LaMotte®

# SOIL TESTING PRODUCTS

# METERS & ACCESSORIES

## pH

Soil pH is a measure of the relative acidity or basicity of a given soil. The pH scale (0-14) is a logarithmic expression of hydrogen ion activity. A pH of 7.0 is neutral, and soils above or below this value are either alkaline or acidic, respectively. A soil with a pH of 6.0 is ten times more acidic than a soil of pH 7.0. Changes in soil pH dramatically affect the availability of nutrients to growing crops. The pH meter is the preferred method for determination of soil pH and the only one adaptable to the buffer methods for determining the lime requirement of a soil. pH is measured by mixing a 1:1 ratio of soil and distilled water. Distilled water not included with meters.

## LaMotte pH 5 Series Meter

See back page for Shipping Codes & Weights chart.

**pH 5 (without case) · Code 5-0034-01 · NH (3)**
**pH 5 (with case) · Code 5-0035-01 · NH (5)**

Meter includes electrode and temperature probe, pH 4, 7 and 10 buffer tablets, and is available with or without a carrying case.

### Features:

- Range: 0.00-14.00 pH/0.01 pH
- Three point calibration
- Automatic Temperature Compensation
- Temperature readout 0-100°C/0.1°C
- Power: Four AAA batteries included
- Auto-off after 17 minutes
- Hold function
- Instructions included for measuring pH in soil


*Code 5-0034-02*


*Code 5-0035-01*


## pH Buffer Solutions

These Standardized pH Buffer Solutions are for use in calibration of pH meters. Available in 120 mL and 500 mL sizes.

| pH Value* | Code |
|---|---|
| 4.01 | 2866 |
| 7.00 | 2881 |
| 10.00 | 2896 |

* Other pH values available.


## Buffer Tablets

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

| pH Value | Code |
|---|---|
| 4.0 | 3983A |
| 7.00 | 3984A |
| 10.0 | 3985A |


*Code 1741*


*Code 1766*

## pH Tracer

### Code 1741 · NH (1)

Tracer provided with 4, 7 and 10 pH buffer tablets.

### Features:

- Range: 0.00 to 14.00 pH/0.01 pH
- Temp: 23° to 194°F (–5° to 90° C)
- Resolution: 0.01 pH
- Rugged flat surface electrode will alert user when it's 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
- Optional interchangeable probes for Total Chlorine* (Code 1732) and ORP (Code 1734) measurement in water. Replacement pH Probe (Code 1733)
- Auto-off after 10 minutes
- Power: Four 3VCR-2032 batteries
- Requires 7044A-J Tablets (included)

## pH/TDS/SALT Tracer

### Code 1766 · NH (1)

### Features:

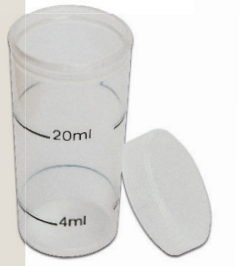
- Measures five parameters including Conductivity, TDS, Salinity, pH and Temperature using one electrode
- Units of measure: pH, µS, mS, ppm, ppt, mg/L, °C, °F
- Memory stores up to 25 labeled readings
- Adjustable Conductivity to TDS ratio
- Auto power off and low battery indicator

### Options:

- Replacement Electrode for 1766 only, Code 1755
- Weighted Stand w/Sample Cups (5), Code 1746
- Sample Cups w/caps (24), Code 1745

| | Range | Resolution | Accuracy |
|---|---|---|---|
| Conductivity | 0 to 199.9 µS,<br>200 to 1999 µS,<br>2.00 to 19.99 mS | 0.1 µS | ±1% |
| TDS/Salinity | 0 to 99.9 ppm (mg/L),<br>100 to 999 ppm (mg/L),<br>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 |


Weighted Stand
Code 1746




Sample Cup
Code 1745

**See back page for Shipping Codes & Weights chart.**

## pH Buffer Solutions

These Standardized pH Buffer Solutions are for use in calibration of pH meters. Available in 120 mL and 500 mL sizes.

| pH Value* | Code |
|---|---|
| 4.01 | 2866 |
| 7.00 | 2881 |
| 10.00 | 2896 |

* Other pH values available.


