

Hanna seal of freshness

Our air-tight bottle with tamper-proof seal of freshness ensures quality.



Table of Reference Temperatures

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

Ready-made Solutions

Buffer solutions that can be prepared in small batches from capsules, tablets or powders, are called "fresh" because they are prepared at the time of use. They are considered to be, but are not very precise. The quality of buffer solutions produced depends on many factors including the quantity and quality of the chemicals and distilled water used in production. Other important factors are the temperature and the instruments used to prepare them.

Hanna buffer solutions are checked carefully, in an aseptic environment with the highest precision reference instruments, and are calibrated to NIST Standards.

Hanna solutions are more convenient than the so-called "fresh" solutions. The main standard buffer solutions produced by Hanna are available in bottles or in sealed sachets, complete with or without a certificate of analysis.

The following pages show the series of calibration solutions in the various types of packages that will satisfy every application need, while always guaranteeing a highly accurate buffer.



Certified Solutions

For those operators who request it, we provide standard solutions complete with certificate of analysis. These certificates are prepared in accordance with NIST standards to avoid any possible error in determining the actual pH value. The certificate shows the date of production, batch number and expiration date.

Safety Data Sheets

Download Safety Data Sheets (SDS) from our website at: www.hannainst.com.

Calibration and Cleaning Solutions

The fundamental use of calibration and cleaning solutions is to correctly maintain electrode operation to assure accurate and reproducible readings. Often, readings are not correct because the sensors have not been properly handled. Using Hanna's wide range of solutions will help guarantee proper cleaning and calibration of electrodes and probes for maximum performance.



Sachets are Practical, Safe and Ready-to-Use

Single-use sachets are quick and easy to use. Each sealed, opaque sachet holds just the right amount of solution. Every time your instrument and probe is maintained using Hanna sachets, it is like using a newly opened bottle of solution.

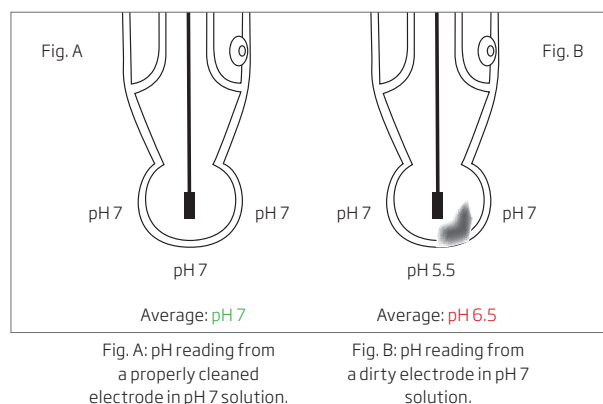
A wide range of pH, conductivity, TDS, and cleaning solutions are available.

Table of Reference Temperatures

A label presenting a reference table of the relationship between pH or conductivity values and temperature is printed on all calibration solution sachets.



Step 1: Cleaning



Just because you can't see contamination doesn't mean it isn't there.

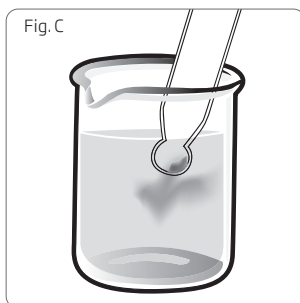
An electrode generates a voltage of the average hydrogen ion concentration from the surface area outside the pH bulb tip. Fig. A above shows that the clean electrode is submersed in pH 7 from all areas of the bulb surface.

When an electrode becomes dirty from use or neglect, the contaminated surface contributes to a voltage offset based on the surface area exposed to buffer as seen in Fig. B. Now the pH meter is mistakenly reading pH 6.5 instead of the actual pH 7.

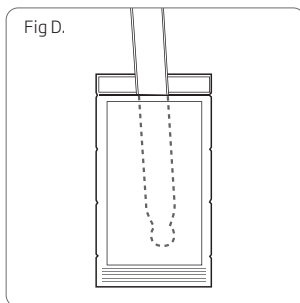
Always clean your electrode before calibration. If a dirty electrode is used for calibration, all subsequent measurements will be in error.

