



Hydrogen Water Testing & Certification

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Report#: H2AR-260723-3

Laboratory Report

Introduction

This report summarizes the testing of a hydrogen water bottle distributed by Alkaway, Mullumbimby, NSW, Australia. This testing was requested by Alkaway. The bottle was received for testing on 7/21/2026

Tests requested: Dissolved H₂ for the following cycle times: 5- & 10-minutes

Product Description

Name: Hydrogen Water Bottle Brand: Alkaway Model #: FHWB2026 Volume: 350 mL

The bottle is a battery-operated device that uses electrolysis to produce and infuse hydrogen gas (H₂) into the drinking water. It has a single-walled reservoir with a volume of $\approx$ 350 mL. Because the design allows pressure to build during electrolysis, it can dissolve hydrogen at concentrations higher than the maximum at sea level, 1.57 mg/L (1570 ppb). To prevent an unsafe buildup of pressure, the cap includes an internal pressure relief valve. The unit has two pre-programmed cycle times: 5 minutes (by pressing the power button once) and 10 minutes (by pressing it twice). Because the design uses a proton-exchange membrane (PEM) sandwiched between two platinum electrodes, this unit will work with any type of drinking water, including distilled water, regardless of its mineral content.

Materials & Methods

Water: generic, distilled, pH, 5.46 ± 0.5 ; starting temperature, $25.0^\circ\text{C} \pm 1.5$ EC: $1\ \mu\text{S}/\text{cm}$

Laboratory elevation: 883 meters (0.90 atm); all measurements adjusted to sea level where applicable.

Gas Chromatograph: SRI 8610C; column: Hayesep-D 6M; column/oven temp: 60°C ; detector: TCD; carrier gas: N₂

GC Test Method: Static headspace analysis (HS-GC); calibration (H₂), performed on the day of testing using H₂/N₂ calibration gas

The battery was charged overnight, and the membrane was wetted with warm distilled water (60°C). Tests were conducted with the USB charging cable connected.

For each dissolved H₂ test, the bottle was filled with distilled water (below the pressure-relief valve port), the cap was securely tightened, the power button was pressed once to start the 5-minute cycle, and pressed again to start the 10-minute cycle. After each cycle was completed, the cap was removed, and a 2000 μL test sample was immediately drawn from the bottle using a gas-tight syringe and injected into the headspace vial. The test sample was then placed into a 2400 rpm centrifuge for 3 minutes to permit the dissolved H₂ in the water sample to equilibrate with the headspace. After equilibration, a 1000 μL sample of the headspace was drawn using a gas-tight syringe and injected into the GC for analysis. After completing three tests for each cycle time, the results were recorded, and the mean and standard deviations were calculated. Based on the mean dissolved H₂ concentration and the volume of water in the bottle, the average amount of H₂ that would be ingested when drinking the entire contents was calculated and reported as "H₂ Dose". Attachments 1 & 2 show sample chromatograms.

