



Testing Products for Brewing





Better Chemistry...Better Beer!

Craft brewing has experienced a renaissance over the last 20 years as old beer styles have been rediscovered and new styles created. Beer and brewing are just like food and cooking—to make a great dish you need to understand your ingredients and seasonings, and brewing a great beer is the same. Beer is 90% water and the quality and mineral content of the water can have a large effect on the beer's flavor.



Alkalinity

Alkalinity is generally a problem in brewing water. Alkalinity is the carbonate and bicarbonate content of the water, and acts to raise the pH of the mash and beer. Water hardness can offset the alkalinity, and for that reason both parameters are typically measured as "Calcium Carbonate" in order to determine the net effect.

Chloride

The chloride ion acts to bring out the sweetness and fullness of the malt flavor, much like table salt does for food. Craft brewers often add calcium chloride to brewing water for Pilsner and other lagers.

Dissolved Oxygen

Dissolved oxygen can have both a positive and negative impact on beer, depending on the brewing stage. While fermentation itself is an anaerobic process [occurs in the absence of air], yeast cells do require oxygen for growth. Excessive DO can lead to rapid fermentations and excessive yeast growth, resulting in higher ester production, giving fruitier flavors. It can also lead to permanent chill haze, increased beer astringency, and an increase in color intensity, largely due to the oxidation of polyphenols.

Hardness

Water hardness is a brewer's friend because calcium and magnesium are important ions in many biochemical reactions during mashing and fermentation.

pH

The chemistry of brewing and cooking is complex, and while knowing the mineral content of the water is a critical first step to predicting the impact of the water to the beer, the best way is to measure it, and that is where pH comes into the picture. The mineral content of the water directly affects the pH of the mash, and the pH of the mash affects the entire brewing process—both in process performance and beer flavor. In order to consistently brew great beer, the pH of the mash, wort, and beer should be monitored at every step.

Sodium

Sodium acts in concert with chloride to enhance the sweetness and fullness of the malt, but just as in food and cooking, too much can oversalt the beer and result in salty or metallic flavors. Sodium is ubiquitous in water supplies and mineral additions, so it is important for the brewer to know how much the water has before any treatments are planned. Sodium can be easily determined by calculation from the results of the other tests.

Sulfate

Sulfate and chloride ions in water affect the flavor balance of the beer, from hoppy to malty. The sulfate ion acts to accentuate the hoppiness and dryness of the beer, making it more crisp tasting. Craft brewers often add calcium sulfate to their brewing water for pale ales and IPAs.

Total Dissolved Solids

The measurement of total dissolved solids allows the brewer to quickly determine if there has been a shift or change in a water source or brewing process by measuring all solids in solution. It can also provide a valuable quality assurance check on demineralization processes and waste treatment effectiveness.

Professional Brewing Test Kits

BrewLab® Pro

Code 7190

BREWLAB® PRO

The **BrewLab® Pro** is designed with the professional brewer in mind. This kit provides results for water quality factors that are necessary to calculate adjustments needed to reach brewing water targets. Produce attributes that are unique to each style of beer. Monitor consistency in the source water and the brewing process with the digital total dissolved solids meter to assure quality in every batch. The dissolved oxygen meter easily measures levels during each stage to control flavor, color, and physical characteristics.



11 Essential Test Factors

- Chloride
- Sulfate
- Alkalinity
- Total Hardness
- Calcium Hardness
- Magnesium Hardness
- Sodium
- pH
- Temperature
- Total Dissolved Solids
- Dissolved Oxygen



Kit developed in cooperation with John Palmer, author of *Water, A Comprehensive Guide for Brewers*.

