LaMotte

2016

Food & Beverage Safety
Testing Products

LaMotte Test Methods

Colorimetric

There are two basic types of colorimetric tests:

1. Tests which determine the concentration of a substance are based on Beer's Law. Simply stated, this says that the higher the concentration of a substance, the darker the color developed in the test, so more light is absorbed by the sample.
2. pH tests use an indicator which changes color with changes in the concentration of hydrogen ions, or the acidity of the solution.

Test Strips

Test strips are either dipped or swirled in test solutions. The resulting color reaction is compared to a color chart provided.

Color Chart Comparator

Color charts are laminated color standards. The reacted sample is held against the panel and compared to the color standards.

Octa-Slide 2 Comparator

The eight color standards in the Octa-Slide 2 can be viewed at once against a precision matched color bar top-loaded next to the sample tube.

LRC Comparator

This innovative new design replaces the Axial Reader with a far more simplistic and significantly improved optical system. Simply place one reacted sample in the front and one unreacted sample behind it and let the light shine down into both tubes. Precision matched glass ampoules are in the slide bar so even the most sensitive low range colors can be matched one-on-one with extraordinary ease and confidence.

Electronic Methods

Electronic colorimeters measure the amount of light which travels through the reacted sample, and convert the measurement to a reading as ppm, absorbance or %T. In addition to colorimeters, LaMotte offers instruments to test pH, TDS/conductivity, dissolved oxygen, and turbidity.

Titrimetric

Titrimetric tests can be used to determine the concentration of a substance in a sample solution. After the sample is treated with an indicator, a standard titrant is added until a color change indicates a completed reaction. LaMotte offers four separate types of titration methods, allowing a choice of precision and convenience.

Direct Reading Titrator

The Direct Reading Titrator is a 1.0 mL microburet calibrated to allow direct reading of the test result. Each Titrator has a specific range, but may be refilled to test higher concentrations.

Dropper Pipet

The drop count test uses a pipet to provide fast, reliable measurements in the field. The number of drops used to obtain a color change is multiplied by a given factor to produce the test result.

Automatic Buret

The self-zeroing automatic buret is calibrated from 0 to 10 mL in 0.1 mL increments. It is available with a squeeze valve (pinchcock), glass stopcock, or Teflon® stopcock.

Dropper Bottle

The dropper bottle test uses bottle tips which deliver a consistent standard drop size to add titrant to the sample. As with the drop count test, the number of drops used to complete the reaction is multiplied by a given equivalence factor to determine the concentration. Many dropper bottle tests use different sample sizes for different equivalences.

LaMotte Test Strips

LaMotte offers 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. All test strips ship as NH (1)†.

Single Factor Test Strips

Test Factor	Code	Range (ppm)	# of Tests Per Vial	Values (ppm)
Chlorine Dioxide	2999LR	0-10	50	0, 0.25, 0.5, 1, 3, 10
Chlorine Dioxide	3002	0-500	50	0, 10, 25, 50, 100, 250, 500
Chlorine, Free, Low Range	2964-G	0-10	25	0, 0.25, 0.5, 1, 3, 5, 10
Chlorine, Total, Low Range	2963LR-G	0-10	25	0, 0.25, 0.5, 1, 3, 10
Chlorine, Free, High Range*	3031	0-800	50	0, 50, 100, 250, 500, 800
Chlorine, Total	2979	0-5	50	0, 0.5, 1, 3, 5
Hardness, Low Range	2981	0-180	50	0, 30, 60, 120, 180
pH, Wide Range	2974	4-10 (pH)	50	4, 5, 6, 7, 8, 9, 10
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
Hydrogen Peroxide	2984LR	0-50	25	0, 1, 3, 10, 30, 50
Hydrogen Peroxide, High Range	2984	0-90	25	0, 15, 30, 50, 90
QAC, Dual Range	2934	0-80 0-800	50	0, 10, 20, 40, 80 0, 100, 200, 400, 800

*See also chlorine test papers below.

Multi-Factor Test Strips

Test Factor	Code	Range (ppm)	# of Tests Per Factor/Per Vial	Values (ppm)
Iron & Copper	2994	0-5 (Iron) 0-3 (Copper)	25 25	0, 0.3, 0.5, 1, 3, 5 0, 0.3, 0.6, 1, 3
Wide Range pH & Total Chlorine	2987	4-10 (pH) 0-50 (TCl)	25, 50 25, 50	4, 5, 6, 7, 8, 9, 10 0, 1, 5, 10, 20, 50
Nitrate & Nitrite	2996	0-50 (Nitrate) 0-10 (Nitrite)	50 50	0, 5, 10, 25, 50 (NO_3–N) 0, 0.5, 1, 5, 10 (NO_2^-N)

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. Codes 2951 and 2951HR are test strips. They are also packaged with a color chart in a waterproof plastic vial. The QAC strips are specifically formulated to read all types of QAC.

Test Factor	Code	Range (ppm)	# of Tests Per Factor/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
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

† See page 4 for Shipping Code table.

