LaMotte®

TRACER™ Fluoride PockeTester

Code 1756

Water Testing Leader Since 1919!

TRACER™

FLUORIDE POCKETESTER CODE 1756

INTRODUCTION

The Fluoride TRACER is a system specifically designed for the quick and accurate measurement of fluoride ions in drinking water and other aqueous samples. Unlike other electrode based systems the Fluoride TRACER consists of the sensing electrode, measuring electronics, and the display in one convenient package. This meter is shipped fully tested; with proper use, this instrument will provide years of reliable service.

Features

- Automatic temperature compensation (±10°C of calibration temperature)
- Automatic calibration
- Stability sensing to optimize accuracy
- Internal Datalogger for storing up to 25 readings
- Direct reading of ppm units
- Direct reading of relative mV units
- Automatic shut down after 12 minutes to preserve battery life
- Internal error detection
- Convenient TISAB TesTab reagent

SPECIFICATIONS

Range	0.10 to 9.99ppm (mg/L)
Accuracy	±3.0% of reading or 0.1ppm whichever is greater
Resolution	0.1ppm
Display	2000 count, Dual function 3½ digit LCD with Bargraph, Display size: 24 mm x 20 mm
Electrode	Europium doped lanthanum fluoride single crystal
Electrode Life	1 year minimum
Response Time	90% of change in less than 30 seconds (typical)
Operating Temp. Range	32 to 140°F (0 to 60°C)
ATC Range	32 to 140°F (0 to 60°C)
Measurement Storage	25 tagged (numbered) data sets with recall
Battery Power	Four (4) CR2032 button batteries
Low Battery Indication	'BAT' appears on the LCD
Auto Power Off	After 12 minutes of inactivity
Dimensions/Weight	1.4 x 6.8 x 1.6" (36 x 173 x 41 mm); 7.4 oz (210 g)

CONTENTS

Fluoride TRACER Kit	Code 1756
Includes:	
Fluoride TRACER Body	
Flat Surface Fluoride Electrode	
*TISAB TesTabs (20)	
Tablet Crusher	
Sample Cup	
Lanyard	
Protective Sensor Cap	
Batteries, 3V (4)	

Search for the four digit reagent code number listed on the reagent label, in the contents list or in the test procedures. Omit any letter that follows or precedes the four digit code number.

For example, if the code is 4450WT-H, search 4450. To obtain a printed copy, contact LaMotte by email, phone or fax.

Emergency information for all LaMotte reagents is available from Chem-Tel: (US, 1-800-255-3924) (International, call collect, 813-248-0585).

PARTS & ACCESSORIES

*TISAB TesTabs (100)	*Code 7024-J
Tablet Crusher	Code 0175
Flat Surface Fluoride Electrode	Code 1757
Fluoride Standarad, 1.0 ppm, 3800 mL	Code 2798-M

METER DESCRIPTION

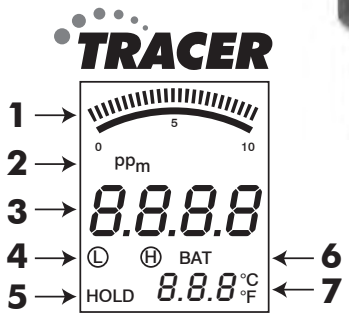
Front Panel Description

1. Battery compartment cover
2. LCD Display
3. MODE/HOLD key
4. CAL/RECALL key
5. ON/OFF key
6. Electrode Retaining Collar (ring)
7. Electrode Sensor

   (Note: The Electrode storage cap is not shown)

LCD Display

8. Bargraph reading
9. Measurement units
10. Main display
11. Low (L) and High (H) Calibration icons
12. Data HOLD indicator
13. Low Battery indicator
14. Temperature display



Electrode Sensor Description

The sensing electrode is a europium doped lanthanum fluoride single crystal that has been incorporated into a removable sensing module that houses a reference electrode and temperature measurement system. The high resistance electrode signals are impedance converted to a low resistance output in the sensing module to ensure stable and noise free performance.