BrewLab® PRO Code 7190† • \$820.00 - Reagent Refill; Code R-7190

**Delivering
Consistency!
Delivering
Results!**

Test Factor	Test System	Range	# of Tests
Chloride	Direct Reading Titrator	1 drop = 10, 25 ppm	Approx. 80
Sulfate	Turbidimetric	0-200 ppm sulfate	50
Alkalinity	Direct Reading Titrator	0-200 ppm (and higher) as CaCO ₃	50 at 200 ppm
Total Hardness	Direct Reading Titrator	0-200 ppm (and higher) as CaCO ₃	50 at 200 ppm
Calcium Hardness	Direct Reading Titrator	0-200 ppm (and higher) as CaCO ₃	50 at 200 ppm
Magnesium Hardness	Calculation	----	----
Sodium	Calculation	----	----
pH	Electrometric	0.0-14.0 pH	Unlimited
Temperature	Electrometric	32 to 149°F (0 to 65°C)	Unlimited
Total Dissolved Solids	Electrometric	0 to 99.9 ppm (mg/L), 100 to 999 ppm (mg/L), 1.00 to 9.99 ppt	Unlimited
Dissolved Oxygen [Sat. Mode]	Electrometric	0 to 200.0%	Unlimited
Dissolved Oxygen [Conc. Mode]	Electrometric	0 to 20.00 ppm (mg/L)	Unlimited

† Prop 65: ⚠ WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov/product

Home Brewing Test Kit

BrewLab® PLUS

Code 7188-02

Brew your
best batch
EVERY
time!

BREWLAB® PLUS



8 Essential Test Factors

- Chloride
- Sulfate
- Alkalinity
- Total Hardness
- Calcium Hardness
- Magnesium Hardness
- Sodium
- pH



Be in control from mash to mug! The **BrewLab® Plus** Kit for home brewers allows you to evaluate the quality of one of the most crucial ingredients of a successful beer—the water. Results for 8 water quality factors to allow you to calculate whether adjustments are necessary before you begin brewing. The digital pH meter provides additional information that allows you to monitor progress throughout the brewing process. A link to a popular brewing calculator is included.

BrewLab® PLUS

Order Code 7188-01[†] · Ship Code R1 [5]*

Reagent Refill; Order Code R-7188-01[†] · Ship Code R1 [5]*

Test Factor	Test System	Range	# of Tests
Chloride	Direct Reading Titrator	1 drop = 10, 25 ppm	Approx. 80
Sulfate	Turbidimetric	0-200 ppm sulfate	50
Alkalinity	Direct Reading Titrator	0-200 ppm [and higher] as CaCO ₃	50 at 200 ppm
Total & Calcium Hardness	Direct Reading Titrator	0-200 ppm [and higher] as CaCO ₃	50 at 200 ppm
Magnesium Hardness	Calculation	----	----
Sodium	Calculation	----	----
pH	Electrometric	0.0-14.0 pH	Unlimited

* See back page for Shipping Codes table. [†] Prop 65: ⚠ WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov/product

Home Brewing Test Kit

BrewLab® BASIC

Code 7189-02

BREWLAB®

BASIC

The **BrewLab® Basic** Kit for home brewers monitors 7 important water quality factors. Experts agree that the quality of the water that you start with will affect your final product, so take the mystery out of making great tasting beer.

Looking for a digital pH test? Check out the **BrewLab® Plus** [Code 7188-01]

Trust LaMotte, the water analysis experts since 1919, to help you understand the most important ingredient—water!

7 Essential Test Factors

- Chloride
- Sulfate
- Alkalinity
- Total Hardness
- Calcium Hardness
- Magnesium Hardness
- Sodium