## Conductivity/TDS Solutions

The following potassium chloride solutions can be used to standardize conductivity meters. TDS values are based on a 0.7 conversion from conductivity. Available in 30 mL and 500 mL sizes.

| Code | Description |
|---|---|
| 6312-L | 84 µS/cm, 59 ppm |
| 6354-L | 1,413 µS/cm,989 ppm |
| 6317-L | 12,880 µS/cm, 9016 ppm |

# METERS & ACCESSORIES

## Dissolved Salts

High levels of soluble salts in the soil can be caused by excessive fertilization, insufficient watering, poor drainage, or by some contributing salt water intrusion. High concentrations of soluble salts can inhibit plant growth and will reduce overall crop yields. Greenhouse plants and other sensitive crops may be damaged if soluble salts exceed 2000 ppm. Soluble Salts, or Total Dissolved Salts, are measured by means of a Conductivity Meter. A conductivity reading measures the capacity of a solution to conduct an electric current and is directly related to the total ionic concentration of dissolved substances in the solution. Thus, the conductivity reading of a soil extract can be converted into a reading of Total Dissolved Salts to indicate combined levels of sulfates, chlorides and other salts in the soil. Extract is prepared using deionized water, not included with meters.

See back page for Shipping Codes & Weights chart.

## LaMotte TDS 6 Series Meter

### TDS 6 (without carrying case) · Code 5-0036-02 · NH (3)

### TDS 6 (with carrying case) includes two calibration standards · Code 5-0037-02 · NH (5)

Microprocessors have enabled meter manufacturers to combine many features into smaller designs with better accuracy. Meter includes electrode and temperature probe, and is available with or without a carrying case.

### Features:

- Push button operation
- Calibration 1 per range
- Range: 0.0-10.0, 100.0, 1,000 ppm, 1.0-10.00, 100.0, 200 ppt
- Power: Four AAA batteries included
- Temperature readout 0-100°C/0.1°C
- Automatic Temperature Compensation
- Auto-off after 17 minutes
- Hold function
- Adjustable conductivity to TDS factor
- Instructions included for measuring TDS in soil
- Meter has a two-year warranty


*Code 5-0036-02*


*Code 5-0037-02*



# SAL/EC/TDS Tracer

## Code 1749 · NH (1)

### Features:

- Easy to use
- 2% accuracy for EC, TDS and Salt modules
- Automatic temperature compensation
- Self calibration
- Memory can store up to 15 readings
- Automatic shut-off and low battery indicator; uses four 3V CR-2032 button batteries
- Auto Off after 10 minutes

### Options:

- EC/TDS/SAL Replacement Electrode · Code 1765
- Weighted Stand w/Sample Cups (5) · Code 1746
- Sample Cups w/caps (24) · Code 1745
- Conductivity Standard, 84 µS · Code 6312
- Conductivity Standard, 1413 µS · Code 6354
- Conductivity Standard, 12,880 µS · Code 6317


Weighted Stand


Sample Cup

| | Range |
|---|---|
| Conductivity: | 0 to 199.9 µS, 200 to 1999 µS, 2.00 to 19.99 mS |
| TDS: | 0 to 99.9 ppm (mg/L), 100 to 999 ppm (mg/L), 1.00 to 9.99 ppt (g/L) |
| Salinity: | 0 to 99.9 ppm, 100 to 999 ppm, 100 to 9,900 ppm |
| Accuracy: | EC, TDS, Salt: ± 2% FS; Temperature: ± 1°C (1.8°F) |
| Temperature | ±1.8°F/°C |


## Conductivity/TDS Solutions

The following potassium chloride solutions can be used to standardize conductivity meters. TDS values are based on a 0.7 conversion from conductivity. Available in 30 mL and 500 mL sizes.

| Code | Description | Size |
|---|---|---|
| 6312-L | 84 µS/cm, 59 ppm | 500 mL |
| 6354-L | 1,413 µS/cm,989 ppm | 500 mL |
| 6317-L | 12,880 µS/cm, 9016 ppm | 500 mL |

# ELECTRONIC LABS

See back page for Shipping Codes & Weights chart.

