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Date: 5/1/2025

H₂HUBB Official Test Report

Evaluation Introduction

Our report summarizes our analysis of the H₂-Max Hydrogen Water Bottle offered by the company ZYNAFLO. H₂HUBB classifies this device as a high-pressure (psi) H₂ water portable system. The device features a PEM/SPE membrane to ensure H₂ 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 minutes 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 H₂ product performance standards, which must be achieved to be approved and recommended by H₂HUBB. To learn more about our H₂ performance standards for hydrogen water bottles, visit [H₂HUBB](https://H2HUBB.com/).

H₂ Products

- Company: ZYNAFLO
- Product Name: H₂-Max Hydrogen Water Bottle Generator
- Type: High-Concentration H₂ Water Device
 - PEM/SPE
 - Portable hydrogen water generator
 - High-PSI bottle
- URL Link: <https://ZYNAFLO.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: 0.208 L or 208 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 H₂ Concentration Tests Converted to SATP (water temp and pressure)
- Claimed Dissolved H₂ mg/L: 3.0-5.0 mg/L (post 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 H₂Blue 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.

H₂ Concentration at SATP:

- 5-mins avg mg/L (ppm): $\cong$ 2.90 mg/L (ppm); SD: 0.10
- 10-mins avg mg/L (ppm): $\cong$ 5.90 mg/L (ppm); SD: 0.47

Peak H₂ Concentration at SATP:

- 5-mins peak mg/L (ppm): $\cong$ 3.0 mg/L (ppm)
- 10-mins peak mg/L (ppm): $\cong$ 6.30 mg/L (ppm)

Avg H₂ mg Produced in Designated Vol:

- 5-mins: $\cong$ 0.60 mg ($\equiv$ 7.26 mL Dissolved)
- 10-mins: $\cong$ 1.22 mg ($\equiv$ 14.76 mL Dissolved)
- **Claimed H₂ mg/L (ppm) confirmed:** Yes

H₂HUBB Hydrogen Concentration Assessment

- According to our testing, the H₂-Max Hydrogen Water Bottle Generator exhibits a dissolved molecular hydrogen concentration of 2.90 - 5.90 mg/L (ppm) throughout its cycle durations of 5 and 10 minutes, with a peak H₂ concentration of nearly 6.30 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 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:**
 - 3.7 volts
- **Total Amps:**
 - 2200 mAh (2.20 amps)
- **Total watts:**
 - 8.14 Wh (watts)
- **Electrolysis volts:**
 - 2.54 volts
- **Electrolysis amps:**
 - 1.0 amps
- **Total watts:**
 - 2.54 watts

H₂ Production vs. Dissolved Hydrogen:

- **Theoretical Max H₂ production:**
 - 7.61 mL/min or 0.62 mg/min
- **Theoretical Max Dissolved H₂ Level**
 - 5-mins: $\cong$ 14.92 mg/L (ppm)
 - 10-mins: $\cong$ 29.85 mg/L (ppm)
- **Measured Dissolved H₂ reading:**
 - 5-mins: $\cong$ 2.90 mg/L (ppm)
 - 10-mins: $\cong$ 5.90 mg/L (ppm)
- **Percentage of Max H₂ Dissolved (as measured):**
 - 5-mins: $\cong$ 19.43% dissolved
 - 10-mins: $\cong$ 19.43% dissolved
- **Percentage of Max H₂ Undissolved (loss):**
 - 5-mins: $\cong$ 80.57% undissolved
 - 10-mins: $\cong$ 80.57% undissolved

Product Assessment

Functionality:

- Power on/off button
 - Located on 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 consecutively 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:

- H₂-Max Hydrogen Water Bottle: \$199.00 USD
- H₂ Hubb discount: TBA
- H₂ Hubb recommendation cost: TBA

Overall Opinion

The ZYNAFLO H₂-Max Hydrogen Water Bottle is a well-constructed, portable hydrogen water unit. Our evaluation found that during a 10-minute operation cycle, the device produced approximately 5.90 mg/L (ppm) of dissolved hydrogen gas (H₂) in 208 mL of water, delivering a total dissolved hydrogen content of 1.22 mg H₂, which is equivalent to 14.76 mL of H₂ gas at SATP. The peak hydrogen concentration reached 6.30 mg/L (ppm). The total mass of dissolved hydrogen produced within 10 minutes places this bottle among the top-performing hydrogen water bottles—exceeding 1.0 mg of H₂ per cycle. Furthermore, this output surpasses H₂HUBB's minimum daily standard of 0.8 mg of H₂ with just a single bottle. This means that by consuming three bottles per day, a user can ingest over 3 mg of molecular hydrogen—a clinically relevant dose according to current human research. These findings are further supported by previous third-party testing conducted by H₂ Analytics, another authoritative hydrogen laboratory, which reported hydrogen concentrations of 3.15 mg/L and 6.11 mg/L on the 5-minute and 10-minute operation cycles, respectively. The variation between H₂HUBB's and H₂ Analytics's test results is within 8%—a margin consistent with acceptable inter-laboratory variance for hydrogen concentration testing. This cross-validation corroborates the bottle's capability to consistently achieve upwards of 3.0 mg/L on a 5-minute cycle and approach or exceed 6.0 mg/L on a 10-minute cycle, reinforcing confidence in the product's high-performance output.

