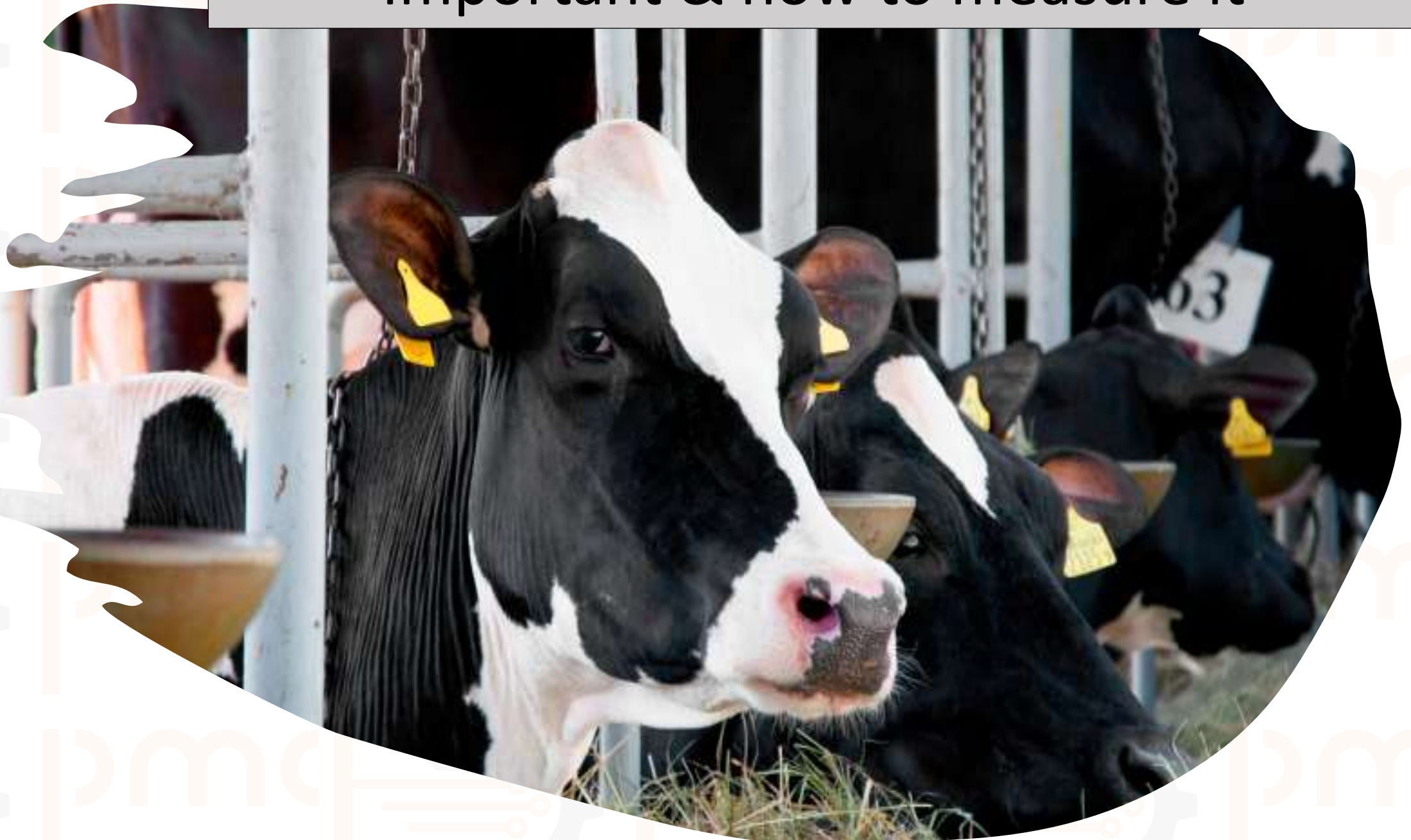


Solid-Not-Fat(SNF) of Milk

Important & how to measure it



Content

1. What is SNF?
2. Why measure SNF?
3. Methods to determine solid-not-fat
4. Conclusion
5. Reference



1. What is SNF?

- Total solids content of milk is the entire residue left after complete evaporation of water from milk.
- This includes fat protein, lactose and mineral matter.
- These solid constituents exist in milk in a mechanical mixture.
- The milk's protein, milk sugar, and minerals make up the solids-not-fat(SNF).



