



**NSF International**

789 N. Dixboro Rd. Ann Arbor, MI 48105, USA  
1-800.NSF.MARK | +1-734.769.8010 | www.nsf.org

# TEST REPORT

**Send To: C0711067**  
Mrs. Celine Gongora  
Danone Communities  
17 Rue des Deux Gares  
Rueil-Malmaison, 92500  
France

**Facility: C0711068**  
Danone Communities  
17 Rue des Deux Gares  
Rueil-Malmaison, 92500  
France

---

**Result: COMPLETE**

Report Date: 15-SEP-2022

---

Customer Name: Danone Communities  
Tested to: Custom Test Plan for Microbial Reduction  
Trade Designation: HF15  
Test Type: Test Only  
Job Number: J-00437087  
Project Manager: Mike Blumenstein

---

**Thank you for having your product tested by NSF International.**

Please contact your Account Manager if you have any questions or concerns pertaining to this report.

**Report Authorization:** \_\_\_\_\_

Kyle Postmus – Technical Operations Manager, Water



## 1 METHODS AND PROCEDURES

### 1.1 Introduction

This report describes the results of testing two gravity flow filtration systems submitted by Danone Communities for reduction of *Raoultella terrigena* and live *Cryptosporidium parvum* oocysts in Test Water #1 (General Test Water) described in NSF P231. The results of this report cannot be used for NSF certification, nor do the results constitute NSF approval of the product.

### 1.2 Product Specific Test Plan

A Product Specific Test Plan (PSTP) was developed for the NSF testing laboratory to follow. The PSTP contains the step-by-step testing procedures for the specific product to be tested, and can be found in Appendix A of this report.

#### 1.2.1 Deviations from PSTP

No deviations from the test plan were reported.

### 1.3 Test Procedure

Two systems submitted by Danone Communities were operated in the NSF Laboratory according to the procedures in the PSTP. Two batches of challenge water were processed – the first containing *R. terrigena* on the first day of the test, and the second containing *C. parvum* on the second day of the test. The units were backflushed in between batches according to the manufacturer’s instructions. After processing each batch, challenge water and treated water samples were collected for analysis.

## 2 RESULTS AND DISCUSSION

The influent and effluent *R.terrigena* and *C. parvum* counts are presented in Table 1. See the Appendix B for the laboratory test data report, which includes the water chemistry results. All water chemistry parameters were within the specifications listed in the PSTP.

| TABLE 1. MICROBIAL REDUCTION DATA   |           |                      |                |               |
|-------------------------------------|-----------|----------------------|----------------|---------------|
| Challenge Organism                  | Test Unit | Influent Count       | Effluent Count | Log Reduction |
| <i>R. terrigena</i><br>(CFU/100 mL) | Unit 1    | 1.42x10 <sup>7</sup> | <1             | 7.15          |
|                                     | Unit 2    |                      | <1             | 7.15          |
| <i>C.parvum</i><br>(oocysts/L)      | Unit 1    | 1.08x10 <sup>5</sup> | <1             | 5.03          |
|                                     | Unit 2    |                      | <1             | 5.03          |



**NSF International**

789 N. Dixboro Rd. Ann Arbor, MI 48105, USA  
1-800.NSF.MARK | +1-734.769.8010 | [www.nsf.org](http://www.nsf.org)

# TEST REPORT

## Appendix A Product Specific Test Plan

# Product Specific Test Protocol

## Microbial Reduction Test for HF15 Pour Through

*Prepared For:*

Danone Communities  
17 Rue des Deux Gares , 92500, Rueil-  
Malmaison, France

*Prepared By:*

NSF International  
789 N. Dixboro Rd.  
Ann Arbor, MI 48105  
USA

Project Number:

W0771425

J-00437087

July 7, 2022



## 1 Introduction

NSF International is an independent third-party testing and certification organization. NSF is accredited to ISO/IEC Guide 65, which applies to the requirements for bodies operating product certification systems, and ISO/IEC 17025, which contains the general requirements for the competence of testing and calibration facilities and organizations.

