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

Laboratory Report

Introduction

This report summarizes the analysis of the Echo Go™ hydrogen water bottle manufactured by Echo Technologies, LLC, Pleasant Grove, UT, USA. The product was tested for dissolved hydrogen concentration on both the short (3 min) & long (10 min) cycles.

Product Description

Echo Go™ Portable Hydrogen Water Bottle, Model # - Echo Go™

Product was received for testing 4/28/2021

Methods

Dissolved hydrogen concentration (H_2)

Test water: ASTM Type I ultrapure ChemWorld, Salt Lake City, UT, USA; temperature: 25ºC ± 1.5º ; ec: 0 us/cm; pH: 6.4
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: 80°C
Detector: Tungsten-Rhenium TCD (5000 mvsec max)
Carrier gas: Nitrogen (99.999%) @20 PSI, 20 mL/min
Calibration: Performed on day of testing using third-party calibration gas

Test Method: Static headspace analysis

Prior to testing, the unit's internal battery was charged overnight using the supplied wall charger. On the day of testing, the GC was permitted to warm up for two hours and then calibrated. For each test, the Echo Go™ bottle was filled with 250 mL of water and the cap was securely tightened. After completion of the desired cycle time (3 min or 10 min), the cap was removed and a 1000 uL sample was immediately taken from a depth of 20 mm using a gas-tight syringe. The sample was immediately injected into the headspace vial and agitated on an equilibrator device for five minutes to permit the dissolved H_2 to equilibrate with the headspace. After equilibration, a 1000 uL sample of the headspace was taken 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.

Results

Short cycle (3 min): Dissolved H_2:	Mean -	1.23 mg/L (ppm)	SD -	0.17
Long cycle (10 min): Dissolved H_2:	Mean -	1.88 mg/L (ppm)	SD -	0.06

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Approved By: RSSharpe Randy Sharpe, Director of Testing Report Date: 6/10/2021