

STANDARD OPERATING PROCEDURE – Cream Standardization

INTRODUCTION

Pasteurized cream is an ingredient used to manufacture many food products. It is also packaged for wholesale distribution. To ensure the consistency of foods prepared using cream it is advantageous for that cream to have a known butterfat content. This is accomplished by adding skim milk to the cream until the desired butterfat content is achieved.

MATERIALS

1. Supplies
 - a. Sample bottles
 - b. Fat determination instrumentation and materials
2. Cautions
 - a. Chemicals used in fat determinations may cause damage to eyes and skin.

PROCEDURE

1. Circulate the cream until it is thoroughly mixed.
2. Determine the total number of gallons of cream.
3. Collect a representative sample.
4. Determine the fat content of the cream sample.
5. Calculate the volume of skim milk that needs to be added to the cream in order to reduce the cream's measured fat content to the desired fat content.
6. Add the proper volume of skim milk to the cream and mix thoroughly.

CALCULATIONS

1. One gallon of skim milk weighs 8.63 pounds.
2. Find the weight of one gallon of cream:

38 % fat	8.36 pounds
39 % fat	8.35 pounds
40 % fat	8.35 pounds
41 % fat	8.33 pounds
42 % fat	8.33 pounds
43 % fat	8.33 pounds
44 % fat	8.32 pounds
45 % fat	8.30 pounds
46 % fat	8.30 pounds
47 % fat	8.29 pounds
48 % fat	8.29 pounds
3. Weight of cream = number of gallons of cream * weight of one gallon of cream
4. Skim factor = measured fat content of cream - desired fat content of cream
5. Gallons of skim milk needed = $\frac{\text{weight of cream} * \text{skim factor}}{(\text{desired fat content of cream} * 8.63)}$

Example: Gallons of cream = 180
Measured fat content of cream = 46 %
Desired fat content of cream = 40 %

Weight of cream = 180 gallons * 8.30 pounds per gallon = 1494 pounds
Skim factor = 46 % - 40 % = 6
Gallons of skim milk needed = $(1494 \text{ pounds} * 6) / (40 * 8.63 \text{ pounds per gallon})$
= 8964 / 345.2
= 26 gallons

REFERENCES

1. Information on sample collection and fat determination methodology:
Standard Methods for the Examination of Dairy Products
Published by the American Public Health Association
www.apha.org
2. Operating instructions:
SMART System 5 Moisture / Solids Analyzer Operation Manual
SMART Trac Rapid Fat Analysis System Operation Manual
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The following individual is responsible for implementation of this SOP and has the overall authority on-site:

Name: _____ Title: _____ Date: _____