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 ZYNAFLO H₂-Max 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 peak H₂ concentration 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.

Since the H₂-Max Hydrogen Water Bottle Generator achieved a peak H₂ concentration of 6.30 mg/L (ppm) during its 10-minute cycle, it is classified as a Level 4 H₂ water device in the H₂HUBB ranking system. Our performance classification is based on the highest dissolved hydrogen concentration recorded during testing, which reflects the maximum capacity of the device and the highest possible H₂ dose a user could receive under optimal conditions. However, this does not mean that every individual will consistently achieve this exact concentration, as real-world performance can vary due to user conditions, product variability, and environmental factors.

To provide a realistic expectation for consumers, we also report the average H₂ concentration achieved across multiple tests, which represents what users are more likely to experience during regular use. While our performance levels are determined by peak H₂ concentrations, the H₂HUBB test average offers a more practical measure of typical device performance. Therefore, while the H₂-Max Hydrogen Water Bottle is capable of producing hydrogen concentrations exceeding 6.20 mg/L (ppm), users should not expect to consistently reach this peak value with every use. Additionally, not every bottle will reach the exact same peak H₂ concentration, although performance should remain within a similar range.

Despite all H₂-Max bottles coming from the same manufacturer and assembly line, individual units may exhibit slight performance differences due to variations in H₂ electrolytic cell performance (voltage, amperage, resistance), lid seal integrity, and pressure release valve efficiency. These minor discrepancies can lead to small variations in hydrogen concentration results across different units. In fact, in our testing, the 10-minute cycle produced hydrogen concentrations ranging from 5.30 to 6.30 mg/L (ppm). Therefore, consumers should reasonably expect H₂ concentrations in the range of 5.0 to 6.0 mg/L (ppm) under normal use across different bottles and sessions. Consumers should understand that these findings are the result of credible, independent testing conducted by a recognized authority in the industry.

Replicating H₂HUBB's exact test results in a non-laboratory setting—despite using the same titration reagents—is inherently improbable. This is attributable to the lack of controlled environmental conditions, standardized testing methodologies, and precise execution of the oxidimetry protocol. H₂HUBB employs a highly refined oxidimetry-based titration protocol, developed and validated over more than a decade, to ensure repeatability and precision. This standardized methodology minimize variability.

Consumers attempting to assess the hydrogen concentration in their own bottle using H₂HUBB-approved reagents should understand that, without adherence to professional standards, results may deviate significantly. In practical terms, achieving approximately 30–70% of H₂HUBB's measured values—specifically in the range of 3.50–4.10 mg/L (ppm) on a 10-minute cycle—should be interpreted as indicative of effective hydrogen generation. This performance band accounts for expected loss in precision due to non-standardized testing variables, including operator technique, reagent handling, water composition, and environmental conditions. Given that peak H₂ concentrations are only achieved under optimal test conditions, H₂HUBB reports both peak and average values to provide a comprehensive and realistic representation of product performance. This dual reporting structure empowers consumers to make informed evaluations of their hydrogen water systems based on objective, third-party testing.

Overall, the H₂-Max hydrogen water bottle is aesthetically appealing, engineered with high-quality materials, and effectively dissolves a therapeutic concentration of hydrogen gas into its 208 mL capacity. The validity of the manufacturer's claims regarding the bottle's hydrogen gas performance is not in question and the device's performance aligns closely with the product's marketing materials. We have no safety concerns with the system, as it appears to have implemented sufficient safety measures and effectively prevents the production of chlorine and ozone in the drinking water. We are generally pleased with the performance of the device. The H₂-Max Hydrogen Water device performed above our minimum performance standards and, in the opinion of H₂HUBB, the system appears to be safe and suitable for in-home H₂ Water Therapy.

We desire to move forward with recommending the product to the public.

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

CEO, H₂HUBB LLC

