Hydrogen Water Testing & Certification

Laboratory Report

H2 Analytics
2505 Anthem Village Dr Suite E385
Henderson, NV 89052
customerservice@h2-analytics.com

Report # H2AR-250116-1

Introduction

This report summarizes the analysis of the Echo Flask™ hydrogen water bottle manufactured by Echo Technologies, LLC, Spanish Fork, UT, USA. The product was tested for dissolved hydrogen concentration on the 10 and 20 minute cycles.

Product Description

Echo Flask™ Portable Hydrogen Water Bottle; Volume: 350 mL; Model # EC-Machine Flask ; Serial # M9

The product was received for testing 1/7/2025

Methods

Dissolved hydrogen concentration (H_2)

Test water: Distilled (generic); temperature: 24.5ºC ± 1.5º; ec: 0 us/cm; pH: 6.52
Laboratory elevation: 864 meters (0.91 atm); all measurements adjusted to SATP

Test Equipment: SRI 8610C gas chromatograph, Torrance, CA USA
Column: Hayesep-D 6M packed column temp: 60°; Detector: Tungsten-Rhenium TCD
Carrier gas: N_2, 20 PSI, 20 mL/min; Calibration: Performed on the day of testing using third-party calibration gas
Centrifuge: H2 Analytics, H2A-TE-3001, 2400 RPM

Test Method: Static headspace analysis

Prior to testing, the unit's internal battery was charged overnight using the supplied wall charger, and the membrane was wetted with warm water (60°C). On the day of testing, the GC was permitted to warm up for two hours and then calibrated. For each test, the bottle was filled with ~ 350 mL of water, and the cap was securely tightened. After completion of the selected cycle time, the pressure was released using the button on the cap, the cap was removed, and a 2000 uL sample was drawn from the bottle using a gas-tight syringe. The sample was immediately injected into the headspace vial and placed on a centrifuge for three minutes to permit the dissolved H_2 to equilibrate with the headspace. After equilibration, a 1000 uL sample of the headspace was drawn using a gas-tight syringe and injected into the gas chromatograph for analysis. Three tests were conducted for each cycle time, the results recorded, and the mean and standard deviations calculated. Based on the dissolved H_2 concentration and the water volume, the dose of H_2 delivered when drinking the entire contents was calculated and reported in milligrams. Attachments 1 & 2 show sample GC chromatograms.

Dissolved H_2 Results

10 minutes: Mean – 6.07 mg/L (ppm);	SD - 0.06;	Dose: 2.17 mg
20 minutes: Mean – 8.25 mg/L (ppm);	SD - 0.40;	Dose: 2.89 mg

