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H2HUBB Official Test Report

Evaluation Introduction

This report presents our analysis of the H2Grail Hydrogen Water Bottle from H2Grail. H2HUBB classifies this device as a high-pressure (psi) portable hydrogen water system, capable of dissolving hydrogen gas into water at concentrations exceeding 1.57 mg/L (ppm). The bottle utilizes a PEM/SPE membrane, ensuring consistent hydrogen production regardless of the source water's conductivity (TDS). The device operates on two cycle time-frames: 5 minutes and 10 minutes, and we evaluated its dissolved hydrogen performance solely on the 10 minute cycle. Given the bottle's small volume of 200 mL, the best chance for the device to produce an acceptable dose of hydrogen—greater than 0.4 mg of H₂ per bottle—lies within the 10-minute cycle. The unit is powered by a 7.4 V, 1100 mAh battery, as specified on the battery specs. Our investigation focused on determining whether the product meets H2HUBB's H₂ performance standards, a prerequisite for approval and recommendation. For more information about our hydrogen water bottle performance standards, please visit [H2HUBB](https://www.H2HUBB.com).

H2 Products

- Company: H2Grail
- Product Name: H2Grail Hydrogen Water Bottle
- Type: High-Concentration H₂ Water Device
- PEM/SPE
- Portable hydrogen water generator
- High-PSI bottle
- Model: HPW-200
- URL Link: <https://h2grail.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: 0.20 L or 200 mL (6.7 oz)
- Cycle Time Frame:
 - 5-minutes
 - 10-minutes
- Contamination Tests:
 - Chlorine generation (Cl₂)
 - Ozone Generation (O₃)
- Test Location: 277 meters (909 ft elevation)
- Test Methodology:
 - Titration: H2Blue® Test Reagent
- All Dissolved H₂ Concentration Tests Converted to SATP (water temp and pressure)
- Claimed Dissolved H₂ mg/L: 2.5-5.0 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 below the bottom of the threads, above the max water level line. 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 results displayed in this report are averages rather than peak concentrations.

H2 Concentration at SATP:

- 10-mins avg mg/L (ppm): \cong 3.60 mg/L (ppm)

Avg H2 mg Produced in Designated Vol:

- 10-mins: \cong 0.72 mg (\equiv 8.74 mL Dissolved)
- **Claimed H2 mg/L (ppm) confirmed:** No

H2HUBB Hydrogen Concentration Assessment

- According to our testing, the H2Grail Hydrogen Water Bottle exhibits a dissolved molecular hydrogen concentration of \cong 3.60 mg/L (ppm) throughout its cycle duration of 10 minutes. Based on current scientific literature in human studies, the dissolved hydrogen concentration on the 10 minute settings is deemed sufficient to induce therapeutic effects. The bottle surpasses our H2HUBB standards for both **H2 Concentration and Daily Dose of H2**, and we recommend users utilize the 10-minute cycle time for consuming hydrogen water from the device.

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:**
 - 7.4 volts
- **Total Amps:**
 - 1100 mAh (1.1 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
 - Integrated manual 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:

- H2Grail Hydrogen Water Bottle : \$143.00 USD
- H2 Hubb discount: TBA
- H2 Hubb recommendation cost: TBA

Overall Opinion

The H2Grail Hydrogen Water Bottle is a high-quality, portable hydrogen water generator. In our evaluation, the device produced approximately 3.60 mg/L (ppm) of dissolved hydrogen in 200 mL of water during a 10-minute session, equating to 0.72 mg of H₂ (≈ 8.74 mL) dissolved in the bottle. The amount of hydrogen gas (milligrams) dissolved by the bottle within 10 minutes meets the standards for premium portable H₂ water generators, which is typically above 0.4 mg. Based on our test results, consumers would need to drink 3-4 bottles daily to ingest 2-3 mg of H₂, a dosage that has been shown in scientific studies to offer therapeutic benefits. The dissolved hydrogen test results from the bottle are satisfactory; however, they do not fully align with the online claims, which suggest it can produce 2.5 mg/L (ppm) on a 5-minute setting and 5.0 mg/L (ppm) on a 10-minute setting. Based on our testing, we recommend that H2Grail market the device as a 2.5-3.5 mg/L (ppm) unit on its 10 minute setting. These figures better reflect our findings, and H2Grail has notified H2HUBB that they confirmed achieving 3.0 mg/L (ppm) in their own tests. Accurately marketing the bottle with these numbers will provide consumers with a more realistic understanding of its true capabilities.

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 H2Grail 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 2 hydrogen water device.** You can view the meaning of this ranking [here](#). We are pleased with the device's dissolved hydrogen concentration.

The hydrogen water bottle includes a nasal cannula for inhaling hydrogen gas. While we believe that H2Grail does not intend to actively promote this feature, it's important for us to clarify our position, which is backed by research. We do not approve of inhaling hydrogen gas from hydrogen water bottles for reasons supported by scientific evidence and our own testing.

At H2HUBB, we do not recommend inhaling hydrogen gas from hydrogen water bottles due to the significant limitations and inefficiencies of this method. Our calculations show that, under ideal conditions with no H₂ losses, these bottles may produce an inhaled hydrogen concentration of only 0.1-0.2% in the nasal cavity. This concentration is already significantly below the therapeutic levels reported in scientific studies. However, when accounting for hydrogen loss during exhalation—approximately 66.6% due to the use of nasal cannulas—the actual administered H₂ concentration drops even further, to around 0.033%. This level is roughly 40 times lower than the minimum concentration required to achieve any therapeutic benefit based on the available data we have now.

Furthermore, additional factors such as the dissolution of hydrogen into the water and the time required to purge atmospheric air from an empty bottle can further diminish the already low concentration of inhaled H₂. As a result, the final hydrogen concentration reaching the bloodstream or cells is approximately < 0.2 μmol/L, which is 30-50 times lower than the levels typically required to induce therapeutic effects in humans. Therefore, we strongly advise against using hydrogen water bottles for inhalation purposes, as they are insufficient for delivering the necessary hydrogen levels for systemic benefits. These bottles are best utilized for their intended purpose—drinking hydrogen water, which remains a far more effective method to derive therapeutic benefits from the bottle. The inhalation attachments for hydrogen water bottles are largely a marketing gimmick, capitalizing on the growing interest in hydrogen inhalation. Consumers would be better off not wasting their time or money on trying to breathe hydrogen gas from a hydrogen water bottle, as it is a pointless feature.

The H2Grail hydrogen water bottle is well-engineered using high-quality materials and efficiently dissolves a therapeutic concentration of hydrogen gas into its 200 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 H2Grail hydrogen water bottle exceeds our minimum performance standards and, in H2HUBB's opinion, is both safe and suitable for in-home hydrogen water therapy.

H2 Hubb LLC disclaimer: All tests conducted and test results produced by H2 Hubb LLC have been done according to industry-accepted practices and standards. Nevertheless, these results may not necessarily reflect test results performed by manufacturers, suppliers or third-party labs. Our test results are independent of all other parties, and testing by other parties may produce different results. We understand that many variables are involved in testing, some of which are extremely difficult to control. These reports are not meant or intended for any other purpose but to uphold H2 Hubb LLC's business practices and to validate the reasons for our recommendations.



Approved By: Tywon Hubbard

A handwritten signature in black ink that reads 'Tywon Hubbard'.

CEO, H2HUBB LLC