LaMotte Individual Test Kits

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

4491-DR-01

Order Code	Test System	Range/Sensitivity	# of Tests [# Reagents]	Shipping Code [Weight/Lbs]
ACIDITY Some cleaning processes require acidic products. To determine the strength of the acid, titrate the sample with a standard alkali.				
7182-01	HCl, H_2SO_4, H_3PO_4 Dropper Bottle	1 drop = 0.1 or 1.0% (as the particular acid)	50 at 10% [2]	R1 [1]
ALKALINITY Alkalinity plays an important part in process waters used in foods and beverages. The three primary forms are hydroxyl, carbonate and bicarbonate. Titration with a standard acid to the phenolphthalein [P] endpoint determines all of the hydroxyl and ½ of the carbonate alkalinity. Titration to the total [T] alkalinity endpoint determines the other half of the carbonate and all of the bicarbonate. P alkalinity is sometimes called active alkalinity. Inactive alkalinity is calculated by the difference in the P and T determinations. The 7515 kit contains barium to eliminate carbonate and allow direct titration of OH alkalinity.				
7240-02	P & T Alkalinity Dropper Bottle	1 drop = 10, 25, or 50 ppm as $CaCO_3$	100 at 500 ppm [3]	R1 [2]
4491-DR-01	Total Alkalinity Direct Reading Titrator	0–200 ppm/4ppm as $CaCO_3$	50 at 200 ppm [2]	NH [1]
4533-DR-01	P & T Alkalinity Direct Reading Titrator	0–200 ppm/4 ppm as $CaCO_3$	50 at 200 ppm [3]	NH [1]
ARSENIC The procedure requires about 15 minutes and employs a test strip. Inorganic As^{+3} and As^{+5} are converted to arsine gas. This reacts with the test strip in a closed container and produces yellow to brown colors on the strip. The strip color is compared to a color chart to determine concentration in ppb.				
4053-02	Test Strip	<4, 4, 5, 6, 7, 8, 9, 10, 15, 40, 50, 80, 100, 150, 200, 500, >500 ppm	50	R1 [8]
CAUSTIC Caustic soda, NaOH, is used for cleaning equipment in the food, beverage and other process areas. In some cases caustic is reported as Na_2O. Percent caustic concentrations are determined by titration with a standard acid. The 8225 kit uses a single reagent that combines the indicator and titrant. The 8226 is for chorinated cleaners.				
7516-DR-02	Direct Reading Titrator	0–10%/0.2% NaOH	50 at 10% [4]	R1 [1]
8225-01	Dropper Pipet	1 drop = 0.25% NaOH, 1 drop = 0.01% Na_2O	50 [1]	R2 [2]
7181-01	Dropper Bottle	1 drop = 0.1 or 1% NaOH	50 at 10% [3]	R1 [1]
8226-01	Dropper Pipet	1 drop = 0.01% NaOH	50 [3]	R2 [2]
CHLORIDE High chloride concentrations may affect the taste of foods and beverages and can increase corrosion of metal parts. An argentometric titration using silver nitrate is used to determine concentrations.				
7172-02	Dropper Bottle	1 drop = 10, 25, or 50 ppm Cl^-	120 at 100 ppm [5]	R1 [2]
7459-02	Salinity Direct Reading Titrator	0–20 ppt/0.4 ppt Salinity	50 at 20 ppt [2]	NH [1]
CHLORINE Chlorine is a sanitizer for many applications. Several different methods are available to determine chlorine, depending on the concentration. DPD is usually used for concentrations from 0–10 ppm; the FAS-DPD test can titrate higher concentrations by adding more DPD and refilling the titrator. Test strips or papers can read as high as 800 ppm. The iodometric titration is used for higher ppm and % concentrations [see also the 1200 Colorimeter and Tracer, pp. 9 and 15].				
DPD KITS				
3308-01*	DPD Tablet Octa-Slide	0.2, 0.4, 0.6, 0.8, 1.0, 1.5, 2.0, 3.0 ppm Cl	50 [2]	NH [1]
3328-01	DPD Tablet Octa-Slide	1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 8.0, 10.0 ppm Cl	50 [2]	NH [1]
3624-01	Chlorine or Bromine Direct Reading Titrator	0–10 ppm/0.2 ppm Cl or Br 0–100 ppm/2 ppm Cl or Br	50 at 10 ppm [3]	NH [1]
7514-01	FAS-DPD Dropper Bottle Titration	1 drop = 0.2 or 0.5 ppm Cl	50 [3]	NH [1]

*[NPDWR] EPA Accepted.

