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H2HUBB Official Test Report

Evaluation Introduction

This report presents our analysis of the Essence V2 Hydrogen Water Bottle from Spirit H2. H2HUBB classifies this device as a high-pressure portable hydrogen water system, capable of dissolving hydrogen gas into water at concentrations exceeding 1.57 mg/L (ppm). The bottle employs a PEM/SPE membrane, ensuring consistent hydrogen production regardless of the source water's conductivity (TDS). The device operates on two cycle durations: 5 minutes and 10 minutes, with our evaluation focused solely on the 10-minute cycle for dissolved hydrogen performance. The unit is powered by a 3.7V, 2200 mAh battery, as indicated in the specifications. Our investigation aimed to confirm the test results from H2 Analytics, particularly since the product is IHSA-certified and has been tested by a hydrogen-based laboratory. This confirmation process is part of our standard procedure for products that have received IHSA certification and undergone H2 Analytics testing. Hydrogen water products previously tested by H2 Analytics can be expedited through the H2HUBB evaluation process, as the efficacy of the product has already been established by a reputable laboratory. Our confirmation testing ensures that the product meets H2HUBB's performance standards. For more information about our hydrogen water bottle performance standards, please visit **H2HUBB.**

H2 Products

- Company: Spirit H2
- Product Name: Essence V2
- Type: High-Concentration H2 Water Device
- PEM/SPE
- Portable hydrogen water generator
- High-PSI bottle
- Model: SH500
- URL Link: https://spirith2.com/

Method and Procedure

- Distilled water: 6.0 pH (verifies that unit can function with low water conductivity)
- ΔpH (delta pH): Did not increase
- Water Temperature: 65~70°F/ 18~21°C
- Bottle Vol Size: 0.230 L or 230 mL (7.7 oz)
- Cycle Time Frame:
  - 5-minutes
  - 10-minutes

- Contamination Tests:
  - Chlorine generation (Cl2)
  - Ozone Generation (O3)
- Test Methodology:
  - Test Location: 277 meters (909 ft elevation)
  - Titration: H2Blue® Test Reagent
  - All Dissolved H2 Concentration Tests Converted to SATP (water temp and pressure)
  - Claimed Dissolved H2 mg/L: 2.7-6.2 mg/L (post 5~10 minutes)

Test Results

To perform a dissolved hydrogen gas concentration test on the bottle, we began by filling it with distilled water slightly above the bottom of the threads. We then secured the lid on the bottle and activated the hydrogen water bottle for the 10-minute setting. All of the dissolved molecular hydrogen concentration tests were conducted using H2Blue. We performed a minimum of eight tests and averaged the results. The primary results displayed in this report are averages rather than peak concentrations.

H2 Concentration at SATP:

- 10-mins avg mg/L (ppm): ≅ 5.0 mg/L (ppm)

Avg H2 mg Produced in Designated Vol:

- 10-mins: ≅ 1.15 mg (≡ 14 mL Dissolved)

- **Claimed H2 mg/L (ppm) confirmed: Yes**

H2HUBB Hydrogen Concentration Assessment

H2HUBB's primary objective was to perform a confirmation assessment of the product's hydrogen concentration, in accordance with our policy outlined in the Recommendation Guidelines and Terms. This approach was taken as Spirit H2, the company behind the product, had already secured the most precise hydrogen concentration (mg/L) test results through H2 Analytics, a reputable hydrogen laboratory based in the United States. According to H2 Analytics' test report, the Essence V2 hydrogen water bottle achieved 2.73 mg/L (ppm) during its 5-minute cycle and 6.23 mg/L (ppm) during its 10-minute cycle. These results are exceptional, ranking among the highest dissolved H2 concentrations we've observed in the market. At H2HUBB, we strive to ensure our test measurements align within a 5-20% range of the Gas Chromatography results provided by H2 Analytics, acknowledging the inherent margin for human error in our testing process. Throughout our own tests, the Essence V2 achieved a peak hydrogen concentration of 6.1 mg/L, with an average of 5.0 mg/L across eight tests. However, it is important to note that the peak reading was not obtained during the averaged tests. This variation may be attributed to a brief break-in period commonly observed with PEM hydrogen water products or minor human error in our testing—or perhaps a combination of both. Nonetheless, our results fall within the desired 5-20% confirmation range, with the deviation from H2 Analytics' measurements ranging from as little as 2% to at worst 20%. The bottle meets and exceeds H2HUBB's standards for both **H2 Concentration and Daily Dose of H2**. Based on our findings, we recommend users operate the device using the 10-minute cycle to achieve the most optimal hydrogen water consumption.