## Model SCL-12 · Code 1985-05 · LQ (37) | Reagent Refill · Code R-1985-04 · LQ
## Model SCL-15 w/out pH & Dissolved Salts Meters · Code 1988-03 · LQ (33)

The LaMotte Model SCL-12 is designed to provide the landowner, consultant, or fertilizer specialist with a method for achieving immediate and economical soil analyses in the field without sacrificing accuracy. The Model SCL-12 is a self-contained, electronic soil analysis laboratory that provides accurate answers anywhere for 15 soil factors, including available forms of macronutrients and critical micronutrients. The SMART® 3 Colorimeter instantly analyzes color reactions developed in nutrient tests. Display readings are multiplied by a conversion factor specific to each test to provide a result in parts per million (ppm) or pounds per acre (lb/acre)—no further calculations are necessary. The simplified test procedures provide at least 20 tests for each soil nutrient. Each accurately standardized system is furnished in an individual plastic module for quick distinction. All tests are performed in minutes on easy-to-prepare soil extracts, based on **Mehlich I extraction**. Critical soil pH measurements are performed quickly and reliably with a battery-powered pH 5 meter. The meter measures the pH of a one-to-one solution of soil and distilled water over the range of 0-14 pH units to a sensitivity of ±0.01 pH. Soluble Salt levels in soils and irrigation waters are monitored accurately with a TDS 6 meter, measuring Dissolved Salts from 0-999+ ppm.


*Code 1985-05*

All of the LaMotte soil test kits measure the portion of the soil nutrient that is available for the plant to use. Pounds per acre represent the number of pounds of soil in an acre to the plow depth of 6-7 inches, or 2,000,000 lbs.

| Colorimeter Tests | Method | Range* | # Tests |
|---|---|---|---|
| Nitrate Nitrogen | Cadmium Reduction | 0-300 lb/acre | 20 |
| Nitrite Nitrogen | Diazotization | 0-40 lb/acre | 20 |
| Ammonia Nitrogen | Nesslerization | 0-200 lb/acre | 50 |
| Phosphorus | Ascorbic Acid Reduction | 0-99 lb/acre | 50 |
| Potassium | Tetraphenylboron | 0-500 lb/acre | 100 |
| Sulfur | Barium Chloride | 3-94 ppm | 50 |
| Copper | Diethyldithiocarbamate | 0-30 ppm | 100 |
| Iron | Bipyridyl | 0-30 ppm | 50 |
| Manganese | Periodate | 0-75 ppm | 50 |
| Zinc | Zincon | 0-15 ppm | 50 |

| Direct Reading Titrator Tests: | Range* | # Tests |
|---|---|---|
| Calcium | 0-4000 lb/acre | 50 |
| Magnesium | 0-2400 lb/acre | 50 |
| Chloride | 0-1000 lb/acre | 50 |

| Battery-Powered Meters: | Range* |
|---|---|
| pH 5 | pH 0-14 |
| TDS 6 | 0-10.00, 100.0, 1,000 ppm; 1.00-10.00, 100, 200 ppt |

* See table at right for unit conversion factors

### Unit Conversion Factors:

Results can be measured using a choice of units, explained here. Parts per million (ppm), pounds/acre and Kg/hectare units can be converted to each other using these values:

| Area | Soil Depth | Soil Weight |
|---|---|---|
| 1 acre | 6-7 inches | 2 million lb |
| 1 hectare | 15-18 cm | 2.25 million Kg |

| ppm | lb/acre | Kg/hectare |
|---|---|---|
| 0.5 | 1 | 1.12 |
| 1 | 2 | 2.24 |
| 0.89 | 1.78 | 1 |

A number of variables must be considered when interpreting soil test results in addition to the values obtained. These variables include the composition of the soil, drainage, climate, previous fertilizer programs and the type of plant to be grown. Samples must also be truly representative of the area being studied and must be carefully selected.