BrewLab® BASIC

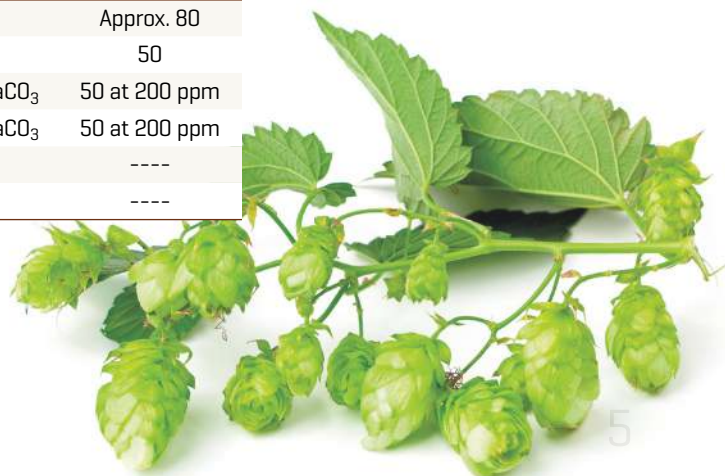
Order Code 7189-01† • Ship Code R1 [5]*

Reagent Refill; Order Code R-7189-01† • Ship Code R1 [5]*

Test Factor	Test System	Range	# of Tests
Chloride	Direct Reading Titrator	1 drop = 10, 25 ppm	Approx. 80
Sulfate	Turbidimetric	0-200 ppm sulfate	50
Alkalinity	Direct Reading Titrator	0-200 ppm (and higher) as CaCO ₃	50 at 200 ppm
Total & Calcium Hardness	Direct Reading Titrator	0-200 ppm (and higher) as CaCO ₃	50 at 200 ppm
Magnesium Hardness	Calculation	----	----
Sodium	Calculation	----	----

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LaMotte Instrumentation

pH/TDS/Salt Meters

pH TRACER with Temperature

Order Code 1741 • Ship Code NH [1]*

- Provided with 4, 7, and 10 pH buffer tablets
- Easy-to-clean rugged flat surface electrode is ideal for food/beverage analysis
- "CAL" indicator shows when to recalibrate with a 1, 2, or 3 point calibration available
- Automatic Temperature Compensation and displays simultaneous temperature and pH result

Range:	0.00 to 14.00 pH
Temperature:	23° to 194°F [-5° to 90°C]
Resolution:	0.01 pH
Accuracy:	±0.01 pH



pH/TDS/Salt TRACER with Temperature†

Order Code 1766 • Ship Code NH [1]*

- One electrode measures 5 parameters including Conductivity, TDS, Salinity, pH, and Temperature
- Units of measure: pH, μ S, mS, ppm, ppt, mg/L, g/L, °C, °F
- Memory stores up to 25 labeled readings
- Auto power off and low battery indicator
- Adjustable Conductivity to TDS ratio

† Not for use in ultra-pure water

Options:

- pH/EC/TDS/SAL Replacement Electrode
Order Code 1755 • Price \$94.90
- Sample Cups w/cap
Order Code 1745-1 • Price \$2.25
- Conductivity Standard, 84 μ S
Order Code 6312-G • Price \$10.00
- Conductivity Standard, 1413 μ S
Order Code 6354-G • Price \$9.55
- Conductivity Standard, 12,880 μ S
Order Code 6317-G • Price \$9.20

	Range	Resolution	Accuracy
Conductivity	0 to 199.9 μ S, 200 to 1999 μ S, 2.00 to 19.99 mS	0.1 μ S	±1%
TDS/Salinity	0 to 99.9 ppm [mg/L], 100 to 999 ppm [mg/L], 1.00 to 9.99 ppt	0.1 ppm [mg/L]	±2%
pH	0.00 to 14.00 pH	0.01 pH	±0.01 pH
Temperature	32° to 149°F [0 to 65°C]	0.1°F/°C	±1.8°F/°C

* See back page for Shipping Codes table.

LaMotte Instrumentation

Dissoved Oxygen Meters



Dissolved Oxygen TRACER with Temperature

Order Code 1761 • Ship Code NH [1]*

- Oxygen level displayed as % Saturation from 0 to 200.0% or Concentration from 0 to 20.00 ppm [mg/L]
- Adjustable Altitude Compensation [0-20,000 ft in 1,000 ft increments] and Salinity Compensation from 0 to 50 ppt
- Memory stores up to 25 data sets
- Self-calibration on power up; Data, Hold, Auto power off, Low battery indicator
- Optional 3 ft [1m] or 16 ft [5m] extension cable; complete with DO electrode, protective sensor cap, spare membrane cap, electrolyte, four 1.5V CR-2032 batteries, and 48" [1.2m] neckstrap

Accessories

- DO Membrane Kit, 6 screw-on membranes and solution
Order Code 1761M
Price \$109.00
- DO Sensor Module
Order Code 1762 • Price \$249.00
- 3 ft. Cable • Order Code 1763
Price \$73.90
- 16 ft. Cable • Order Code 1764
Price \$116.80