A dirty electrode can contaminate solutions.

Always use fresh solutions with each calibration. Buffer solutions can be contaminated by dirty electrodes as in Fig. C. Always clean your electrode before each calibration and measurement, and always use fresh solutions.



Contamination can take time to work its way around the beaker. If you notice fluctuations in your readings, it may be time to calibrate with fresh solutions.

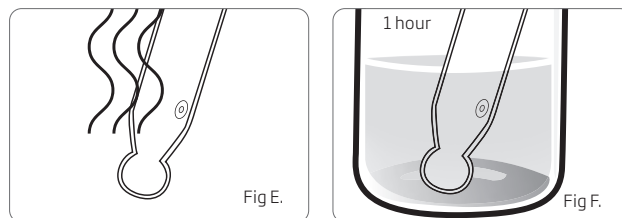


Fresh Every Time

Hanna single-use sachets are a great way to ensure your solution is always fresh. Fig. D shows just how easy it is to tear open the packet and insert the electrode. These opaque sachets are also the ideal size for testers.

pH Cleaning Procedure

Hanna manufactures a full complement of cleaning solutions formulated to address general and specific cleaning needs.



IMPORTANT: After performing any of the cleaning procedures, rinse the electrode thoroughly with purified water (Fig. E) and soak the electrode in HI70300 or HI80300 Storage Solution for at least 1 hour before taking measurements (Fig. F).

General Cleaning

Soak in Hanna HI7061 or HI8061 General Cleaning Solution for approximately 30 minutes to dissolve mineral deposits and other general coatings.

Protein Coating

Soak in Hanna HI7073 or HI8073 Protein Cleaning Solution for 15 minutes to enzymatically dissolve deposits from protein sources.

Inorganic Soak

Soak in Hanna HI7074 Inorganic Cleaning Solution for 15 minutes. This cleaner is especially effective at removal of precipitates caused by reaction with the silver in the filling solution that may form in a ceramic junction.

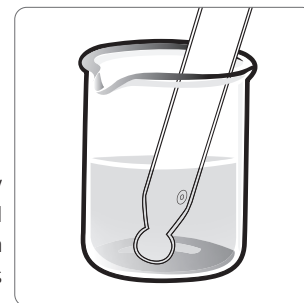
Oil and Grease Rinse

Oil and grease removal require the correct chemicals to solubilize the coating, but mild enough to leave the electrode unaffected. Use Hanna HI7077 or HI8077 Oil and Fat Cleaning Solution.

Step 2: Calibration

Calibration only counts when using fresh solutions and properly cleaned electrodes.

A pH electrode that is properly manufactured and kept clean will retain its measuring integrity for a long time. As a result of many factors such as age, use, poor maintenance, or improper handling, any electrode will lose its integrity in time.



Routine maintenance will ensure accurate readings while extending the life of your electrode.

pH and ORP Solutions

A proper calibration restores the ability of an electrode to take accurate measurements. The most common cause for pH measurement inaccuracies is an unclean or improperly cleaned electrode. This is very important to note because during calibration, the instrument assumes that the electrode is clean and that the standardization curve created during the calibration process will remain a valid reference until the next calibration. pH meters on the market today will allow an offset of approximately ± 60 mV while Hanna only allows an offset of approximately ± 30 mV. An offset voltage is the mV at 7.00 pH. The deviation from 0 mV is not unusual, in fact it represents the true characteristics of a normal pH electrode.

An offset can be compensated for by calibrating a pH meter with a properly cleaned electrode. Calibrating a meter with a dirty electrode will only compound the problem. An mV offset that continues to deviate with a properly cleaned electrode is a good indication that the electrode may need to be replaced.