LaMotte Individual Test Kits

Order Code	Test System	Range/Sensitivity	# of Tests (# Reagents)	Shipping Code (Weight/Lbs)
IODOMETRIC KITS				
4497-01	Dropper Pipet	1 drop = 10 ppm Cl	50 at 200 ppm (3)	R2 (1)
4497-DR-01	Direct Reading Titrator	0–200 ppm/4 ppm Cl	50 at 200 ppm (3)	R2 (1)
4501-01	Dropper Pipet	1 drop = 1 ppm Cl	50 (3)	R2 (1)
7105-02	Direct Reading Titrator	0–10%/0.2% Cl	50 at 10% (3)	R1 (2)
7894-01	Dropper Pipet	1 drop = 0.005%, 0.05%, or 0.5% Cl	50 at 0.1, 1.0, or 10% (3)	R1 (1)
CHLORINE DIOXIDE Chlorine dioxide is used in sanitizing food and beverage equipment and in some drinking water applications. There are 2 ranges of test strips available. Chlorite up to 1,000 ppm and chlorine up to 2 ppm will not interfere with the strip determinations. The field kit and meter use the DPD method. Glycine is added in this method to eliminate chlorine interference. (see also the 1200 colorimeter, p. 9 and test strips, p. 3)				
2999LR	Test Strip	0, 0.25, 0.50, 1.0, 3.0, 10 ppm	50	NH (1)
3002	Test Strip	0, 10, 25, 50, 100, 250, 500 ppm	50	NH (1)
DETERGENTS Detergents are surfactants that are used in cleaners to break up dirt and grease. Anionic detergents (ABS) are tested using a modification of the methylene blue method.				
4507-02	Dropper Pipet	1 drop = 1.0 ppm Detergent	60 at 5.0 ppm (3)	R1 (2)
4515-01	Dropper Pipet	1 drop = 0.1 ppm Detergent	30 (4)	HF (2)
HARDNESS Calcium and magnesium are the primary components of hardness. They interfere with soap/suds formation and can leave undesirable deposits on surfaces. EDTA titration of hardness is the commonly used method.				
7171-02	Total Hardness Dropper Bottle	1 drop = 10, 25, or 50 ppm $CaCO_3$	100 (3)	R1 (1)
7246-02	Total Hardness Dropper Bottle	1 drop = 2, 5, or 10 ppm $CaCO_3$	100 (3)	R1 (1)
4824-LT-02	Calcium, Magnesium, Total Hardness Dropper Bottle	1 drop = 10 ppm or 1 gpg $CaCO_3$ Tablet indicator	50 at 200 ppm or 20 gpg (5)	R1 (1)
HYDROGEN PEROXIDE Various concentrations of hydrogen peroxide are used as oxidizers and bleaching agents in water systems. Iodometric titration is used for ppm and % determinations.				
7138-DB-01	Iodometric Dropper Bottle	1 drop = 5 ppm H_2O_2	50 (4)	HF (2)
7150-01	Iodometric Dropper Bottle	1 drop = 0.5% H_2O_2	50 (4)	HF (2)
2984	Test Strips	0, 15, 30, 50, 90 ppm	25 (1)	NH (1)
2984LR	Test Strips	0, 1, 3, 10, 30, 50 ppm	50 (1)	NH (1)
IODINE Iodine is a sanitizer used in food/beverage and warewash processes. Health Departments usually require a concentration of 12.5-25 ppm for warewash. As with many other oxidizers, iodine may be titrated with a standard thiosulfate solution.				
2948-BJ	Test Papers	12, 25, 50, 100 ppm I_2	200	NH (1)
7253-DR-01	Direct Reading Titrator	0–50 ppm/1 ppm I_2	50 at 50 ppm (3)	R1 (1)
7253-01	Dropper Pipet	1 drop = 2.5 ppm I_2	100 at 25 ppm (3)	R1 (1)

*(NPDWR) EPA Accepted.

See next page for more Individual Test Kits...

3622-01

LaMotte Individual Test Kits

Order Code	Test System	Range/Sensitivity	# of Tests (# Reagents)	Shipping Code (Weight/Lbs)
IRON Iron is present in many natural waters and can impart a foul taste in beverages. The bipyridal method is used for analysis of total iron. A modification of this test can distinguish ferrous and ferric iron. (See p. 9 for the colorimeter version.)				
4447-01	Total Iron Octa-Slide	0.5, 1.0, 2.0, 3.0, 4.0, 6.0, 8.0, 10.0 ppm Fe	90 (2)	R1 (1)
3347-01	Ferrous/Ferric Iron Octa-Slide	0.5, 1.0, 2.0, 3.0, 4.0, 6.0, 8.0, 10.0 ppm Fe	100 (3)	R1 (1)
NITRATE Nitrate can be present in natural waters. The EPA limit on nitrate is 10 ppm as –N, 44 ppm as $-NO_3$. The method employs zinc to reduce the nitrate to nitrite, which is then reacted to form a pink color.				
3354-01	Zinc Reduction Octa-Slide	0, 1, 2, 4, 6, 8, 10, 15 ppm NO_3^-–N	50 (2)	NH (2)
2996	Test Strips	0, 5, 10, 25, 50 ppm NO_3^- 0, 0.5, 1, 5, 10 ppm NO_2^-N	50 (1)	NH (1)
OZONE Ozone is a strong oxidizer used in some food/beverage operations. DPD can be used to test solutions that contain only ozone. However, if chlorine is also present, the indigo trisulfonate colorimeter must be used.				
3678-01 DC1200-OZ	Indigo Trisulfonate Colorimeter	0–0.4 ppm/0.04 ppm O_3	100 (3)	NH (7)
PERACETIC ACID/HYDROGEN PEROXIDE This chemical combination is used to sanitize where the use of other sanitizers is not appropriate. The titration kit uses a ceric titration of the peroxide followed by an iodometric titration of the peracetic acid. One may also test the peracetic acid only. The kit allows the use of 3 samples sizes to give a 1 drop = 6, 15 or 300 ppm peracetic acid equivalence. There are also 2 test strips available.				
7191-02	Dropper Bottle	1 drop = 50 ppm Peroxide 1 drop = 6, 15 or 300 ppm Peracetic Acid	50 (5)	R1 (2)
3000	Test Strips	0, 10, 20, 40, 60, 85, 160 ppm	50	NH (1)
3000LR	Test Strips	0, 5, 10, 20, 30, 50 ppm	50	NH (1)
3000HR	Test Strips	0, 50, 100, 250, 500, 1000	50	NH (1)
pH One of the most common analyses, pH must be controlled and monitored because it plays an essential role in almost all chemical and biological processes. Field kits using pH indicators and pH test strips are below. See pp. 11-12 for pH meters.				
2109-01	Bromthymol Blue	6.0-7.4 pH		NH (1)
2110-01	Phenol Red	6.8-8.2 pH		NH (1)
2111-01	Cresol Red	7.2-8.6 pH		NH (1)
2112-01	Thymol Blue	8.0-9.4 pH		NH (1)
5858-01	Precision Wide Range	3.0-6.5 pH, 7.0-10.5 pH		R1 (1)
pH TEST PAPERS				
2912	Test Papers	3.0-10.0 pH/1 pH	200 Strips	NH (1)
2953	Test Papers	4.5-7.5 pH/0.5 pH	1 Roll	NH (1)
2954	Test Papers	0-13 pH/1 pH	1 Roll	NH (1)
2956	Test Papers	1-11 pH/1 pH	1 Roll	NH (1)
3-2950	pH Indicator Sticks	0–14/1 pH	100 Strips	NH (1)
2974	pH Wide Range	4-10 pH/1 pH	50 Strips	NH (1)
POLYQUAT Polyquats are used as biocides to clean contact surfaces. A polyelectrolytic titration is used to determine the concentration.				
7056-01	Dropper Bottle	1 drop = 1 ppm Polyquat	100+ (5)	R1 (1)
QUATERNARY AMMONIUM COMPOUNDS These biocides are also referred to as Quats or QAC. They are used to clean food processing implements and contact surfaces. Test papers or a tetraphenylboron titration may be used for high concentrations. A variable equivalence titration may be used for all concentrations.				
7057-01	Polyelectrolytic Dropper Bottle	1 drop = 2, 5, or 10 ppm Alkyl dimethyl benzyl ammonium chloride	100+ (5)	R1 (2)
3043-DR-01	BPB Direct Reading Titrator	0–500 ppm/10 ppm Alkyl dimethyl benzyl ammonium chloride	50 at 500 ppm (2)	NH (1)
3042-01	BPB Direct Reading Titrator	0-1,000 ppm/20 ppm 0-5,000 ppm/100 ppm with dilution	50 at 1,000 ppm (2)	NH (1)
2951	Test Papers	50, 100, 200, 400 ppm	100	NH (1)
2951HR	Test Papers	200, 400, 600, 1000, 1500 ppm	50	NH (1)
2934	Test Strips	LR: 0, 10, 20, 40, 180 HR: 0, 100, 200, 400, 800	50	NH (1)

