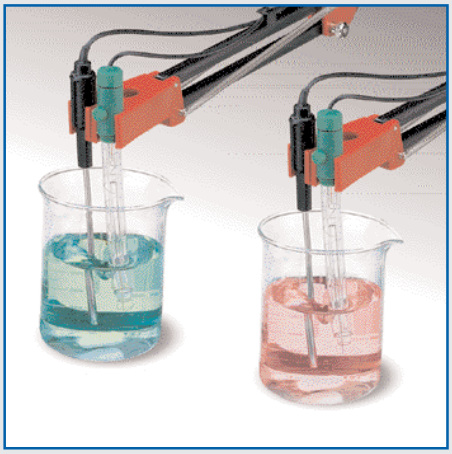
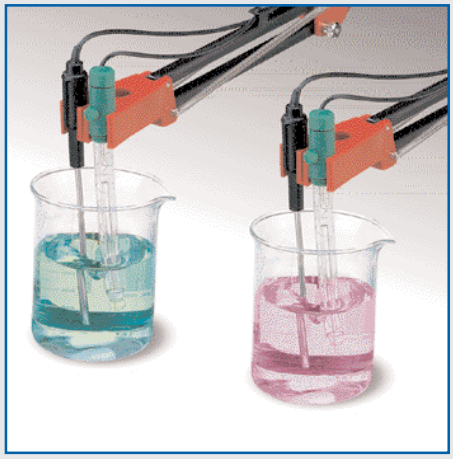
Solutions

pH Buffer Solutions

pH	Technical Buffers (±0.01 pH)	Millesimal Buffers (±0.002 pH)	Standard Buffers (±0.01 pH)	Standard Buffers in FDA Bottle (±0.02 pH)
1.00	HI 5001 (page F9) HI 50001 (page F10)	HI 6001(page F11) HI 60001 (page F12)		
1.68	HI 5016 (page F9) HI 50016(page F10)	HI 6016 (page F11) HI 60016 (page F12)	HI 7001 (page F13)	
2.00	HI 5002 (page F9) HI 50002 (page F10)	HI 6002 (page F11) HI 60002 (page F12)		
3.00	HI 5003 (page F10) HI 50003 (page F10)	HI 6003 (page F11) HI 60003 (page F12)		
3.79	HI 5037 (page F9) HI 50037 (page F10)	HI 6037 (page F11) HI 60037 (page F12)		
4.01	HI 5004 (page F9) HI 50004 (page F10)	HI 6004 (page F12) HI 60004 (page F12)	HI 7004 (page F14) HI 70004 (page F14)	HI 8004 (page F14)
4.63	HI 5046 (page F9) HI 50046 (page F10)	HI 6046 (page F11) HI 60046 (page F12)		
5.00	HI 5005 (page F9) HI 50005 (page F10)	HI 6005 (page F11) HI 60005 (page F12)		
6.00	HI 5006 (page F9) HI 50006 (page F10)	HI 6006 (page F11) HI 60006 (page F12)		
6.86	HI 5068 (page F9) HI 50068 (page F10)	HI 6068 (page F11) HI 60068 (page F12)	HI 7006 (page F15) HI 70006 (page F15)	HI 8006 (page F15)
7.01	HI 5007 (page F9) HI 50007 (page F10)	HI 6007 (page F11) HI 60007 (page F12)	HI 7007 (page F16) HI 70007 (page F17)	HI 8007 (page F16)
7.41	HI 5074 (page F9) HI 50074 (page F10)	HI 6074 (page F11) HI 60074 (page F12)		
8.00	HI 5008 (page F9) HI 50008 (page F10)	HI 6008 (page F11) HI 60008 (page F12)		
9.00	HI 5009 (page F9) HI 50009 (page F10)	HI 6009 (page F11) HI 60009 (page F12)		
9.18	HI 5091 (page F9) HI 50091 (page F10)	HI 6091 (page F11) HI 60091 (page F12)	HI 7009 (page F18) HI 70009 (page F18)	HI 8009 (page F18)
10.01	HI 5010 (page F9) HI 50010 (page F10)	HI 6010 (page F11) HI 60010 (page F12)	HI 7010 (page F19) HI 70010 (page F19)	HI 8010 (page F19)
11.00	HI 5011 (page F9) HI 50011 (page F10)	HI 6011 (page F11) HI 60011 (page F12)		
12.00	HI 5012 (page F9) HI 50012 (page F10)	HI 6012 (page F11) HI 60012 (page F12)		
12.45	HI 5124 (page F9) HI 50124 (page F10)	HI 6124 (page F11) HI 60124 (page F12)		
13.00	HI 5013 (page F9) HI 50013 (page F10)	HI 6013 (page F11) HI 60013 (page F12)		




