



HI5000 Series

## pH Technical Calibration Solutions

### Technical Solutions ( $\pm 0.01$ pH) for Each Point of the pH Scale

To obtain precise and valid pH measurements, the pH meter and electrode must be calibrated at a minimum of two different points, close to the value of the sample to be tested. For this type of calibration, Hanna offers technical solutions for each point of the pH scale.

This complete scale of buffer solutions offers a higher degree of accuracy for pH measurements in specific areas of application, as in monitoring the pH of must and wine. This line includes twenty solutions starting from a value of pH 1.00 up to pH 13.00 with an accuracy of  $\pm 0.01$  pH, thus covering every point of the pH scale.

These solutions are dedicated to applications that require extremely accurate pH monitoring, and come with a certificate of analysis prepared by comparison against NIST standards.

Also available are solution bottles that are colored according to a given standard calibration value: HI5004-R (Red), HI5007-G (Green) and HI5010-V (Violet).

### Easy to Use Single Dose Sachets

For the highest level of reliability of field instrumentation, technical solutions are available in convenient single dose sachets in 10 or 25 pack quantities.



## Table of Reference Temperatures

HI5000 calibration solutions are provided with a label presenting a reference table of the relationship between pH or conductivity values and temperature.

### Bottles

pH Value @25°C	Code	Package
1.00	HI5001	500 mL
1.68	HI5016	500 mL
2.00	HI5002	500 mL
2.00	HI5002-01	1 L
3.00	HI5003	500 mL
4.01	HI5004	500 mL
4.01	HI5004-01	1 L
4.01	HI5004-R	500 mL (color coded solution)
4.01	HI5004-R08	1 G (3.78 L) (2) (color coded solution)
5.00	HI5005	500 mL
5.00	HI5005-01	1 L
6.00	HI5006	500 mL
6.86	HI5068	500 mL
7.01	HI5007	500 mL
7.01	HI5007-01	1 L
7.01	HI5007-G	500 mL (color coded solution)
7.01	HI5007-G08	1 G (3.78 L) (2) (color coded solution)
7.41	HI5074	500 mL
8.00	HI5008	500 mL
8.00	HI5008-01	1 L
9.00	HI5009	500 mL
9.18	HI5091	500 mL
10.01	HI5010	500 mL
10.01	HI5010-01	1 L
10.01	HI5010-V	500 mL (color coded solution)
10.01	HI5010-V08	1 G (3.78 L) (2) (color coded solution)
11.00	HI5011	500 mL
12.00	HI5012	500 mL
12.45	HI5124	500 mL
13.00	HI5013	500 mL

### Sachets

pH Value @25°C	Code	Package
1.00	HI50001-02	20 mL (25)
1.68	HI50016-01	20 mL (10)
1.68	HI50016-02	20 mL (25)
2.00	HI50002-02	20 mL (25)
3.00	HI50003-02	20 mL (25)
4.01	HI50004-01	20 mL (10)
4.01	HI50004-02	20 mL (25)
5.00	HI50005-02	20 mL (25)
6.86	HI50068-02	20 mL (25)
7.01	HI50007-01	20 mL (10)
7.01	HI50007-02	20 mL (25)
9.00	HI50009-02	20 mL (25)
9.18	HI50091-02	20 mL (25)
10.01	HI50010-01	20 mL (10)
10.01	HI50010-02	20 mL (25)
11.00	HI50011-02	20 mL (25)
12.00	HI50012-01	20 mL (10)
12.00	HI50012-02	20 mL (25)
12.45	HI50124-02	20 mL (25)
13.00	HI50013-02	20 mL (25)

## Hanna Combination Kits in Bottles

Use our combination kits for easy ordering and reordering.

