Testing the Accuracy of the Taylor K-1826 H2O2 Test Kit

an informal experiment from Float On

Supplies

- 2 Buckets (10L or larger)
- USP Grade Epsom Salt
- 35% H2O2
- Taylor Kit K-1826, Drop Test, Hydrogen Peroxide
- Thermoworks Reference Thermometer *(Certified accuracy to ±0.05°C [±0.1°F])*
- Calibrated Hydrometer able to read from 1.24 - 1.3 specific gravity
- 6 Test Tubes for Pulling Water Samples
- Syringe capable of measuring in .1mL increments

Method

1. Mix USP Epsom Salt ($MgSO_4$ • 7H20) with filtered tap water to create a solution of epsom salt water between 1.24-1.30 specific gravity.

2. Fill up a bucket with 7 liters of the salt water.

3. Fill up a second bucket with 7 liters filtered tap water.

4. Measure temperature of both buckets.

5. Measure H2O2 levels in both buckets as a baseline.

6. Test H2O2 levels at .3mL
    a. Add .3mL of H2O2 to each solution.
    b. Take 3 samples from each bucket.
    c. Test all 6 samples for H2O2 with the Taylor Test Kit.

7. Test H2O2 levels at .6mL
    a. Add another .3mL of H2O2 to each solution.
    b. Take 3 samples from each bucket.
    c. Test all 6 samples for H2O2 with the Taylor Test Kit.

8. Test H2O2 levels at 1.2mL
    a. Add another .6mL of H2O2 to each solution.
    b. Take 3 samples from each bucket.
    c. Test all 6 samples for H2O2 with the Taylor Test Kit.

Expected Results

Dilution Calculation

(.3mL * 35% H_2O_2)/7000mL = 0.000015% H_2O_2 = 15ppm H_2O_2 per .3mL added

Hypothesis

Based on my previous experiment, and our own results in the tanks at Float On, I expect that the fresh water and salt water buckets will have very similar results, and that they will both go up approximately 15ppm per .3mL of 35% H_2O_2 added.

Results

Specific Gravity of the Salt Water = 1.245

	Fresh Water	**Salt Water**
Initial Temperature	24.1° C (75.4° F)	24.7° C (76.5° F)

H_2O_2 tests at .3ml in 7L of solution		
	Fresh Water	**Salt Water**
Sample 1	25ppm	25ppm
Sample 2	25ppm	25ppm
Sample 3	25ppm	25ppm

H_2O_2 tests at .6ml in 7L of solution		
	Fresh Water	**Salt Water**
Sample 1	45ppm	45ppm
Sample 2	45ppm	45ppm
Sample 3	45ppm	45ppm

H2O2 tests at 1.2 ml in 7L of solution		
	Fresh Water	**Salt Water**
Sample 1	95ppm	95ppm
Sample 2	95ppm	95ppm
Sample 3	95ppm	90ppm

Conclusions

Testing Kit Accuracy in Salt Water

It would appear that the Taylor Kit K-1826 is as accurate at testing H2O2 levels in a magnesium sulfate solutions as it is at testing H2O2 levels in regular water.

Only one of the tests came out slightly off This was likely due to experimenter error, since it was taken from the same . Even with this slight discrepancy, the results are remarkably consistent between the fresh water and the salt water.

Dilution Calculations vs Real World Tests

There was a difference between the expected results based on the dilution equations and the actual results. There are several possibilities.

1. We have noticed that the H2O2 that we order tends to come in slightly varying strengths, bottle by bottle. However, it would have to be 58% to get the actual results, which seems unlikely.

2. The syringe used to measure the 35% H2O2, or the buckets, or both could be inaccurate. This is possible, as I didn't do anything to verify their accuracy before using them.

3. The reagents aren't reacting properly. This could be due to age or improper storage, and either is possible. I did not use a new test kit for this experiment.

4. The Taylor Test Kit K-1826 may not accurately measure H2O2 levels. This seems unlikely to have such a high margin for error, but is a possibility.

