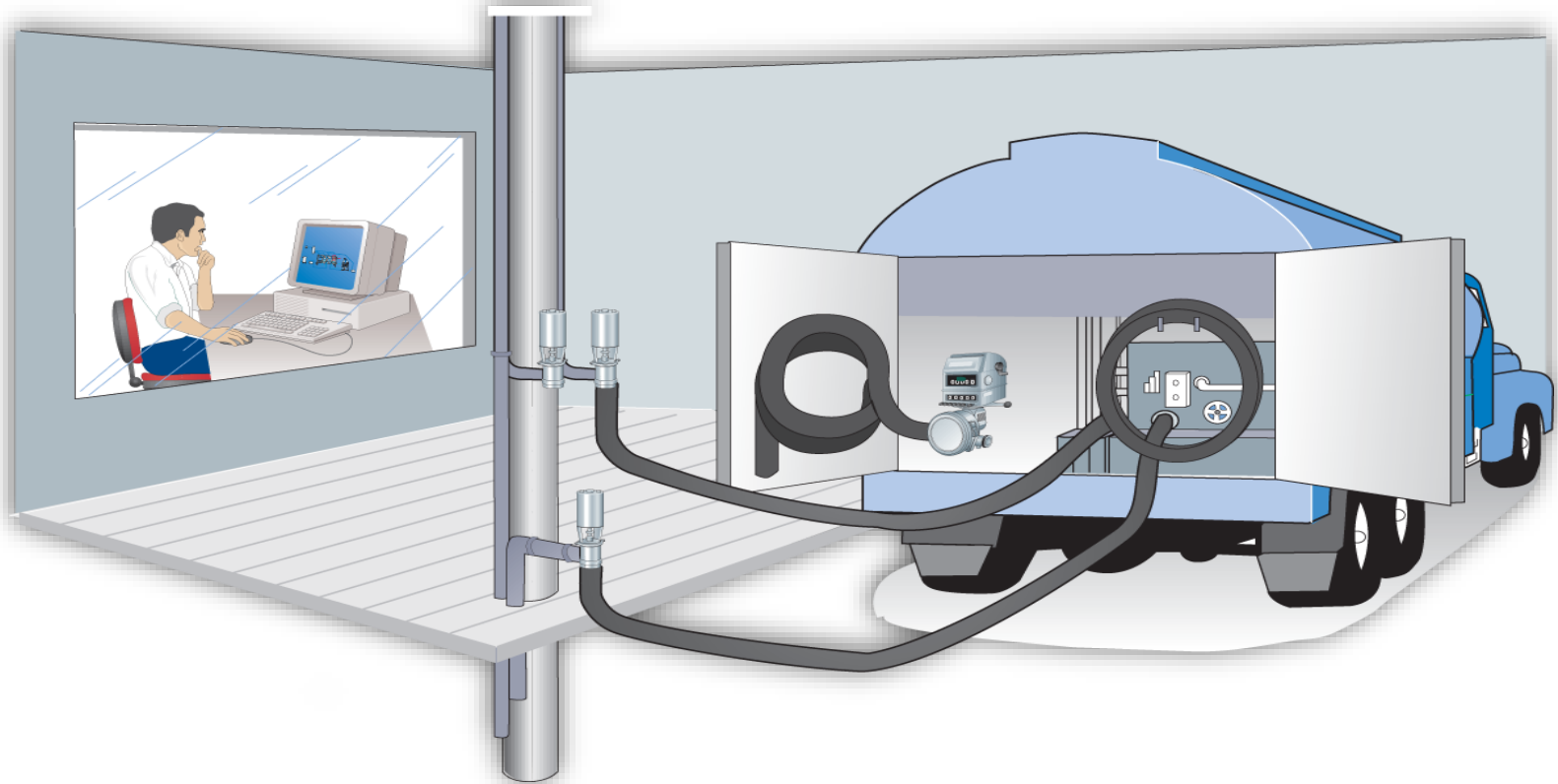


Platform Test at RMRD



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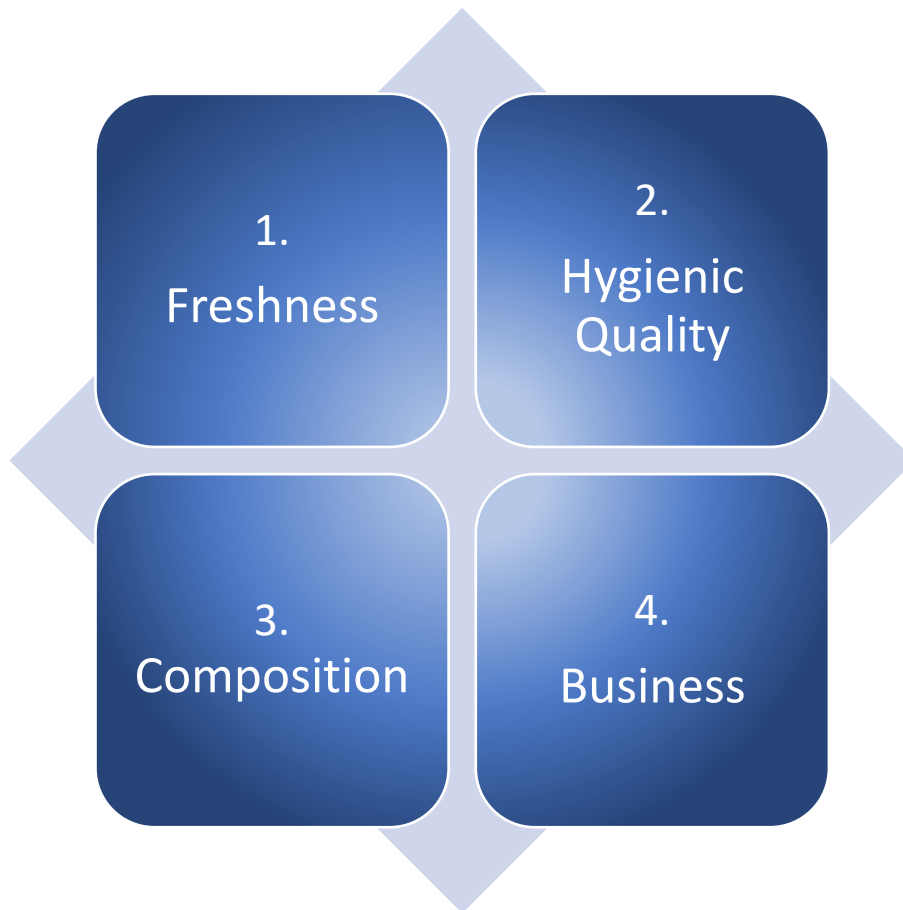
1. Introduction

- **Platform Test-** Raw milk pass through rigorous examination including organoleptic, physical and chemical tests to assess the quality of intake milk rapidly.
- Platform test is the deciding factor **for raw milk acceptance or rejection.**
- It is performed on each can/tanker to assess the **quality of the incoming milk.**
- These tests must be easy to perform, give quick and reliable results and should not require complicated and elaborate equipment.
- **Grading of Milk-** The classification of milk based on quality. So, grading of milk is done since platform tests which include organoleptic as well as preliminary tests.



2. PURPOSE

Main purpose of examination of raw milk at reception dock are for assessment of:



3. Classes Of Platform Test

1. Organoleptic tests:

- Also known as **sensory tests** are performed with the help of five sensing organs, viz. eye, nose, tongue, ear and skin.
- The general appearance, cleanliness, color, taste and smell of milk are tested before emptying the transport containers.

2. Preliminary tests:

- Simple and rapid physical-chemical tests
- Can be performed easily on the reception dock.

3. Microbiological Tests:

- Provide information on the sanitary condition and keeping quality of milk.
- The tests are intended to be carried out on samples collected for microbiological analysis.

3.1. Organoleptic Tests

i. Smell or odor:

- Sniffing as soon as opening of lid to detect the smell/odor of the milk.
- Normal milk don't have any off-or unnatural smell.
- Even slight change in smell indicates microbial deterioration.

ii. Appearance:

- Checked for any floating extraneous matters, off-color, or partially churned milk.
- Presence of visible dirt, straw or manure indicates milk been handled in an unhygienic way.
- The color of milk of cows and sheep should be slightly yellowish-white, that of buffaloes and goat absolutely white.
- If the color is reddish, the milk may contain blood; if it is yellowish, it may contain pus, such milk should not be accepted.