Certificate of Analysis
HANNA instruments

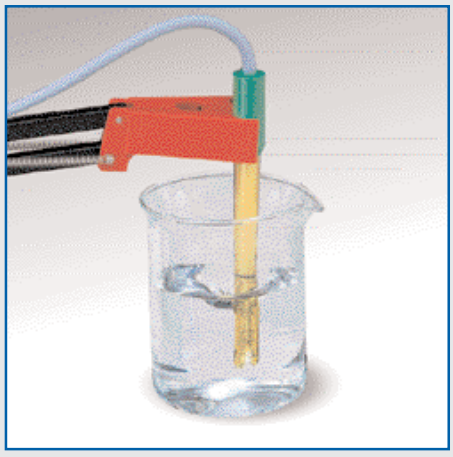


Certified pH Buffer Solutions

pH	Technical Buffers (±0.01 pH)	Millesimal Buffers (±0.002 pH)	Standard Buffers (±0.01 pH)	Buffer Sachets (±0.01pH / ±0.002)	Buffers in FDA Bottle (± 0.02 pH)	Page
1.00	HI 5001	HI 6001	—	HI 50001 / HI 60001	—	F9-12
1.68	HI 5016	HI 6016	—	HI 50016 / HI 60016	—	F7-14, F14
2.00	HI 5002	HI 6002	—	HI 50002 / HI 60002	—	F9-12
3.00	HI 5003	HI 6003	—	HI 50003 / HI 60003	—	F9-12
3.79	HI 5037	HI 6037	—	HI 50037 / HI 60037	—	F9-12
4.01	HI 5004	HI 6004	HI 7004L/C	HI 50004 / HI 60004 HI 70004C	HI 8004L/C	F9-12, F14
4.63	HI 5046	HI 6046	—	HI 50046 / HI 60046	—	F9-12
5.00	HI 5005	HI 6005	—	HI 50005 / HI 60005	—	F9-12
6.00	HI 5006	HI 6006	—	HI 50006 / HI 60006	—	F9-12
6.86	HI 5068	HI 6068	HI 7006L/C	HI 50068 / HI 60068 HI 70006C	HI 8006L/C	F9-12, F15
7.01	HI 5007	HI 6007	HI 7007L/C	HI 50007 / HI 54710 HI 60007 / HI 70007C	HI 8007L/C	F9-12, F16
7.41	HI 5074	HI 6074	—	HI 50074 / HI 60074	—	F9-12
8.00	HI 5008	HI 6008	—	HI 50008 / HI 60008	—	F9-12
9.00	HI 5009	HI 6009	—	HI 50009 / HI 60009	—	F9-12
9.18	HI 5091	HI 6091	HI 7009L/C	HI 50091 / HI 60091 HI 70009C	HI 8009L/C	F9-12, F18
10.01	HI 5010	HI 6010	HI 7010L/C	HI 50010 / HI 60010 HI 70010C	HI 8010L/C	F9-12, F19
11.00	HI 5011	HI 6011	—	HI 50011 / HI 60011	—	F9-12
12.00	HI 5012	HI 6012	—	HI 50012 / HI 60012	—	F9-12
12.45	HI 5124	HI 6124	—	HI 50124 / HI 60124	—	F9-12
13.00	HI 5013	HI 6013	—	HI 50013 / HI 60013	—	F9-12

