

**MILK QUALITY IMPROVEMENT PROGRAM  
CORNELL UNIVERSITY**



MQIP LAB Standard Operating Procedure		
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**Spore Pasteurization**

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## **SECTION 1 INTRODUCTION**

### **1.1 Purpose**

The purpose of this document is to set forth standard guidelines for performing spore pasteurization for the determination of spore counts in raw, pasteurized and powdered dairy products.

### **1.2 Scope**

This SOP applies to the Milk Quality Improvement Program (MQIP) Lab

### **1.3 Definitions**

**SP – Spore Pasteurization**

**MSC – Mesophilic spore count**

**TSC – Thermophilic spore count**

**PSC – Psychrotolerant spore count**

**TC – Temperature control**



## **SECTION 2      MATERIALS**

- **Shaking waterbath capable of reaching and maintaining 80°C**
- **Ice**
- **Thermometer**
- **Sterile 250 mL glass bottles with screw on cap**
- **Temperature control glass bottle with hole in cap**



## SECTION 3 PROCEDURES

### 3.1. Sample preparation

- 3.2.1. Ensure uniform samples, shake 25 times in a 1 foot arc within 7 seconds prior to transferring sample to sterile bottles.
- 3.2.2. Aseptically transfer 100 mL of raw, pasteurized or hydrated powder product to a 250 mL sterile glass bottle with screw cap.
- 3.2.3. Prepare a TC with the same volume of raw, pasteurized or hydrated powder product to be processed, in a 250 mL glass bottle with hole in the screw cap for thermometer.

### 3.2. Spore Pasteurization

- 3.2.1. Set a waterbath at 80°C and ensure the water level will exceed the level of the product in the bottle by 4 mm.
- 3.2.2. Place samples and temperature control in waterbath and turn on the shaking mechanism.
- 3.2.3. Start timing the 12 minute hold time when the temperature of the TC has reached 80°C.
- 3.2.4. At the end of the hold time, immediately remove samples and TC from the waterbath and place on ice.
- 3.2.5. When the temperature of the samples and TC cool to 10°C or lower proceed with sample analysis.
  - 3.2.5.1. SP treated samples plated and incubated at 32°C for 24-48 hours constitutes a MSC.
  - 3.2.5.2. SP treated samples plated and incubated at 55°C for 24-48 hours constitutes a TSC.
  - 3.2.5.3. SP treated samples plated and incubated at 7°C for 10 days constitutes a PSC.

## SECTION 4 TROUBLESHOOTING

## SECTION 5 REFERENCES

Wehr, H. M. and J. F. Frank eds. 2004. *Standard Methods for the Examination of Dairy Products*. 17th ed. American Public Health Association, Washington, DC.

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