

# ENVIROTEK LABORATORIES, INC.

120 White Owl Trail Mullica Hill, NJ 08062  
PHONE 856-478-0010 www.enviroteklab.com  
EPA ID # NJ01298 NJ DEP ID # 08012

## PROONE-G2.0 NSF PROTOCOL P231 TEST REPORT

Report # 14-286 (ProOne-G2.0)

Report Date: 11/12/2014

Customer Name: Propur Water Purification Systems

### EXECUTIVE SUMMARY

The ProOne-G2.0 filter element was tested for Microbiological Reduction following the NSF protocol P231 for a total volume of 50 gallons. The ProOne-G2.0 filter qualifies as a microbiological water purifier set forth by the NSF protocol P231 for 50 gallons.

### INTRODUCTION

The ProOne-G2.0 filter element was tested for Microbiological Reduction following the NSF protocol P231 for a total volume of 50 gallons. The filter was challenged with tap water adjusted and spiked with Bacteria (*Klebsiella terrigena*); virus (Poliovirus 1 and Rotavirus); and Cyst (*Giardia lamblia*) and tested using Standard Methods for the Examination of Water. The ProOne-G2.0 filter qualifies as a microbiological water purifier set forth by the NSF protocol P231 for 50 gallons.

### REAGENTS, MATERIALS, AND LAB EQUIPMENT

Barnstead Lab-Line Incubator.

*Klebsiella terrigena* (produced by overnight growth in nutrient broth).

Poliovirus 1 (Virus)/Rotavirus (produced by the Smith and Gerba technique from bovine and porcine sources).

*Giardia lamblia* (Polybead 4-6 micron spheres Cat 17134 Lot 614641).

Sterile water, phosphate buffer.

Amscope Microscope Digital Model MD600.

ProOne-G2.0 Water Filter Element.

### PROCEDURE

Flushed the filter with approximately 1 gallon of sterile water. Prepared 5 gallons of challenge influent water daily with *Klebsiella terrigena* at a concentration of  $10^8/L$ , Poliovirus at  $10^7/L$ , Rotavirus at  $10^7/L$ , and *Giardia lamblia* at  $10^6/L$ . Tables 2, 4, 6, and 8 summarize the Influent water properties for each micro-organism. Passed 5 gallons of Influent water through the filter per day, every day until a total volume of 50 gallons passed through the filter. Collected the effluent water and analyzed the filtered water every 5 gallons for micro-organisms following the Standard Methods of Analysis of Water 21<sup>st</sup> Edition, methods SM 9222-F (*Klebsiella*); SM 9510-B (virus); SM9711-B (cyst). The results are summarized in Tables 1, 3, 5, and 7 below.

### RESULTS

**Table 1**  
***Klebsiella terrigena* (Bacteria) Test Results**

Accumulated volume	Influent Water Concentration	Filtered Water Concentration	% Reduction	Criteria: Minimum % Reduction 99.9999
Initial (1 gallon)	$10^8/L$	<10 CFU/L	>99.9999	Passed
5 gallons	$10^8/L$	<10 CFU/L	>99.9999	Passed
10 gallons	$10^8/L$	<10 CFU/L	>99.9999	Passed
15 gallons	$10^8/L$	<10 CFU/L	>99.9999	Passed
20 gallons	$10^8/L$	<10 CFU/L	>99.9999	Passed
25 gallons	$10^8/L$	<10 CFU/L	>99.9999	Passed
30 gallons	$10^8/L$	<10 CFU/L	>99.9999	Passed
35 gallons	$10^8/L$	<10 CFU/L	>99.9999	Passed
40 gallons	$10^8/L$	10 CFU/L	99.9999	Passed
45 gallons	$10^8/L$	20 CFU/L	99.9999	Passed
50 gallons	$10^8/L$	30 CFU/L	99.9999	Passed

**Table 2**  
**Influent Challenge Water Properties**

Parameter	Influent Challenge Water	Target
pH	7.20 to 7.50	6.5 to 8.5
Temperature	20.5 qC to 22.5 qC	20 r 5qC
TDS	250 to 450 mg/L	50 - 500 mg/L
Turbidity	2.5 to 4.5NTU	0.1 to 5 Nephelometric Turbidity Units
TOC	2.7 to 3.5.mg/L	0.1 to 5.0 mg/L

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**Table 3**  
**Poliovirus 1 (Virus) Test Results**