Code	Solutions (pH Value @25°C)	Bottle
HI54710	pH 4.01, pH 7.01, pH 10.01	500 mL (3)
HI54710-10	pH 4.01, pH 7.01, pH 10.01, HI70300L	500 mL (4)
HI54710-11	pH 4.01, pH 7.01, pH 10.01, HI70300L, HI7061L	500 mL (5)

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## HI6000 Series

## ±0.002 pH Millesimal Calibration Solutions

## Millesimal Calibration Solutions

The HI60XX line of buffers with millesimal accuracy ( $\pm 0.002$  pH) has been prepared to meet the increasing need for assured accuracy in pH measurements. Each bottle of the series HI60XX is provided with a certificate of analysis, prepared by comparison with NIST standards.

## Easy Range Identification

The colors on the HI60XX series packaging correspond to a given standard pH value. They make it easy and safe to identify the buffers to be used.

## Millesimal Calibration Solution Sachets

This series is also available in handy sachets to perform accurate calibrations on-site or in the field. Single dose sachet solutions are safe, easy to carry and always fresh.



## Bottles

pH Value @25°C	Code	Package
1.000	HI6001	500 mL
1.679	HI6016	500 mL
2.000	HI6002	500 mL
3.000	HI6003	500 mL
4.010	HI6004	500 mL
4.010	HI6004-01	1 L
6.000	HI6006	500 mL
6.862	HI6068	500 mL
7.010	HI6007	500 mL
7.010	HI6007-01	1 L
7.413	HI6074	500 mL
8.000	HI6008	500 mL
9.000	HI6009	500 mL
9.177	HI6091	500 mL
10.010	HI6010	500 mL
10.010	HI6010-01	1 L
12.000	HI6012	500 mL
12.450	HI6124	500 mL
13.000	HI6013	500 mL

## Sachets

pH Value @25°C	Code	Package
1.000	HI60001-02	20 mL (25)
1.679	HI60016-02	20 mL (25)
2.000	HI60002-02	20 mL (25)
4.010	HI60004-02	20 mL (25)
7.010	HI60007-02	20 mL (25)
10.010	HI60010-02	20 mL (25)



## Table of Reference Temperatures

HI6000 calibration solutions are provided with a label presenting a reference table of the relationship between pH or conductivity values and temperature.

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# pH Standard Calibration Solutions

## Quick Cal Calibration Solution

Quick Cal is for use with Hanna's GroLine pH and/or EC/TDS meters. Using the Quick Cal function found in compatible meters allows for single-point calibration for pH and/or conductivity sensors.

- pH calibration buffer value of pH 6.86
- EC calibration standard value of 5,000  $\mu\text{S}/\text{cm}$  (5.00 mS/cm)

## Quick Cal pH/EC

Code	Size	Certificate of Analysis
<b>HI5036-023</b>	230 mL (GroLine)	•
<b>HI5036-012</b>	120 mL (GroLine)	•
<b>HI50036P</b>	20 mL sachets, 25 pcs. (GroLine)	•

## 1.68 pH Buffer Solution

Plating bath samples, food samples and waste samples are often acidic in nature. To increase accuracy of your measurement at lower pH values, it is important to calibrate your electrode and meter at the appropriate pH also. Hanna pH 1.68 buffer is available to fulfill this requirement. pH 1.68 buffer solution allows you to calibrate your measurement system in the acidic pH range and bracket your samples by using a second value at 4.01 pH or near 7.01 pH.

## 4.01 pH Buffer Solution

Hanna buffer solutions are prepared according to precise formulas and are standardized with a pH electrode and meter calibrated with NIST standards. This buffer value is widely used in water purification plants, in the food industry and wherever the pH is expected to be slightly acidic.

## 6.86 pH Buffer Solution

Many of our portable and benchtop instruments may now be calibrated with both pH 6.86 or pH 7.01 buffers.

The Hanna range of pH 6.86 buffer solutions has been expanded and stability has been improved to match the stability of pH 7.01.