# AGRICULTURAL COMBINATION SOIL OUTFITS


*Code 5010-01*

**See back page for Shipping Codes & Weights chart.**

## Model STH Series

### Macronutrients, pH, & Humus

Model STH-5 · Code 5061 · LQ (12) | Reagent Refill · Code R-5061 · LQ (6)

### Macronutrients, Micronutrients, & pH

Model STH-14 · Code 5010-01 · LQ (20) | Reagent Refill · Code R-5010-01 · LQ (10)

The Model STH Combination Soil Outfits have offered simplified methods for determination of available nutrients found in agricultural soils for over 50 years. Since the original introduction, based on **Morgan soil test methods**, reagent systems have been updated with new advancements. A series of chemical tests use standardized reagents to produce color reactions measured against laminated color charts. All STH outfits come in lightweight carrying cases with components securely mounted in removable trays. This provides flexibility for the in-house specialist who also wants to make quick problem determinations in the field. Colorimetric test methods are used for most test factors. Tests for calcium, sulfate and chlorides are based on turbidity measurements. Potassium analysis also employs a turbidity measurement, using a unique reading device designed in LaMotte laboratories to read directly in pounds per acre. A single extraction procedure, using Morgan Universal Extraction Solution, provides the liquid soil extract for all the nutrient tests with the exception of chloride, which is extracted with demineralized water. The Humus Screening Test, performed on a soil sample-demineralized water suspension, employs five color standards for rapid measurement of humus content of the soil. Soil pH is determined colorimetrically, using pH indicators and color charts covering the range of pH 3.8 to 9.6. The STH outfits also include simplified procedures for screening nitrates, phosphorus and potassium in plant tissues. Complete reagent refill packages are available for each STH outfit. Kits includes instructions, a soil management handbook and a pad of soil analysis report forms. The ***LaMotte Soil Handbook*** contains general information on interpretation of test results for determination of lime and fertilizer requirements.

### STH-7 · CODE 5061

| Test Factor | Tests | Range* |
|---|---|---|
| pH | 100 | pH 3.8-9.6 |
| Nitrate Nitrogen | 50 | 10-150 lbs/acre |
| Phosphorus† | 50 | 10-200 lbs/acre |
| Potassium | 50 | 100-400 lbs/acre |
| Humus (Organic Matter) | 50 | L-H 1½%-8% |
| Calcium | 50 | 150-2800 ppm |
| Magnesium | 50 | L-H 5-150 ppm |

### STH-14 · CODE 5010-01

| Test Factor | Tests | Range* |
|---|---|---|
| pH | 100 | pH 3.8-9.6 |
| Nitrate Nitrogen | 50 | 10-150 lbs/acre |
| Phosphorus† | 50 | 10-200 lbs/acre |
| Potassium | 50 | 100-400 lbs/acre |
| Humus (Organic Matter) | 50 | L-H 1½%-8% |
| Calcium | 50 | 150-2800 ppm |
| Magnesium | 50 | L-H 5-150 ppm |
| Ammonia Nitrogen | 50 | L-H 5-150 ppm |
| Manganese | 50 | L-H 4-40 ppm |
| Aluminum | 50 | L-H 5-125 ppm |
| Nitrite Nitrogen | 50 | 1-50 ppm |
| Sulfate | 50 | 50-2000 ppm |
| Chloride | 50 | 25-500 ppm |
| Ferric Iron | 50 | 5-125 lbs/acre |

* See table below for unit conversion factors

† For non-alkaline soils. Code 5090 Phosphorus Auxiliary package recommended for alkaline soils.

### Unit Conversion Factors:

Results can be measured using a choice of units, explained here. Parts per million (ppm), pounds/acre and Kg/hectare units can be converted to each other using these values:

| Area | Soil Depth | Soil Weight |
|---|---|---|
| 1 acre | 6-7 inches | 2 million lb |
| 1 hectare | 15-18 cm | 2.25 million Kg |

| ppm | lb/acre | Kg/hectare |
|---|---|---|
| 0.5 | 1 | 1.12 |
| 1 | 2 | 2.24 |
| 0.89 | 1.78 | 1 |

A number of variables must be considered when interpreting soil test results in addition to the values obtained. These variables include the composition of the soil, drainage, climate, previous fertilizer programs and the type of plant to be grown. Samples must also be truly representative of the area being studied and must be carefully selected.

# GARDEN & EDUCATION OUTFITS


Best Seller!

*Code 5679-01*

## Model EL Garden Kit

### Model EL · Code 5679-01 · LQ (4) · Reagent Refill · Code R-5679 · R2 (3)

A simple test kit for soil science education or garden analysis. Rapid test procedures, diagramed instructions and laminated color charts are used to measure concentrations of nitrogen, phosphorus, potassium (15 tests each) and soil pH (30 tests). The Study of Soil Science handbook, LaMotte Soil Handbook and Garden Guide Manual are included to interpret test results and give lime and fertilizer recommendations.

