

# Doulton Ultracarb Ceramic Candle Chlorine Reduction Test Report

Report Number - 0561AU-010694

## Spectrum Labs Inc.

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## Experimental Design

The experimental and mechanical system design for the chlorine reduction evaluation was based on test protocol contained in NSF Standard Number 42. This design allows for the uninterrupted testing of two identical units simultaneously. A mechanical test system plumbed entirely of Teflon was used for this experiment. The use of Teflon provides a chemically inert system which eliminates any corrosion or leaching of system components which may add unwanted contaminants to the challenge test water. All influent samples were taken immediately prior to the test units to demonstrate that the mechanical test system had no effect on the water characteristics or on the concentration of the challenge analyte.

Test units were installed, conditioned and operated according to the manufacturer's instructions. Pressure gauges and flow meters were installed appropriately to allow documentation of system operation. Spiked challenge water was prepared in 525 gallon lots by adding known volumes of sodium hypochlorite to attain an influent target spike level of 2.0 mg/L FAC. A total of 600 gallons of spiked challenge water was passed through each test unit using an operating cycle of 50 percent on, 50 percent off with a 15 minute cycle during periods of system operation which did not exceed more than 16 hours per day. The initial flow rate from each unit was measured at approximately 0.5 GPM using a constant inlet static pressure of 60 PSIG.

## Test Unit 1

<b>Chlorine Reduction Studies with Ultracarb</b>						
Volume Influent Gallons	Influent Sample Number	Influent Chlorine Level mg/L	Effluent Sample Number	Effluent Chlorine Level mg/L	Percent Reduction	Flow Rate (gpm)
Initial	9312046742	1.96	9312046743	<0.01	>99%	0.50
60	9312046745	2.24	9312046746	<0.01	>99%	0.55
120	9312046748	2.14	9312046749	<0.01	>99%	0.57
180	9312046751	1.96	9312046752	<0.01	>99%	0.58
240	9312046754	1.97	9312046755	0.08	96%	0.55
300	9312046757	1.91	9312046758	0.02	99%	0.55
360	9312046760	1.93	9312046761	0.05	97%	0.55
420	9312046763	1.93	9312046764	0.01	99%	0.56
480	9312046766	1.94	9312046767	0.03	98%	0.55
540	9312046769	1.87	9312046770	0.06	97%	0.55
600	9312046772	1.87	9312046773	0.03	98%	0.55

## Test Unit 2

<b>Chlorine Reduction Studies with Ultracarb</b>						
Volume Influent Gallons	Influent Sample Number	Influent Chlorine Level mg/L	Effluent Sample Number	Effluent Chlorine Level mg/L	Percent Reduction	Flow Rate (gpm)
Initial	9312046742	1.96	9312046744	<0.01	>99%	0.48
60	9312046745	2.24	9312046747	<0.01	>99%	0.40
120	9312046748	2.14	9312046750	0.02	99%	0.45
180	9312046751	1.96	9312046753	0.08	96%	0.44
240	9312046754	1.97	9312046756	0.04	98%	0.45
300	9312046757	1.91	9312046759	0.07	96%	0.45
360	9312046760	1.93	9312046762	0.04	98%	0.40
420	9312046763	1.93	9312046765	0.03	98%	0.50
480	9312046766	1.94	9312046768	0.02	99%	0.45
540	9312046769	1.87	9312046771	0.06	97%	0.45
600	9312046772	1.87	9312046774	0.06	97%	0.40

### **Conclusion**

The **Doulton Ultracarb filter cartridge** was found to be very effective at removing chlorine from spiked challenge water. Calculated contaminant reduction percentages were greater than 95 percent in both test units evaluated for 600 gallons, which **substantially exceeds** the current NSF requirement of 75 percent minimum reduction for Class I filters. Based on this set of laboratory results, the Doulton HIP undercounter drinking water treatment system meets the requirements for compliance under NSF Standard Number 42 for taste, odor and chlorine reduction for Class I filters using a capacity rating of 600 gallons.

*signed by:*

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