## 1.68 pH @ 25°C - Bottles

Code	Size	Certificate of Analysis
<b>HI7001L</b>	500 mL	on request
<b>HI7001M</b>	230 mL	on request

## 4.01 pH @ 25°C - Bottles

Code	Size	FDA Bottle	Certificate of Analysis
<b>HI7004/1G</b>	1 G (3.78 L) (color coded solution)		on request
<b>HI7004/1L</b>	1 L (color coded solution)		on request
<b>HI7004L</b>	500 mL		on request
<b>HI7004L/C</b>	500 mL		•
<b>HI7004C</b>	500 mL (color coded solution)		on request
<b>HI7004M</b>	230 mL		on request
<b>HI7004-023</b>	230 mL (GroLine)		•
<b>HI7004-012</b>	120 mL (GroLine)		•
<b>HI8004L</b>	500 mL	•	•
<b>HI8004L/C</b>	500 mL	•	•

## 4.01 pH @ 25°C - Sachets

Code	Size	Package	Certificate of Analysis
<b>HI70004C</b>	20 mL	25 pcs.	•
<b>HI70004P</b>	20 mL	25 pcs.	
<b>HI7004P/5</b>	20 mL	500 pcs.	

## 4.01 and 7.01 pH @ 25°C - Sachets

Code	Size	Package	Certificate of Analysis
<b>HI77400C</b>	20 mL	10 pcs., 5 ea	•
<b>HI77400P</b>	20 mL	10 pcs., 5 ea	

## 6.86 pH @ 25°C - Bottles

Code	Size	FDA Bottle	Certificate of Analysis
<b>HI7006/1G</b>	1 G (3.78 L)		on request
<b>HI7006/1L</b>	1 L		on request
<b>HI7006L</b>	500 mL		on request
<b>HI7006L/C</b>	500 mL		•
<b>HI7006M</b>	230 mL		on request
<b>HI8006L</b>	500 mL	•	•
<b>HI8006L/C</b>	500 mL	•	•

## 6.86 pH @ 25°C - Sachets

Code	Size	Package	Certificate of Analysis
<b>HI70006C</b>	20 mL	25 pcs.	•
<b>HI70006P</b>	20 mL	25 pcs.	

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## 7.01 pH @ 25°C - Bottles

Code	Size	FDA Bottle	Certificate of Analysis
HI7007/1G	1 G (3.78 L) (color coded solution)		on request
HI7007/1L	1 L (color coded solution)		on request
HI7007C	500 mL (color coded solution)		on request
HI7007L	500 mL		on request
HI7007L/C	500 mL		•
HI7007M	230 mL		on request
HI7007-023	230 mL (GroLine)		•
HI7007-012	120 mL (GroLine)		•
HI8007L	500 mL	•	•
HI8007L/C	500 mL	•	•

## 7.01 pH @ 25°C, and Combination Packs - Sachets

Code	Value	Size	Package	Certificate of Analysis
HI70007C	7.01 pH	20 mL	25 pcs.	•
HI70007P	7.01 pH	20 mL	25 pcs.	
HI77700P	7.01 pH	20 mL	10 pcs.	
HI770710C	10.01 & 7.01 pH	20 mL	10 pcs., 5 ea	•
HI770710P	10.01 & 7.01 pH	20 mL	10 pcs., 5 ea	
HI77100C	1413 µS/cm & 7.01 pH	20 mL	20 pcs., 10 ea	•
HI77100P	1413 µS/cm & 7.01 pH	20 mL	20 pcs., 10 ea	
HI77200P	1500 mg/L (ppm) & 7.01 pH	20 mL	20 pcs., 10 ea	
HI77300C	1382 mg/L (ppm) & 7.01 pH	20 mL	20 pcs., 10 ea	•
HI77400P	4.01 & 7.01 pH	20 mL	10 pcs., 5 ea	

## 8.20 pH @ 25°C - Bottle

Code	Size	Package
HI70082M	230 mL	bottle

## 8.30 pH @ 25°C - Bottle

Code	Size	Package
HI70083M	230 mL	bottle

## 9.18 pH @ 25°C - Bottles

Code	Size	FDA Bottle	Certificate of Analysis
HI7009/1G	1 G (3.78 L)		on request
HI7009/1L	1 L		on request
HI7009L	500 mL		on request
HI7009L/C	500 mL		•
HI7009M	230 mL		on request
HI8009L/C	500 mL	•	•
HI8009L	500 mL	•	•

## 9.18 pH @ 25°C - Sachets

Code	Size	Package	Certificate of Analysis
HI70009C	20 mL	25 pcs.	•
HI70009P	20 mL	25 pcs.	

