





FLORIDA KEYS WATER WATCH

CHEMICAL KIT DIRECTIONS



DISSOLVED OXYGEN

Record 2 samples, both samples ± 0.6 in ppm (parts per million; or mg/L)

1. Fixing the Sample: Rinse water sample bottle 3x with water from your site. Fill and cap water sample bottle underwater, wrist deep or elbow deep. NO bubbles!!
 2. Add **8 drops of *Manganous Sulfate Solution¹** followed immediately by **8 drops of *Alkaline Potassium Iodide Azide** to the water sample bottle. Limit amount of time the top is off the sample!
 4. Cap and gently invert sample bottle until precipitate (suspended material) is uniform like a snow globe throughout the bottle. Allow precipitate to settle below shoulder of bottle.
 5. Add **8 drops of *Sulfuric Acid**.
 6. Cap and shake hard until all of the particulate matter is dissolved. Sample is now fixed (oxygen from the atmosphere will no longer affect the sample contents).
 7. Titration Steps: Rinse the 25 mL test tube 3x with a little bit of the golden colored solution in the water sample bottle to clean the test tube; dump into wastewater container.
 8. Fill test tube to the **20 mL line** with yellow solution from the sample bottle.
 9. Fill Titrator (syringe) with ***Sodium Thiosulfate** to the zero line. NO bubbles!!
 10. Titrate (squirt **Sodium Thiosulfate** into the test tube slowly, a drop at a time and swirling in test tube) until sample color turns from golden yellow to pale yellow. Remove titrator from the test tube carefully and set aside.
- | | |
|---|--|
|  <p>GOLDEN YELLOW</p> |  <p>PALE YELLOW</p> |
|---|--|
11. Add **8 drops of Starch Indicator** into test tube and swirl around, solution will turn dark blue.
 12. Continue titration with the titrator syringe slowly, one drop at a time until blue color completely disappears and solution is colorless.
 13. Read result directly on the titrator at the line where the liquid meets the largest circle on the titrator. Record in ppm or mg/L dissolved oxygen. Each tick line is 0.2 ppm.
 14. Repeat Titration Steps 7-15 for second sample reading.

¹ Reagents marked with an * are potential health hazards. Limit contact with skin. Refer to materials safety data sheets for more information.

SECCHI DISK (WATER CLARITY)

2 measurements, both measurements ± 10.0 cm

1. Lower the Secchi disk into the water until it just disappears from sight. Mark the rope at the surface of the water with a clothespin.
2. Lower the disk a few more feet into the water. Slowly raise the disk. When the Secchi disk reappears, mark the rope at the surface of the water with the second clothespin.
3. Average your two Secchi disk readings by forming a loop between the two clothespins. Mark with a 3rd clothespin at the center of the loop to mark it. Remove the other two clothespins.
4. The 3rd clothespin mark will be your Secchi reading. Measure from the top of the Secchi disk to the clothespin for your Secchi Depth measurement, in cm. Repeat Steps 1-4 for second reading.

NOTE: If you can still see Secchi disk at the bottom, do not take a measurement.

TEMPERATURE

Record 1 sample in air, record 1 in water. Record in $^{\circ}$ Celsius.

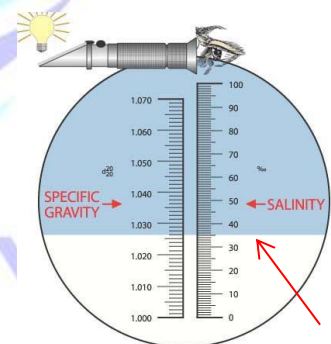
1. FIRST Measure air temperature (ideally in the shade) in $^{\circ}$ Celsius
2. SECOND Measure water temperature in $^{\circ}$ Celsius
3. Your pH meter may have temperature included; you can measure temperature in the air while holding the meter (make sure you measure air temperature with pH cap OFF!) and measure it in the water while collecting the pH.

NOTE: $21^{\circ}\text{C} = 70^{\circ}\text{F}$ $24^{\circ}\text{C} = 75^{\circ}\text{F}$ $27^{\circ}\text{C} = 80^{\circ}\text{F}$ $29^{\circ}\text{C} = 85^{\circ}\text{F}$ $32^{\circ}\text{C} = 90^{\circ}\text{F}$ $35^{\circ}\text{C} = 95^{\circ}\text{F}$

REFRACTOMETER

2 measurements, both samples ± 1.0 ppt (parts per thousand)

1. Calibrate within 24 hours using distilled water
2. Place droplets onto lens, look through eyepiece and read at the horizontal blue line on the right side, record in parts per thousand (ppt)
3. Rinse with freshwater and blot with lens cloth



35 ppt

NOTE: Oceanic salinity is 35 ppt

pH

Record 2 samples, both samples ± 0.25 standard units

1. Turn on pH meter. Place tip of pH meter into pH 7 calibration fluid, if pH reads 7 ± 0.1 , continue. If pH does not read 7 ± 0.1 , continue to calibration phase.²
2. Place tip of pH meter directly into the canal, covering the glass electrode about 1.5" deep. Wait 60 seconds until pH meter reading stabilizes, record as pH. Repeat.
3. When finished sampling for the day, place tip of pH meter into pH 7 calibration fluid, if pH reads 7 ± 0.1 , record readings. **Store in tapwater in cap; do not let electrode probe dry out.**

NOTE: Coastal pH range is 7.2-8.5

² Please follow pH meter 3-point calibration instructions for standard solutions pH 4, 7, and 10.