	Range	Resolution	Accuracy
DO [sat. mode]	0 to 200.0%	0.1%	±2% FS
DO [conc. mode]	0 to 20.00 ppm [mg/L]	0.01 ppm [mg/L]	0.4 ppm [mg/L]
Temperature	32 to 122°F [0 to 50°C]	0.1°F/°C	±1.8°F [1°C]
Dimensions	1.4 x 6.9 x 1.6 inches [36 x 176 x 41 mm]		
Weight	3.8 oz [110g]		



LaMotte Instrumentation

Portable Multi-Detector Meters



Go to lamotte.com for a listing of over 80 pre-programmed tests!

SMART 3 Colorimeter

Order Code 1910 • Ship Code NH [6]*

The user-friendly SMART3 Colorimeter is the direct reading colorimeter for complete on-site water analyses. All pre-programmed tests can be run on this compact instrument and each test features automatic wavelength selection. The entire multi-LED optical system is embedded in the light chamber and optimized for LaMotte test reagent systems. The analyst can simply select the test and put in the sample with reagent. The microprocessor, which selects the wavelength, also allows the user to load up to 25 tests for analyzing custom reagent systems.

The SMART3 Colorimeter is supplied with 6 sample tubes, AC adapter, and instruction manual including test procedures. SmartLink3 Software available separately.

Range:	0-125%T
Resolution:	1% FS
Accuracy:	2% FS
Light Source:	LED/Filter setup; 428nm, 525nm, 568nm, 638nm
Detector:	Photodiode
Display:	160x100 Backlight LCD, 20x4 line graphics display
Sample Cell:	25 mm round cell, 10 mm square cuvette, 16 mm COD tubes
Datalogging:	Up to 500 data points, USB transfer, time and date stamped
Power:	USB computer/power charger or Lithium Ion rechargeable battery
Bandwidth:	10 mm typical



2020t/i Ratio Turbidity Meters

Code [2020t] 1974-T • Ship Code NH [6]*

Code [2020i] 1970-I • Ship Code NH [6]*

Industry-leading precision, sensitivity, and dependability in one of the most innovative handheld meters available on the market!

Advanced Features:

- Lithium Ion rechargeable battery
- USB port
- 7 languages
- Backlit display
- EPA and ISO versions

Mode	Ratiometric	Nephelometric	Attenuation
Unit of Measure 2020t	NTRU, NTU, ASBC, EBC	NTU, ASBC, EBC	AU, NTU, ASBC, EBC
Unit of Measure 2020i	FNRU, NTU, ASBC, EBC	FNU, NTU, ASBC, EBC	FAU, NTU, ASBC, EBC
Range	0-1,000 NTRU/FNRU 0-17,500 ASBC 0-250 EBC	0-100 NTU/FNU 0-1,750 ASBC 0-25 EBC	0-2,000 AU/FAU 0-70,000 ASBC, 0-1,000 EBC
Resolution	0-10.99 NTRU/FNRU: 0.01 11.0-109.9 NTRU/FNRU: 0.1 110-1000 NTRU/FNRU: 1	0-10.99 NTU/FNU: 0.01 11.0-100.0 NTU/FNU: 0.1	0-2000 AU/FAU: 1
Accuracy	0-2.5 NTRU/FNRU: ±0.05 2.5-100 NTRU/FNRU: ±2% 100-1000 NTRU/FNRU: ±3%	0-2.5 NTU/FNU: ±0.05 2.5-100 NTU/FNU: ±2%	0-2000 AU/FAU: ±10 AU/FAU or 6%, whichever is greater
Detection Limit	0.05 NTRU/FNRU	0.05 NTU/FNU	10 AU/FAU
Reproducibility	0.02 NTRU/FNRU or 1%	0.02 NTU/FNU or 1%	1%
Range Selection	Automatic		
Light Source	2020t: Tungsten lamp 2300 °C ±50 °C 2020i: IR LED 860 nm ±10 nm, spectral bandwidth with 50 nm		
Detector	2020t: Photodiode, centered at 90° and 180°, maximum peak 400-600 nm 2020t/i: Photodiode, centered at 90° and 180°		



* See back page for Shipping Codes table.