## pH Standard Calibration Solutions

## 7.01 pH Buffer Solution

pH 7.01 is the most widely used among all buffer solutions. For this reason we have prepared it in a wider variety of sizes to meet application demand.

## 8.20 and 8.30 pH Buffer Solution

To increase accuracy of your measurement, Hanna offers the 8.20 pH buffer solution. The label indicates the batch code, expiration data and pH/temperature correlation table.

## 9.18 pH Buffer Solution

To increase accuracy of your measurement in an alkaline environment, it is important to calibrate your electrode and meter in that pH range and to preferably bracket your sample values. Hanna offers both pH 9.18 buffer and pH 10.01 buffer to fulfill this requirement.

## FDA approved bottle

For maximum reliability choose our solutions in bottles that meet FDA standards (US Food & Drug Administration) which protect the solutions from extended exposure to light.

## Traceability with NIST Standard Reference

Hanna pH buffers are carefully prepared using the highest quality ingredients available and are standardized with high precision meters calibrated to NIST references.



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# pH Standard Calibration Solutions

## 10.01 pH Buffer Solution

pH 10.01 solution is commonly used to calibrate equipment used for analyzing basic samples. pH 10.01 buffer solution is available in various sizes to best fit your needs.



## 10.01 pH @ 25°C - Bottles

Code	Size	FDA Bottle	Certificate of Analysis
HI7010/1G	1 G (3.78 L) (color coded bottle)		on request
HI7010/1L	1 L (color coded bottle)		on request
HI7010L	500 mL		on request
HI7010C	500 mL (color coded solution)		on request
HI7010L/C	500 mL	•	
HI7010M	230 mL		on request
HI5100-12	120 mL		on request
HI7010-023	230 mL (GroLine)	•	
HI7010-012	120 mL (GroLine)	•	
HI8010L	500 mL	•	•
HI8010L/C	500 mL	•	•

## 10.01 pH @ 25°C, and Combination Packs - Sachets

Code	pH Value	Size	Package	Certificate of Analysis
HI70010C	10.01	20 mL	25 pcs.	•
HI70010P	10.01	20 mL	25 pcs.	
HI70010P/5	10.01	20 mL	500 pcs.	
HI770710C	10.01 & 7.01	20 mL	10 pcs., 5 ea	•
HI770710P	10.01 & 7.01	20 mL	10 pcs., 5 ea	

# ORP and Sample Preparation Solutions

ORP standard solutions allows users to test the precision of ORP electrodes. For example, by immersing the electrode in HI7020 solution, readings should fall within the 200 to 275 mV range (@25°C/77°F).

If the reading is outside the indicated interval, clean and condition your ORP electrode in Hanna pretreatment solution.

Use HI7092 for oxidizing or HI7091 for reducing pretreatment.