*(NPDWR) EPA Accepted.

BioPaddles®

BioPaddles® are flexible dual-agar paddles each containing microbe-specific media enclosed in a sterile vial. Identify and quantify microbes in air, soil, water, or any surface! BioPaddles do not require any other testing equipment—only a magnifier and warm place (35°C or incubator) are needed.

- Microbiology Simplified!
- Ready to use. Saves time!
- Longer shelf-life than traditional Petri dishes
- No refrigeration required
- Simple incubation requirements
- Unique design enhances colony morphology characterization

Liquid Sampling:

Remove the paddle from the vial and fill the vial (approximately 40ml) with the sample. Insert the paddle, swirl for 15 seconds. Pour out the liquid, replace the paddle in the vial, and incubate.

Surface Sampling:

Remove the paddle from the vial and gently touch each paddle media surface to the sample surface twice per side. Replace paddle in the vial and incubate.

Air Sampling:

Remove the paddle from the vial. Invert and mount the circular cap into the vial, exposing the agar covered paddle. Expose for 15 minutes. Replace the paddle in the vial and incubate.

BioPaddles® Products

All BioPaddles® products come packaged 10 paddles per box. Includes general instructions and provides access to detailed Technical Documents for each paddle type.
All BioPaddles® products come with a free app! **LaMotte BioPaddles Colony ID™ Lite** app lets users compare colony examples on BioPaddle agar types from 5 microhabitats (air, water, soil, surface and food). Also contains information regarding organisms, microbiological techniques, and more!

New BioPaddles® Colony ID™ app

New BioPaddles® Colony ID™ app has a library of over 250 images of 30+ microbes, ideal for presumptive identification. Images of microbial growth on BioPaddles® can be captured with the iPad camera and imported for a side-by-side comparison to the images in the reference library. Using the new Report function a report including a full color image can be prepared and distributed directly by email. Expanded resource materials include Fungi and Bacteria Microanatomy and Microbe Exclusionary Charts. Available for purchase through iTunes. Visit our web site at www.lamotte.com and click on BioPaddles for a direct link.

LaMotte Microbiological Testing

BioPaddles®

Order Code	Type Of Agar(s)	Description	Shipping Code (Weight/Lbs)
5550	Nutrient	For routine culture of non-fastidious bacteria.	R1 (1)
5551	Sabouraud Dextrose	For selective cultivation of fungi (yeasts and molds)	R1 (1)
5552	Tryptic Soy (TSA)/ Rose Bengal (RB)	For cultivation of a wide variety of microorganisms (TSA) and selective isolation of yeasts and molds (RB).	R1 (1)
5553	Nutrient TTC/MacConkey	■ TTC. For field sampling cultivation and enumeration of coliform bacteria total coliform count (TCC). Gram (-) bacterial colonies appear as red dots. Gram (+) bacteria are usually inhibited. ■ MAC. Medium gives improved differentiation between coliforms and non-lactose fermenting organisms. Gram (+) cocci are usually inhibited.	R1 (1)

NOTE: Dated material. Specifiy ship date. Orders may be placed in advance. Orders shipped from Maryland on Monday and Tuesday only.