2. Why measure SNF?

- The primary criterion used to assess milk's worth has historically been its fat content.
- The California State Legislature passed a bill in 1961 that stipulates that market milk's solids-not-fat composition would be considered when setting its prices.
- Today, more attention is being paid to all the nutrients included in milk, making both the fat and the SNF in the milk of importance to breeders, dairy farmers, milk processors, nutritionists, and consumers.



3. Methods to determine solid-not-fat

3.1. Gravimetric method

3.2. By Richmond's scale.

3.3. By use of Richmond's formula

3.1. Gravimetric method

A known weight of milk, about 2.5 grams, is placed into an accurately weighed flat-bottomed dish. Heated on a steam bath for 10 to 15 minutes. And placed in an hot air oven (at 98°-100° C).

This procedure drives off the water, leaving the milk solids.

After the dish has cooled to room temperature, it is weighed, and the percentage of milk solids is calculated.

The fat percentage, previously determined, is subtracted from the total solids and the remainder represents the milk solids-not-fat.

$$\text{Total solids \%} = \frac{\text{Weight of residue}}{\text{Weight of milk sample}} \times 100$$

3.2. By Richmond's scale

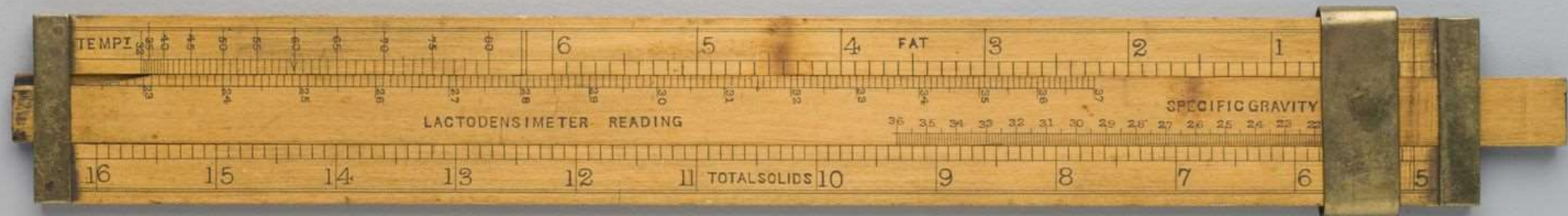
To have immediate results the total solids content is determined by Richmond's scale. The mechanical device made in the form of a ruler with a sliding center slip.

The total solids can be determined if the lactometer reading, the temperature of milk and the fat content is known.

The observed lactometer reading is placed opposite to the little arrow at 60°F on the temperature scale.

The corrected lactometer is observed opposite the line indicating the observed temperature of the milk. This would give the corrected lactometer reading.

The arrow on the sliding portion is placed against the fat content of the given milk and the bottom part of the scale would give the percentage of total solids opposite to the CLR reading on small scale.



Richmond's Improved Milkscale slide rule

3.3. By use of Richmond's formula

First the fat percentage of the milk sample is determined by using Gerber's method.

The lactometer reading and temperature of the milk are then calculated.

The values of fat and CLR are inserted in the following formula to calculate solids-not-fat.

$$\text{SNF \%} = \frac{\text{CLR}}{4} + 1.22 \text{ F} + 0.72$$

Where,

- CLR = Corrected lactometer Reading
- F= Fat content in milk

4. Conclusion

SNF stands for Solid-Non-Fat Content in milk products. Any other substances in milk excluding butterfat and water come under the SNF category.

Hence, the formulas given above can use to calculate the SNF value the next time milk is purchased.

Low SNF in milk is mainly caused due to a protein and nutrient-deficient diet.

5. Reference

1. <https://agriinfo.in/determination-of-s-n-f-solid-not-fat-and-total-solids-of-milk-704/>
2. <https://www.cdffa.ca.gov/dairy/pdf/fmmo/1961MeasuringSNF.pdf>
3. <https://bebodywise.com/blog/snf-in-milk/>

About PMG Engineering

We deliver End-to-End Engineering Design and Construction Management Projects in Food and Beverage Industry.



Meeting Global Benchmarks

In ENGINEERING DESIGN and PROJECT MANAGEMENT
for FOOD and BEVERAGE Industry with SINGLE POINT ACCOUNTABILITY

Process Engineering | Project Management | Mechanical | Electrical | Automation | Food Safety

People Delivering Results

Safe-by-Choice. First Time Quality. Maximize Value.
Objectivity. Ownership. Reliable and Trustworthy Business.