Accumulated volume	Influent Water Concentration	Filtered Water Concentration	% Reduction	Criteria: Minimum % Reduction 99.99
Initial (1 gallon)	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
5 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
10 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
15 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
20 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
25 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
30 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
35 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
40 gallons	10 <sup>7</sup> /L	10 PFU/L	99.99	Passed
45 gallons	10 <sup>7</sup> /L	10 PFU/L	99.99	Passed
50 gallons	10 <sup>7</sup> /L	10 PFU/L	99.99	Passed

**Table 4**  
**Influent Challenge Water Properties**

Parameter	Influent Challenge Water	Target
pH	7.20 to 7.80	6.5 to 8.5
Temperature	18.5 qC to 20.5 qC	20 r 5qC
TDS	250 to 350 mg/L	50 - 500 mg/L
Turbidity	2.5 to 4.5NTU	0.1 to 5 Nephelometric Turbidity Units
TOC	2.6 to 3.8.mg/L	0.1 to 5.0 mg/L

**Table 5**  
**Rotavirus (Virus) Test Results**

Accumulated volume	Influent Water Concentration	Filtered Water Concentration	% Reduction	Criteria: Minimum % Reduction 99.99
Initial (1 gallon)	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
5 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
10 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
15 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
20 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
25 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
30 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
35 gallons	10 <sup>7</sup> /L	<10 PFU/L	>99.99	Passed
40 gallons	10 <sup>7</sup> /L	10 PFU/L	99.99	Passed
45 gallons	10 <sup>7</sup> /L	10 PFU/L	99.99	Passed
50 gallons	10 <sup>7</sup> /L	10 PFU/L	99.99	Passed

**Table 6**  
**Influent Challenge Water Properties**

Parameter	Influent Challenge Water	Target
pH	7.20 to 7.80	6.5 to 8.5
Temperature	18.5 qC to 20.5 qC	20 r 5qC
TDS	250 to 350 mg/L	50 - 500 mg/L
Turbidity	2.5 to 4.5NTU	0.1 to 5 Nephelometric Turbidity Units
TOC	2.6 to 3.8.mg/L	0.1 to 5.0 mg/L

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**Table 7**  
**Giardia lamblia (Cyst) Test Results**

Accumulated volume	Influent Water Concentration	Filtered Water Concentration	% Reduction	Criteria: Minimum % Reduction 99.99
Initial (1 gallon)	10 <sup>6</sup> /L	<10 oocysts/L	>99.9	Passed
5 gallons	10 <sup>6</sup> /L	<10 oocysts/L	>99.9	Passed
10 gallons	10 <sup>6</sup> /L	<10 oocysts/L	>99.9	Passed
15 gallons	10 <sup>6</sup> /L	<10 oocysts/L	>99.9	Passed
20 gallons	10 <sup>6</sup> /L	<10 oocysts/L	>99.9	Passed
25 gallons	10 <sup>6</sup> /L	<10 oocysts/L	>99.9	Passed
30 gallons	10 <sup>6</sup> /L	<10 oocysts/L	>99.9	Passed
35 gallons	10 <sup>6</sup> /L	<10 oocysts/L	>99.9	Passed
40 gallons	10 <sup>6</sup> /L	10 oocysts/L	99.9	Passed
45 gallons	10 <sup>6</sup> /L	10 oocysts/L	99.9	Passed
50 gallons	10 <sup>6</sup> /L	20 oocysts/L	99.9	Passed

**Table 8**  
**Influent Challenge Water Properties**

Parameter	Influent Challenge Water	Target
pH	7.15 to 7.50	6.5 to 8.5
Temperature	18.0 qC to 20.5 qC	20 r 5qC
TDS	200 to 300 mg/L	50 - 500 mg/L
Turbidity	3.5 to 4.5NTU	0.1 to 5 Nephelometric Turbidity Units
TOC	3.0 to 4.5mg/L	0.1 to 5.0 mg/L

**CONCLUSION:**

The ProOne-G2.0 Filter meets the requirements for the Microbiological Reduction NSF Protocol P231 for 50 gallons. Passed.

*Jaime A. Young*

Jaime A. Young  
 Lab Director

The removal/reduction of contaminants or other substances that maybe present in your water supply may vary depending on its content. The contaminants or other substances removed or reduced are not necessarily present in all users' water. Some contaminants maybe more easily filtered than others. Percentage of reductions will vary from approximately 50% to 95% over the life of the filter based on the level of contaminant(s) found in your water supply. Testing was performed under standard laboratory conditions. Actual performance may vary.