TISAB TesTabs Tablet Description

The Fluoride TRACER allows the users to follow the ASTM and EPA standard methodology using any of the TISAB reagents and standards already in use. TISAB TesTabs contain all of the essential and approved chemicals that are found in the usual TISAB reagents. The "dry" reagent does not contribute to sample dilution.

QUICK START

The following procedure describes a quick-start for the Fluoride TRACER using the TISAB TesTabs. Detailed operating instructions can be found on the pages that follow.

Preparation

1. Remove the Fluoride TRACER, tablets, electrode module and sample cup from the box. Remove caps from module.
2. Fit the electrode module onto the end of the meter body, making sure that the slots line up correctly, and tightly turn the module retaining ring to secure the assembly.
3. Wipe the fluoride crystal and reference junction with a damp tissue.

Calibration

1. Fill a sample cup to 20 mL with a 1.0 ppm fluoride standard Add one TISAB TesTab (7024). Crush tablet with Tablet Crusher (0175) and mix until the tablet disintegrates. Or prepare a traditional 1.0 ppm fluoride standard and TISAB reagent, or use premade mixed TISAB and 1.0 ppm standard. Pour 20 mLs of this standard solution into the sample cup.
2. Rinse the end of the Fluoride TRACER module in TISAB solution and wipe thoroughly with paper tissue.
3. Place the Fluoride TRACER in the 1.0 ppm standard/TISAB mixture.
4. Switch the instrument on using the ON/OFF key. The instrument will now go through its internal calibration.
5. The 1.0 ppm reading will stabilize in approximately 35 seconds and the instrument will enter HOLD mode.
6. When in HOLD mode press the CAL key and hold until 1.0 ppm and 'CAL' appear in the display. Release the CAL key.
7. Wait until the display stops blinking; the instrument will enter the HOLD mode.
8. The instrument is now calibrated and ready for use or calibration with a second standard.

Measurement

1. Prepare unknown solution by adding one TISAB TesTab (7024) to 20 mL of the sample. Crush tablet with Tablet Crusher (0175) and mix until the tablet dissolves. Or use another TISAB reagent system. Thoroughly wipe the end of the Fluoride Tracer.
2. Place the Fluoride TRACER into the prepared unknown sample.
3. If the display is indicating 'HOLD' press the HOLD key to enter the Measure mode. (The HOLD display will switch off).
4. After approximately 35 seconds the instrument will display the value of the unknown concentration. Refer to the Maintenance Section for battery replacement information.
5. The readings can be stored in memory by pressing the MODE/HOLD key for approximately 3 seconds.

Storage and Maintenance

1. After use, store the electrode in an analyzed sample. (Fluoride standards plus TISAB tablet)
2. Thoroughly wipe the sensor with paper tissue. The flat ended sensors can be wiped vigorously.
3. The fluoride module can be replaced once the automatic calibration no longer sufficiently calibrates the instrument.
4. Other maintenance information is provided in a later section of this guide.

OPERATION

Preparation for use

1. Remove the Fluoride TRACER, tablets, electrode module and sample cup from the box. Remove caps from module.
2. Fit the electrode module onto the end of the meter body, making sure that the slots line up correctly, and tightly turn the module retaining ring to secure the assembly.
3. Wipe the fluoride crystal and reference junction with a damp tissue. (Cleaning techniques are addressed later in this guide).

Powering the Fluoride TRACER

The Fluoride TRACER uses four (4) CR2032 lithium ion batteries. Press the ON/OFF key to turn the meter on or off. If the batteries are weak, the 'BAT' indicator appears on the LCD. The auto power off feature shuts the meter off automatically after approximately 12 minutes of inactivity. The auto power off feature may be temporarily disabled for convenience or for extended polarization time.

