

877.860.3030

13714 A Street, Omaha, NE 68144, USA

CleanCoreSol.com

### **Cleaning with Aqueous Ozone Aged 4 Hours.**

To achieve Green Seal certification, CleanCore was required to prove that their Aqueous Ozone cleaning solution was effective and passed certain industry accepted cleaning tests. Green Seal set the testing protocols and third-party testing company Dell Tech Labs was hired to do the testing.

CleanCore's Aqueous Ozone was tested and PASSED using solution made fresh, aged 1 hour and aged 4 hours using the following tests as required by Green Seal:

**Test Date:** 9/22/15

**Test:** Descaling Purac Test Method Modified 1998-10-04

**Test Product:** Tap water run through CT 3.0 Fill Station and **Aged 4 Hours**

Conclusion: Under the conditions of this test, the Tap water run through the CT 3.0 Fill Station and aged 4 hours performed better than Spartan NABC Non-Acid Disinfectant Bathroom Cleaner.

**Test Date:** 9/22/15

**Test:** CSPA-DCC-09: Glass Cleaner Evaluation

**Test Product:** Tap water run through CT 3.0 Fill Station and **Aged 4 Hours**

Conclusion: Effective Glass Cleaning rated 3/4/3 using the rating system defined in CSMA-DCC-09 method.

**Test Date:** 9/21/15

**Test:** ASTM D4488-A5 Particulate and Oily Soil/Vinyl Tiles Test Method

**Test Product:** Tap water run through CT 3.0 Fill Station and **Aged 4 Hours**

Conclusion: Under the conditions of this test the cleaning efficiency of Tap water run through CT 3.0 Fill Station and aged 4 hours was observed to be 82.83%.

Report Date: September 22, 2015

Report #: 2241-18535-22-09-2015B

Client: CleanCore Technologies LLC  
13714 A Street  
Omaha, NE, 68144

Test: CSPA DCC-09: Glass Cleaner Evaluation

Test Product: Tap water run through CT 3.0 Fill Station and aged 4 hours

Dell Tech Lab Code#: 15-0224

### Summary of Method

Clean glass plates are soiled, and then cleaned on a Gardener straight-line washability apparatus. Cleaning performance is rated in three areas, cleaning, streaking and smearing on a 4-point scale

<u>Cleaning</u>	<u>Streaking</u>	<u>Smearing</u>
4 – Total soil removed	4 – None	4 – None
3 – Good soil removed	3 – Slight streaking	3 – Slight smear
2 – Moderate soil removed	2 – Moderate streaking	2 – Moderate smear
1 – Poor soil removal	1 – Severe streaking	1 - Severe smear

### Preparation of glass plates

The glass plates are cleaned in a series of solvent baths and wiped between baths in the following order

1. Mineral spirits (Isopar K)
2. Ethylene Glycol Monobutyl Ether
3. Isopropanol
4. Distilled water

The plates are finally dried with cheesecloth after the distilled water rinse.

### Soiling of glass plates

The following soil was applied at a load rate of 5.5 g per 90 in<sup>2</sup> (7.5" x 12") glass plate. The soiled plates are then aged at 50 C for two hours.

Mineral oil	0.5%
Bandy Black Clay	0.5%
Synthetic sebum	0.5%
Perchloroethylene	98.5%




**Cleaning of glass plates**


Approximately 2.0 g of the test product is sprayed on to a 3.75" x 12" area on each of the three different plates. After allowing the treated plate to sit for 60 seconds, a piece of clean, dry cheesecloth is attached to the carrier of the Gardner apparatus and run for 10 cycles over the area treated with glass cleaner. The cheesecloth is then turned over, and a further 10 cycles run on the same test plate. (20 cycles total).

Each of the three test plates for both are rated for cleaning, streaking and smear using the rating system defined in CSMA DCC-09 and noted in the summary of method.