See back page for Shipping Codes & Weights chart.

## Educational Test Kits

Kits are supplied with unit dose, non-hazardous TesTabs®. Sufficient tablets to run 50 repetitions of each test factor. Simple diagrammed instructions, hardware and laminated color chart included.

### Soil NPK Kit · Code 3-5880 · NH (1)

**Features:**

- Tests for nitrogen, phosphorous and potassium
- Results reported as Low, Medium and High


*Code 3-5880*


*Code 3-5912*

### Soil pH Kit · Code 5912 · NH (1)

**Features:**

- Tests for pH in the range of 4.0-11.0 in 1.0 pH units


Code 5023-01

## pH

### Model ST-M · Code 5023-01 · R2 (3)
### Model ST-T · Code 5024 · R1 (1)

The pH value affects all mineral elements and the biological processes made available to plants from the soil. Accurate pH testing is essential to determine lime requirements and to insure that a mineral-rich soil is also a fertile one.

| Code/Model | Method | Range & Sensitivity | Reagent System | # of Tests |
|---|---|---|---|---|
| 5023-01/ ST-M | 5 Color Charts & Spot plate Morgan Method | pH 3.8-8.4 in 0.2 increments (not for heavy clays) | 5 individual pH indicators | 50 |
| 5024/ST-T | Color Chart & Spot Plate | pH 4.0, 5.0, 6.0, 7.0, 8.0 | Duplex Indicator | 100 |


Code 5024


Code 1067

## Texture

### Code 1067 · NH (2)

The overall texture of a soil affects growth in the root zone, which determines the above-ground growth production, and is determined by the fractions of sand, silt and clay present.

| Code | Method | Range & Sensitivity | Reagent System | # of Tests |
|---|---|---|---|---|
| 1067 | Settling | Determines sand, silt, & clay fraction, texture determined by chart | Dispersion, Flocculation | 50 |

## Plant Tissue Testing

Plant tissue testing provides essential information concerning plant use of nutrients vital to their growth. These simplified field tests for green plant tissue indicate whether growing plants are receiving adequate amounts of available nutrients from the soil. All tests give qualitative results for the specific nutrients. By comparing test results from healthy and problem plants, it is possible to pinpoint deficiencies or excessive nutrient conditions.

## Macronutrient Plant Tissue Kit

### Model PT-3R · Code 5026-01 · LQ (3)
### Reagent Refill · Code R-5026 · LQ (2)

A complete kit for determining nitrates, phosphorus and potassium in plant tissue. Diced green plant tissue is saturated in a Universal Extracting Solution to prepare a single liquid extract for use with all three tests. **Qualitative results given as abundant, adequate, deficient only.** Reagents for 50 tests per factor.


Code 5026-01

# HYDROPONICS OUTFITS

See back page for Shipping Codes & Weights chart

Hydroponic culture is the growing of plants in a controlled environment with nutrient solutions, but without the use of soil as the supporting medium. Plant roots are fed directly, which is in contrast to conventional growing methods where plant food is applied to the soil and the roots extract the nutrients from the soil. Plants are either grown directly in nutrient solutions with only structural support or in beds through which nutrient solutions are periodically recirculated. Unlike field crops, hydroponically grown plants can be grown at great densities and with less concern about diseases initiated in soils or by insects and weeds. Hydroponics has played a significant role in modern plant nutrition research. Scientists are able to isolate the effects of essential minerals on various stages of plant growth and to study the effects of single element deficiencies under controlled conditions.