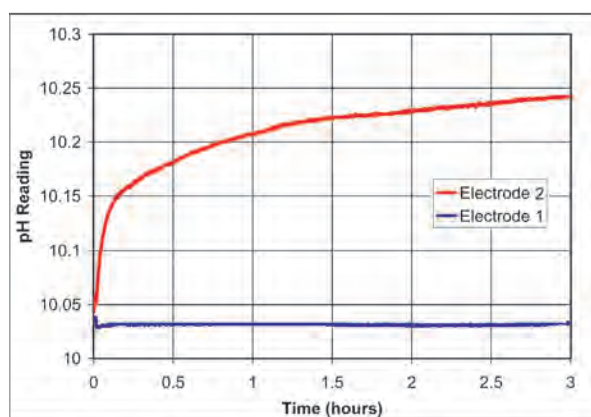


Fig G.

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

Electrode readings may vary with insufficient cleanings.

Fig. G (above) shows that the pH measured by a dirty electrode changes over a short period of time, resulting from the residue on the pH electrode bulb. The resulting pH measurements, based upon the calibration of a coated electrode, will then be incorrect.

Conventional pH meters do not warn the user when a pH electrode is dirty or when a solution may be contaminated. A common example of this occurs just after calibrating the instrument; the pH electrode is immersed into the pH 7 buffer and the reading is lower than expected (pH 6.8 or 6.9 instead of pH 7). Hanna meters that feature our exclusive CAL Check™ electrode diagnostics automatically alert the user of any potential electrode or solution problems during calibration.

Precision Solutions

Hanna's wide range of solutions will help guarantee correct cleaning and calibration of electrodes and probes for maximum performance. Our solutions have been manufactured with your application in mind.

Step 3: Maintenance

Measurement

Always calibrate the electrode and pH meter together before making measurements. Rinse the pH electrode sensor tip with deionized or distilled water. For a faster response, and to avoid cross-contamination of the samples, rinse the electrode tip with a few drops of the solution to be tested. Before taking measurements submerge the pH sensor tip and reference junction (~ 3 cm / $1\frac{1}{4}$ ") in the stirred sample.

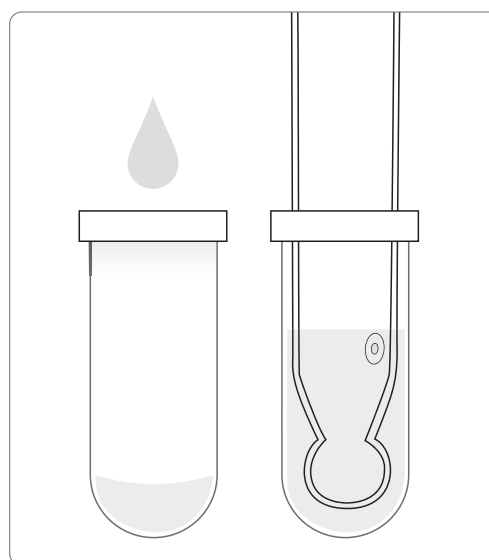


Fig H

Storage

To ensure an optimum response time, the glass sensor tip and the reference junction of the pH electrode should be kept moist and not be allowed to dry out.

Replace the solution in the protective cap with a few drops of HI70300 or HI80300 Storage Solution or, in its absence, with pH 4 or pH 7 buffer (Fig H).

NOTE: Never store the electrode in distilled or deionized water.



Inspect

Inspect and clean the electrode on a regular schedule to ensure the electrode will be ready when you need it. Coatings and reactions from samples result in decreased efficiency and longer response times.



HI5000 Series

pH Technical Calibration Solutions

- Supplied with Certificate of Analysis
- Accuracy of ± 0.01 pH @ 25°C
- Safety Data Sheets
 - Safety data sheets for all Hanna solutions are available at hannainst.com or upon request.
- Expiration date
 - The production batch number, expiration date, and temperature correlation table are reported on all Hanna calibration solutions.
- NIST traceability
 - Standardized using a meter and specially designed multi-reference probe. Reported values are traceable to NIST Standard Reference Materials (SRMs).
- Air-tight bottles
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.
- Single use sachets
 - opaque packaging prevents oxidation from UV light that could alter the value. Every sachet is as fresh as the day it was packaged.