Coliform Screening Kit

Order Code 4-3616

The 4-3616 is an easy-to-use, disposable 5-tube method to indicate the presence of Total Coliform Bacteria in a water supply. The water sample is placed in test vials containing the special coliform indicating tablets and stored at room temperature for a predetermined time period. After the required storage period, the vials are examined to determine the presence of coliform bacteria.

Code	Test System	Range/ Sensitivity	# of Tests (# of Reagents)	Shipping Code (Wgt./lbs)
4-3616	Tableted nutrient based	Presence/ Absence	1 (1)	NH (1)

LaMotte Instrumentation

LaMotte offers a number of instruments to test process water, wastewater and sanitizers. A brief summary of these is below. For more information on these and other instruments, please visit **www.lamotte.com**.

Model 1200 Series

The 1200 Series of single test, direct reading colorimeters incorporates design advances that enhance reliability, improve accuracy, and simplify the calibration process, all in a portable, handheld package.

Meters are available for ammonia nitrogen, bromine, chlorine, chlorine dioxide, copper, fluoride, iron, manganese, molybdenum, nitrate nitrogen, ozone, phosphate and sulfate.

Instrument Type:	Single wavelength, direct-reading colorimeter
Readout:	3½ digit LCD
Photometric Accuracy:	±0.001 Absorbance Unit
Detector:	Silicon Photodiode
Sample Chamber:	Accepts 25mm diameter flat-bottom, screwcap tubes (6 included)
Light Source:	LED
Interface:	RS-232 serial interface
Power:	Alkaline 9-volt DC battery, 3.5 mm jack for optional AC adapter
Size (LxWxH):	15 x 8 x 5.5 cm, (6 x 3.25 x 2.5 inches, 152 x 83 x 64 mm)

Options:

RS-232 Cable (Order Code 1772)
Replacement Tubes (Order Code 0290-6)

AUTO-ZERO

Simply insert the sample blank and press the zero key. No more dialing in the zero

HINGED LIGHT COVER

Flip-top lid over sample chamber prevents any stray light, especially in the field, and avoids misplacing separate light caps.

IMPROVED ACCURACY

The microprocessor enables the factory programmed calibrations to optimally match nonlinear curves.

EUROPEAN CE MARK

The 1200 has been independently tested and has earned the European CE Mark of compliance for electromagnetic compatibility and safety.

WATER RESISTANT DESIGN

Designed with excessive exposure to moisture in mind, the 1200 colorimeters deliver trouble-free performace in the field and lab.

EPA COMPLIANT

Employing the proper wavelength and the DPD test method, the 1200 Chlorine Colorimeter Kit meets or exceeds EPA design specifications for NPDWR and NPDES chlorine monitoring programs (EPA 330.5 and Standard Methods 4500-Cl G).

A GREAT VALUE!

Complete, economical package! The 1200 Chlorine Colorimeter Kit comes with enough tablets for 100 tests or liquid reagents for 140 tests, six sample vials with screw caps, instruction manual, and sturdy coloring case.

FIELD & LAB USE

An optional AC adapter is available to save battery life when in the laboratory.

0-4 PPM CHLORINE

No need to select a low or high range. The 1200 covers the entire critical chlorine range of 0-4 ppm with a 0.05 sensitivity.

RS-232 INTERFACE

An RS-232 port is provided to interface with a datalogger or computer. Optional cable available.

LARGE DISPLAY

The large 3½ digit display presents measurements in absorbance, and indicates low battery warnings.

LaMotte Instrumentation

Model 1200 · Single Test Colorimeter Labs

Test Factor	Code	Model	Range (ppm)	Detection Limit	Test Method (# of reagents)	# of Tests	Ship Codes
Ammonia Nitrogen	3680-01	DC1200-NH	0–5.0	0.05	Nessler (2)	60	R1
Bromine	3672-01	DC1200-BR	0–7.0	0.05	DPD Tablets (1)	100	NH
Chlorine (Free & Total)	3670-01	DC1200-CL	0–4.0	0.05	DPD Tablets (2)	100	NH
Chlorine (Free & Total)	3670-01-LI	DC1200-CL-LI	0–4.0	0.05	DPD Liquid (3)	140	R1
Chlorine Dioxide	3671-01	DC1200-CLO	0–7.0	0.05	DPD with Glycine Solution (2)	100	NH
Chlorine Dioxide	3671-01-LI	DC1200-CLO-LI	0–7.0	0.05	DPD Liquid	140	R1
Copper	3673-01	DC1200-CO	0–6.0	0.03	Diethyldithiocarbamate (1)	100	NH
Fluoride	3674-01	DC1200-FL	0–2.0	0.028	Alizarin-Zirconyl (2)	100	LQ
Iron	3681-01	DC1200-FE	0–4.0	0.25	1,10 Phenanthroline (2)	100	R1
Manganese	3682-01	DC1200-MN	0–0.7	0.02	PAN (3)	100	R3
Molybdenum	3676-01	DC1200-MO	0–30	0.5	Thioglycolate (3)	50	R3
Nitrate Nitrogen	3677-01	DC1200-NA	0–3.0	0.05	Cadmium Reduction (2)	40	R1
Ozone	3678-01	DC1200-OZ	0–0.4	0.04	Indigo Blue (3)	100	NH
Ozone (Without other oxidizers)	3598	DC1200-OZ-DPD	0-3	0.03	DPD Liquid	140	R1
Phosphate	3679-01	DC1200-PLR	0–3.0	0.07	Ascorbic Acid (2)	100	R2
Sulfate	3683-01	DC1200-SU	0–100	1.0	Barium Chloride (1)	100	R1