3.1. Organoleptic Tests (cont.)

iii. Taste

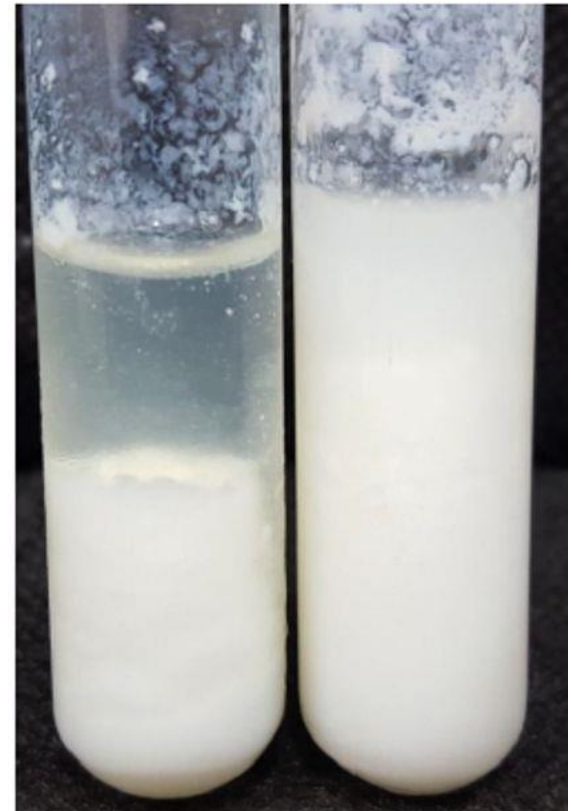
- Taste of milk can be noted by taking a spoonful milk in the mouth and rotating inside with the help of tongue.
- When doubt exists concerning smell, the taste of the milk may help to determine sourness and if so, milk should be rejected.
- Adulteration of milk with salt, sugar, etc. can also be detected.

iv. Temperature

- With practice, the grader can judge the temperature of milk with a high degree of accuracy by touching the container. Abnormal to the weather or condition may indicate the prehistory of milk with respect to its cooling or heating, etc.

3.2 Preliminary Tests

- i. **Clot-On-Boiling (C.O.B.):** A small portion of milk is heated to boiling point in a test tube for checking whether it withstands heat treatment without clotting. If the milk clots on boiling it is sour or abnormal. This milk cannot be processed any more and hence it should be rejected.
- ii. **Alcohol test:** Milk with increased acidity or of abnormal salt balance or mastitis flocculates after addition of alcohol. This test is used to determine heat stability of milk. If no flocculation occurs after addition of alcohol, the milk is fresh or its acidity is only very slightly increased. If milk flocculates with alcohol, the milk is heat unstable and it should be rejected.



3.2 Preliminary Tests

iii. Titratable acidity (T.A.):

- The titratable acidity of milk is determined by titrating 10 ml of milk with NaOH solution to assess sourness in milk.
- The result is either expressed in degrees Dornic, i.e. ml of N/10 NaOH used being equal to 1° Dornic (DO) or in % lactic acid, whereby ml of N/10 NaOH used is equal to 0.01% w/v lactic acid.
- Milk testing more than 0.15% lactic acid should be rejected.



- ### iv. Alizarin-alcohol test:
- Incorporation of alizarin in alcohol helps to determine both heat stability and approximate percentage of acidity in milk. Milk showing poor heat stability is rejected.

3.2 Preliminary Tests

v. pH:

- Measured with an electronic pH meter or different pH-indicators to assess the acidity of milk.
 - Normal milk has pH ranging from 6.4 (in cow milk) to 6.8 (in buffalo milk).
 - A higher pH (7.0 to 7.4) means milk from infected (mastitis) udders, or it is neutralized by alkali.
- The major shortcoming of this method is its poor sensitivity since milk is extremely well buffered system, slight change in acidity or alkalinity cannot be detected.



3.2 Preliminary Tests

v. Lactometer test:

- Lactometer is used for determination of specific gravity.
- However, test result obtained can be misleading due to variation in temperature and fat content in milk etc.
- This method is correct only when carried out at the correct temperature and combined with milk fat test.



3.2 Preliminary Tests

vii. Sediment test

- The sediment test is used to check the visible foreign matter contained in the milk.
- Off the bottom sediment tester or barrel type sediment tester may be used.
- Test is carried out by allowing a measured quantity of milk (usually 500 ml) to pass through a fixed area of a filter disc and comparing the sediment left with the prepared standard.
- Any hair flies, pieces of hay or straw or any large particles of dirt are not included in grading sediment.
- Presence of appreciable sediment indicates careless or insanitary dairy farm practice.
- However, lack of sediment is not always indicative of ideal conditions, since visible sediment may be readily removed by straining at the dairy farm. It may have bacterial contamination