Conductivity Calibration Solutions

µS/cm	Certified Solutions	Standard Solutions (Bottle)	Standard Solutions (Sachet)	Standard Solutions (FDA Bottle)	Page
84	HI 6033 HI 70033C	HI 6033 / HI 7033	HI 70033P / HI 70033C	HI 8033L	F22
1413	HI 6031 / HI 7031L/C HI 70031C / HI 77100C	HI 6031 / HI 7031	HI 70031P / HI 70031C HI 77100P / HI 77100C	HI 8031L	F23
5000	HI 70039C	HI 7039	HI 70039P / HI 70039C	HI 8039L	F24
12880	HI 70030C	HI 7030	HI 70030P / HI 70030C	HI 8030L	F25
80000		HI 7034	—	HI 8034L	F26
111800		HI 7035	—	HI 8035L	F27



TDS (Total Dissolved Solids) Calibration Solutions

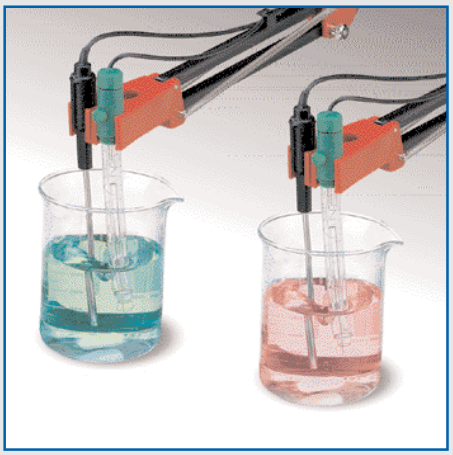
ppm	Certified Solutions	Standard Solutions (Bottle)	Standard Solutions (Sachet)	Standard Solutions (FDA Bottle)	Page
800	HI 70080C	—	HI 70080P / HI 70080C	—	F28
1382	HI 6032 / HI 70032C	HI 6032 / HI 7032	HI 70032P / HI 70032C	—	F28
1500	HI 70442C	HI 70442	HI 70442P / HI 70442C	—	F28
6440	HI 70038C	—	HI 70038P /; HI 70038C	—	F28
12410	—	HI 7036	—	—	F28

Turbidity Standard Solutions

EBC	30 mL Bottle	Page
0	HI 93124-0	F29
2.5	HI 93124-1	F29
125	HI 93124-2	F29

FTU	30 mL Bottle	Page
0	HI 93703-0	F29
10	HI 93703-10	F29
500	HI 93703-05	F29

NTU	30 mL Bottle	Page
0	HI 93102-0	F29
20	HI 93102-20	F29



Salinity Standard Solutions

NaCl	Standard Bottle	FDA Bottle	Page
0.3 g/L	HI 7085	HI 8085	F29
3.0 g/L	HI 7083	HI 8083	F29
5.84 g/L	HI 7088	HI 8088	F29
30 g/L	HI 7081	HI 8081	F29
58.4 g/L	HI 7084	HI 8084	F29
125 g/L	HI 7089	HI 8089	F29
100%	HI 7037	—	F29

Na^+	Standard Bottle	FDA Bottle
0.23 g/L	HI 7087	HI 8087
2.3 g/L	HI 7080	HI 8080
23 g/L	HI 7086	HI 8086

ISA	Standard Bottle	Page
	HI 7090	F29

Fluoride Standard Solutions

F^-	Standard Bottle	Page
1 g/L	HI 70701	F29
10 mg/L	HI 70702	F29
100 mg/L	HI 70703	F29

