

# Lab Test Results for Chlorine Removal in Hot Water Shower Filter with KDF Process Media

## Lab Test Results for Bacteria from Sprite Industries

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Shower Master (SR-1) 5,000 gallon test results:  
LR: 81590 Utilizing 18 oz of KDF® 55D

### **Purpose:**

To demonstrate free chlorine removal by a standard Shower Master (SR-1) shower filter over a minimum duration of 5000 gallons.

### **Equipment:**

1. Shower master filter with standard shower head (SR-1)
2. Two-way Diverter (SA-3)
3. Standard shower head (S-1) with 2.5 GPM Restrictor
4. Faucet hose/shower arm assembly
5. Chem-Tech Pulsafeeder Model 100/020 with 15 gallon tank
6. Collecting pan
7. 10% sodium hydro chlorite solution
8. Thermometer, 32-125° F
9. Chlorine test kit/Titratin (Lamotte DT-DR)

### **Set up:**

The faucet hose/shower arm assembly was constructed so as to attach to the hot and cold faucet at the input and the diverter (SA-3) at the output.

A Shower Master filter with a standard showerhead (SR-1) was attached to the two-way diverter's in-line port and a standard showerhead (S-1) to its angled port. A Chem-Tek pulsafeeder model 100/030 injected 10% hypo chlorite solution via a tee fitting, midway at the faucet hose. A collecting pan with thermometer was placed under showerheads for gathering samples.

**Procedure:**

1. The output water was adjusted to 103 - 105°F
2. The chlorine PPM (parts per million) content from the non-filtered water was adjusted to 2.2-2.4 ppm
3. The output flow for both Shower Master filter w/standard shower head and the standard showerhead w/no filter was 2.5 gallons
4. Samples were drawn from a 2.5 collecting pan for both samplings
5. Parts per million of free chlorine was determined by use of Lamotte Chemical Chlorine test kit, Model DT-DR, Direct Reading Titrator
6. Initially, 103-105°F temperature water was sampled at the start of the days test run. Within a 30 minute period the hot water heater became exhausted. The water temperature lowered and stabilized at approximately 82-84°F. At the end of each testing period, the system was shut down to allow for a final sampling again at the 103-105°F temperature

**Results:**

Due to limitations of the testing apparatus two groups of data appeared.

1. Normal showering temperature data at 103-105°F yielded a 96 - 100% removal of chlorine.
2. Cooler than normal showering temperature data set at 82-84°F yielded a 83-91% removal of chlorine.

**Conclusion:**

The percent of chlorine removal is directly related to temperature. At normal showering temperatures, 103-105°F the Sprite Shower Master removed from 96-100% of the free chlorine.

Date	Time	PPM In	PPM Out	Temp °F	% Removal	Total Gallons	
7/2/90	2:30	1.5	0.0	105.0	100.0		
	2:35	2.8	0.1	104.0	96.4	12.5	
	3:00	1.8	0.2	84.0	91.7	75.0	
	3:05	2.4	0.2	84.0	91.7	87.5	
	3:20	2.4	0.2	84.0	91.7	137.5	
	3:35	2.2	0.2	84.0	90.9	162.5	
	4:00	2.2	0.2	84.0	90.9	225.0	
	4:15	2.6	0.3	84.0	88.5	262.5	
	OFF	4:35	2.2	0.3	84.0	86.4	312.5
		6:15	1.9	0.0	104.0	100.0	
7/9/90	6:20	2.0	0.0	104.0	100.0		
	12:30	2.0	0.0	104.0	100.0		
	12:40	2.0	0.0	104.0	100.0	337.5	
	1:30	2.2	0.1	84.0	95.5	462.5	
	2:30	2.4	0.3	84.0	87.5	612.5	

	3:30	2.2	0.3	84.0	86.4	762.5
OFF	4:30	1.8	0.2	83.0	88.9	912.5
	5:00	2.0	0.3	103.0	85.0	
<b>7/25/90</b>	2:30	1.6	0.0	104.0	100.0	
	2:45	1.6	0.2	83.5	87.5	950.0
	2:50	2.4	0.4	83.0	83.3	965.0
OFF	5:15	2.4	0.4	83.5	83.3	1325.0
	6:20	2.2	0.0	104.0	100.0	
<b>7/27/90</b>	12:45	1.8	0.0	104.0	100.0	
	12:50	2.2	0.2	87.0	93.2	1337.0
	2:05	2.2	0.2	84.0	93.2	1525.0
	3:15	2.0	0.4	82.0	80.0	1700.0
OFF	3:30	2.2	0.4	80.0	81.8	1712.5
	4:04	1.6	0.0	104.0	100.0	
<b>7/28/90</b>	12:10	2.5	0.1	104.0	96.0	
	1:15	1.8	0.3	84.0	83.3	1875.0
	2:15	2.4	0.5	84.0	79.2	2025.0
OFF	4:50	2.4	0.5	84.0	79.2	2412.5
	5:30	2.6	0.2	105.0	94.2	
	5:35	2.5	0.2	105.0	94.0	
<b>8/14/90</b>	1:25	2.6	0.0	105.0	100.0	
	1:45	2.6	0.2	96.0	92.3	2462.5
	3:20	2.6	0.3	84.0	88.5	2700.0
<b>8/16/00</b>	7:50	2.0	0.0	105.0	100.0	
	7:55	2.4	0.2	88.0	91.7	2712.5
	9:10	2.4	0.3	82.0	87.5	2900.0
	10:20	2.6	0.4	81.0	84.6	3075.0
	12:15	2.4	0.2	82.0	91.7	3362.5
	1:30	2.3	0.3	82.0	87.0	3550.0
	3:15	2.4	0.4	82.0	83.3	3812.5
OFF	5:00	2.2	0.3	82.0	86.4	4075.0
	6:45	2.6	0.1	105.0	96.2	
	6:50	2.6	0.1	104.0	96.2	
<b>8/17/90</b>	7:10	2.4	0.0	105.0	100.0	
	9:20	2.4	0.3	83.0	87.5	4400.0
	11:25	2.6	0.4	83.0	84.6	4712.5
OFF	2:05	2.2	0.2	83.0	90.9	5112.5
	4:15	2.5	0.0	105.0	100.0	

Submitted by Sprite Industries, Fullerton CA

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