Power-On Diagnostics

1. When the meter is switched ON the LCD displays 'SELF' and 'CAL' while the meter runs a diagnostic routine.
2. During this time the meter is recalling the user calibration data, performing self diagnostics & initializing the circuitry.
3. When completed, the meter proceeds to the normal measurement mode.

Calibration

The Fluoride TRACER can be calibrated between 1.0 ppm and 10.0 ppm or between 0.5 and 5.0 ppm Fluoride ion. The following calibration procedure assumes the normal 1.0 to 10 ppm range has been chosen.

1. Fill a sample cup to 20 mL with a 1 ppm fluoride standard Add one TISAB TesTab (7024). Crush tablet with Tablet Crusher (0175) and mix until the tablet disintegrates. Or prepare a traditional 1.0 ppm fluoride standard and TISAB reagent, or use pre made mixed TISAB and 1.0 ppm standard. Pour 20 mLs of this standard solution into the sample cup.
2. Rinse the end of the Fluoride TRACER module in TISAB solution and wipe thoroughly with paper tissue.
3. Place the Fluoride TRACER in the 1.0 ppm standard/TISAB solution and switch the instrument ON using the ON/OFF key. The instrument will now run its self-calibration.
4. The instrument will enter the HOLD mode when stabilized in the 1.0 ppm solution.
5. Press the CAL key; 'CAL' will appear in the display followed by 0.5ppm and 5.0 ppm. Continue holding until 1.0 ppm is shown. Release the CAL key. After the display stops blinking the instrument will enter the HOLD mode.
6. For a 2 point calibration, repeat the calibration procedure with a 10.0 ppm standard.
7. The instrument is now calibrated and ready for use. The circled 'L' and 'H' icons on the display indicate that the low range (L) and high range (H) calibrations have been completed.

Calibration Frequency

A 1 point calibration is adequate prior to each new measurement batch or if more than 24 hours has elapsed since the last calibration. A 2 point calibration should be performed if the meter is new or has not been calibrated for 5 days.

Slope Adjustment

1. Slope adjustment, although not a frequent requirement, can be carried out by following the instructions in Calibration above and by calibrating with a 10.0 ppm standard after calibrating with the 1.0 ppm standard.
2. Press the CAL key until 10.0 ppm appears. Slope adjustment is then complete.

Other Standards

As mentioned the Fluoride TRACER can also be calibrated between 0.5 and 5.0 ppm Fluoride. Follow the calibration instructions above but substitute 0.5 ppm for 1.0 ppm and 5.0 ppm for 10.0 ppm.

Measurements

1. Prepare an unknown solution by adding, crushing, and dissolving one TISAB TesTab (7024) in 20 mL of the sample or by adding TISAB reagent to the sample in the same dilution ratio as for the calibration procedure. Mix thoroughly.
2. Rinse the end of the Fluoride TRACER.
3. Place the Fluoride TRACER into the prepared unknown sample. If the instrument is in the HOLD mode, press MODE/HOLD to unlock HOLD.
4. After 25 seconds, the instrument will display the value of the unknown concentration and will then enter the HOLD mode.

Note: The readings can be stored in the memory by pressing the MODE/HOLD key for approximately 3 seconds as explained in a subsequent section of this user guide.

Temperature Units (°F / °C)

1. With the unit OFF, press and hold the CAL/RECALL key.
2. With the CAL/RECALL key depressed, momentarily press the ON/OFF button to turn the unit ON.
3. The CAL/RECALL key can be released when 'Self Cal' is shown in the display.
4. To switch back to the previous unit of measure, repeat steps 1 through 3.

Auto-Power OFF Feature

The auto power off feature automatically shuts the meter off 12 minutes after the most recent button press.

Disabling the Auto-Power OFF Feature

With the unit ON, momentarily press the CAL/RECALL key, then quickly press and hold both the MODE/HOLD and ON/OFF key until 'oFF' is displayed. To restore the Auto Power Off Feature (auto power OFF enable) simply turn the meter off and on again using the ON/OFF key.