## ORP Test and Pretreatment Solution Bottles

Code	Description	Size	Certificate of Analysis
HI7020L	ORP test solution @200 to 275 mV (@25°C)	500 mL	on request
HI7020M	ORP test solution @200 to 275 mV (@25°C)	230 mL	on request
HI7021L	ORP test solution @240 mV (@25°C)	500 mL	on request
HI7021M	ORP test solution @240 mV (@25°C)	230 mL	on request
HI7022L	ORP test solution @470 mV (@25°C)	500 mL	on request
HI7022M	ORP test solution @470 mV (@25°C)	230 mL	on request
HI7091M	pretreatment reducing solution	230 mL	
HI7091L	pretreatment reducing solution	500 mL + 14g (set)	
HI7092L	oxidizing pretreatment solution	500 mL	
HI7092M	oxidizing pretreatment solution	230 mL	

## Sample Preparation Solution Bottles

Code	Description	Size
HI7051M	soil sample preparation solution	230 mL
HI7051L	soil sample preparation solution	500 mL
HI70960	preparation solution for solid or semi-solid samples	30 mL

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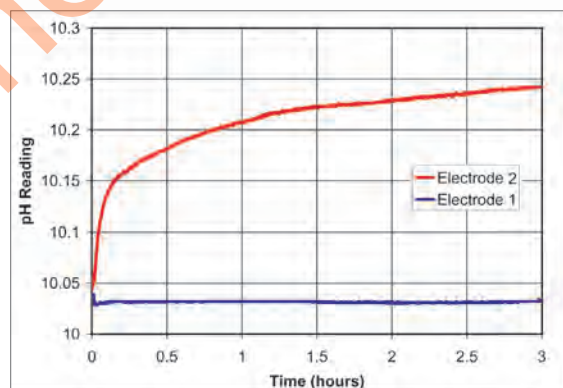
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## General Purpose and Specific Electrode Cleaning Solutions

Electrodes can become dirty from use and will produce inaccurate results even as they read correctly in a pH buffer. Hanna's cleaning solutions eliminate impurities and residues that are left on the electrode surface after taking measurements.

Hanna general purpose and specific electrode cleaning solutions ensure maximum efficiency and accuracy of your sensors when used for its designated application. Electrode cleaning is a fast and effective routine that should be performed on a regular basis as a preventative measure against using a dirty electrode and to ensure that the junction is not clogged.



Electrode 1 has been properly cleaned before calibration.  
Electrode 2 has not been properly cleaned.

## General Electrode Cleaning

Clean the sensing portion of your electrodes weekly to prevent fouling and to maintain accuracy. Immerse the electrode in the proper cleaning solution for at least 15 to 20 minutes and rehydrate in storage solution before use.

### General Use Electrode Cleaning Solutions

Code	Application	Package
HI70000P	rinsing	20 mL sachet (25)
HI7061L	general purpose	500 mL bottle
HI7061-023	general purpose (GroLine)	230 mL bottle
HI7061-012	general purpose (GroLine)	120 mL bottle
HI7073L	proteins	500 mL bottle
HI7073M	proteins	230 mL bottle
HI7074L	inorganic substances	500 mL bottle
HI7074M	inorganic substances	230 mL bottle
HI7077L	oil and fats	500 mL bottle
HI7077M	oil and fats	230 mL bottle
HI8061L	general purpose	500 mL FDA bottle
HI8073L	proteins	500 mL FDA bottle
HI8077L	oil and fats	500 mL FDA bottle



### Specific Cleaning for a Top Performing Sensor

In many applications, electrodes become contaminated from use and produce inaccurate results. Since these contaminants cannot be removed during normal use, special cleaning solutions are needed.

The Cleaning Series ensures maximum efficiency and accuracy of your sensors when used for its designated application

### Specific Cleaning Solutions - Bottles

Code	Description	Size
HI70630L	acid cleaning solution for meat grease and fats (food industry)	500 mL
HI70631L	alkaline cleaning solution for meat grease and fats (food industry)	500 mL
HI70632L	cleaning and disinfection solution for blood products	500 mL
HI70635L	cleaning solution for wine deposits (winemaking)	500 mL
HI70636L	cleaning solution for wine stains (winemaking)	500 mL
HI70640L	cleaning solution for milk deposits (food industry)	500 mL
HI70641L	cleaning and disinfection solution for dairy products (food industry)	500 mL
HI70642L	cleaning solution for cheese residues (food industry)	500 mL
HI70643L	cleaning and disinfection solution for yogurt products (food industry)	500 mL
HI70663L	cleaning solution for soil deposits (agriculture)	500 mL
HI70664L	cleaning solution for humus deposits (agriculture)	500 mL
HI70670L	cleaning solution for salt deposits (industrial processes)	500 mL
HI70671L	cleaning and disinfection solution for algae, fungi and bacteria (industrial processes)	500 mL
HI70681L	cleaning solution for ink stains	500 mL