RSSharpe

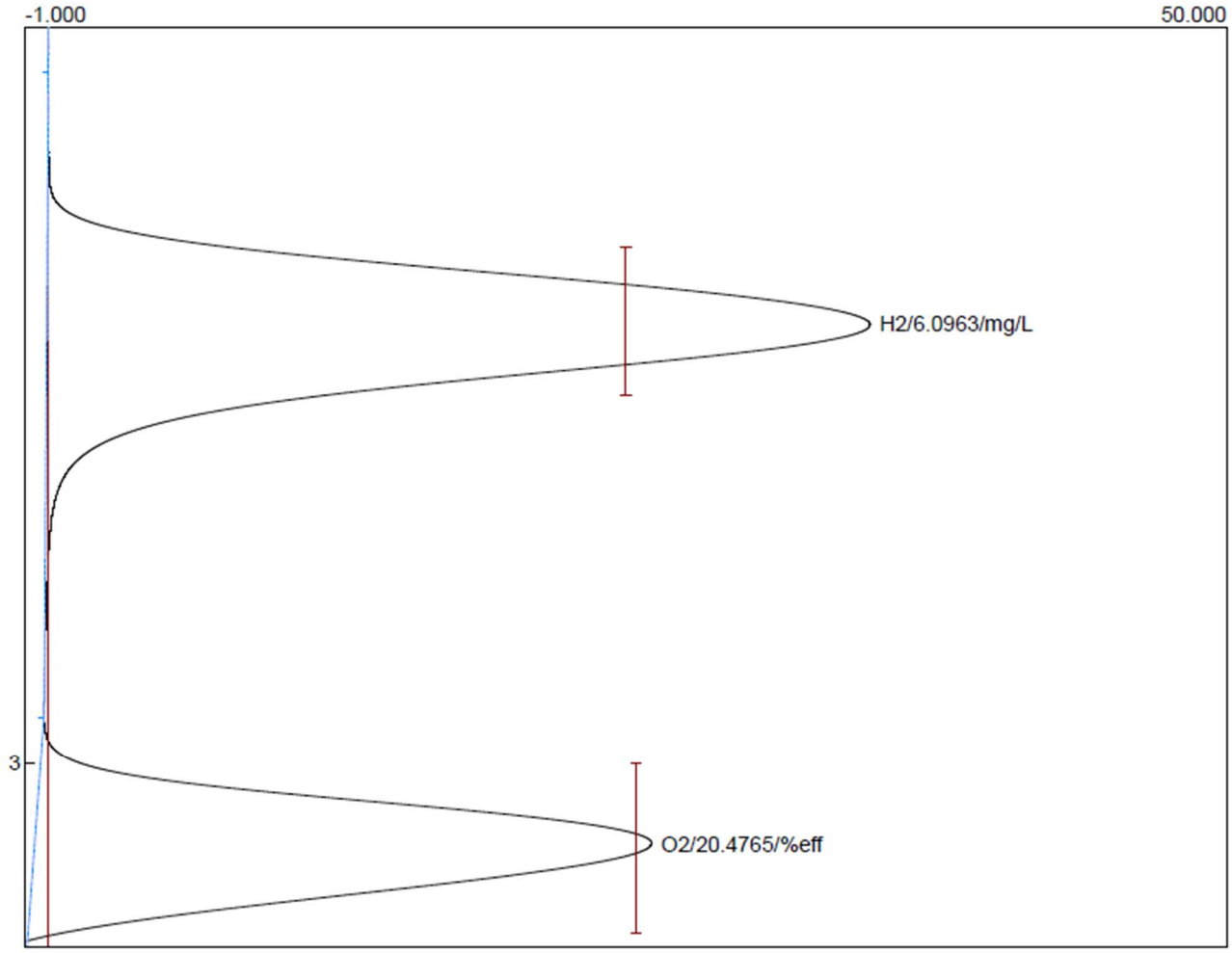
Approved By: Randy Sharpe, Director of Testing

Report Date: 1/16/2025

Attachment 1

H2 Analytics
Hydrogen Water Testing & Certification

Lab name: H2 Analytics
Client: Echo Technologies
Client ID: H2A-1003
Collected: 1-16-25
Holding time: 300
Analysis date: 01/16/2025 12:38:25
Method: Static HS Analysis (GCHS)
Lab ID: HNV
Description: TCD CH1 60C
Column: Hayesep-D 6 meters 60C
Carrier: N2 @ 20psi (20 mL/min)
Components: AqH2O2.cpt
Integration: Peak sens=90.0 Base sens=75.0 Min area= 0.10 Standard= 1.000 Sample= 1.000 Tangents=off
ontrol filename: E:\Peak499Win10\EchoFlask.CON
Data file: EchoFlaskIHSA02..CHR ()
Sample: Echo Flask IHSA (10min)
Operator: rs
Comments: DH2 Test Run
QC batch: N/A



