

WaterLab Tips

The 10 Most Common Errors Made by Express Lab Users

Everyone makes mistakes. So, if your staff is perfect, make sure you keep this list for your next new employee or an upcoming staff meeting.

1. Not reading instructions They are consolidated onto two pages for efficiency.
2. Disregarding color development timings Most critical with hardness => iron. A timer helps in the training process.
3. Incorrect sample collection The pipettor tip has an embossed 3mL line on its barrel. Mark it with a permanent marker so users can see the line when loading the pipettor.
4. Incorrect sample dispensing An under loaded pipettor barrel will lead to releases of less than 3mL. When filling, note the 1st stop that is 3mL. To dispense, press the plunger all the way down to the handle.
5. Not inserting a proper sample blank There are several possibilities for error. In some cases users have not put in sample blanks or have not filled them with pool water. In other cases the sample blank is removed before pressing the button to go to the next test. The most common error occurs when using cloudy sample blank tubes.
6. Cutting open pouches in advance In some cases analysts have cut open entire boxes of pouches exposing them to ambient moisture days before they were needed. This is a common mistake by a new employee just trying to help.
7. Analyzing samples with bubbles When a user rapidly forces sample from the pipettor, some bubbling can occur. Dispense sample water deliberately on an angle into the vials. Tap the vial on the counter to release bubbles.
8. Shaking vials rather than inverting For most tests the difference in mixing procedures will not affect results. However, calibrations for the meter are based on inverting each vial 3 times just before inserting them in the meter. If clumps of powder are lodged in the corners it is all right to tap the vial edges on a counter to release the powder. If they do not come loose discard the vial.
9. Testing Biguanide water samples Biguanides interfere dramatically with the 4308-H alkalinity UDV test by washing out the color.
10. Using expired UDVs Whether it is from leaving vials out or getting a pouch with an improper seal, keep an eye out for powders that have gone bad. Use the guide on the next page and watch for tightly clumped reagent powders.

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What Fresh UDV Powders Should Look Like

The following descriptions identify what each of the powders inside the UDVs should look like prior to use. We recommend posting this in an area where all lab users can easily refer to the list.

Description	Code	Ideal Powder Conditions	Deteriorating UDV Powder Conditions
Alkalinity	4308	fluffy, pale yellow	clumpy, dark yellow; possibly with black crystals
Hardness	4309	fluffy, light purple	clumpy, dark purple crystals
pH (phenol red)	4310	fluffy, peach	clumpy, dark pink/red or orange
Free Chlorine	4311	fluffy, white	clumpy, gray or black crystals
Total Chlorine	4312	fluffy, white	clumpy, gray or black crystals
Cyanuric Acid	4313	fluffy, white	clumpy, white
Copper	4314	fluffy, light tan	clumpy, dark tan to brown
Total Iron	4315	fluffy, white	clumpy, tan/brown, vial may appear to be eroded inside
Alkalinity	4318	fluffy, peach	clumpy, orange/brown

Interferences

- **Chlorine/Bromine**
- ***Vivid pink color disappears?*** High Chlorine/ Bromine levels above 10 ppm exist in the pool or spa. (See also pH)
- ***Strange brown color develops?*** A pool recently treated with a “NON-CHLORINE” shock can discolor the Total Chlorine DPD #3 reaction. For an accurate Total Chlorine reading, sample again in 24 hours and retest or use MPS-OUT system.
- **pH**
- ***Purple/Blue color develops?*** A high level of Chlorine or Bromine can change the indicator Phenol Red and produce a purplish color. LaMotte uses a double inhibitor system to eliminate halogen interferences up to approximately 12 ppm. If the concentration is higher, a chlorine neutralizer such as thiosulfate may be added.
- ***Result seems too low?*** First check the alkalinity of the sample. Some pH tests are affected by low alkalinity.
- **Cyanuric Acid**
- ***Strange Results?*** Check sample temperatures! Samples that are cool, below 65°F, may read higher, while samples that are warm, above 80°F, may read lower than expected. Also check your procedure and remember to shake the test tube just before reading the result.
- **Calcium Hardness**
- ***Purple color, not blue?*** When red changes to blue, a brief purple color is not unusual, however, if the purple color remains after several drops, you likely have a metal interference, probably from Copper. To eliminate the interference, add two drops of Hard Titrant to the sample before adding the Hard 1 and Hard 2 reagents. Count the Hard Titrant added, with the final titration.
- **Total Alkalinity**
- ***Yellow color developed?*** If a high level of Chlorine or Bromine is present it may bleach the normal red end-point color to yellow. Add 2-4 drops of Chlorine Neutralizer before adding the Alk 1 reagent.

Other Questions: Email our Tech Service Team at tech@lamotte.com.