



3M™ Petrifilm™ Plates

Guide to Dilution Preparation

Many foods require a dilution step before plating and the following is a guide to use when preparing dilutions. For specific dilution recommendations for dairy and juice, please refer to the 3M Petrifilm Plate Application Guide: Use with Dairy and Juice Products.

| Dilution | Sample size | Diluent |
|----------|-------------|---------|
| 1:5 | 10.00 g | 40 mL |
| | or | |
| | 22.50 g | 90 mL |
| 1:10 | 1.00 g | 9 mL |
| | or | |
| | 10.00 g | 90 mL |
| 1:20 | 4.74 g | 90 mL |
| | or | |
| | 5.21 g | 99 mL |

Diluent Volume Calculations:

Volume of Buffer Needed = (Weight of Sample x Dilution) – Weight of Sample

Example: You have 7.5 mL of sample and want to prepare 1:10 dilution.

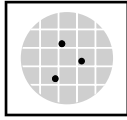
$$\left(\begin{array}{c} \text{7.5 mL} \\ \text{Weight of Sample} \end{array} \times \begin{array}{c} \text{10} \\ \text{Dilution} \end{array} \right) - \begin{array}{c} \text{7.5 mL} \\ \text{Weight of Sample} \end{array} = \begin{array}{c} \text{67.5 mL} \\ \text{Volume of Buffer Needed} \end{array}$$

Procedure for Determining Counts:

Use a multiplication factor to convert the plate count to the number of colony forming units (CFU) of bacteria per gram of sample. The multiplication factor is determined by dividing the dilution used by the volume plated.

Example 1: Single plate

1 mL plated of 1:10 dilution



count = 3

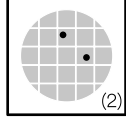
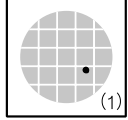
$$\frac{10 \text{ (1:10 dilution)}}{1 \text{ mL plated}} = 10 \text{ (dilution factor)}$$

$$3 \times 10 \div 1 = 30$$

count dilution factor mL plated CFU/g reported

Example 2: Multiple plates in order to achieve higher sensitivity

1 mL each plated of 1:10 dilution on two plates equals 2 mL total

total count = 3

$$\frac{10 \text{ (1:10 dilution)}}{2 \text{ mL plated}} = 5 \text{ (dilution factor)}$$

$$3 \times 10 \div 2 = 15$$

count dilution factor mL plated CFU/g reported

Sensitivity of 3M™ Petrifilm™ Plates:

If no colonies appear on the plate, do not report the count as zero. Report in CFU/g as shown below. Most 3M Petrifilm Plates require a 1 mL volume of sample. 3M™ Petrifilm™ High-Sensitivity Coliform Count Plate requires a 5 mL volume of sample.

| Dilution | 3M Petrifilm Plate | CFU/g |
|-----------|--------------------|--------|
| 1 : 10 | 1 mL plate | < 10.0 |
| | 5 mL plate | < 2.0 |
| 1 : 5 | 1 mL plate | < 5.0 |
| | 5 mL plate | < 1.0 |
| 1 : 2 | 1 mL plate | < 2.0 |
| | 5 mL plate | < 1.0 |
| Undiluted | 1 mL plate | < 1.0 |
| | 5 mL plate | < 1.0 |

For greater sensitivity, a lower dilution and /or more plates may be used.

For detailed WARNING, CAUTIONS, DISCLAIMER OF WARRANTIES / LIMITED REMEDY, LIMITATION OF 3M LIABILITY, STORAGE AND DISPOSAL information, and INSTRUCTIONS FOR USE see product's instructions online at [3M.com/foodsafety/Petrifilm](https://www.3m.com/foodsafety/Petrifilm)



3M Food Safety

3M Center
Bldg. 275-5W-05
St. Paul, MN 55144-1000
USA

Phone 1-800-328-6553
Web [3M.com/foodsafety](https://www.3m.com/foodsafety)

3M Canada

Post Office Box 5757
London, Ontario N6A 4T1
Canada

Phone 1-800-364-3577

3M and Petrifilm are trademarks of 3M.
Printed in U.S.A. © 3M 2022.
70-2009-1806-1 (Rev-01/22)