Liquid Chlorine DPD Reagents

30 mL (1 Oz.)	Code	Ship Code
DPD 1A	P-6740-G	NH
DPD 1B	P-6741-G	R1
DPD 3	P-6743-G	NH

60 mL (2 Oz.)	Code	Ship Code
DPD 1A	P-6740-H	NH
DPD 1B	P-6741-H	R2
DPD 3	P-6743-H	NH

Tablet Chlorine DPD Reagents

Tablet	50	100	1000	Ship Code
Chlorine DPD #1 Instrument	6903A-H	6903A-J	6903A-M	NH
Chlorine DPD #3 Instrument	6197A-H	6197A-J	6197A-M	NH
Chlorine DPD #4 Instrument	6906A-H	6906A-J	6906A-M	NH

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 these compact instruments 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 SMART 3 Colorimeter is supplied with 6 sample tubes, AC adapter, and instruction manual including test procedures. SmartLink 3 Software available separately

Advanced Features:

- IP67 Waterproof
- Simple, menu-driven operation
- Automatic wavelength selection
- Seven user selected languages

Accessories/Replacement Items:

Smartcheck Standards	**Code 4148**
Replacement Sample Chamber Cup	**Code 3-0038**
COD/UDV adapter	**Code 1724**
6 sample tubes	**Code 0290-6**
USB Cable	**Code 1720**
USB Power Plug	**Code 1721**
Car Charger	**Code 5-0132**
Small Case	**Code 1910-GCS150**
Large Case	**Code 1910-GCS440**

IP67 WATERPROOF | EPA 180.1 | 2 YEAR WARRANTY | CE

Specifications	
Range:	0-125%T
Resolution:	1% FS
Accuracy:	2% FS
CE Mark:	Yes
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
Keypad:	6-button mechanical
Calibration:	Factory set - user adjustable
Power:	USB computer/power charger or Lithium Ion rechargeable battery, 3.7V
Dimensions:	19.05 x 8.84 x 6.35 cm (7.5 x 3.5 x 2.5 inches)
Weight:	15 ounces
Bandwidth:	10 mm typical

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

LaMotte Instrumentation

2020we/wi Portable Turbidity Meters

Order Code (2020we) 1970-EPA · Order Code (2020wi) 1970-ISO · Ship Code NH (6)

The multi-detector optical configuration assures long term stability and minimizes stray light and color interferences. All readings are determined by the process of signal averaging over a 5 second period. This minimizes fluctuations in readings attributed to large particles and results in rapid, highly repeatable measurements. Ideally suited for both low-level drinking water applications as well as monitoring high turbidity in the field.

2020we version meets US EPA design criteria as specified by US EPA method 180.1. 2020wi version meets design criteria for quantitative methods of turbidity using optical turbidimeters as specified by ISO 7027. Kits are supplied with 0, 1, and 10 NTU standard, sample bottle, four sample tubes.

IP67 WATERPROOF · EPA 180.1 · ISO 7027 · 2 YEAR WARRANTY · CE

Specifications	
Unit of Measure 2020we	NTU, AU, ASBC (American Society of Brewing Chemists), EBC (European Brewery Convention)
Units of Measure 2020wi	FNU, FAU, ASBC (American Society of Brewing Chemists), EBC (European Brewery Convention)
Range*	0-4000 NTU/FNU, 0-10,500 ASBC, 0-150 EBC
Resolution*	0.01 NTU/FNU 0.00-10.99 0.1 NTU/FNU 11.0-109.9 1 NTU/FNU 110-4000
Accuracy*	From 0-2.5 NTU the accuracy is ±0.05 NTU. From 2.5-100 NTU the accuracy is ±2%. Above 100 NTU the accuracy is ±3%.
Detection Limit	0.05 NTU/FNU
Range Selection	Automatic
Reproducibility*	0.02 NTU/FNU or 1%
Light Source	Tungsten (EPA), complies with EPA 180.1, Rev. 2.0 (1993) and Standard Methods 2130 B-2001; 860nm LED (ISO), complies with ISO 7027

*Over 600 NTU/FNU units expressed as AU/FAU

Meter Features	
Signal Averaging	Disabled, 2, 5, 10
Power	USB computer cable, wall adapter or Lithium ion rechargeable battery, 3.7V, 2.5" x .75", 1.7 oz
AC Power	Optional
Data Logging	500 points
Auto Shut-Off	Disabled, 5, 10, 30 seconds
Optional Software	SmartLink 3
Languages	English, French, Spanish, Japanese, Italian, Portuguese, Chinese
Response Time	<2 Seconds
Size	7.5 x 3.5 x 2.5 inches; 19.05 x 8.84 x 6.35 cm
Weight	13 ounces
Display	6-line LCD with backlit display

2 YEAR WARRANTY · CE

SMART Spectro Spectrophotometer

Order Code 2000-01 · Ship Code NH (17)

The SMART Spectro is a portable spectrophotometer that is easier to use and more accurate than anything in its price range. With automatic wavelength selection, pre-programmed tests, and superior performance, this is the best spectrophotometer for the money! Over **80 pre-programmed tests** are included, and 25 user calibrations can be entered into the memory. The user can also customize sequences for frequently run tests.
The SMART Spectro is supplied with 6 sample tubes (25mm round), 2 sample cell holders (25mm round and COD, 10 mm cuvettes), AC adapter, battery charger, instruction manual including test procedures, and quick start guides.