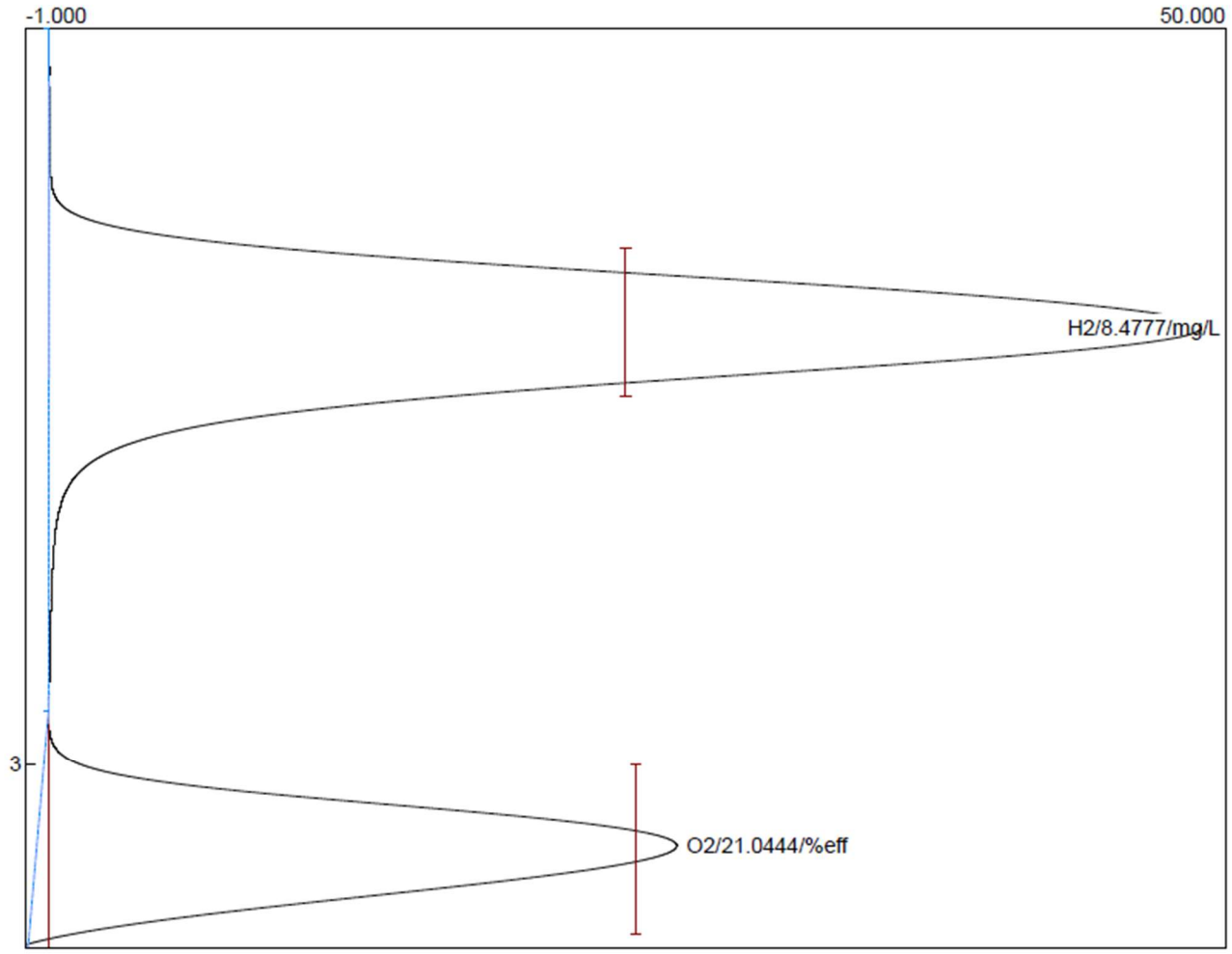
Component	Retention	Area	External	Units
H2	2.403	338.0920	6.0963	mg/L
O2	3.110	225.7790	20.4765	%eff

Echo Flask Sample Chromatogram (10-min)

Attachment 2

Hydrogen Water Testing & Certification

Lab name: H2 Analytics
Client: Echo Technologies
Client ID: H2A-1003
Collected: 1-16-25
Holding time: 300
Analysis date: 01/10/2025 14:47:18
Method: Static HS Analysis (GCHS)
Lab ID: HNV
Description: TCD CH1 60C
Column: Hayesep-D 6 meters 60C
Carrier: N2 @ 20psi (20 mL/min)
Components: AqH2O2.cpt
Integration: Peak sens=90.0 Base sens=75.0 Min area= 0.10 Standard= 1.000 Sample= 1.000 Tangents=off
ontrol filename: E:\Peak499Win10\EchoFlask.CON
Data file: EchoFlaskIHSA12.CHR ()
Sample: Echo Flask 20min
Operator: rs
Comments: DH2 Test Run
QC batch: N/A



Component	Retention	Area	External	Units
H2	2.406	470.1602	8.4777	mg/L
O2	3.110	232.0404	21.0444	%eff

Echo Flask Sample Chromatogram (20-min)