Technical Solutions (± 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 ± 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).

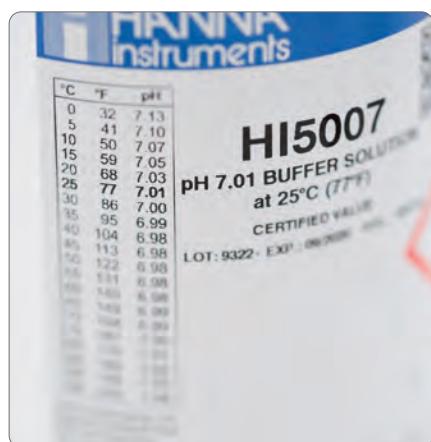


Table of Reference Temperatures

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	Certificate of Analysis
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	Certificate of Analysis
1.00	HI50001-02	20 mL (25)	•
1.68	HI50016-02	20 mL (25)	•
2.00	HI50002-02	20 mL (25)	•
3.00	HI50003-02	20 mL (25)	•
4.01	HI50004-02	20 mL (25)	•
5.00	HI50005-02	20 mL (25)	•
6.86	HI50068-02	20 mL (25)	•
7.01	HI50007-02	20 mL (25)	•
9.00	HI50009-02	20 mL (25)	•
9.18	HI50091-02	20 mL (25)	•
10.01	HI50010-02	20 mL (25)	•
11.00	HI50011-02	20 mL (25)	•
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	Certificate of Analysis
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)	•

HI6000 Series

±0.002 pH Millesimal Calibration Solutions

- Supplied with Certificate of Analysis
- Accuracy of ±0.002 pH @ 25°C
- Safety Data Sheets
 - Safety data sheets for all Hanna solutions are available at hannainst.com or upon request.
- Expiration date
 - The production batch number, expiration date, and temperature correlation table are reported on all Hanna calibration solutions.
- NIST traceability
 - Standardized using a meter and specially designed multi-reference probe. Reported values are traceable to NIST Standard Reference Materials (SRMs).
- Air-tight bottles
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.
- Single use sachets
 - Opaque packaging prevents oxidation from UV light that could alter the value. Every sachet is as fresh as the day it was packaged.
- Opaque bottles
 - Prevents any oxidation from UV light that could alter the buffer value.



Bottles

pH Value @25°C	Code	Package	Certificate of Analysis
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	•
11.000	HI6011	500 mL	•
12.000	HI6012	500 mL	•
12.450	HI6124	500 mL	•
13.000	HI6013	500 mL	•

Sachets

pH Value @25°C	Code	Package	Certificate of Analysis
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)	•

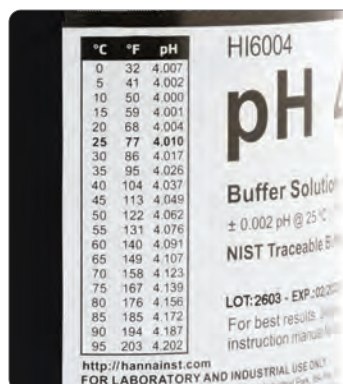


Table of Reference Temperatures

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

Quick Cal

pH/EC 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.

- Calibration solution for GroLine pH and EC/TDS meters
- pH calibration buffer value of pH 6.86
- EC calibration standard value of 5,000 $\mu\text{S}/\text{cm}$ (5.00 mS/cm)
- Safety Data Sheets
 - Safety data sheets for all Hanna solutions are available at hannainst.com or upon request.
- Expiration date
 - The production batch number, expiration date, and temperature correlation table are reported on all Hanna calibration solutions.
- NIST traceability
 - Standardized using a pH meter calibrated by means of two standard solutions prepared from NIST standard reference materials. A conductivity meter and probe calibrated against NIST primary standard solutions or primary standard solutions prepared following NIST guidelines.



- Air-tight bottles
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.
- Single use sachets
 - Opaque packaging prevents oxidation from UV light that could alter the value. Every sachet is as fresh as the day it was packaged.

