

STANDARD CORE EQUIPMENT MAINTENANCE GUIDE

General Guidelines

1. Store kit and reagents at room temperature (60°-80°F) away from extreme elements (direct sunlight, humidity, rain, etc.)
2. Store items in the proper location in the kit to prevent accidental breaks or chips.
3. Do not use soap when cleaning equipment. Soap can leave a residue, which can alter test results. Instead, rinse equipment thoroughly with distilled or deionized water.

Conductivity Meter

Monitoring Best Practices

1. Before using the meter, rinse electrodes twice with deionized (DI) water and dry with a clean paper or cloth towel.
2. Make sure the meter is always turned off except when submerged in a liquid.
3. Do not immerse meter in water above the indicator level line.
4. Calibrate the meter with a standard in the expected range of your sample. In most cases use a 1413 $\mu\text{S}/\text{cm}$ standard
5. Always rinse the meter electrodes with DI or distilled water twice between measurements to avoid cross contamination of standard and/or samples.
6. Do not touch the surface of the electrode as this may damage and reduce the life of the meter.
7. Do not let the electrode sit in liquids longer than necessary. Electrolytes can leak into the sample, which can affect the conductivity measurement.
8. After sampling, rinse electrode twice with DI water and dry off with a clean paper or cloth towel before replacing the protective cap.

Upkeep

1. Most conductivity meters are not waterproof or even water resistant. Be careful to protect against moisture, especially during damp conditions. Meters will not work properly if moisture gets inside the instrument.
2. To prevent corrosion of the meter, remove batteries when not in use.

Replacing Batteries

1. When the batteries become weak the "BAT" icon will appear in the display as a reminder to replace the current batteries with 4 new CR2032 batteries.
2. Unscrew the top battery compartment cap. Holding the battery housing in place with a finger, remove the battery carrier using the 2 small tabs.
3. Replace the 4 - CR2032 batteries, while checking to make sure the batteries' polarity is correct.
4. Replace the battery compartment cap.

Cleaning the Electrode

1. If the electrode is contaminated by water soluble substances, clean with DI water and soak or scrub the electrode with a soft brush. Rinse thoroughly with DI water and dry off with a clean paper or cloth towel before replacing the protective cap.
2. If the electrode is contaminated by grease and oil, rinse it with warm water and unscented, natural detergent. Soak or scrub the electrode with a soft brush for a maximum of 10 minutes. Rinse thoroughly with DI water and dry off with a clean paper or cloth towel before replacing the protective cap.
3. If the electrode is heavily contaminated with grease and oil, rinse, or soak with rubbing alcohol for a maximum of 5 minutes, then scrub with a soft brush. Rinse thoroughly with DI water and dry off with a clean paper or cloth towel before replacing the protective cap.

4. If the electrode is contaminated by lime or hydroxide coatings, clean with 10% acetic acid or diluted vinegar and soak until the contaminant's coating is dissolved for a maximum of 5 minutes. Rinse thoroughly with DI water and dry off with a clean paper or cloth towel before replacing the protective cap.

Replacing an Electrode

1. Unscrew and completely remove the electrode collar by turning it counterclockwise.
2. Gently rock the electrode from side to side, pulling it downwards, until it disconnects from the meter.
3. To attach a new electrode, carefully plug it into the probe socket then tighten the electrode collar to make sure it's sealed properly. CAUTION: Take care to align pins carefully. Bent or broken pins will cause the meter to malfunction.
4. Firmly tighten the electrode collar to create a seal with the rubber gasket between the electrode and the meter.

Thermometer

Monitoring Best Practices

1. After each use, rinse the thermometer twice in tap water.

Upkeep

1. The thermometer used to measure air and water temperature is calibrated against the conductivity meter temperature measurement in water. Calibrations are used to test the accuracy of the method and/or equipment. See Texas Stream Team Core Water Quality Citizen Scientist Manual for more information about how to conduct the Thermometer-Probe Temperature Check.

