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H₂HUBB Official Test Report

Evaluation Introduction

Our report summarizes our analysis of the Nord Hydrogen Bottle offered by the company Nord Hydrogen. H₂HUBB classifies this device as a premium high-pressure (psi) H_2 water portable system. The device features a PEM/SPE membrane to ensure H_2 gas production regardless of source water conductivity (TDS). Its session time-frame or cycle time-frames are 5 minutes and 10 minutes. We evaluated the system's dissolved hydrogen performance at 5 and 10 minutes. The unit contains a 3.7 V +2200 mAh battery, as stated by the battery specs. Our investigation was to analyze whether the product would meet our H_2 product performance standards, which must be achieved to be approved and recommended by H₂HUBB. To learn more about our H_2 performance standards for hydrogen water bottles, visit **H₂HUBB.**

H_2 Products

- Company: Nord Hydrogen
- Product Name: Nord Hydrogen Bottle
- Type: High-Concentration H_2 Water Device
  - PEM/SPE
  - Portable hydrogen water generator
  - High-PSI bottle
- Serial Number: HWMSENY2000
- URL Link: https://nordhydrogen.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: 0.210 L or 210 mL
- 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 H_2 Concentration Tests Converted to SATP (water temp and pressure)
- Claimed Dissolved H_2 mg/L: 3.5-5.0 (post 5~10 minutes)

Test Results

To measure the dissolved hydrogen gas concentration of the bottle, we filled it with distilled water up to the base of the threads. The lid was then securely fastened, and the bottle was activated using either the 5-minute or 10-minute hydrogen generation setting. All measurements were conducted using the H_2Blue testing method. Multiple tests were performed to ensure accuracy, and the results were averaged to determine the bottle's performance. While our primary emphasis is on the average dissolved hydrogen concentration, peak concentration values are also included to provide a comprehensive analysis of the bottle's capabilities.

H_2 Concentration at SATP:

- 5-mins avg mg/L (ppm): ≅ 2.83 mg/L (ppm); SD: 0.12
- 10-mins avg mg/L (ppm): ≅ 4.75 mg/L (ppm); SD: 0.10

Peak H_2 Concentration at SATP:

- 5-mins peak mg/L (ppm): ≅ 3.20 mg/L (ppm)
- 10-mins peak mg/L (ppm): ≅ 5.01 mg/L (ppm)

Avg H_2 mg Produced in Designated Vol:

- 5-mins: ≅ 0.60 mg (≡ 7.28 mL Dissolved)
- 10-mins: ≅ 1.0 mg (≡ 12.14 mL Dissolved)

- **Claimed H_2 mg/L (ppm) confirmed:** Yes

H_2HUBB Hydrogen Concentration Assessment

- According to our testing, the Nord Hydrogen Bottle exhibits a dissolved molecular hydrogen concentration of 2.83 - 4.75 mg/L (ppm) throughout its cycle durations of 5 and 10 minutes, with a peak H_2 concentration of 5.01 mg/L (ppm). Based on current scientific literature in human studies, the dissolved hydrogen concentration on the 5-10 minute settings is deemed sufficient to induce therapeutic effects. The bottle surpasses our H_2HUBB standards for both **H_2 Concentration and Daily Dose of H_2**, 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 H_2: 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 H_2 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 again during 5-minutes session to initiate a 10-minute session time then shuts off.
- USB-C charging port
  - Located on the backside of the device.
- 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:

- Nord Hydrogen Bottle: $219.00 USD
- H_2 Hubb discount: TBA
- H_2 Hubb recommendation cost: TBA

Overall Opinion

The Nord Hydrogen Bottle is a well-engineered portable hydrogen water device. Our evaluation found that it produced approximately 4.75 mg/L (ppm) of dissolved H_2 in 210 mL of water during a 10-minute cycle, delivering approximately 1.0 mg of H_2 (equivalent to 12.14 mL) per session. The device also achieved a peak H_2 concentration of 5.01 mg/L, demonstrating its ability to dissolve more than 1.0 mg of hydrogen into the bottle. This means the bottle essentially delivers a 1.0 mg dose of molecular hydrogen per 10-minute cycle or serving. The total hydrogen mass dissolved within this time frame places the Nord Bottle in alignment with top-performing hydrogen water bottles currently on the market. Importantly, the hydrogen dosage delivered after a single cycle exceeds H_2HUBB's daily minimum performance standard of 0.8 mg of H_2, making it possible to reach a clinically relevant daily dose by consuming just three or more bottles per day. With these higher hydrogen concentrations and dosing capabilities, high-end hydrogen water bottles like the Nord are becoming effective, low–upfront cost options for achieving therapeutic hydrogen intake on a daily basis.

