Water Quality and Hydrogen Generation Test Report

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Sample: IonBottles ATOM Hydrogen Water Bottle - Model #: ATOM-2025 - Serial #: IB-ATOM-2025-002 - Batch #: 202501-02
Testing Period: April 1-30, 2024
Project ID: SWRI-240312-5 Work Order No.: 24031510

Test Summary: This report details the water quality and hydrogen generation analysis of the IonBottles ATOM Hydrogen Water Bottle, conducted at the Swiss Water Research Institute in Zurich. The sample was received on March 29, 2024, in a factory-sealed box, with a USB-C charging cable and user manual. The unit was fully charged prior to testing, and the proton exchange membrane was preconditioned overnight.

Materials and Methods:

- Water Type: Distilled, pH 6.45 ± 0.25
- Starting Water Temperature: 25.0°C ± 1.0
- Laboratory Elevation: 408 meters (0.96 atm)
- Gas Chromatograph: Shimadzu GC-2030 with TCD Detector
- GC Test Method: Static headspace analysis (HS-GC)
- Calibration (H_2): 2-point (1.42 / 7.17 mg/L), performed on the day of testing
- pH Meter: Mettler Toledo SevenExcellence S400, three-point calibration (4.0, 7.0, 10.0)

Hydrogen Generation Results:

- Mean dissolved H_2 (5-min mode): 2.5 ppm (2.5 mg/L) ± 0.15
- Available H_2 (5-min mode): 1.0 mg per 400 mL
- Mean dissolved H_2 (10-min mode): 5.0 ppm (5.0 mg/L) ± 0.25
- Available H_2 (10-min mode): 2.0 mg per 400 mL

Water Quality Results - Domestic Water Panel:

- Chloride: 0.3 mg/L
- Fluoride: 0.02 mg/L
- Nitrate as N: 0.1 mg/L
- Nitrite as N: 0.01 mg/L
- Sulfate: 0.5 mg/L
- Cyanide, Free: Not Detected
- Hardness (as $CaCO_3$): 2.0 mg/L
- Silica, Dissolved (as SiO_2): Not Detected
- Turbidity: <0.5 NTU
- pH: 7.10
- Aluminum: <0.05 mg/L
- Iron: <0.05 mg/L
- Magnesium: <1.0 mg/L
- Sodium: <1.0 mg/L
- Lead: Not Detected
- Arsenic: Not Detected
- Cadmium: Not Detected
- Chromium: Not Detected
- Copper: Not Detected
- Zinc: <0.01 mg/L

Conclusion: The IonBottles ATOM Hydrogen Water Bottle was found to produce hydrogen-rich water at 2.5 ppm (2.5 mg/L) in 5-minute mode and 5.0 ppm (5.0 mg/L) in 10-minute mode, translating to approximately 1.0 mg and 2.0 mg of molecular hydrogen per 400 mL, respectively. Additionally, the water produced was exceptionally pure, with all measured contaminants well below maximum contaminant levels (MCLs) set by international water quality standards. The results confirm that water produced by the IonBottles ATOM is safe for human consumption and meets the highest standards for drinking water purity.

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