Quick Cal pH/EC Bottles

Code	Size	Certificate of Analysis
HI5036-050	500 mL (GroLine)	•
HI5036-023	230 mL (GroLine)	•
HI5036-012	120 mL (GroLine)	•

Quick Cal pH/EC Sachets

Code	Size	Certificate of Analysis
HI50036P	20 mL sachets, 25 pcs. (GroLine)	•

pH Buffer Solutions

- **Safety Data Sheets**
 - Safety data sheets for all Hanna solutions are available at hannainst.com or upon request.
- **Expiration date**
 - The production batch number, expiration date, and temperature correlation table are reported on all Hanna calibration solutions.
- **NIST traceability**
 - Standardized using a pH meter calibrated by means of two standard solutions prepared from NIST standard reference materials.



- **Air-tight bottles**
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.
- **Single use sachets**
 - Opaque packaging prevents oxidation from UV light that could alter the value. Every sachet is as fresh as the day it was packaged.
- **FDA compliant bottles (HI80xx)**
 - Hanna solutions are offered in opaque bottles that meet FDA requirements.

4.01 pH Buffer Solution

This buffer value is widely used in water purification plants, in the food industry, and wherever the pH is expected to be slightly acidic.



4.01 pH @ 25°C - Bottles

Code	Size	FDA Bottle	Certificate of Analysis
HI7004/1G	1 G (3.78 L) (color coded solution)		on request
HI7004/1L	1 L (color coded solution)		on request
HI7004L	500 mL		on request
HI7004L/C	500 mL		•
HI7004C	500 mL (color coded solution)		on request
HI7004M	230 mL		on request
HI7004-050	500 mL (GroLine®)		•
HI7004-023	230 mL (GroLine)		•
HI7004-012	120 mL (GroLine)		•
HI8004L	500 mL	•	•
HI8004L/C	500 mL	•	•

4.01 pH @ 25°C - Sachets

Code	Size	Package	Certificate of Analysis
HI70004C	20 mL	25 pcs.	•
HI70004G	20 mL (GroLine)	25 pcs.	•
HI70004P	20 mL	25 pcs.	
HI700044P	20 mL (Pool Line)	25 pcs.	

4.01 and 7.01 pH @ 25°C - Sachets

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

pH Buffer Solutions

- **Safety Data Sheets**
 - Safety data sheets for all Hanna solutions are available at hannainst.com or upon request.
- **Expiration date**
 - The production batch number, expiration date, and temperature correlation table are reported on all Hanna calibration solutions.
- **NIST traceability**
 - Standardized using a pH meter calibrated by means of two standard solutions prepared from NIST standard reference materials.



7.01 pH @ 25°C - Bottles

Code	Size	FDA Bottle	Certificate of Analysis
HI70071G	1 G (3.78 L) (color coded solution)		on request
HI70071L	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
HI7007-050	500 mL (GroLine®)		•
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.	•
HI70007G	7.01 pH (GroLine)	20 mL	25 pcs.	•
HI70007P	7.01 pH	20 mL	25 pcs.	
HI700074P	7.01 pH (Pool Line)	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	
HI77400P	4.01 & 7.01 pH	20 mL	10 pcs., 5 ea	

- **Air-tight bottles**
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.
- **Single use sachets**
 - Opaque packaging prevents oxidation from UV light that could alter the value. Every sachet is as fresh as the day it was packaged.
- **FDA compliant bottles (HI80xx)**
 - Hanna solutions are offered in opaque, bottles that meet FDA requirements.

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.



pH Buffer Solutions

- **Safety Data Sheets**
 - Safety data sheets for all Hanna solutions are available at hannainst.com or upon request.
- **Expiration date**
 - The production batch number, expiration date, and temperature correlation table are reported on all Hanna calibration solutions.
- **NIST traceability**
 - Standardized using a pH meter calibrated by means of two standard solutions prepared from NIST standard reference materials.