### Specific Cleaning Solutions - Sachets

Code	Description	Qty/Size
HI700601P	general purpose cleaning solution for laboratories	20 mL (25)
HI700630P	acid cleaning solution for meat grease and fats (food industry)	20 mL (25)
HI700635P	cleaning solution for wine deposits (winemaking)	20 mL (25)
HI700636P	cleaning solution for wine stains (winemaking)	20 mL (25)
HI700640P	cleaning solution for milk deposits (food industry)	20 mL (25)
HI700641P	cleaning and disinfection solution for dairy products (food industry)	20 mL (25)
HI700642P	cleaning solution for cheese residues (food industry)	20 mL (25)
HI700643P	cleaning and disinfection solution for yogurt products (food industry)	20 mL (25)
HI700661P	general purpose cleaning solution for agriculture	20 mL (25)
HI700663P	cleaning solution for soil deposits (agriculture)	20 mL (25)
HI700664P	cleaning solution for humus deposits (agriculture)	20 mL (25)
HI700670P	cleaning solution for salt deposits (industrial processes)	20 mL (25)

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## Electrode Storage Solutions

To minimize junction clogging and ensure fast response time, always keep the glass bulb and the junction of your pH electrode moist. Store the electrode with a few drops of HI70300 storage or pH 4 or pH 7 buffer solution in the protective cap.



### Electrode Storage Solutions

Code	Description	Package
HI70300L	electrode storage solution	500 mL bottle
HI70300M	electrode storage solution	230 mL bottle
HI70300-023	electrode storage solution (GroLine)	230 mL bottle
HI70300-012	electrode storage solution (GroLine)	120 mL bottle
HI80300L	electrode storage solution	500 mL FDA bottle
HI80300M	electrode storage solution	230 mL FDA bottle
HI5300-12	electrode storage solution	120 mL bottle

## Electrode Fill Solutions

The electrolyte level in refillable electrodes should be checked before performing any measurement. If the level is low, refill with the proper electrolyte solution to ensure correct electrode performance. This simple maintenance helps guarantee adequate head pressure to keep the liquid junction flowing.



### Electrode Fill Solutions

Code	Description	Package
HI7071	electrolyte solution, 3.5M KCl + AgCl	30 mL bottle (4)
HI7071M	electrolyte solution, 3.5M KCl + AgCl	230 mL bottle
HI7071L	electrolyte solution, 3.5M KCl + AgCl	500 mL bottle
HI7072	electrolyte solution, 1M KNO <sub>3</sub>	30 mL bottle (4)
HI7072L	electrolyte solution, 1M KNO <sub>3</sub>	500 mL bottle
HI7075	electrolyte solution, 1.7M KNO <sub>3</sub> , 0.7M KCl	30 mL bottle (4)
HI7076	electrolyte solution, 1.0M NaCl	30 mL bottle (4)
HI7078	electrolyte solution, 0.5M (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	30 mL bottle (4)
HI7082	electrolyte solution, 3.5M KCl	30 mL bottle (4)
HI7082M	electrolyte solution, 3.5M KCl	230 mL bottle
HI7082L	electrolyte solution, 3.5M KCl	460 mL bottle
HI8071	electrolyte solution, 3.5M KCl + AgCl	30 mL FDA bottle (4)
HI8082	electrolyte solution, 3.5M KCl	30 mL FDA bottle (4)
HI8093	electrolyte solution, 1M KCl + AgCl	30 mL FDA bottle (4)



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