TISAB	Standard Bottle
	HI 7023

ORP Test & Pretreatment Solutions

mV	Standard Bottle	Page
200/275	HI 7020	F30
240	HI 7021	F30
470	HI 7022	F30

Pretreatment	Standard Bottle
Reducing	HI 7091
Oxidizing	HI 7092

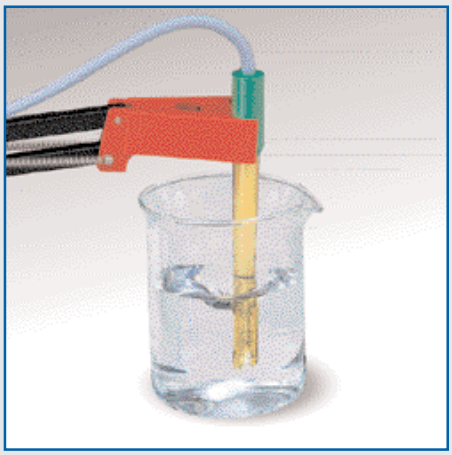
Sample Preparation Solutions

Preparation	Standard Bottle	Page
Soil	HI 7051	F30
Solid or Semi Solid Samples	HI 70960	F30

Electrode Maintenance Solutions

Refilling	Standard Bottle	FDA Bottle	Page
3.5M KCl+AgCl	HI 7070 / HI 7071L	HI 8071L	F30
3.5M KCl	HI 7082	HI 8082	F30
1M KNO_3	HI 7072L	HI 8072L	F30
1M KCl+AgCl	—	HI 8093	F30

Storage	Standard Bottle	FDA Bottle
	HI 70300	HI 80300



Electrode Cleaning Solutions

Application

	Standard Bottle	Sachets	FDA Bottle	Page
Graphics	HI 70681		—	F30-32
Meat	HI 70630 / HI 70631 / HI 70632	HI 700630	—	F30-32
Diary Products	HI 70640 / HI 70641 / HI 70642	HI 700640 / HI 700641 / HI 700642	—	F30-32
Wine	HI 70635 / HI 70636	HI 700635 / HI 700636	—	F30-32
Paper	HI 70680	HI 700680	—	F30-32
Cosmetics	HI 70620 / HI 70621	HI 700620 / HI 700621	—	F30-32
Inorganic Substances	HI 7074	—	HI 8074	F30-32
Honey	HI 70662	—	—	F30
Oil and Fats	HI 7077	—	HI 8077	F30-32
Proteins	HI 7073	—	HI 8073	F30-32
Rinsing	—	HI 70000	—	F30-32
Agriculture	HI 70663 / HI 70664	HI 700661 / HI 700663 HI 700664	—	F30-32
Industrial Processes	HI 70670 / HI 70671	HI 700670 / HI 700671	—	F30-32
Water Treatment	HI 70671 / HI 7077	HI 700671	HI 8077	F30-32
General Purpose	HI 7061	—	HI 8061	F30-32

Specific Cleaning Solutions

- **Top Performance Sensor**
- **Superior Cleaning**

A Solution for Every Need

Calibration and Cleaning Solutions for Electrodes and Probes

The use of calibration and cleaning solutions is fundamental for the correct use of electrodes and for obtaining the most accurate and reproducible readings. Often readings are not correct because the sensors have not been properly handled. Using HANNA instruments® wide range of solutions guarantees a correct cleaning and calibration of electrodes and probes. Our application engineered solutions have been produced with reference instruments calibrated with the highest precision NIST standard. Our range of buffer and cleaning solutions has been recently extended with 3 new lines: the series HI 50xx, technical buffer solutions which allow for the calibration of the pH meter from 1.00 to 13.00 pH; solutions with millesimal resolutions, HI 60xx, available for pH and conductivity measurements, and application specific cleaning solutions available in bottles of 230 and 500 mL and in small sachets of 20 mL each.