Low Battery Indication

When the battery voltage falls below the operating threshold, 'BAT' will appear on the display. Refer to the Maintenance section for battery replacement information.

Storing Readings

Up to 25 readings can be stored in memory for later recall.

1. With the meter in the HOLD mode, press and hold the MODE/HOLD key for 3 seconds to store a reading. Release the key when the memory location number appears on the lower display.
2. After approximately 30 seconds (measurement duration) the meter will return to the HOLD mode and another reading can then be stored.
3. If more than 25 readings are stored, previously stored readings (starting with reading number 1) are overwritten.

Recalling Stored Readings

1. Momentarily press the CAL/RECALL key and then within 4 seconds momentarily press the MODE/HOLD key. The last stored data point location will be displayed (1 to 25). Each time the MODE/HOLD button is momentarily pressed the next most recently stored data key will be displayed.
2. After the last data point is displayed, pressing the MODE/HOLDkey again returns the display to the beginning of the list.
3. Pressing the CAL/RECALL key at anytime stops the data retrieval process and returns the meter to the normal measurement mode.

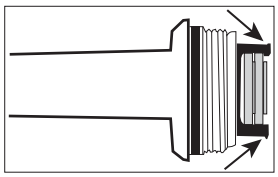
Clearing Stored Readings

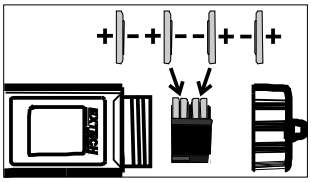
1. With the unit ON press and hold the ON/OFF key for 4 seconds.
2. When 'clr' is shown in the main display the memory is cleared.

MAINTENANCE

Battery Replacement

1. Twist off the battery compartment cover.
2. Holding the battery housing in place with a finger, pull out the battery carrier using the two small tabs.
3. Replace the four (4) CR2032 batteries observing proper polarity.
4. Replace the battery carrier, reattach the battery compartment cap and tighten securely.





Electrode Replacement

1. To remove the electrode, first turn the instrument OFF and then unscrew and remove the electrode retaining collar. (Turn the collar counter-clockwise to remove).
2. Gently rock the electrode from side to side, pulling it away from the meter until it disconnects.
3. To attach an electrode, align the positioning "keys" on the electrode and the main body housing and then carefully push the electrode into the meter socket until it is fully seated. CAUTION: Take care to align pins carefully. Bent or broken pins will cause the meter to malfunction.
4. Tighten the electrode retaining collar firmly enough to seal the electrode with the meter.

Electrode Storage

1. The module and can be stored wet or dry. If stored dry it will be necessary to allow approximately 15 minutes of soaking in a fluoride solution before the specified performance can be achieved. It is recommended that the electrode be stored wet in the last test solution used by the instrument (fluoride ion plus TISAB reagent).
2. The instrument will give an error code when the electrode can no longer be calibrated.
3. If the instrument will not calibrate, clean the fluoride electrode surface and recalibrate the instrument. If the meter still does not calibrate, replace the electrode.

WARRANTY

LaMotte Company warrants this instrument to be free of defects in parts and workmanship for 1 year from the date of shipment and warrants this probe to be free of defects in parts and workmanship for 6 months from the date of shipment. If it should become necessary to return the instrument for service during or beyond the warranty period, contact our Technical Service Department

responsible for shipping charges, freight, insurance and proper packaging to prevent damage in transit. This warranty does not apply to defects resulting from action of the user such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification. LaMotte Company specifically disclaims any implied warranties or merchantability or fitness for a specific purpose and will not be liable for any direct, indirect, incidental or consequential damages. LaMotte Company's total liability is limited to repair or replacement of the product. The warranty set forth above is inclusive and no other warranty, whether written or oral, is expressed or implied.