Hydrogen Water Testing & Certification

Laboratory Report

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Report # H2AR-251002-1a

Introduction

This report summarizes the analysis of a hydrogen water bottle distributed by HUVE Pty Ltd, Australia. The product was tested for dissolved hydrogen concentration on the five- and ten-minute cycles.

Product Description

Name: Perform Hydrogen Water Bottle Brand: HUVE Model: HV-H2P-01 Volume: 230 mL

The bottle was received for testing on 10/1/2025 in factory-new packaging and included a base unit, Tritan bottle, screw-on cap, USB-C interface cable, and manual. The electrolysis cell included a removable shipping cap to prevent the membrane from drying out during shipping. The bottle has a rechargeable battery and uses a proton exchange membrane (PEM) and platinum electrodes to produce hydrogen gas (H_2) via electrolysis. When the cap is tightly secured and the electrolysis cycle begins, the internal pressure rises as the H2 gas is produced, elevating the level of dissolved H2 in the water above the sea level saturation point of 1.57 mg/L (1570 ppb) according to Henry's law. The PEM allows the bottle to produce hydrogen water using any type of potable water, including distilled. Two pre-programmed cycle times are available: five minutes by pressing the start button once, and ten minutes by pressing the start button for three seconds. The cap includes an internal pressure relief valve to maintain a safe level of internal pressure. Oxygen gas (O_2), simultaneously produced at the anode, is vented through a hole in the bottom of the unit.

Materials & Methods

Test water: Distilled (generic); temperature: 25ºC ± 1.5º; ec: 6 us/cm; pH: 5.81
Laboratory elevation: 864 meters (0.91 atm); all measurements adjusted to SATP
Test Equipment: SRI 8610C gas chromatograph (GC), Torrance, CA; Column: Hayesep-D 6M; temp: 60°C; Detector: TCD; Carrier: N_2
Calibration: performed on the day of testing using calibration gas; PQL: 50 µg/L; LOD: 20 µg/L

Before testing, the unit's internal battery was charged and the membrane was wetted using warm distilled water (60°C). On the day of testing, the GC was permitted to stabilize for two hours and then calibrated using calibration gas. For each test, the bottle was connected to a power transformer via the USB-C cable, filled with distilled water, and the cap was securely tightened. After completion of each cycle, the cap was removed, and a 2000 µL sample was drawn from the bottle using a gas-tight syringe. The sample was injected into the headspace vial and placed into a centrifuge for three minutes to permit the dissolved H_2 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. Three tests were conducted, the results recorded, and the mean and standard deviations were calculated. The amount of H_2 ingested when drinking the entire bottle (dose) was calculated based on the dissolved H_2 concentration and water volume and reported as "Ingested H_2".

Attachments 1 & 2 show sample chromatograms.

Dissolved H_2 Results

5-minute cycle:	Mean – 3.27 mg/L (3270 ppb)	SD - 0.22	Ingested H_2: 0.75 mg
10-minute cycle:	Mean – 5.12 mg/L (5120 ppb)	SD - 0.13	Ingested H_2: 1.18 mg

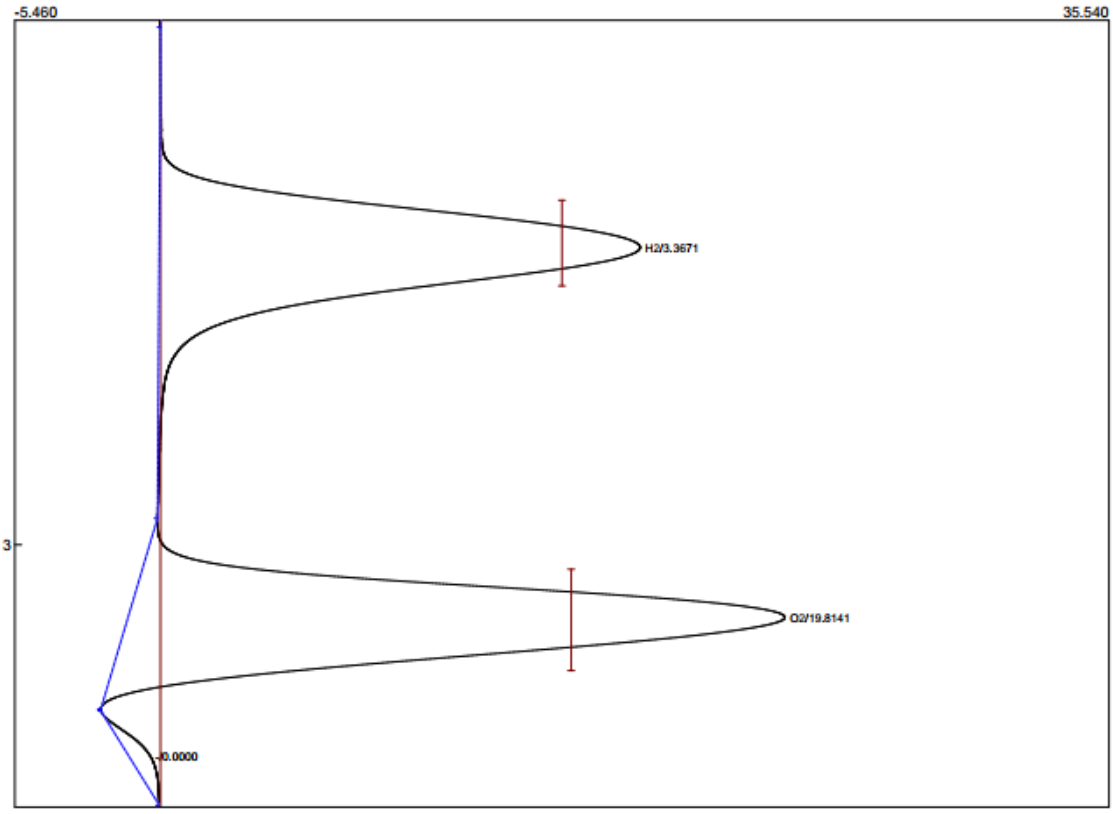
Approved By: Randy Sharpe, Director of Testing