LaMotte Instrumentation Testing Products for Brewing



Mercury Free COD Multi-Range Reagent Systems

LaMotte-manufactured Chemical Oxygen Demand reagent systems used with our SMART3 Colorimeter are an easy and precise way to measure critical COD levels. Measure low, medium or high levels of COD using your choice of mercury [USEPA approved method] or non-mercury reagent systems. Each package contains 25 ready to use vials.

Order Code	Range	*Shipping Code [Weight/Lbs]
0072-SC	0-150 ppm	R1 [6]
0073-SC	0-1500 ppm	R1 [6]
0074-SC	0-15,000 ppm	R1 [6]

* See back page for Shipping Codes table.



COD Heater Block

Order Code 5-0102 (120V), 12-Tube Capacity

Order Code 5-0102-EX2 (230V), 12-Tube Capacity

This COD heater block features digital microprocessor control, programmable time and temperature settings, and a dual LED display to monitor both temperature and timer. Perfect for COD, Total Phosphorus, and Total Nitrogen testing PLUS other tests requiring digestion.

Temperature:	86-392°F [30-200°C]
Timer:	0-999 minutes
Vial Capacity:	12 [0.541 oz. / 16 mm tubes]
Stability:	±0.1°C @ 100°C
Weight:	7.94 lb. [3.6 kg]
Dimensions	12.2 L x 9.84 W x 3.15 H inches [310 x 250 x 80 mm]
CE Mark:	Yes
Oven Temp Cutoff:	413°F [212°C]



Caustic Test Kit

Order Code 7516-DR-02† · Ship Code R1 [1]*

Reagent Refill; Code R-7516-01† · Ship Code R1 [1]*

A sample is reacted with barium to precipitate any carbonates, then is titrated with a standard acid to the phenolphthalein endpoint.

Order Code	Test System	Range/Sensitivity	# of Tests [# Reagents]	Reagent Refill Order Code	*Shipping Code [Weight/Lbs]
7516-DR-02	Direct Reading Titrator	0-10%/0.2% NaOH	50 at 10% [4]	R-7516-DR-02	R1 [1]

* See back page for Shipping Codes table. † Prop 65: ⚠ WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov/product

LaMotte

Test Products for Brewing



Alkalinity Test Kit

Order Code 4533-01 • Ship Code NH [1]*

Uses titrations with standard acid to the phenolphthalein [P] and/or total [T] alkalinity endpoint. The mixed indicator, BCG-MR, is used for total alkalinity determinations. Where hydroxyl [OH] alkalinity is determined directly, as with kit #7515, the sample is pre-treated with barium to precipitate carbonate alkalinity. All results are expressed as CaCO₃. To convert results to Na₂O, multiply the answer by 0.62.



Chloride Test Kit

Order Code 7172-02 • Ship Code R1 [2]*

The Chloride Kit uses an argentometric method. This employs a chromate indicator and silver nitrate titrant. Hydrogen peroxide is included to eliminate sulfite interference.



Hardness Test Kit

Order Code 7171-02 • Ship Code R1 [1]*

EDTA titration is used for all hardness determinations, with a red to blue end-point. Both total and calcium hardness buffers include inhibitors to eliminate metal interferences. All results are as CaCO₃; some kits also express results as gpg. The 3609, which is recommended for salt water analysis, includes a conversion factor for Ca⁺⁺. The -LI suffix indicates an all liquid kit; -LT indicates a liquid buffer and tablet indicator.



Peracetic Acid Test Kit

Order Code 7191-02 • Ship Code R1 [2]*

This test is a combination of two separate titrations. The first is a cerium titration of peroxide. The second is an iodometric titration of peracetic acid.