Ready-to-Use Solutions

Buffer solutions 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 the buffer solutions depends on many factors that intervene during production: the quantity and quality of the chemicals and distilled water that have been used in preparing the batches, the temperature and the instruments used to prepare them.
HANNA instruments® buffer solutions are prepared using chemicals that have been checked very carefully, within an aseptic environment and with the highest precision reference instruments.
The main standard buffer solutions produced by HANNA instruments® are available in bottles or in sealed sachets, complete with certificate of analysis.
HANNA instruments® solutions are more convenient than the so called "fresh" solutions. The following pages show all the series of calibration solutions in the various types of packages that will satisfy every application need and will always guarantee precise readings.

A Complete Range

The entire range of HANNA instruments® solutions includes:

- pH buffer solutions
- Standard solutions for conductivity, TDS, turbidity, salinity and fluoride calibration
- ORP test and pretreatment solutions
- Electrolyte solutions for refillable electrodes
- General and specific cleaning solutions for electrodes
- Solutions for electrode maintenance
- Solutions for sample preparation

The solutions are available in many sizes to satisfy all different applications, from 20 mL sachets all the way to 3.78 L (1 Gallon) for the large quantities used in analytical laboratories.

All HANNA instruments® solutions are provided with a label showing the batch number and expiration date, for safety and traceability.

Certified Solutions

For those operators who request it, we provide standard solutions complete with certificate of analysis, prepared against NIST standards, to avoid any possible error in determining the actual pH value.
The use of these certified HANNA instruments® solutions adds a further factor of accuracy to your most critical measurements. The certificates show the date of production, batch number, accuracy rating and the expiration date.
All solutions belonging to the series HI 50xx and HI 60xx are provided with a certificate of analysis. The certified solutions belonging to the HI 70xx series are identified by the letter "C" at the end of the part number.

Table of Reference Temperatures

All calibration solutions are provided with a label presenting a reference table of the relationship between pH or conductivity values and the temperature. This will save time and, most important, will prevent calibration errors especially during field measurements.

Bottles that Meet FDA Standards

In order for you to be certain of the accuracy of your instruments over time, ask for HANNA instruments® solutions in FDA type bottles (US Food & Drug Administration). These are opaque bottles, so that the value of the solution remains unchanged even when exposed to light.

Material Safety Data Sheet

Material Safety Data Sheets (MSDS) for each of the solutions included in the HANNA instruments® catalog can be found at www.hannainst.com.

New Series of Solutions

To meet the requirements of the various applications, new categories of solutions have been created:
HI 50xx series, technical solutions: they allow for calibration at all units of pH from pH 1.00 to pH 13.00.
HI 60xx series, millesimal solutions: they allow for the correct calibration of pH meters with millesimal readings.
HI 706xx series, cleaning solutions: an indispensable tool when the electrode is used continuously. Produced with the purpose of ensuring correct readings in widely varied areas of application, they guarantee a long life for the electrode and precise measurements.

Ready-to-Use Single-Dose Sachets

Custom-made Solutions

Get the best out of your instruments using single-dose HANNA instruments® calibration and maintenance solutions. A wide range of solutions for pH, conductivity, TDS and cleaning is available in the form of practical 20 mL sachets.
Each sachet holds the right amount of calibration solution, ready for use, sealed and protected against light.
When your instrument is calibrated using these HANNA instruments® sachets, it is like using a newly-opened bottle of solution.

Practical, Safe and Ready-to-Use

The single-dose sachets are ready for use and are available in different packages, with 10, 25 and 500 pieces. Each sachet is well sealed to ensure the longest life and maximum freshness for the solution

Single-Dose Certified Solutions in Sachets

Solutions in sachets are now also available with a certificate of analysis. Just as in the case of bottled solutions, the certificate shows the date of production, batch number and expiration date.

Combination Kits

To be more practical, HANNA instruments® solutions are also available in combined kits useful for multiparameter instruments or for two-point calibration