**Results**

PLATE #	CLEANING	STREAKING	SMEARING
1	3	4	3
2	3	4	3
3	3	4	3
<i>Average</i>	3	4	3

Tested by:   
Diane Mader, Lab Technician

Approved by:   
Lab Services Manager



Report date: September 22, 2015  
 Report #: 2241-18535-22-09-2015A  
 Client: CleanCore Technologies LLC  
 13714 A Street  
 Omaha, NE, 68144  
 Test: Descaling Purac Test Method Modified 1998-10-04  
 Samples & Dell Tech Lab Code#:

Sample	Dell Tech Lab Code#	Test Dilution
Tap water run through CT 3.0 Fill Station and aged 4 hours	15-0224	As supplied
Spartan NABC Non-Acid Disinfectant Bathroom Cleaner (Reference)	15-0225	As supplied

**Summary of method:**

White carrarra marble blocks (25 mm x 25 mm x 15mm) are immersed in 150 ml of test solution for 15 minutes, rinsed, wipe and then dried at 105 °C for 1 hour. Determination of the weight loss of a marble block (CaCO<sub>3</sub> is dissolved), by the action of the product, is a measure for the decalcification properties. The blocks are tested individually.

Prior to testing the marble blocks to be used are treated in a 0.1 N HCl solution for ten minutes. The blocks are then rinsed with distilled water, wipe and dried in an oven at 105 °C for 1 hour. When the blocks are dry they are brushed to remove loose marble particles and the exact weight of the blocks is measured on an analytical balance.

With the measured exact weight loss for each marble block the decalcification can be calculated using the following formula:

$$\text{Decalcification} = \frac{\text{Wt. loss of block 1 (g)} + \text{Wt. loss of block 2 (g)} + \text{Wt. loss marble block 3 (g)}}{3}$$

In addition to the test product, a reference product was also tested.

The test product and reference product were tested as supplied

**TABLE OF RESULTS**

Sample	Initial mass (g)	Final mass (g)	Total loss (g)	Total loss (%)
Spartan NABC	22.4476	22.4431	0.0045	0.02
Spartan NABC	22.3371	22.3322	0.0049	0.02
Spartan NABC	21.8129	21.8089	0.0040	0.02
<b>Average</b>			<b>0.0045</b>	<b>0.02</b>
CT 3.0	21.9705	21.9484	0.0221	0.10
CT 3.0	22.2979	22.2753	0.0226	0.10
CT 3.0	21.6116	21.5863	0.0253	0.12
<b>Average</b>			<b>0.0233</b>	<b>0.11</b>

**Conclusion:**

Under the conditions of this test, the Tap water run through CT 3.0 Fill Station and aged 4 hours performed better than Spartan NABC Non-Acid Disinfectant Bathroom Cleaner.

TESTED BY:




Lab Services Manager

APPROVED BY:

*This report shall not be reproduced except in full, without the written approval of the laboratory. The results relate only to the items tested or calibrated.*



Report Date: September 21, 2015  
 Report #: 2241-18535-21-09-2015B  
 Client: CleanCore Technologies LLC  
 13714 A Street  
 Omaha, NE, 68144  
 Test: ASTM D4488-A5 Particulate and Oily Soil/Vinyl Tiles Test Method  
 Sample: Tap water run through CT 3.0 Fill Station and aged 4 hours  
 Dell Tech Lab Code#: 15-0224  
 Test dilution: As supplied

**Procedure:**

A synthetic oily soil is prepared of an oil phase and a particulate phase. 50 mg of particulate soil is placed on a white vinyl tile over a space of 2 x 4 in. This is done with a template to insure a constant application area. Five drops of the oily blend is applied to double thickness paper towel and rubbed in a circular motion over the particulate soil. The panels are allowed to air dry for 24 hours. Reflectance readings are taken before and after soiling and after cleaning. Cleaning is done by soaking a sponge in 50mL of test solution and allowing the test area to be immersed in 20mL of test solution for 60 sec and then scrubbed for 10 cycles with a Gardner Straight-line Washability Apparatus.

$$\% \text{ Cleaning Efficiency} = (R^o - R^s) / (R^o - R^c) \times 100$$

Where  $R^c$  = cleaned reflectance  
 $R^o$  = original reflectance  
 $R^s$  = soiled reflectance

**Results: Table of Results - Reflectance\***

Sample	Initial Reflectance	Soiled Reflectance	Cleaned Reflectance	% Cleaning Efficiency
1	89.09	26.75	77.19	80.91
2	89.13	26.61	77.67	81.67
3	89.08	29.25	80.50	85.90
Average =				82.83

\* Three tiles were tested per product with three reflectance readings per tile.

**Conclusion:**

Under the conditions of this test the cleaning efficiency of Tap water run through CT 3.0 Fill Station and aged 4 hours was observed to be 82.83 %.

Tested by:   
 Lab Technician

Approved by:   
 Lab Services Manager



ISO 17025 Accredited by the Standards Council of Canada.