Independent testing by the hydrogen laboratory H_2 Analytics reported a dissolved hydrogen concentration of 5.14 mg/L (ppm) for this bottle, corresponding to 1.08 mg of H_2 dissolved in the specified volume. These results are in close agreement with H_2HUBB's own findings, which differed by only 2.5%. Such minor variation is expected and can be attributed to factors including methodological differences (gas chromatography vs. redox titration), potential operator variability, and performance differences between distinct sample units. H_2HUBB recognizes a standard discrepancy range of 5–20% when comparing results with H_2 Analytics, and the test results for this product fall well within that acceptable margin, further validating the consistency and reliability of the bottle's hydrogen performance.

Dissolved hydrogen concentration (mg/L (ppm)) is a critical performance metric, as research suggests that 1-3 mg of H_2 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. H_2HUBB'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 Nord Hydrogen Bottle surpassed H_2HUBB standards for both **H_2 Concentration and Daily Dose of H_2**. 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 3 hydrogen water device**. You can view the meaning of this ranking **here**. We are pleased with the device's dissolved hydrogen concentration.

Safety is a critical concern for all hydrogen products, including hydrogen water bottles. The Nord Hydrogen Bottle stands among the safest hydrogen water bottles currently on the market, having undergone nearly every major safety evaluation applicable to this category. It has been independently tested by both H_2HUBB and H_2 Analytics and is certified to IHSA (International Hydrogen Standards Association) specifications. These certifications include EPA-compliant laboratory analyses that verify the produced hydrogen water is safe for consumption and free from harmful contaminants, such as heavy metals. Moreover, this unit is one of the few hydrogen water bottles tested for per- and polyfluoroalkyl substances (PFAS), often referred to as "forever chemicals." Results indicate that high-end hydrogen water bottles utilizing quality PEM/SPE membranes—including those like the Nord—are unlikely to leach PFAS into drinking water.

Current data, as well as the design characteristics of these devices, suggest a low probability of PFAS release. Key variables that influence membrane degradation (and potential PFAS leaching) include membrane composition and thickness, current density, and operational conditions such as temperature and pH. High-grade PEMs—such as Nafion 115 and 117—used in premium devices are engineered for chemical durability and mechanical stability. These membranes are resistant to degradation when operated under proper conditions. Hydrogen water bottles operate at relatively low temperatures and current densities. The drinking water (catholyte), typically between 10°C and 25°C (50°F–77°F), helps regulate cell temperature well below the degradation threshold of the membrane (80°C–120°C for Nafion 117). Additionally, these devices operate at current densities ranging from approximately 0.043 to 0.23 A/cm²—roughly 6.5 to 70 times lower than the degradation onset range of 1.5 to 3.0 A/cm² for PEM/SPE membranes. These low operating conditions significantly minimize both thermal and electrochemical stress on the membrane.

Another key factor is membrane hydration. PEMs function through the transport of protons (hydrogen ions) across the membrane via water molecules. If the membrane becomes dry, it can become brittle and lose proton conductivity. However, hydrogen water bottles are designed to operate with water present at all times, ensuring consistent membrane hydration. This further reduces any risk of degradation or structural compromise. While PFAS concerns in consumer products are valid, excessive worry specific to hydrogen water bottles—especially high-end, PEM-based systems—is not warranted based on current evidence. Multiple independent laboratory analyses have confirmed that quality hydrogen water bottles have not leach PFAS into drinking water.

That said, the absence of detectable PFAS in current tests does not preclude the possibility of new findings in the future. H_2HUBB maintains that product safety should always be assessed in light of evolving data. Our current evaluation concludes that the risk of PFAS contamination from premium hydrogen water bottles is low. This does not extend to low-grade hydrogen bottles, which may utilize inferior materials and lack third-party safety testing—therefore posing a higher risk.

In summary, H_2HUBB is highly satisfied with the safety profile of the Nord Hydrogen Bottle and commends Nord Hydrogen for proactively meeting and exceeding established safety standards.

Overall, the Nord Hydrogen Bottle is an aesthetically refined and well-constructed device, utilizing high-quality materials and demonstrating the ability to consistently dissolve therapeutic concentrations of molecular hydrogen into its 210 mL water capacity. The manufacturer's performance claims regarding hydrogen gas output have been independently verified and align closely with both our test results and the product's marketing representations. From a safety standpoint, no concerns were identified. The system appears to incorporate adequate safeguards and does not generate harmful byproducts such as chlorine or ozone in the produced drinking water. Based on our evaluation, the device exceeded H_2HUBB's minimum performance standards and, in our professional opinion, is both safe and effective for in-home hydrogen water therapy. We are generally satisfied with the device's overall performance and build quality.

Approved By: Tywon Hubbard

Tywon Hubbard

CEO, H_2HUBB LLC

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