This project is for “test only” non-certification testing of a Danone Communities supplied filter for reduction of *Raoultella terrigena* and *Cryptosporidium parvum* oocysts in the General Test Water (GTW) described in NSF P231. The data gathered during this testing cannot be used towards NSF Certification.

## 2 Test Protocol

### 2.1 Experimental Design

This test shall be a one-day microbial challenge test on two product samples supplied by Danone Communities. The product samples shall be challenged with *R. terrigena* bacteria functioning as a surrogate for pathogenic bacteria, and *C. Parvum* oocysts to represent protozoa and protozoan oocysts.

### 2.2 Challenge Organisms

*R. terrigena* (formerly *Klebsiella terrigena*) is a non-pathogenic coliform bacteria that is similar in size and shape to *E. coli*, making it a suitable surrogate test organism.

*C. parvum* oocysts will be used as the challenge organism to represent pathogenic protozoa and protozoan oocysts. NSF/ANSI 53 calls for *C. parvum* oocysts to be used as the challenge organism for the cyst reduction test because they are the smallest oocyst.

The target and minimum required influent challenge concentrations for each organism are listed in Table 1. These influent concentrations will allow for measurement of 6 log reduction or greater of bacteria, and 4.5 log reduction or greater of *Cryptosporidium*.

| <b>Organism</b>          | <b>Target Influent Challenge</b> | <b>Minimum Required Influent Challenge</b> |
|--------------------------|----------------------------------|--|
| <i>R. terrigena</i>      | 1x10 <sup>7</sup> CFU/100 mL     | 1x10 <sup>6</sup> CFU/100 mL               |
| <i>C. Parvum</i> oocysts | >5x10 <sup>4</sup> oocysts/ 1L   | 5x10 <sup>4</sup> oocysts/ 1L              |

### 2.3 Test Waters

Test Water #1 (GTW) in P231 shall be the only water used for this test. The specifications for this water are listed in Table 2.

| Table 2. Test Water #1 (GTW) Test Water Specifications |              |                                   |
|--|--------------|-----------------------------------|
| Parameter  | Target Range | Substance for Adjustment          |
| Total Chlorine (mg/L)                                  | <0.1         | NA                                |
| pH   | 7.0 ± 0.5    | HCl or NaOH                       |
| Temperature (°C)                                       | 20 ± 5       | NA                                |
| TDS (mg/L)   | 50-500       | Reagent grade NaCl                |
| TOC (mg/L)   | 0.1 – 2.0    | Tannic acid                       |
| Turbidity (NTU)  | < 1          | ISO spec. 12103-A2 fine test dust |

## 2.4 System Conditioning

The filters shall be conditioned according to the manufacturer’s instructions prior to testing.

## 2.5 Test Procedure

After completion of the conditioning procedure, a 15 L batch of GTW containing *R. terrigena* challenge shall be processed. Once the full 15 L volume has been processed, effluent samples shall be collected from each unit, dispensed from the product water spigot. Sufficient volume of challenge water shall be made such that there is enough volume for the 15 L batch plus the necessary influent sample volumes.

If time allows, a second 15 L GTW batch containing the *C. parvum* challenge shall be processed immediately after the *R. terrigena* batch. Otherwise, store the test units in a refrigerator overnight and process the *C. parvum* batch the next day. Collect influent and effluent samples for *C. parvum* analysis in the same manner as described above for *R. terrigena*.

## 2.6 Analytical Methods

### 2.6.1 *R. terrigena*

*R. terrigena* shall be prepared using the method specified in Asburg, E.D. Methods of Testing Sanitizers and Bacteriostatic Substances; in *Disinfection, Sterilization, and Preservation* (Seymour S. Block, ed.) (1983).

All *R. terrigena* samples shall be assayed in triplicate with m-Endo medium using Method 9222B in Standard Methods for the Examination of Water and Wastewater (APHA, 2001). The geometric mean of the triplicate assay results shall be reported.

### 2.6.2 *C. parvum*

All *C. parvum* samples shall be processed and analyzed following the procedures in Normative Annex 1 of NSF/ANSI 53.