3.2 Preliminary Tests

viii. Fat Test

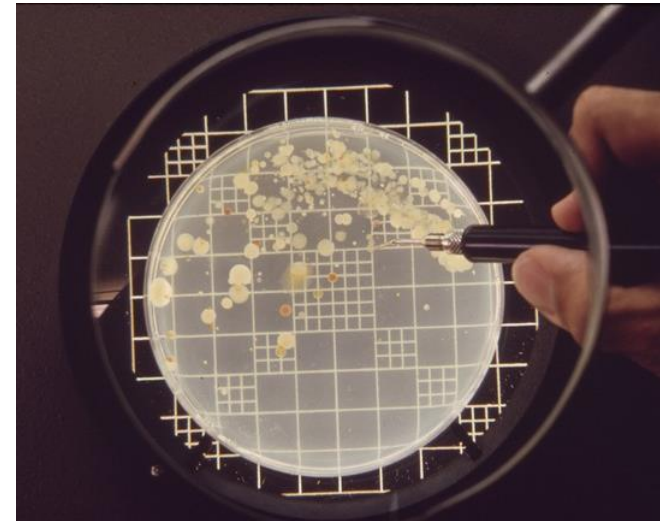
- It is done to make payment for the milk. Among several methods, one common method is the acid-barometric butterfat test or Gerber test.
- Using a butyrometer to measure the fat content of a sample—which dissolves the emulsion—one can ascertain the amount of fat in milk.
- The Milko-tester Minor is a semi-automatic butterfat analyzer used to determine milk fat content, using light scattering by milk fat globules to measure light transmission and display fat percentage.



3.3 Microbiological Test

1. Direct Microscopic Count (DMC):

- The direct microscopic count method consists of examination of milk under a compound microscope.
- It enables the rapid estimation of the total bacterial population of a sample of milk and reveals useful information for tracing the source of contamination in milk.

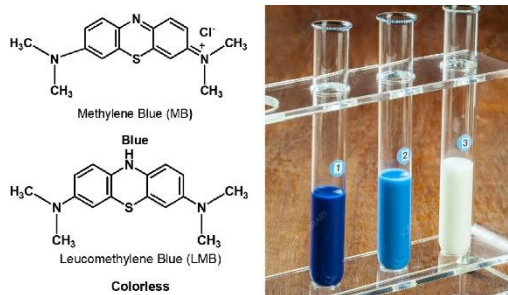


Counts per (ml)	Quality of milk
< 5,00,000	Good
5,00,001 to 4,000,000	Fair
4,000,001 to 20,000,000	Poor
> 20,000,000	Very poor

3.3 Microbiological Test

2. Methylene blue reduction (MBR) Test:

- The length of time taken by milk to de-colourize methylene blue is a fairly good measure of its bacterial content.
- Ten ml milk in sterile test tube is well mixed with one ml methylene blue solution.
- Tube is closed with sterile rubber stopper and incubated in a water bath maintained at $37.5 \pm 0.5^\circ\text{C}$.
- Tube is inspected after 30 minutes and seen whether milk in the tube is de-colored at least up to within 5 mm of the surface.



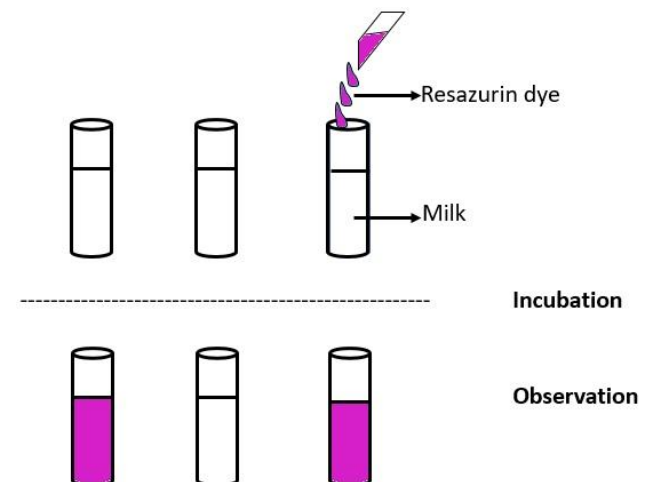
Grade	Duration	One-hour Resazurin
Very good	≥ 5	-----
Good	2 to 4	≥ 4
Fair	1 to 2	3.5 to 1
Poor	0.5	0.5 - 0

3.3 Microbiological Test

3. Resazurin test:

- Since resazurin reduction occurs in two stages, the first from blue to pink, and the second from pink to colourless, the quality of milk can be assessed easily in shorter time.
- Procedure is the same as described in MBR test.
 - At the end of 10 minutes + 30 second of incubation, the tube is removed from the water bath and immediately the colour is matched with the resazurin disc in the comparator.
- The result shall be interpreted as follows:

Disc Reading	Keeping Quality
≥ 4	Satisfactory
3.5 To 1	Doubtful
0.5 To 0	Unsatisfactory



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