Buffer Solution pH 10.00 $\pm 0.02$ @25°C, (Coloured)	TB1002	TB100	TB1001

## Low Ionic Strength Buffers

Low Ionic Strength pH Buffer Solutions. Special buffers suitable for accurate measurement of low ionic strength samples. Tested at 20°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 5L
Buffer Solution pH 4.10 ±0.04	LS41	LS415
Buffer Solution pH 6.96 ±0.04	LS69	LS695

## “Bag In Box” - colour coded

Coloured, Bag in Box pH Buffer solutions supplied in cubitainers with tap. Tested at 20°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 5L
Buffer Solution pH 4.00 (Red) ±0.01 @ 20°C	BPH01	BPH02
Buffer Solution pH 7.00 (Yellow) ±0.01 @ 20°C	BPH03	BPH04
Buffer Solution pH 10.00 (Blue) ±0.01 @ 20°C	BPH05	BPH06

Coloured, Bag in Box pH Buffer solutions supplied in cubitainers with tap. Tested at 25°C and certified by Reagecon's ISO 17025 Accredited Test Method. NIST traceable and presented in various pack sizes.

Description	Product No. 500ml	Product No. 5L
Buffer Solution pH 4.00 (Red) ±0.01 @25°C	BPH07	BPH08
Buffer Solution pH 7.00 (Yellow) ±0.01 @25°C	BPH09	BPH 10
Buffer Solution pH 10.00 (Blue) ±0.01 @25°C	BPH 11	BPH 12

## pH Buffer Capsules

The presentation of pH buffers in capsule format is an innovative concept developed by Reagecon. Tested at 25°C, NIST Traceable. These capsules offer the following advantages:

- Colour coded for ease of identification
- Dissolve quickly
- Preservative free
- Easy to store and transport
- Easy to use
- Accuracy ±0.02 pH units
- Economical
- Extended shelf life

To use: Empty contents of one capsule into 100ml of distilled water.

Description	pk50 Capsules
Buffer Capsule pH 4.00 (Red) ±0.02 @25°C	CP1040
Buffer Capsule pH 7.00 (Green) ±0.02 @25°C	CP1070
Buffer Capsule pH 9.00 (Purple) ±0.02 @25°C	CP1090
Buffer Capsule pH 10.00 (Blue) ±0.02 @25°C	CP1100
Buffer Mixed Pack 10 x pH 4.01, 20 x pH 7.00, 10 x pH 9.00, 10 x pH 10.00 ±0.02 @25°C	CPMX47910

## RECAL - Single use Calibration Buffers (Colour Coded)

RECAL is a range of pH Buffers in a wide mouth disposable container which can be used for direct calibration of the electrode and then discarded after use. RECAL offers the following advantages:

- Tested and Certified by Reagecon's ISO 17025 Accredited Test Method.
- Convenience - saves time, more efficient calibration, avoids waste and spillage.
- Mobility - These are easy to store and transport, allowing calibration in the field or directly in the plant.
- Economical - No waste buffer, beaker not required.
- Accuracy - the possibility of contamination is eliminated giving increased confidence in the results.
- Traceability - Each container is labelled with lot number and expiry date and buffers are directly traceable to N.I.S.T. Standards.

Product No.	Description	Pack Size
04C60	Buffer Solution pH 4.00 (Red) $\pm 0.01$ @ 20°C	6 x 90ml
07C60	Buffer Solution pH 7.00 (Yellow) $\pm 0.01$ @ 20°C	6 x 90ml
10C60	Buffer Solution pH 10.00 (Blue) $\pm 0.01$ @ 20°C	6 x 90ml
MXC60	Buffer Solution Mixed pack of 2xpH 4, 7 & 10 $\pm 0.01$ @ 20°C	6 x 90ml
04C65	Buffer Solution pH 4.00 (Red) $\pm 0.01$ @25°C	6 x 90ml
07C65	Buffer Solution pH 7.00 (Yellow) $\pm 0.01$ @25°C	6 x 90ml
10C65	Buffer Solution pH 10.00 (Blue) $\pm 0.01$ @25°C	6 x 90ml
MXC65	Buffer Solution Mixed pack of 2xpH 4, 7 & 10 $\pm 0.01$ @25°C	6 x 90ml

## Antimony Buffers

Antimony pH Buffer Solutions for use with Antimony or equivalent electrodes.

Description	Product No. 250ml	Product No. 500ml
Buffer Standard pH 1.07 $\pm 0.05$ @25°C - Colourless	10725025	10725050
Buffer Standard pH 4.00 $\pm 0.05$ @25°C - Light Red	401025P	40102550
Buffer Standard pH 7.01 $\pm 0.05$ @25°C - Yellow	70125025	70125050

## Sterile Buffers

pH Buffer Solutions sterilised by gamma irradiation.

Product No.	Description	Pack Size
104005S	pH Buffer Solution pH 4.00 $\pm 0.01$ @ 20°C Sterile	500ml
106005S	pH Buffer Solution pH 6.00 $\pm 0.01$ @ 20°C Sterile	500ml
107005S	pH Buffer Solution pH 7.00 $\pm 0.01$ @ 20°C Sterile	500ml
108005S	pH Buffer Solution pH 8.00 $\pm 0.01$ @ 20°C Sterile	500ml