*Code 3561-01*

## Hydroponics 4-In-1 Test Kit

### Model HP-1 · Code 3561-01 · LQ (7) · Reagent Refill · Code R-3561 · LQ (2)

An abbreviated version of our popular Model AM-41, the new Model HP-1 offers tests for pH and three key nutrient factors: nitrogen, phosphorus and potassium. It allows the hydroponic hobbyist to maintain proper nutrient balance and to achieve optimum growing conditions in soil-less cultures. Reagents sufficient for 50 tests per factor and complete labware are foam-mounted in a sturdy carrying case. Instructions and 75-page Hydroponics Handbook are supplied.

| Octa-Slide 2 Comparator Tests | |
|---|---|
| pH | pH 4.5-8.0 |
| Nitrate Nitrogen | 5-200 ppm* |
| Phosphorus | 3-30 ppm |

* By dilution

| Direct Reading Turbidity Tube | |
|---|---|
| Potassium | 0-250 ppm |

## pH Hydroponics Test Kit

### Model HPH · Code 5074-01 · R1 (1) · Reagent Refill · Order 5132-G · R1 (1)

Simply add pH indicator reagent to the sample solution in a test tube for a color reaction. The resulting color is read in an Octa-Slide 2 Comparator with permanent color standards for pH values of 4.8, 5.2, 5.6, 6.0, 6.4, 6.8, 7.2 and 7.6. The kit has sufficient reagent for 50 tests and is packaged in a sturdy, hinged box.


*Code 5074-01*

# SAMPLING EQUIPMENT

## Basic Soil Sampler

### Model EP · Code 1055 · NH (2)

The galvanized steel sampler has a saw-toothed cutting edge tapered for easy core removal. The cutaway side of the tube permits inspection of soil core. The Model EP takes a one-inch core sample to a depth of 10 inches (25 cm) and is furnished with 20 LaMotte Soil Sampling Bags.

*Code 1055*

## Spot Plate

### Plastic, Two-Well
### Code 0159 · NH (1)

White plastic. Two wells. 24mm x 8mm deep. Draining channels 8mm wide x 3mm deep run to smaller wells 10mm diameter x 4mm deep. Plate is 85mm x 75mm.

*Code 0159*

## Soil Sampling Bags

### Package of 100
### Code 0615-J · NH (2)

These 6 x 4 inch (15 x 10 cm) plastic zip-lock bags have instructions for collection and preparation of soil samples printed directly on each bag. By preventing contamination or accidental mixing of different samples, these convenient soil bags help insure accurate test results.


*Code 0615-J*

# HANDBOOKS & CATALOGS


## LaMotte Soil Handbook

### Order Code 1504

Staff, LaMotte Company

This 60-page "growers' manual" discusses major and minor nutrients, trace elements, soil pH, organic matter, soil texture, etc. Includes lime and fertilizer recommendations for a variety of crops and plants, and pH preferences for over 700 plants.

## Plant Nutrition Studies

### Order Code 1596

Dr. Robert Stegner

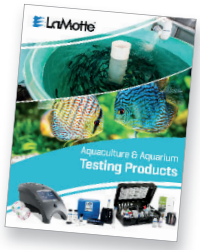
This 76-page manual covers the study and practice of hydroponics: plant culture in soil-less nutrient solutions. Includes a series of laboratory procedures and open-ended investigations.

## OTHER LAMOTTE CATALOGS

## Aquaculture Testing Products

### Order Code 1612

Test kits and instrumentation designed for the fish farm, hatcheries, and research institutions. Equipment designed for monitoring water quality conditions on-site and for benchtop locations. Test equipment also featured for the aquarium hobbyist, the retailer, and the ornamental culturist.




## Water Quality Testing Products

### Order Code 1653

A complete guide to instruments, apparatus, kits, and reagents. This catalog features the best available test equipment for testing a variety of waters. LaMotte individual and combination kits, and instrumentation are featured.


## Environmental Science Products

### Order Code 1590

"Hands-on" test equipment for air, soil, and water chemistry students in elementary, secondary, vocational, outdoor, and college science programs.


## Food & Beverage Safety Products

### Order Code 1658

Contains information on test strips, kits and instruments for the Food and Beverage Industry. Products focusing on safety and sanitation.


## Shipping Codes & Weights

The shipping code in the product description will refer to one of the following in this chart. Weight will be in pounds and enclosed in [ ]

| CODE | DESCRIPTION |
|---|---|
| NH | Non-Hazardous Material, No Fees |
| HF | Hazardous Material, Air & Ground Fees |
| R1 | Small Qty. Hazardous Material, No Fees |
| R2, R3, LQ | Hazardous Material, Air Fees Only |

LaMotte®

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