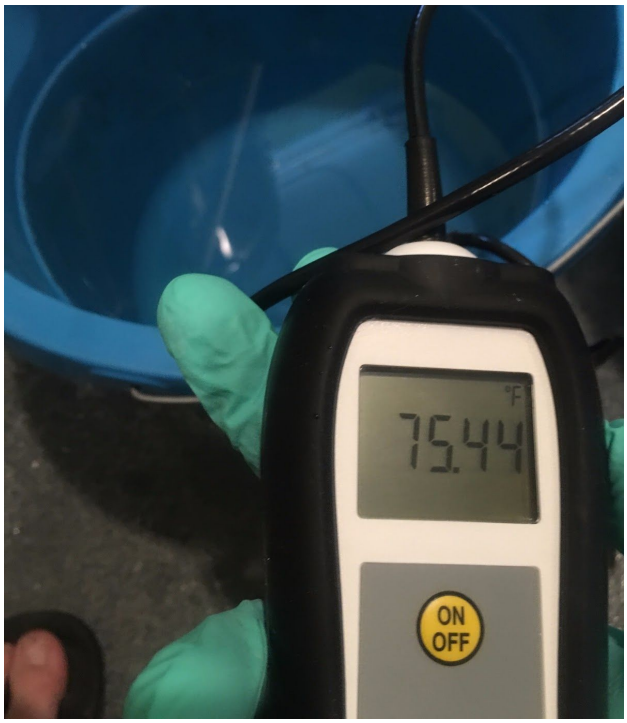
Future Considerations

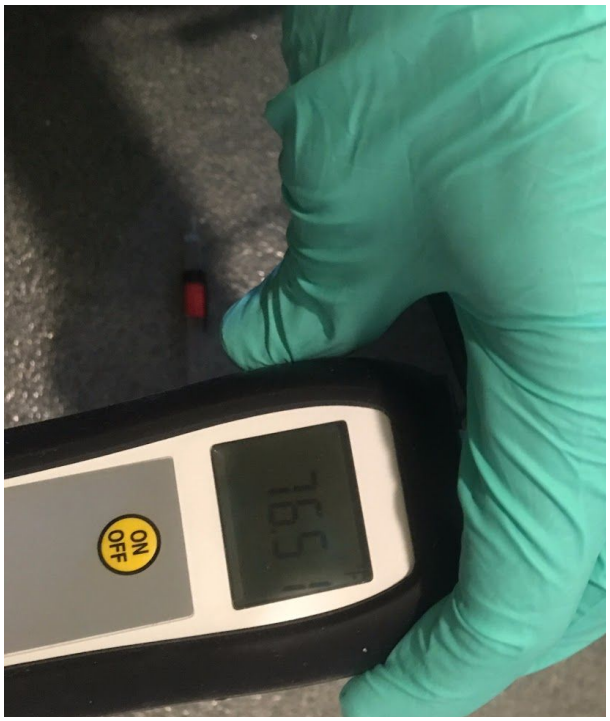
Further replication would be beneficial, especially at 1.28 specific gravity (or higher) and a temperature of 34.2°-34.7° C (93.5°-94.5° F) to more closely resemble the conditions inside a float tank.

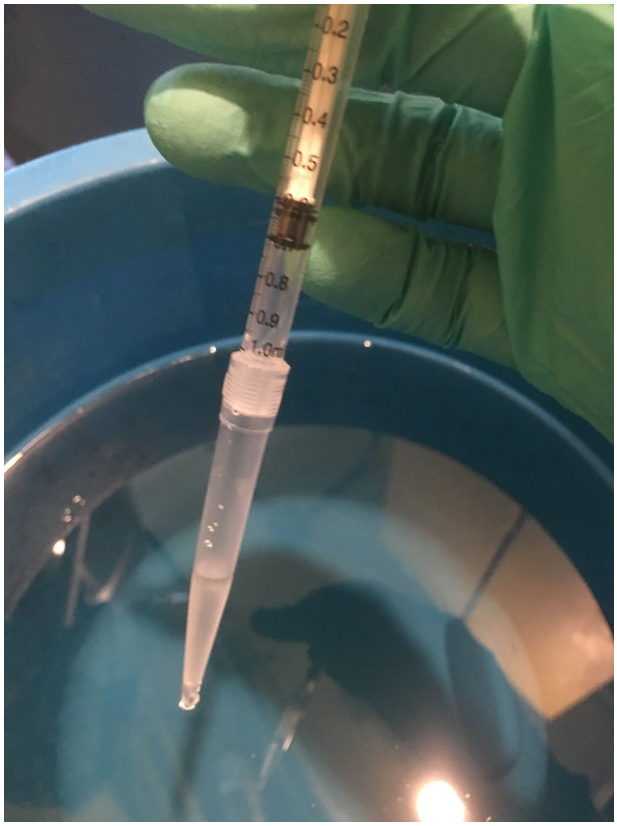
Verifying the concentration of H2O2 before beginning would be nice.

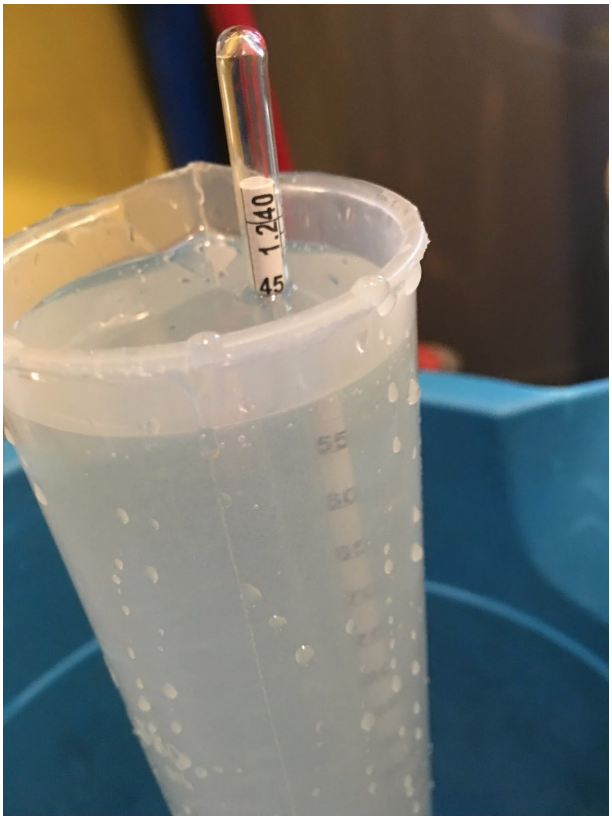
Using more precise measurement devices for the volumes of the buckets and the dosing of the H2O2 would also be helpful for more exact calculations.

Fun Photos








1.240
45


K-1826
Manufactured For:
Lot# B4049
novatech
INTERNATIONAL
800 Rockmead Dr, Ste 102
Kingwood, TX 77339 • 866-433-6682
www.novatech-usa.com
sales@novatech-usa.com
Hydrogen Peroxide
Test
1 drop = 5 ppm
By: taylor


taylor