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Report #: H2A-240602-2

Laboratory Report

Introduction

This report summarizes our analysis of the Echo Clean™ disinfectant-water bottle distributed by Echo Technologies, LLC, Pleasant Grove, UT, USA. The product is a battery-operated device that produces water containing hypochlorous acid (HOCl) and sodium hypochlorite (NaOCl) for sanitizing and disinfecting surfaces.

Tests requested: Chlorine (FAC), multiple cycles and scoops of salt & no salt; pH

Product Description

Name: Echo Clean™ Model #: XD-S01, EC-Machine-Clean-Blue

The Echo Clean™ produces sanitizing water for disinfecting surfaces, cleaning vegetables, etc., and features a reservoir made from food-grade polycarbonate with a capacity of 350 mL. The bottle has a base unit in which the batteries, power supply, electronics, and electrolysis electrodes are contained. The cap includes a built-in sprayer for spraying the sanitizing water onto large surfaces. The bottle is equipped with a rechargeable battery and comes with a USB-C charging cable. The bottle has a three-minute cycle and automatically turns off at the end of a cycle. The electrolytic cell consists of two platinum-coated titanium electrodes with no separating membrane. For electrolysis to produce sanitizing water containing hypochlorous acid and sodium hypochlorite, pure salt (approximately 2.5 grams) must be added using the provided scoop. The addition of salt to the water ensures that there will be an adequate level of chloride ions (Cl^-) necessary for the production of chlorine gas (Cl_2).

Materials

Water: generic, distilled, pH 6.42 ± 0.25; starting temperature 24.7°C ± 1.5 EC: 2 us/cm
Water: Henderson, NV filtered municipal tap (for tap-water tests w/o salt); TDS = 482, pH = 7.07, starting chlorine concentration: 3 ppm
Salt: generic, granulated (non-iodized), 99.99% pure
pH/temperature: Oakton pH 6+ w/temp probe (three-point calibration, 4,7,& 10, performed)
Test strips: Serim (0-300 & 100-750)
The battery was fully charged before testing; all tests were conducted with the USB charging cable connected.
Laboratory elevation: 883 meters (0.90 atm); all measurements adjusted to sea level where applicable.

Method

Depending on which test was being performed, 1 or 2 scoops of granulated salt were added to approximately 100 mL of room-temperature distilled water in a 250 mL beaker and stirred until fully dissolved. Then the salt water solution was poured into the bottle, and distilled water was added until the fill line was reached (350 mL). The spray cap was then attached, and the bottle was shaken to mix the solution thoroughly. A three-minute electrolysis cycle was then initiated by pressing the power button once. For tests involving multiple cycles, the power button was pressed again at the end of a cycle without opening the cap. At the end of each cycle test, the cap was opened and the contents were poured into a glass beaker into which the pH and temperature probes were suspended. A test strip was used to measure the chlorine level, and the results of the pH and chlorine tests were recorded. Between each test, the bottle was rinsed with distilled water. For the tap water tests, the starting chlorine concentration was subtracted from the measured concentration. Attachment 1 shows the results of the testing.

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Approved By: Randy Sharpe, Director of Testing

Report Date: 6/2/2025

Attachment 1

Echo Clean™ Chlorine Level sorted by # of scoops			
# scoops	# cycles	Chlorine (FAC) HOCl & OCl^- (ppm)	pH
1	1	200	9.41
1	2	300	9.94
1	3	750	10.12
2	1	500	9.92
2	2	750	10.01
2	3	1500	10.09

Echo Clean™ Chlorine Level sorted by # of cycles			
# cycles	# scoops	Chlorine (FAC) HOCl & OCl^- (ppm)	pH
1	1	200	9.41
1	2	500	9.92
2	1	300	9.94
2	2	750	10.01
3	1	750	10.12
3	2	1500	10.09

Echo Clean™ Chlorine Level using tap water & no salt[1]		
# cycles	Chlorine (FAC) HOCl & OCl^-	pH
1	7	8.09
2	12	8.18
3	17	8.20