Results

Mean dissolved H₂, 5-min: 1.55 mg/L (1550 ppb); SD: 0.17; H₂ Dose: 0.54 mg

Mean dissolved H₂, 10-min: 2.65 mg/L (2650 ppb); SD: 0.24 H₂ Dose: 0.96 mg



Approved By: Randy Sharpe

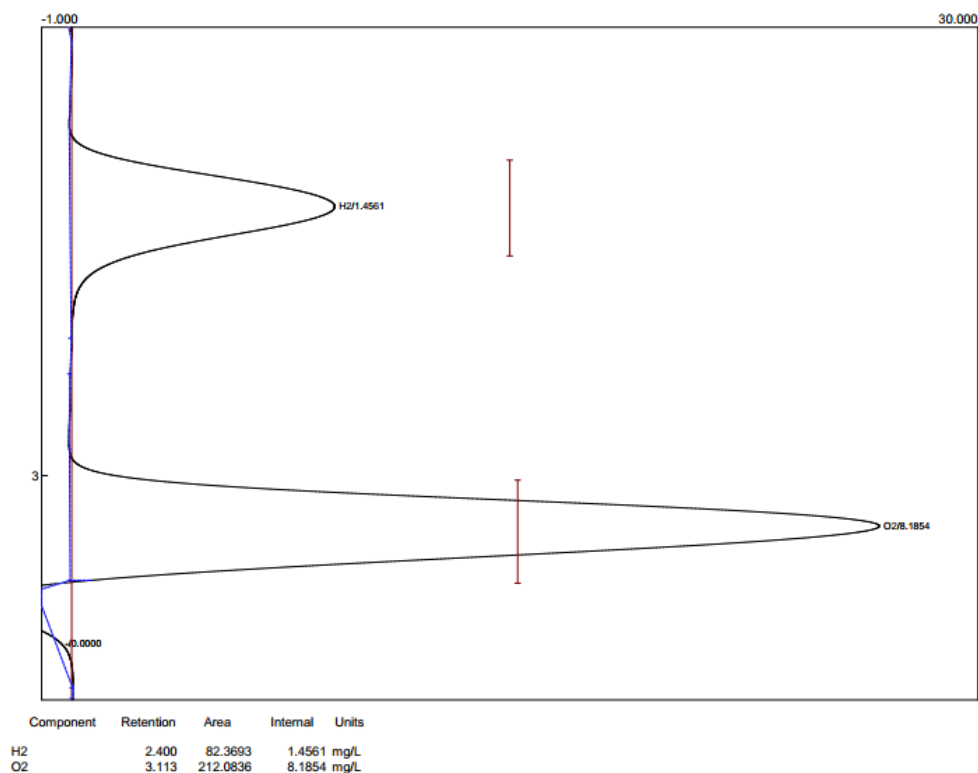
Title: Director of Testing

Report Date: 7/23/26



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Lab name: H2 Analytics
Client: Alkaway
Collected: 7-22-26
Holding time: 180 sec
Analysis date: 07/22/2026 10:39:53
Method: Static HS Analysis (GCHS)
Lab ID: HNV
Description: TCD CH1 60C
Column: Hayesep-D 6 meters 60C
Carrier: N2 @ 20psi (20 mL/min)
Integration: Peak sens=95.0 Base sens=90.0 Min area= 1.00 Standard= 1.000 Sample= 1.000 Tangents=off
Data file: AlkawayH2Bot02.CHR ()
Sample: H2 Bottle
Operator: rs
Comments: DH2 Test Run
QC batch:

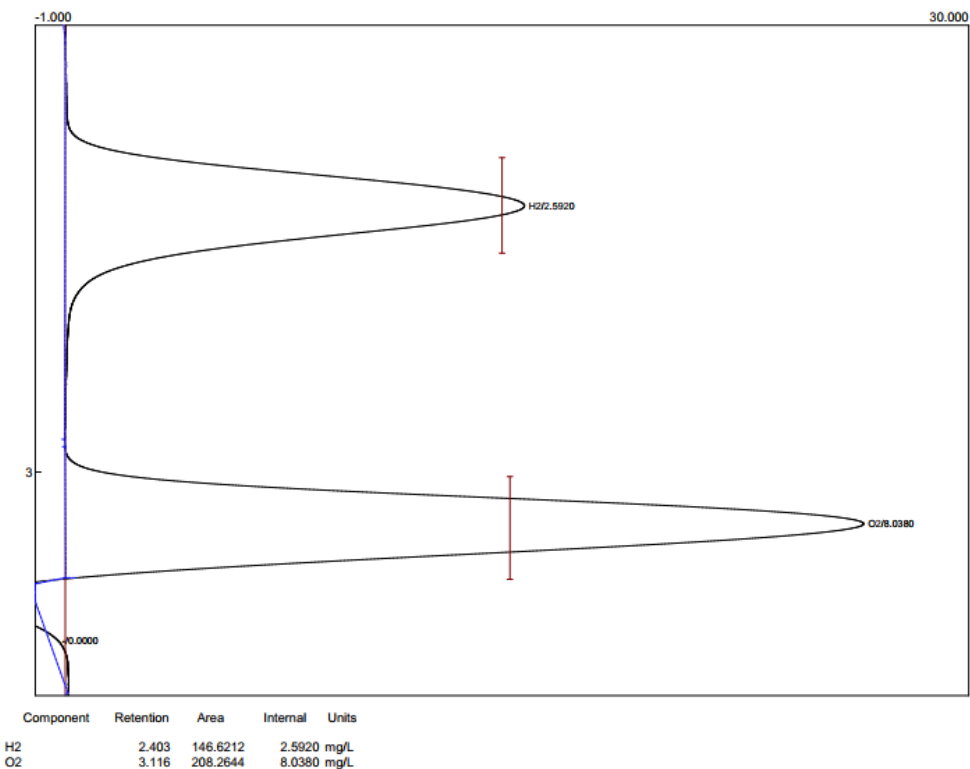


Alkaway H2 Bottle Sample Chromatogram (5-min)



Hydrogen Water Testing & Certification

Lab name: H2 Analytics
Client: Alkaway
Collected: 7-22-26
Holding time: 180 sec
Analysis date: 07/22/2026 10:58:38
Method: Static HS Analysis (GCHS)
Lab ID: HNV
Description: TCD CH1 60C
Column: Hayesep-D 6 meters 60C
Carrier: N2 @ 20psi (20 mL/min)
Integration: Peak sens=95.0 Base sens=90.0 Min area= 1.00 Standard= 1.000 Sample= 1.000 Tangents=off
Data file: AlkawayH2Bot04.CHR ()
Sample: H2 Bottle
Operator: rs
Comments: DH2 Test Run
QC batch:



Alkaway H2 Bottle Sample Chromatogram (10-min)