Contamination Test:

- Chlorine (Cl2): No detectable levels
- Ozone (O3): No detectable levels

Internal Performance

Manufacturer's Rated Electrical Values: (as stated on the power supply)

- **Type of device/electrolytic cell**
  - Pure H2: PEM/SPE membrane
- **Applied volts:**
  - 3.7 volts
- **Total Amps:**
  - 2200 mAh (2.2 amps)
- **Total watts:**
  - 8.14 Wh (watts)

Product Assessment

Functionality:

- Power on/off button
  - Located on the front of the H2 generator.
  - Press the power button to initiate electrolysis for hydrogen gas production and initiate a 5-minute session, then shuts off.
  - Press the power button twice to initiate a 10-minute session time then shuts off.
- USB-C charging port
  - Located on the backside of the device.
- Pressure release valve lid
  - Dual integrated manual and passive pressure release valve for easy lid removal.
- Anode reservoir off-gas port
  - Pin-hole located on the bottom of the bottle.

Reliability:

- New: Yes
  - Initial test results and evaluation are currently on the report. (see Overall Opinion)

Cost:

- Essence V2 Hydrogen Water Bottle: $244.00 USD
- H2 Hubb discount: $20 off
- H2 Hubb recommendation cost: $225.10

Overall Opinion

The Spirit H2 Essence V2 portable hydrogen water generator is a premium, well-engineered device, classified by H2HUBB as a high concentration portable H2 water system. In our evaluation, the device produced approximately 6.10 mg/L (ppm) of dissolved hydrogen in 230 mL of water during a 10-minute session, marking its peak H2 concentration. Across eight tests, the device averaged 5.0 mg/L (ppm) of dissolved hydrogen. This means the total mass of hydrogen gas dissolved in the bottle during a 10-minute cycle was 1.15 mg of H2 (≈14 mL) at the average concentration of 5.0 mg/L, and 1.40 mg at the peak concentration. Independent testing by H2 Analytics measured a slightly higher dissolved hydrogen concentration of 6.23 mg/L (ppm), equivalent to 1.40 mg of H2 in the same volume. Our results align well with theirs, falling within the 5-20% range we aim for in our comparative analysis. Based on our testing, consumers would need to drink 2-3 bottles daily to ingest 2-3 mg of hydrogen, a dosage shown in scientific studies to provide therapeutic benefits. Both our results and those of H2 Analytics confirm that the hydrogen content in this bottle ranks among the highest we've observed to date.

Dissolved hydrogen concentration (mg/L (ppm)) is a critical performance metric, as research suggests that 1-3 mg of H2 or more per day appears to be therapeutic for humans. Furthermore, the **IHSA** standard for this type of product is a minimum of 0.5 mg/serving or 0.5 mg/L. H2HUBB's performance standard for hydrogen water devices is slightly higher than IHSA, as we require the device to provide a concentration of 0.8 mg/L (ppm) and 0.8 mg/day consistently. The Essence V2 Hydrogen Water Bottle surpassed H2HUBB standards for both **H2 Concentration and Daily Dose of H2**. Based on current research data, we believe the device's mg/L (ppm) performance provides adequate levels of hydrogen gas to induce therapeutic effects in humans. **According to our test results, the product will be featured on our website as a Level 4 hydrogen water device**. You can view the meaning of this ranking **here**. We are pleased with the device's dissolved hydrogen concentration.

We did not obtain our peak H2 measurement during the standard H2 concentration test used to determine the bottle's average H2 concentration. This was likely due to minor human error during our titration testing or the device undergoing a brief break-in period, which is common for hydrogen water devices. Nonetheless, these findings emphasize an important point about hydrogen water products and why we focus on average H2 concentrations rather than peak values.

All hydrogen water bottles and related hydrogen water products produce water with a range of dissolved hydrogen levels, rather than consistently achieving exact mg/L figures with each use. This variability is due to several factors, including water temperature, pressure, electrolysis performance, proper seals, and more. Therefore, it's important to understand that based on our testing, the Spirit H2 Essence V2 Hydrogen Water Bottle has a dissolved hydrogen gas range of 5.0–6.23 mg/L (ppm), which is exceptional. Consumers should expect to ingest hydrogen within this range when the bottle is functioning optimally and filled to the appropriate level.

One concern with high mg/L H2 water portable systems is safety. These systems should have adequate pressure relief systems implemented into the device to manage the higher partial pressure (psi) generated by the system. The Spirit H2 Essence V2 features a dual passive and manual pressure release cap. We thoroughly tested the cap's ability to release pressure. The cap is simple and efficient at acting as a dual passive and manual pressure release valve while maintaining adequate pressure (psi) for achieving high mg/L H2 levels. The system passed our standards for safety and high psi.

The Essence V2 hydrogen water bottle is well-engineered using high-quality materials and efficiently dissolves a therapeutic concentration of hydrogen gas into its 230 mL capacity. We found no safety concerns with the system, as it has implemented sufficient safety measures, effectively preventing the production of chlorine and ozone in the drinking water. Overall, we are satisfied with the device's performance. The Essence V2 hydrogen water bottle exceeds our minimum performance standards and, in H2HUBB's opinion, is both safe and suitable for in-home hydrogen water therapy.

Approved By: Tywon Hubbard

Tywon Hubbard

CEO, H2HUBB LLC

H2HUBB APPROVED
PRODUCT PASSED STANDARDS