- **Air-tight bottles**
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.
- **Single use sachets**
 - Opaque packaging prevents oxidation from UV light that could alter the value. Every sachet is as fresh as the day it was packaged.
- **FDA compliant bottles (HI80xx)**
 - Hanna solutions are offered in opaque bottles that meet FDA requirements.

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
HI7010-050	500 mL (GroLine®)		•
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.	
HI770710C	10.01 & 7.01	20 mL	10 pcs., 5 ea	•
HI770710P	10.01 & 7.01	20 mL	10 pcs., 5 ea	

1.68 pH @ 25°C - Bottles

Code	Size	Certificate of Analysis
HI7001L	500 mL	on request
HI7001M	230 mL	on request

6.00 pH @ 25°C - Bottle

Code	Size	Package
HI70060M	230 mL	bottle

6.86 pH @ 25°C - Bottles

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

6.86 pH @ 25°C - Sachets

Code	Size	Package	Certificate of Analysis
HI70006C	20 mL	25 pcs.	•
HI70006P	20 mL	25 pcs.	

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 Buffer Solutions

- **Safety Data Sheets**
 - Safety data sheets for all Hanna solutions are available at hannainst.com or upon request.
- **Expiration date**
 - The production batch number, expiration date, and temperature correlation table are reported on all Hanna calibration solutions.
- **NIST traceability**
 - Standardized using a pH meter calibrated by means of two standard solutions prepared from NIST standard reference materials.
- **Air-tight bottles**
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.
- **Single use sachets**
 - Opaque packaging prevents oxidation from UV light that could alter the value. Every sachet is as fresh as the day it was packaged.
- **FDA compliant bottles (HI80xx)**
 - Hanna solutions are offered in opaque bottles that meet FDA requirements.

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. 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.

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.

8.20 and 8.30 pH Buffer Solution

To increase accuracy of your measurement, 8.20 and 8.30 pH buffer solution are available.

9.18 pH Buffer Solution

To increase measurement accuracy 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.

ORP and Sample Preparation Solutions

- **Safety Data Sheets**
 - Safety data sheets for all Hanna solutions are available at hannainst.com or upon request.
- **Expiration date**
 - The production batch number and expiration date are reported on all Hanna calibration solutions.
- **Air-tight bottles**
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.

ORP Test and Pretreatment Solutions

ORP standard solutions allows users to test the precision of ORP electrodes. For example, by immersing the electrode in HI7021 solution, the reading should be at 240 mV (@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.

Soil Sample Preparation Solution

HI7051 Soil Sample Preparation Solution is an electrolyte solution used in the measurement of soil pH. The pH of soil is most commonly measured as either a water slurry or electrolyte slurry, where a set ratio of soil:solvent (solvent is water or electrolyte solution) is chosen; common ratios used for soil pH are 1:1, 1:2, or 1:5, where more solvent than soil is used when soils-to-be-analyzed contain high amounts of organic matter or clay. Use of an electrolyte solution is usually preferred as it is less affected by soil electrolyte concentration and provides a more consistent measurement for soils whose salt content may fluctuate as a result of seasonal conditions or crop residues.

Using the HI7051 solution prior to taking a measurement provides for a more accurate pH reading of soil samples.



ORP Test and Pretreatment Solution Bottles

Code	Description	Size	Certificate of Analysis
HI7021L	240 mV ORP solution for platinum and gold electrodes	500 mL	on request
HI7021M	240 mV ORP solution for platinum and gold electrodes	230 mL	on request
HI7022L	470 mV ORP solution for platinum and gold electrodes	500 mL	on request
HI70224L	470 mV ORP solution for platinum and gold electrodes	500 mL (Pool Line)	on request
HI7022M	470 mV ORP solution for platinum and gold electrodes	230 mL	on request
HI7091L	reducing pretreatment solution (2 components)	500 mL + 14g (set)	
HI7092L	oxidizing pretreatment solution for ORP electrodes	500 mL	
HI7092M	oxidizing pretreatment solution for ORP electrodes	230 mL	

ORP Test and Pretreatment Solution Sachets

Code	Description	Size	Package	Certificate of Analysis
HI70022P	470 mV ORP solution for platinum and gold electrodes	20 mL	25 pcs.	•
HI700224P	470 mV ORP solution for platinum and gold electrodes	20 mL (Pool Line)	25 pcs.	•

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



Electrode Storage Solutions

- Designed for storing any pH or ORP electrode
- Special formulation
 - Special formulation to minimize microbial growth and osmotic/diffusion effects between the solution and inner reference electrolyte
- Expiration date
 - The production batch number and expiration date are reported on all Hanna calibration solutions.



