

PeelPlate® EC
E.COLI AND COLIFORM

INTERPRETATION GUIDE

AN INTRODUCTION TO USE AND INTERPRETING RESULTS FOR PEEL PLATE EC TESTS.
FOR MORE INFORMATION, CONTACT CHARM SCIENCES

INTRODUCTION

Peel Plate EC (*E. coli* and coliform) tests diffuse the sample in media that contains selective agents and dyes designed for the determination of total coliform in dairy when incubated at 32 °C. When incubated at 35 °C the method will distinguish *E. coli* from other coliform through color; *E. coli* are blue/purple colonies while coliform are red.

Since coliforms ferment lactose, they have the ability to break down the enzyme substrate salmon-gal through the production of β -galactosidase, producing a red color. *E. coli* produce β -glucuronidase which acts on x-glucuronide resulting in a blue colony.

EXAMPLES OF WHAT PLATES CAN LOOK LIKE

1



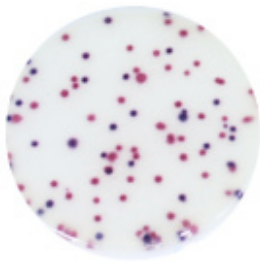
No Growth = 0 Plate remains white to off white color.

2



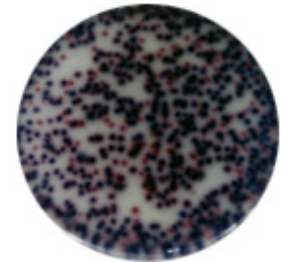
Total Coliform Count = 11
(10 *E.coli* Blue + 1 coliform Red)

3



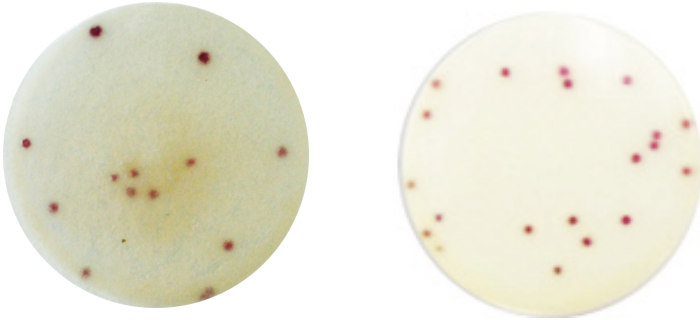
Total Coliform Count 86 (29 *E.coli* Blue + 57 coliform Red) on Peel Plate EC tests, colonies can be counted up to 154 or another 1:10 serial dilution of the sample recommended.

4



Total Coliform Count = TNTC
Plates with colonies that are indistinguishable are considered Too Numerous to Count.

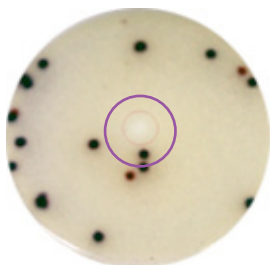
5



With many dairy products, at 32 °C *E. coli* does not typically produce a different color from coliform. Therefore, dairy products are only reported as total coliform regardless of color. Peel Plate tests have been evaluated compared to other dairy reference procedures and has been found equivalent for total coliform detection without the need to pick for confirmation or without the need to determine gas production.

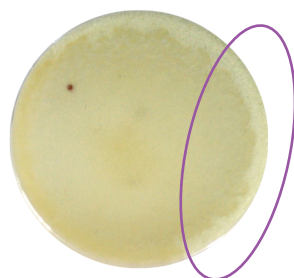
TECHNIQUE AND TROUBLESHOOTING

1



Craters: When pipetting too slowly, sometimes the center of the plate may create a wash-out or crater. **This does not effect the overall count.**

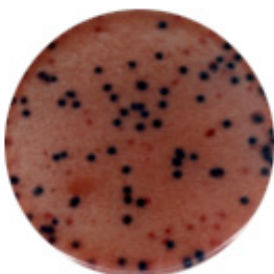
2



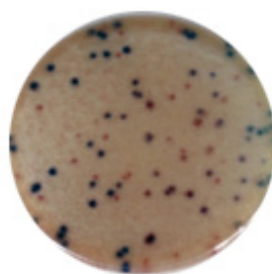
Incomplete diffusion: If not pipetting vertically, or in the center, or not rapidly enough, the samples may not spread completely to every edge. **This does not affect the final count.**

3

WITHOUT BISULFITE



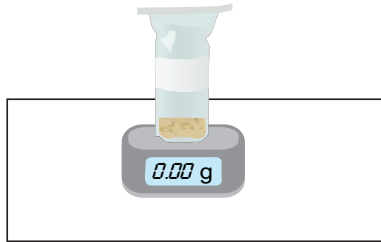
WITH BISULFITE



Cultured Products Some cultured dairy products like yogurt, cottage cheese and cheddar cheese require an additive of sodium bisulfite to make red coliform colonies easier to distinguish from the background and simpler to count. For cultured products which produce red backgrounds, the sodium bisulfite should be added into the sample diluent for testing. Yogurt products require a 48 hour incubation in order to distinguish colonies from the background. In the pictures above, the plate on the left is yogurt without a bisulfite additive, and the plate on the right is with a bisulfite additive.

