MILK RECEPTION AT THE DAIRY DOCK

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1. Introduction

- Milk may be delivered to the dairy plant either in cans or in tankers (road/rail). The place in the dairy plant, where milk first arrives and is received after grading for acceptance, is known as milk reception dock or platform or raw milk receiving dock (RMRD). Dairy reception dock is especially designed and equipped to facilitate rapid reception of milk and, cleaning and sterilization of used containers.

2. Layout of reception dock and equipment

- Important consideration
  - Health regulation
  - Volume of milk
  - Method of delivery of milk
  - Floor space
  - Location of driveways and vehicle yards
  - Elevation of dock

- Equipment and devices of milk reception dock of a dairy plant

S.N.	Equipment/ Device	Description	Function
Receiving milk in cans			
1.	Conveyor	i) Power driven a) ball & socket type or b) slot & chain type ii) Gravity rollers- lubricated and non-lubricated	i) Permits inspection, grading, sampling of milk. ii) To carry milk cans from one end of platform to tipping point.
2.	Trolley	i) can or ii) platform	-do-
3.	Can tipping device	Floor mounted tubular and rubber padded cross bar	i) for resting can ii) tilting and un-loading milk to weigh bowl.
4.	Weigh scale/bowl/ tank/ weighing machine	Stainless steel bowl attached to circular dial weigh scale. May be fitted with automatic weigh recorder.	i) Permits straining, sampling, weighing, recording and dumping of milk.
5.	Dump tank	Stainless steel tank with a pump below weigh bowl.	To receive milk from weigh bowl.
6.	Drip saver/ drain rack	Tubular with rack arrangement	To drain off residual milk from just emptied cans.
7.	Can washer	i) rotary- 1 – 6 can/min, ii) straight through 3-16 can/min	To wash, clean & sterilize cans.
8.	Can washing trough	Semi circular manual cleaning with scrubbing brush.	To scrub & clean cans.
9.	Can scrubber	Two rotating nylon brushes, mechanically operated.	To scrub & clean cans.
10.	Can rinsing and steaming block	Pedal operated	For rinsing and sterilizing cans.
11.	Sanitary milk pump	Stainless steel, centrifugal type.	To pump milk from dump tank.
12.	Draining rack	Roller type conveyor or rod type rack	To drain & dry clean milk cans and lids
13.	Sanitizing assembly	Consists of can steaming block, pump spray & sanitizing solution tank.	To sanitize cans.
14.	Plunger	Manual stirrer made of stainless steel or aluminium	To stir milk in can or vat for grading sampling.
15.	Testing kit	Sampler, sample bottle, test tubes etc.	To accomplish platform tests.

16.	Pre-washer	Fits into the conveyor line	To wash the exterior of milk cans before dumping.
17.	Can cover loosener or opener	A mechanical cover loosener/opener placed in the conveyor line after pre-washer or immediately after unloading from vehicle.	To loosen or open the lid from the cans.
18.	Ventilation	A ventilator duct installed near ceiling	To remove fumes, air etc. from reception dock.
19.	Sanitary pump	Stainless steel centrifugal	To pump milk from tanker to storage tank.
20.	Compressed air arrangement	Connected to the top of the tanks	To empty the tanker under air pressure
21.	Sanitary piping	Stainless steel between tanker outlet and storage tank inlet	To convey milk from tankers to storage tank.
22.	Washing & sanitizing devices	CIP circuit or manual	To wash and sanitize tankers, pump and piping.
23.	Weighing arrangement	Weigh bridge, volumetric meter or dip stick	To weigh or measure the milk.
24.	Shed	Parking yard covered with shed	To park tankers under shed.

- Reception of milk

1) Unloading

- Milk cans
- Road/Rail tankers

2) Conveying

Conveyors

Pipelines

3) Examination of raw milk

Organoleptic test

smell or odor

Appearance

Taste

Appearance

Temperature

Preliminary test

- Clot on boiling
- Alcohol test
- Titratable test
- PH
- Lactometer test
- sediment test

Table 2.2 : Quality of Milk by Sediment Test

Amount of sediment in disc		Quality of milk
At collection center, mg/500ml milk	Dairy reception dock, mg/500ml milk	
0.0	0.0	Excellent
0.5	0.2	Good
2.0	0.5	Fair
5.0	1.0	Bad
7.0	2.0	Very bad

Table 2.3: Quality of Milk by Alizarin-Alcohol Test

Colour	Approx. % Lactic acid	Heat stability
Lilac	Up to 0.14	Good (low acidity)
Pale red	0.14 to 0.17	Poor (sweet curdling)
Violet or purple (alkaline)	0.17	Poor (late lactation or mastitis)
Reddish brown to brown (acidic)	0.17 to 0.20	Very poor
Brownish yellow to yellow highly acidic	> 0.20	Very poor

Tilting/Emptying of milk cans

Weighing / measuring and recording of milk

Sampling of milk

Table 2.4: Characteristics of Milk Sampling Devices

S.No.	Device	Principle	Advantages	Disadvantages
1.	Dipper	Secures 10-15 ml milk	i) Fairly fast and easy to work with ii) Quite accurate with well mixed milk sampling	Inaccurate when wide variations exist in milk lots quantitatively and qualitatively
2.	Tube or milk thief	Secures aliquot portion of milk in proportion to the depth of milk.	Most accurate	i) Cumbersome to use ii) Larger sample needed impractical for varying bottom container in shape and size.
3.	Automatic vacuum	Secures aliquot portion by vacuum automatically	i) Very fast in operation ii) Very accurate	Expensive
4.	Drip	Milk is collected in drops in the sample bottle	Helpful in Fat and SNF accounting of the total intake	Not useful for individual sampling

Sampling method

- From a small handy batch
- From a large batch
- From several containers of different size, shape and type
- From bulk units
- From storage tanks

Dumping of milk