**NSF International**

789 N. Dixboro Rd. Ann Arbor, MI 48105, USA  
1-800.NSF.MARK | +1-734.769.8010 | [www.nsf.org](http://www.nsf.org)

# TEST REPORT

## Appendix B NSF Laboratory Analytical Reports



789 N. Dixboro Rd. Ann Arbor, MI 48105, USA  
1-800.NSF.MARK | +1-734.769.8010 | www.nsf.org

# TEST REPORT

**Send To: C0711067**

Mrs. Céline GONGORA  
Danone Communities  
17 rue des Deux Gares  
Rueil-Malmaison, 92500  
France

**Facility: C0711068**

Danone Communities  
17 rue des Deux Gares  
France

---

|                   |                                  |                    |                    |
|-------------------|----------------------------------|--------------------|--------------------|
| <b>Result</b>     | <b>COMPLETE</b>                  | <b>Report Date</b> | <b>13-SEP-2022</b> |
| Customer Name     | Danone Communities               |                    |                    |
| Tested To         | NSF P231                         |                    |                    |
| Description       | Batch Pour Through System   HF15 |                    |                    |
| Trade Designation | HF15                             |                    |                    |
| Test Type         | Test Only                        |                    |                    |
| Job Number        | J-00437087                       |                    |                    |
| Project Number    | W0771425                         |                    |                    |
| Project Manager   | Sandra Games                     |                    |                    |

---

**Thank you for having your product tested by NSF.**

Please contact your Project Manager if you have any questions or concerns pertaining to this report.

**Report Authorization** *Nancy F. Cole*  
Nancy Cole - Director, Analysis Laboratories

**Date** 13-SEP-2022





### General Information

- Standard: NSF P231
- DCC Number: NA
- § Product Type: Batch Pour Through System
- Standard Version: NSF Protocol P231 Microbiological Water Purifiers
- § Trade Designation/Model Number: HF15
- § Unit Void Volume: 0
- § Unit Volume: 0
- § Data provided by customer and can affect the validity of the results

Sample Id: **S-0001929298**  
 Description: Batch Pour Through System | HF15  
 Sampled Date: 07/19/2022  
 Received Date: 07/19/2022

| Testing Parameter              | Sample   | Control | Result | Units |
|--------------------------------|----------|---------|--------|-------|
| <b>Ann Arbor Chemistry Lab</b> |          |         |        |       |
| *General DWTS Testing          |          |         |        |       |
| Test Result                    | COMPLETE |         |        |       |

Sample Id: **S-0001929406**  
 Description: Test Water Day 1  
 Sampled Date: 07/19/2022  
 Received Date: 07/19/2022

| Testing Parameter                           | Sample      | Control | Result   | Units     |
|---|-------------|---------|----------|-----------|
| <b>Ann Arbor Chemistry Lab</b>              |             |         |          |           |
| Carbon, Total Organic, SM 5310C, in Water   |             |         |          |           |
| Total Organic Carbon                        | 0.7         |         | 0.7      | mg/L      |
| Date Analyzed                               | 31-AUG-2022 |         |          |           |
| * Chlorine, Total Residual (ref. Hach 8167) |             |         |          |           |
| Chlorine, Total                             | ND(0.05)    |         | ND(0.05) | mg/L      |
| Solids, Total Dissolved, (180C), SM 2540C   |             |         |          |           |
| Solids, Total Dissolved                     | 100         |         | 100      | mg/L      |
| * Water pH                                  |             |         |          |           |
| pH  | 7.41        |         |          |           |
| * Turbidity                                 |             |         |          |           |
| Turbidity                                   | ND(0.1)     |         | ND(0.1)  | NTU       |
| * Temperature                               |             |         |          |           |
| Temperature                                 | 23          |         | 23       | degrees C |