Test Factor	Order Code	Test System	Range/Sensitivity	# of Tests [# Reagents]	Reagent Refill Order Code	Shipping Code (Weight/Lbs)
Alkalinity	4533-DR-01	P & T Alkalinity Direct Reading Titrator	0-200 ppm/4 ppm as CaCO ₃	50 at 200 ppm [3]	R-4533-DR-01	NH [1]
Chloride	7172-02	Dropper Bottle	1 drop = 10, 25, or 50 ppm Cl ⁻	120 at 100 ppm [5]	R-7172-02	R1 [2]
Hardness	7171-02	Total Hardness Dropper Bottle	1 drop = 10, 25, or 50 ppm CaCO ₃	100 [3]	R-7171-02	R1 [1]
Peracetic Acid	7191-02	Dropper Bottle	1 drop = 50 ppm Peroxide, 1 drop = 6, 15 or 300 ppm Peracetic Acid	50 [5]	R-7191-02	R1 [2]

LaMotte Test Strips & Test Papers

Sanitizer Test Strips

A convenient, economical way to perform spot checks for several water quality factors. LaMotte test strips are a great way to monitor water without having to use reagents or field kits. The QAC strips are specifically formulated to read all types of QAC.



Test Factor	Order Code	Range (ppm)	# of Tests Per Vial	Values (ppm)
Peracetic Acid, Low Range	3000LR	0-50	50	0, 5, 10, 20, 30, 50
Peracetic Acid	3000	0-160	50	0, 10, 20, 50, 85, 160
Peracetic Acid, High Range	3000HR	0-1,000	50	0, 50, 100, 250, 500, 1000
QAC	2951	50-400 ppm	100	50, 100, 200, 400
QAC	3072-J	0-500 ppm	100	0, 100, 200, 300, 400, 500
QAC High Range	2951HR	200-1500 ppm	50	200, 400, 600, 1000, 1500
QAC Dual Range	2934	Low: 0-80 ppm High: 0-800 ppm	50	Low: 0, 10, 20, 40, 80 ppm High: 0, 100, 200, 400, 800 ppm

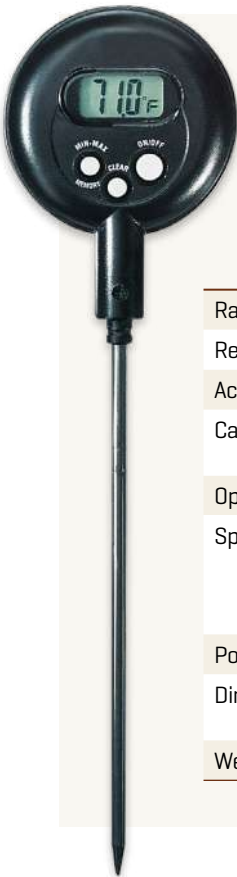
Sanitizer Test Papers

The chlorine and iodine test papers are chemically treated paper strips. These are packaged with a color chart in a waterproof plastic vial.



Test Factor	Order Code	Range (ppm)	# of Tests Per Vial	Values (ppm)
Chlorine	4250-BJ	10-200 ppm	200	10, 50, 100, 200
Iodine	2948-BJ	12-100 ppm	200	12, 25, 50, 100

LaMotte Thermometers



“Min-Max” Memory Thermometer

Order Code 5-0095 • Ship Code NH [1]

- °F or °C selectable scale
- Range: 14 to 392°F or -10 to 200°C
- Recalls minimum and maximum temperature

Range:	-10 to 200°F [14 to 392°C]
Resolution:	0.1°F to 199.9° [1°C above 200°]
Accuracy:	±1.8°F [±1.0°C]
Calibration:	Factory calibrated; fine adjustment through keypad
Operating Temp.:	32 to 122°F [0 to 50°C]
Special Functions:	On/Off or Auto-Off after 8.5 min.; HOLD; °F or °C scale selectable; factory calibration maintained when batteries are replaced
Power & Battery Life:	LR-44 button cell; 2 yr life
Dimensions:	4.3 x 0.14 x 1.8 inches [109 x 4 x 46 mm]
Weight:	3 oz [85 g]



Shipping Codes & Weights

Shipping codes and weights for shipping are included in this catalog for your convenience. The shipping code will refer to one of the following in this chart. Weight will be in pounds and enclosed in [].

Shipping Code	Description
NH	Non Hazardous, No Fees
HF	Hazardous Materials, Air & Ground Fees
R1	Small Quantity Hazardous Materials, No Fees
R2, R3, & LQ	Hazardous Materials, Air Fees Only