- Air-tight bottles
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.
- Single use sachets
 - Opaque packaging prevents oxidation from UV light that could alter the value. Every sachet is as fresh as the day it was packaged.
- FDA compliant bottles (HI803xx)
 - Hanna solutions are offered in opaque bottles that meet FDA requirements.

HI70300 is a storage solution prepared with reagent grade chemicals that can be used to ensure optimum performance of your pH and ORP electrodes.

To ensure an optimum response time, the glass sensor tip and the reference junction of the pH electrode should be kept moist and not be allowed to dry out when not in use.

Placing the pH electrode in a small glass filled with storage solution or replacing the solution in the protective cap is a suitable way to store the electrode. Storage solution should also be used to rehydrate the electrode after a cleaning procedure by soaking for at least one hour before taking measurements.



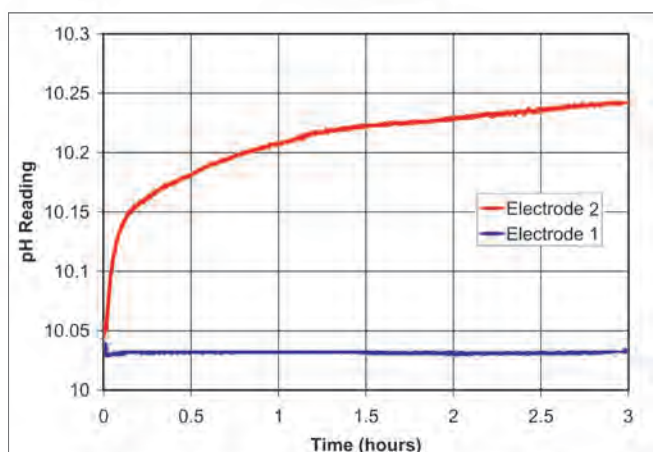
Electrode Storage Solutions

Code	Description	Package
HI70300L	storage solution for pH and ORP electrodes	500 mL bottle
HI703004L	storage solution for pH and ORP electrodes (Pool Line)	500 mL bottle
HI70300M	storage solution for pH and ORP electrodes	230 mL bottle
HI70300S	storage solution for pH and ORP electrodes	30 mL bottle
HI70300G	storage solution for pH and ORP electrodes (GroLine®)	20 mL sachet (25)
HI70300-050	storage solution for pH and ORP electrodes (GroLine)	500 mL bottle
HI70300-023	storage solution for pH and ORP electrodes (GroLine)	230 mL bottle
HI70300-012	storage solution for pH and ORP electrodes (GroLine)	120 mL bottle
HI80300L	storage solution for pH and ORP electrodes	500 mL FDA bottle
HI80300M	storage solution for pH and ORP electrodes	230 mL FDA bottle
HI5300-12	storage solution for pH and ORP electrodes	120 mL bottle



Electrode Cleaning Solutions for a Top Performing Sensor

- **Expiration date**
 - The production batch number and expiration date are reported on all Hanna calibration solutions.
- **Air-tight bottles**
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.
- **Single use sachets**
 - Opaque packaging prevents oxidation from UV light that could alter the value. Every sachet is as fresh as the day it was packaged.
- **FDA compliant bottles (HI80xx)**
 - Hanna solutions are offered in opaque bottles that meet FDA requirements.



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 electrode surfaces when immersed in samples during measurement and stored incorrectly. Hanna suggests cleaning the bulb and junction of your electrode on a regular basis to ensure that the probe is always clean and prevent any clogging of the junction.