Sample Id: **S-0001929407**  
 Description: Test Water Day 2  
 Sampled Date: 07/19/2022  
 Received Date: 07/19/2022

| Testing Parameter                         | Sample | Control | Result | Units |
|---|--------|---------|--------|-------|
| <b>Ann Arbor Chemistry Lab</b>            |        |         |        |       |
| Carbon, Total Organic, SM 5310C, in Water |        |         |        |       |
| Total Organic Carbon                      | 0.6    |         | 0.6    | mg/L  |



Sample Id: **S-0001929407**

| Testing Parameter                            | Sample      | Control | Result   | Units     |
|--|-------------|---------|----------|-----------|
| <b>Ann Arbor Chemistry Lab ( Continued )</b> |             |         |          |           |
| Date Analyzed                                | 09-SEP-2022 |         |          |           |
| * Chlorine, Total Residual (ref. Hach 8167)  |             |         |          |           |
| Chlorine, Total                              | ND(0.05)    |         | ND(0.05) | mg/L      |
| Solids, Total Dissolved, (180C), SM 2540C    |             |         |          |           |
| Solids, Total Dissolved                      | 100         |         | 100      | mg/L      |
| * Water pH                                   |             |         |          |           |
| pH   | 6.50        |         |          |           |
| * Turbidity                                  |             |         |          |           |
| Turbidity                                    | ND(0.1)     |         | ND(0.1)  | NTU       |
| * Temperature                                |             |         |          |           |
| Temperature                                  | 22          |         | 22       | degrees C |

Sample Id: **S-0001929408**

Description: Influent Rt

Sampled Date: 07/19/2022

Received Date: 07/19/2022

| Testing Parameter   | Sample   | Control | Result   | Units     |
|---|----------|---------|----------|-----------|
| <b>Ann Arbor Microbiology Lab</b>   |          |         |          |           |
| * Raoutella terrigena in Water by Membrane Filtration, EPA Purifier Guide |          |         |          |           |
| Raoutella terrigena in water  | 1.42E+07 |         | 1.42E+07 | CFU/100mL |

Sample Id: **S-0001929409**

Description: Effluent 1 Rt

Sampled Date: 07/19/2022

Received Date: 07/19/2022

| Testing Parameter   | Sample    | Control | Result    | Units     |
|---|-----------|---------|-----------|-----------|
| <b>Ann Arbor Chemistry Lab</b>  |           |         |           |           |
| * DWTS Rig Flow Rate  |           |         |           |           |
| Flow Rate   | 0.02      |         | 0.02      | gpm       |
| * Accumulated Volume  |           |         |           |           |
| Accumulated Volume  | 4         |         | 4         | gal       |
| <b>Ann Arbor Microbiology Lab</b>   |           |         |           |           |
| * Raoutella terrigena in Water by Membrane Filtration, EPA Purifier Guide |           |         |           |           |
| Raoutella terrigena in water  | <1.00E+00 |         | <1.00E+00 | CFU/100mL |

Sample Id: **S-0001929410**

Description: Effluent 2 Rt

Sampled Date: 07/19/2022

Received Date: 07/19/2022

| Testing Parameter              | Sample | Control | Result | Units |
|--------------------------------|--------|---------|--------|-------|
| <b>Ann Arbor Chemistry Lab</b> |        |         |        |       |
| * DWTS Rig Flow Rate           |        |         |        |       |



Sample Id: **S-0001929410**

| Testing Parameter   | Sample    | Control | Result    | Units     |
|---|-----------|---------|-----------|-----------|
| <b>Ann Arbor Chemistry Lab ( Continued )</b>                              |           |         |           |           |
| Flow Rate   | 0.02      |         | 0.02      | gpm       |
| * Accumulated Volume  |           |         |           |           |
| Accumulated Volume  | 4         |         | 4         | gal       |
| <b>Ann Arbor Microbiology Lab</b>   |           |         |           |           |
| * Raoutella terrigena in Water by Membrane Filtration, EPA Purifier Guide |           |         |           |           |
| Raoutella terrigena in water  | <1.00E+00 |         | <1.00E+00 | CFU/100mL |