Advanced Features:

- A wider wavelength range
- Menu-driven display
- Pre-programmed tests with 25 user tests
- Automatic wavelength selection
- Unique optical design system using a 1200 lines/mm grating
- Greater accuracy, higher resolution

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

LaMotte Instrumentation

Digestion Tubes for Total Nitrogen and Total Phosphorus

LaMotte offers low and high Total Phosphorus and a Total Nitrogen test that are reacted in a heater block and are then tested using a colorimeter or spectrophotometer. All kits ship as R1 (Small Quantity Hazardous Material - No Fee).

Code	Description	Range	# of Tests
4024-01	Low Total Phosphorus	0-3.5 mg/L	25
4025-01	High Total Phosphorus	0-100 mg/L	25
4026-01	Total Nitrogen	0-25 mg/L	25

COD Multi-Range Reagent Systems

LaMotte-manufactured Chemical Oxygen Demand reagent systems used with our COD PLUS Colorimeter, SMART 2 Colorimeter or SMART Spectro Spectrophotometer are an easy and precise way to measure critical COD levels. Measure low, medium or high levels of COD using your choice of mercury (US EPA approved method) or non-mercury reagent systems. Each package contains 25 ready to use vials. All kits ship as R1 (Small Quantity. Hazardous Material - No Fee).

Mercury-Free Systems

Code	Range
0072-SC	0-150 ppm
0073-SC	0-1500 ppm
0074-SC	0-15,000 ppm

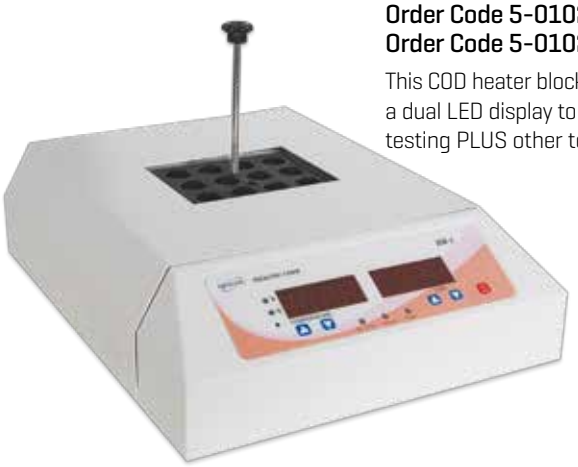
Mercury Based Systems

Code	Range
0075-SC	0-150 ppm (EPA approved)
0076-SC	0-1500 ppm (EPA approved)
0077-SC	0-15,000 ppm

COD Heater Block

Order Code 5-0102 (120V), 12-Tube Capacity · Ship Code NH (15)
Order Code 5-0102-EX2 (230V), 12-Tube Capacity · Ship Code NH (15)

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.



Specifications	
Temperature:	30-200°C
Timer:	0-999 minutes
Vial Capacity:	12 (16 mm tubes)
Stability:	±0.1°C @ 100°C
Weight:	3.6 kg
Dimensions	310 x 250 x 80 mm (LxWxH)
CE Mark:	Yes
Oven Temp Cutoff:	212°C

ColorQ PRO-4

Order Code 2055

The unique, multi-test ColorQ pool and spa hand-held photometer reads up to SEVEN test factors directly on a digital display. Featuring an innovative dual-optic design, the ColorQ eliminates the need to visually determine slight color variations or use look-up tables.

Test Factor	Range	Resolution	# of Tests	Shipping Code (Weight/Lbs)
Free Chlorine	0-10.0 ppm	.01 ppm	144	R1 (2)
Total Chlorine	0-10.0 ppm	.01 ppm	144	R1 (2)
Bromine	0-20.0 ppm	.10 ppm	144	R1 (2)
pH	6.8-8.2 pH	.10 pH	144	R1 (2)

Upgrades easily to measure Alkalinity, Hardness, and Cyanuric Acid.

LaMotte Temperature Meters

"Min-Max" Memory Thermometer

Order Code 5-0095 · Ship Code NH (1)

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

Specifications	
Code:	5-0095
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:	109 x 4 x 46 mm (4.3 x 0.14 x 1.8 inches)
Weight:	85g (3 oz.)

IR Thermometer with Color Alert System

Order Code 5-0133 · Ship Code NH (1)

The convenience of non-contact temperature measurements, now with fast 2 color display.

- Fast and accurate measurements at 12" where the two lasers converge with 12:1 field of view
- Measures up to 950°F (510°C)
- Blue backlit dual LCD display changes to Red backlit outside set points
- Instantaneous response captures spikes in temperature
- Max mode captures and holds rapidly changing temperatures
- Lock function for continuous readings
- Adjustable emissivity increases measurement accuracy for different surfaces
- Double molded housing
- Complete with case and 9V battery
- Adjustable High/Low set points with color and audible alarms signal out of range temperature

Food Safety Applications

Fast and convenient screening tool for both cold and hot foods for Food Safety and HACCP. No contamination or damage to the product. Easily take temperature of products moving on conveyors or hard-to-reach places. Verify equipment performance, sanitation and process temperature conditions. Scan cooling systems, refrigerated display cases, trucks and storage areas before loading and stacking.