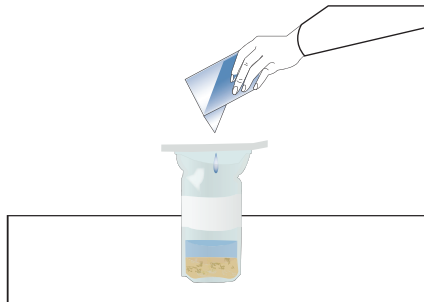
SAMPLE PREPARATION

1



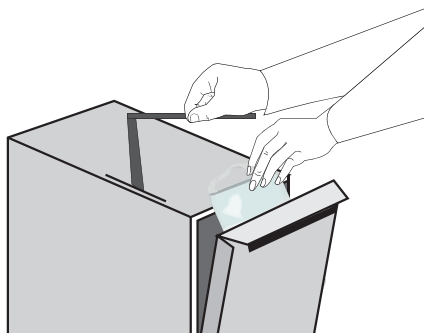
Prepare dilution of test sample. By weight or volume, add sample into appropriate container (e.g. Whirl-Pak, homogenizing bag, dilution bottle or other sterile container) for testing.

2



Dilute sample with preferred sterile diluent. Avoid using buffers with dyes or with inhibitory additives unless otherwise directed by the Operator's Manual.

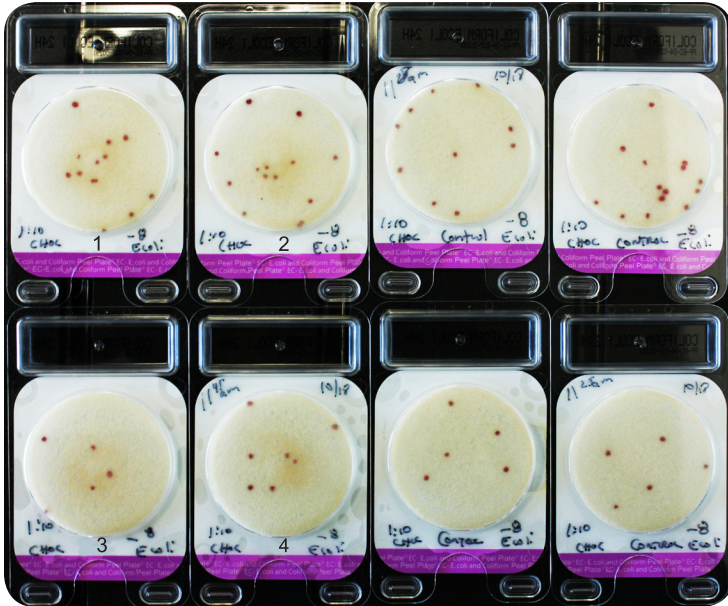
3



Homogenize sample until sample is thoroughly blended. The sample is now ready to plate no pH adjustments required.

SAMPLE PREPARATION CONTINUED

4

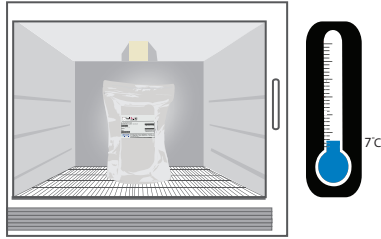


This photo shows plates of chocolate milk samples inoculated with *E. coli*. The plates with “1,” “2,” “3,” and “4” show fluid volume dispensed using a dilution pipettor while those with “Control” show a 1 mL volume dispensed with a serological pipet. Notice the chocolate matrix faint “brown” circle in the dilution pipettor plates. These unevenly mixed colloidal matrices don’t completely spread; but the bacteria from a diluted sample do completely spread and recovery is the same. The same bacterial quantitations are seen with the different pipetting techniques.

Colloidal matrix spots may be observed with viscous solutions diluted with a dilution pipettor, this matrix heterogeneity would be observed with other methods too.

STORAGE

1



A test kit contains multiple foil bags containing 50 Peel Plates EC and a color indicator desiccant. Store kits refrigerated* in supplied container for up to 12 months. Tests may be stored at room temperature for up to 1 month.

2



Open the bag and remove the number of plates needed for analysis. Reseal the bag using the zip closure to store unused tests. Perform testing in a clean dry testing area at ambient temperature.

3



Plates held at room temperature for 1 hour or more will open more easily. Moisture, heat, or storage abused test bags will turn the desiccant indicator pink/white. Do not use discolored tests, or tests from a bag with a discolored desiccant indicator.

* Refrigeration is defined as 0 to 7 °C or 0 to 4.5 °C for US certified labs



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