Sample Id: **S-0001929411**

Description: Influent Crypto

Sampled Date: 07/19/2022

Received Date: 07/19/2022

| Testing Parameter  | Sample   | Control | Result   | Units     |
|--|----------|---------|----------|-----------|
| <b>Ann Arbor Microbiology Lab</b>  |          |         |          |           |
| Cyst Live (Cryptosporidium) reduction Test - Progeny (Membrane Filtration, |          |         |          |           |
| Cryptosporidium  | 1.08E+05 |         | 1.08E+05 | Oocysts/L |

Sample Id: **S-0001929412**

Description: Effluent 1 Crypto

Sampled Date: 07/19/2022

Received Date: 07/19/2022

| Testing Parameter  | Sample | Control | Result | Units     |
|--|--------|---------|--------|-----------|
| <b>Ann Arbor Chemistry Lab</b>   |        |         |        |           |
| * DWTS Rig Flow Rate   |        |         |        |           |
| Flow Rate  | 0.03   |         | 0.03   | gpm       |
| * Accumulated Volume   |        |         |        |           |
| Accumulated Volume   | 8      |         | 8      | gal       |
| <b>Ann Arbor Microbiology Lab</b>  |        |         |        |           |
| Cyst Live (Cryptosporidium) reduction Test - Progeny (Membrane Filtration, |        |         |        |           |
| Cryptosporidium  | <1     |         | <1     | Oocysts/L |

Sample Id: **S-0001929413**

Description: Effluent 2 Crypto

Sampled Date: 07/19/2022

Received Date: 07/19/2022

| Testing Parameter  | Sample | Control | Result | Units |
|--|--------|---------|--------|-------|
| <b>Ann Arbor Chemistry Lab</b>   |        |         |        |       |
| * DWTS Rig Flow Rate   |        |         |        |       |
| Flow Rate  | 0.03   |         | 0.03   | gpm   |
| * Accumulated Volume   |        |         |        |       |
| Accumulated Volume   | 8      |         | 8      | gal   |
| <b>Ann Arbor Microbiology Lab</b>  |        |         |        |       |
| Cyst Live (Cryptosporidium) reduction Test - Progeny (Membrane Filtration, |        |         |        |       |



Sample Id: S-0001929413

| Testing Parameter                               | Sample | Control | Result | Units     |
|---|--------|---------|--------|-----------|
| <b>Ann Arbor Microbiology Lab ( Continued )</b> |        |         |        |           |
| Cryptosporidium                                 |        | <1      | <1     | Oocysts/L |

**Job Attachments:**



Test Configuration

**Testing Laboratories:**

|                        |                       |  |
|------------------------|-----------------------|--|
| All work performed at: | → <u>Id</u><br>NSF_AA | <u>Address</u><br>NSF<br>789 N. Dixboro Road<br>Ann Arbor MI 48105 |
|------------------------|-----------------------|--|

**References to Testing Procedures:**

| <u>NSF Reference</u> | <u>Parameter / Test Description</u>   |
|----------------------|---|
| C0559                | *General DWTS Testing   |
| C3165                | Carbon, Total Organic, SM 5310C, in Water   |
| C3179                | * Chlorine, Total Residual (ref. Hach 8167)   |
| C4457                | Solids, Total Dissolved, (180C), SM 2540C   |
| C6407                | * DWTS Rig Flow Rate  |
| C6408                | * Water pH  |
| C6409                | * Turbidity   |
| C6410                | * Accumulated Volume  |
| C6413                | * Temperature   |
| M0046                | Cyst Live (Cryptosporidium) reduction Test - Progeny (Membrane Filtration, Std. 53) |
| M0064                | * Raoultella terrigena in Water by Membrane Filtration, EPA Purifier Guide Standard |

Test descriptions preceded by an asterisk "\*" indicate that testing has been performed per NSF requirements but is not within its scope of accreditation.

Unless otherwise indicated, method uncertainties are not applied in any determinations of conformity. Testing utilizes the requested sections of any referenced standards, which may not be the entire standard.

**Dates of Laboratory Activity: 18-JUL-2022 to 13-SEP-2022**