Report Date: 10/02/2025

Attachment 1

Hydrogen Water Testing & Certification

Lab name: H2 Analytics
Client: HUVE
Client ID: H2A-1072
Collected: 10-2-25
Holding time: 3 min
Analysis date: 10/02/2025 09:15:37
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=90.0 Base sens=60.0 Min area= 1.00 Standard= 1.000 Sample= 1.000 Tangents=off
Data file: HV-H2P-01 HUVE05..CHR ()
Sample: H2 Bottle
Operator: rs
Comments: 5g in 350mL
QC batch: HV-H2P-01



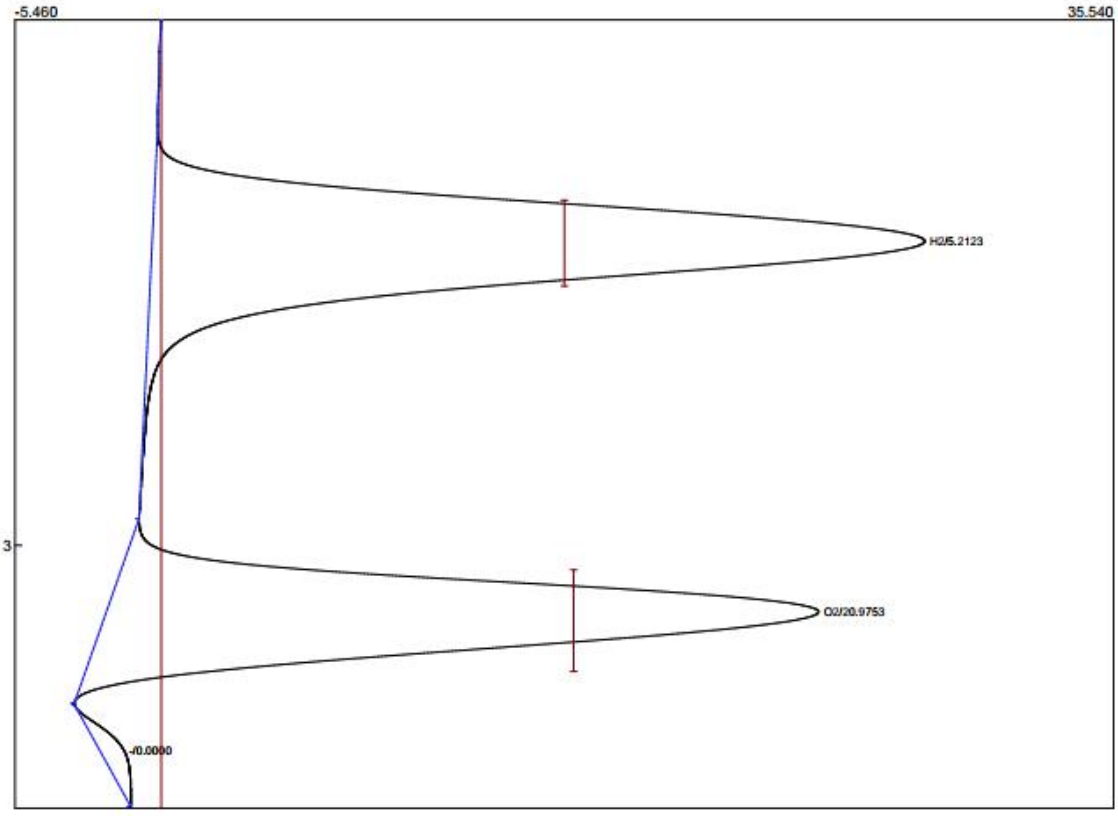
Component	Retention	Area	Internal	Units
H2	2.433	183.1052	3.3671	mg/L
O2	3.140	210.0921	19.8141	%eff

HUVE H_2 Bottle HV-H2P-01 Sample Chromatogram (5-min)

Attachment 2

Hydrogen Water Testing & Certification

Lab name: H2 Analytics
Client: HUVE
Client ID: H2A-1072
Collected: 10-2-25
Holding time: 3 min
Analysis date: 10/02/2025 10:12:16
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=90.0 Base sens=60.0 Min area= 1.00 Standard= 1.000 Sample= 1.000 Tangents=off
Data file: HV-H2P-01 HUVE09..CHR ()
Sample: H2 Bottle
Operator: rs
Comments: 5g in 350mL
QC batch: HV-H2P-01



Component	Retention	Area	Internal	Units
H2	2.420	283.4462	5.2123	mg/L
O2	3.126	222.4039	20.9753	%eff

HUVE H_2 Bottle HV-H2P-01 Sample Chromatogram (10-min)