



Laboratory Report

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Report #: H2AR-241125-1

Introduction

This report summarizes the testing of one used Echo Go[™] hydrogen water bottle manufactured by Echo Technologies LLC, Pleasant Grove, UT, USA. The bottle was returned from the field after approximately one year of use to evaluate its performance. The bottle was tested for dissolved hydrogen concentration on the 5 and 10-minute cycles.

Product Description

Echo Go[™] Portable Hydrogen Water Bottle, Model: Echo Go[™]

Serial #: HWB202309EGV1712

The bottle was received for testing on 11/19/2024 without any accessories.

Test Method

Dissolved hydrogen concentration (H₂)

Test water: Distilled (generic); temperature: 24.2°C ± 1.5° ; ec: 3 us/cm

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; temp: 60°C; Detector: TCD; Carrier gas: Nitrogen (99.999%) @20 PSI, 20 mL/min

Calibration: Performed on the day of testing using saturated standard Test Method: Static headspace analysis

Before testing, the internal batteries were charged overnight and the membrane was wetted using warm (60°C) distilled water. On the day of testing, the GC was permitted to warm up for two hours and then calibrated. For each test, the bottle was connected to a power transformer (USB-C), filled with distilled water close to, but not touching, the bottom of the cap (≈ 275 mL), and the cap was securely tightened. After completion of the cycle (5 or 10 min), the cap was removed and a 2000 uL sample was then drawn using a gas-tight syringe. The sample was then injected into a headspace vial and placed into a centrifuge for three minutes to permit the dissolved H₂ 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, results recorded, and the mean and standard deviations were calculated.

Note: Dissolved H₂ reported in units of mg/L are equivalent to PPM.

Results

Dissolved H₂: 5 min: 2.80 mg/L , SD: 0.01

10 min: 4.59 mg/L, SD: 0.22



Approved By: Randy Sharpe, Director of Testing

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