Specifications	
Range:	-4 to 950°F (-20 to 510°C)
Resolution:	1°C/1°F
Accuracy:	25 to 260°C (77 to 500°F):
±(1% of rdg +2°F/1°C)	Factory calibrated; fine adjustment through keypad
Repeatability:	±0.5% or 1.8°C/1°F
Response Time:	150mSec
Emissivity:	0.10 to 1.00 adjustable
Distance-to-Spot Size:	12:1
Power:	One 9V alkaline battery
Dimensions:	146 x 104 x 43 mm (5.7 x 4 x 1.6 inches)
Weight:	163g (5.74 oz.)

LaMotte PockeTesters

The world's first pocket-sized ISE meter for measuring Total Chlorine. Ideal for use in colored or turbid solutions. Use it to test pH and ORP with interchangeable flat surface sensors (optional).

Total Chlorine TRACER

Order Code 1740 · Ship Code NH (1)

EPA Approved (NPDES Monitoring)

- Read Total Chlorine from 0.00-10 ppm
- Readings are not affected by sample color or turbidity
- Automatic self calibration
- Extra bold display includes an analog bar graph feature
- Memory can store up to 15 readings
- Chlorine mode also displays sample temperature
- Unit identifies which probe is in use and retains calibrations
- Automatic shut-off and Low Battery indicator; uses four 3V CR-2032 batteries
- Includes 100 reagent tablets at almost half the price of similar Chlorine ISE reagents
- Follows EPA protocol for ISE methods

pH TRACER

Order Code 1741 · Ship Code NH (1)

- Provided with 4, 7, and 10 pH buffer tablets
- Rugged flat surface electrode is ideal for food analysis and will alert user when it is time to "RENEW"
- A "CAL" indicator shows when to recalibrate and user can select a 1, 2, or 3 point calibration
- Includes Automatic Temperature Compensation and displays temperature while showing pH result

Specifications	
Range:	0.00 to 14.00 pH
Temp:	23° to 194°F (-5° to 90°C)
Resolution:	0.01 pH
Accuracy:	±0.01 pH

ORP TRACER

Order Code 1742 · Ship Code NH (1)

- High resolution to 1 mV
- Automatic self calibration

Specifications	
Range:	-999 to 999 mV
Resolution:	1 mV
Accuracy:	±4 mV

Options

Additional Probes

- pH Sensor · 0-14.00/±0.01 pH · Order Code 1733
- ORP Sensor · -999 to 999mV/±4mV · Order Code 1734
- Cl2 Sensor · 0-10.00/±10% of reading · Order Code 1732

Chlorine Test Tablets

Order Code 7044A-J

Specially formulated just for the TRACER, these deliver a precise amount of iodide for a 20 mL sample. Available in packages of 100.

LaMotte PockeTesters

pH PockeTester 10 & pH PockeTester 20

pH PockeTester 10 Order Code 5-0103 · Ship Code NH (1)
pH PockeTester 20 Order Code 5-0104 · Ship Code NH (1)
(Replacement Electrode, Code 5-0097)

- ±0.1 pH accuracy

Both meters feature automatic temperature compensation, and buffer recognition for three point calibration based on US (pH 4.01, 7.00, 10.01) or NIST (pH 4.01, 6.86, 9.18) systems. The sensor is a double junction Ag/AgCl system with polymer gel. The IP67 rated housing features a 1.0625" (26.99 mm) display, which also displays diagnostic messages. Auto-off after 8.5 minutes to conserve battery life.

Specifications	pH PockeTester 10	pH PockeTester 20
Order Code:	5-0103	5-0104
Range:	–1.0 to 15.0 pH; extended range	
Resolution:	0.1 pH	0.01 pH
Accuracy:	±0.1 pH	±0.01 pH
Calibration:	Select up to 3 points (4.01, 7.00, 10.01 or 4.01, 6.86, 9.18)	
Operating Temperature:	0 to 50°C; 32 to 122°F	0 to 50°C; 32 to 122°F
Temp. Comp.:	Automatic (ATC) 0 to 50°C	
Special Functions:	On/Off or Auto-Off after 8.5 min.; HOLD; CALibrate; CONfirm	
Power & Battery Life:	Four 1.5V alkaline button cell batteries (supplied), 500 hour use	
Dimensions/Weight:	8.5"L x 2.4"H x 2.5"(boxed); 6.5"L x 1.5"Dia. (unit only); 125g (4.5 oz.) boxed; 90g (3.25 oz.) unit only,	

Buffer Tablets

Add one tablet to 20 mL of Deionized Water to produce buffers. Available in 50, 100, and 1000 tablet packs. In foil strips of 10 tablets each.

pH Value	Code
4.00	3983-H
7.00	3984-H
10.00	3985-H

Standardized pH Buffer Solutions

For use in calibration of pH meters. Ordering information for all buffers is listed.

pH Value	Size	Code
4.01	120 mL	2866-J
4.01	500 mL	2866-L
6.86	500 mL	2808-L
7.00	120 mL	2881-J
7.00	500 mL	2881-L
9.18	500 mL	2809-L
10.00	120 mL	2896-J
10.00	500 mL	2896-L

Color-Coded pH Buffer Solutions

Minute amount of color permits immediate visual distinction of different buffer values.

pH Value	Color	Size	Code
4.01	Red	500 mL	3771-L
7.00	Yellow	500 mL	3772-L
10.00	Blue	500 mL	3773-L

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