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

General Use Electrode Cleaning Solutions - Bottles

Code	Application	Package
HI7061M	general purpose	230 mL bottle
HI7061L	general purpose	500 mL bottle
HI70614L	general purpose (Pool Line)	500 mL bottle
HI7061-050	general purpose (GroLine®)	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
HI70774L	pools and spas (Pool Line)	500 mL bottle
HI8061L	general purpose	500 mL FDA bottle
HI8073L	proteins	500 mL FDA bottle
HI8077L	oil and fats	500 mL FDA bottle



Specific Electrode Cleaning Solutions - Bottles

Code	Description	Size
HI70621L	cleaning Solution for skin grease and sebum (Cosmetic Industry)	500 mL
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 deposits (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
HI70682L	cleaning solution for brewing deposits	500 mL



General Use Electrode Cleaning Solutions - Sachets

Code	Application	Package
HI70000P	rinsing	20 mL sachet (25)
HI700601P	general purpose	20 mL sachet (25)
HI7006014P	general purpose (Pool Line)	20 mL sachet (25)
HI70061G	general purpose (GroLine)	20 mL sachet (25)

Specific Electrode Cleaning Solutions - Sachets

Code	Description	Qty/Size
HI700620P	cleaning Solution for skin residuals	20 mL (25)
HI700621P	cleaning Solution for skin grease and sebum (Cosmetic Industry)	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 deposits (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)
HI700671P	cleaning and disinfection solution for algae, fungi and bacteria (industrial processes)	20 mL (25)
HI700680P	cleaning solution for cellulose deposits	20 mL (25)
HI700681P	cleaning solution for ink stains	20 mL (25)
HI700682P	cleaning solution for beer and wort (beermaking)	20 mL (25)
HI700683P	cleaning solution for sushi rice deposits	20 mL (25)
HI700684P	cleaning solution for bread and dough deposits	20 mL (25)
HI700685P	cleaning solution for chocolate deposits	20 mL (25)

Electrode Fill Solutions

- **Expiration date**
 - The production batch number and expiration date are reported on all Hanna calibration solutions.



- **Air-tight bottles**
 - Air-tight bottle with tamper-proof seal of freshness to ensure quality.
- **FDA compliant bottles (HI80xx)**
 - Hanna solutions are offered in opaque bottles that meet FDA requirements.

The electrolyte level in refillable electrodes should be checked before performing any measurements. If the level is low, refill with the proper electrolyte solution to ensure optimum performance. This simple maintenance helps guarantee adequate head pressure to promote the flow of reference electrolyte into the sample being measured.



Electrode Fill Solutions

Code	Description	Package
HI7071	3.5M KCl with AgCl reference electrolyte	30 mL bottle (4)
HI7071M	3.5M KCl with AgCl reference electrolyte	230 mL bottle
HI7071L	3.5M KCl with AgCl reference electrolyte	500 mL bottle
HI7072	1M potassium nitrate electrode fill solution	30 mL bottle (4)
HI7072L	1M potassium nitrate electrode fill solution	500 mL bottle
HI7075	1.7M potassium nitrate, 0.7M potassium chloride electrode fill solution	30 mL bottle (4)
HI7076	1M sodium chloride electrode fill solution	30 mL bottle (4)
HI7078	0.5M ammonium sulfate electrode fill solution	30 mL bottle (4)
HI7082	3.5M KCl reference electrolyte for double junction electrodes	30 mL bottle (4)
HI7082M	3.5M KCl reference electrolyte for double junction electrodes	230 mL bottle
HI7082L	3.5M KCl reference electrolyte for double junction electrodes	460 mL bottle
HI8071	3.5M KCl with AgCl reference electrolyte	30 mL FDA bottle (4)
HI8082	3.5M KCl reference electrolyte for double junction	30 mL FDA bottle (4)
HI8093	1M KCl with AgCl reference electrolyte	30 mL FDA bottle (4)
HI9071	gelled bridge electrolyte for FC2053 pH electrode and HI981030 GroLine® pH tester	30 mL bottle