Fixing a Separated Thermometer

1. Cooling Method: With the thermometer in an upright position, cool the bulb only in a solution of shaved ice and salt so that the alcohol column retreats slowly into the bulb. Remove and swing thermometer in a short arc forcing the entrapped

gas to the top of the alcohol. Allow the bulb to warm slowly in the air.

2. Heating Method: Heat the thermometer bulb in warm water sufficient to allow the alcohol to rise slowly, until the separation and a portion of the main column enter the chamber. Tap the thermometer in palm of hand or on a padded surface reuniting the column. Allow to cool slowly.

Titration

Upkeep

1. Since the titrator never encounters other reagents, it is not necessary to rinse the titrator EXCEPT when the Sodium Thiosulfate expires OR if you think the titrator may have become contaminated. In these cases, rinse or flush the titrator twice with a small amount of Sodium Thiosulfate, making sure to not remove the plunger. Dispose of the rinse directly into a waste container.

Secchi Disk

Upkeep

1. Rinse the Secchi disk twice in tap water every few months or when needed if appearance becomes obstructed. Allow the disk and rope to air dry. Loosely wind rope around disk to avoid stretching over time and return to kit. 2. Before starting a Secchi disk measurement, make sure the Secchi disk measurement lines are marked every 1/2-meter, meter, and 5 meters. Holding the line attached to the middle of the disk straight, hold a meter stick against the line and place a black mark on the line 1/2 meter from the top of the disk. Continue placing a black mark every 1/2 meter, a red mark every meter, and a yellow mark every 5 meters. Check line measurements annually for inaccuracy due to stretching. Update measurements and marks if needed.

Tubes, Bottles, and Beakers

Getting Started

1. Before using, ensure there are no cracks or chips.

Monitoring Best Practices

1. Thoroughly rinse all tubes, bottles and/or beakers twice with DI water after each monitoring event and place upside down to dry before returning to kit. Be sure to also clean test tube and bottle caps.

Octa-Slide Viewer and Octa-Slides

Upkeep

1. Clean with DI water and a paper or cloth towel periodically.

Reagents

Upkeep

1. Tightly close all containers immediately after use. Do not leave reagents uncapped for extended periods.

2. Do not interchange caps from containers. Caps and bottles can be numbered with permanent black marker to prevent mixing, as well as sequencing use (ex: 1 = Manganous Sulfate Solution, 2 = Alkaline Potassium Iodide w/ Azide, 3 = Sulfuric Acid). This represents the sequential order in which they are used for water testing procedures.

3. Check all reagent expiration dates before each monitoring session and replace expired reagents when needed.

4. Wide Range Indicator can crystallize at the bottle mouth. Gently inverting the bottle several times will dissolve the crystals.

Shelf Life of Reagents

1. Wide Range Indicator.....2 years
2. Sodium Thiosulfate.....1.5 years
3. Alkaline Potassium Iodide Azide.....3 years
4. Sulfuric Acid.....3 years
5. Starch Indicator Solution.....1.5 years
6. Manganous Sulfate Solution.....3 years

Safety Data Sheets

For more information on chemicals or product safety, refer to LaMotte's Safety Data Sheets (SDS). If you would like the full SDS for any reagent, you can download the information on LaMotte's website at: <https://lamotte.com/support/product-documentation/safety-data-sheets-sds-search/>. Select the MSDS tab and type in the reagent code listed below to get a PDF of the data sheet.

- Wide Range Indicator.....Code = 2218
- Sodium Thiosulfate.....Code = 4169
- Alkaline Potassium Iodide Azide.....Code = 7166
- Sulfuric Acid.....Code = 6141 WT
- Starch Indicator Solution.....Code = 4170 WT
- Manganous Sulfate Solution.....Code = 4167

**For more information, reference the manufacturer's user manual included in your kit or email Texas Stream Team at TxStreamTeam@txstate.edu*