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National food safety standard

Determination of specific gravity in raw milk

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Forward

This standard replaces specific gravity determination of raw milk in GB/T 5009.46-2003 - Method of analysis of hygienic standard of milk and milk products and specific gravity determination of milk in GB/T 5409-85 - analytical method for milk.

Replaced previous published standards:

——GB/T 5009.46-1996、GB/T 5009.46-2003.

——GB/T5416-85;

National food safety standard

Determination of specific gravity in raw milk

1 Scope

This standard specifies the method for the determination of specific gravity in raw milk.

This standard applies to the determination of specific gravity in raw milk.

2 Principle

Determine the sample by densimeter and the result could be obtained by table lookup based upon the reading of the densimeter.

3 Apparatus

3.1 Densimeter: 20℃/4℃

3.2 Glass cylinder or graduated cylinder of 200 mL-250 mL capacity: the cylinder should be higher than the densimeter, and the distance between densimeter and the inner wall of the cylinder should not be shorter than 5 mm.

4 Procedure

Cautiously pour the sample which has been mixed evenly and adjusted to10℃-25℃ previously into the cylinder and measure the temperature. Foam should be avoided during the procedure. Cautiously put the densimeter into the sample till the place of scale 30° and let it float freely but keep it away from the inner wall of the cylinder. After standing for 2-3 min, read by keeping eyes horizontal to the milk surface. The density at 20℃ could be obtained by looking up table 1 according to the reading and the temperature of the sample.

5 Expression of results

The specific gravity(ρ_4^{20}) could be calculated by following formula:

$$\rho_4^{20} = \frac{X}{1000} + 1.000 \qquad (1)$$

where：

ρ_4^{20} — the specific gravity of the test sample

X — the reading of densimeter

When using 20℃/4℃ densimeter, if the temperature is 20, the specific gravity could be calculated directly by the reading of the densimeter through formula (1); if the temperature is not 20℃, the reading of the densimeter should be converted to density at 20℃ by

looking up table 1 and then the specific gravity could be calculated through formula (1).

Table1 The reading of densimeter –The density at 20℃ conversion tables

The reading of densimeter	Temperature of raw milk/℃															
	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
25	23.3	23.5	23.6	23.7	23.9	24.0	24.2	24.4	24.6	24.8	25.0	25.2	25.4	25.5	25.8	26.0
26	24.2	24.4	24.5	24.7	24.9	25.0	25.2	25.4	25.6	25.8	26.0	26.2	26.4	26.6	26.8	27.0
27	25.1	25.3	25.4	25.6	25.7	25.9	26.1	26.3	26.5	26.8	27.0	27.2	27.5	27.7	27.9	28.1
28	26.0	26.1	26.3	26.5	26.6	26.8	27.0	27.3	27.5	27.8	28.0	28.2	28.5	28.7	29.0	29.2
29	26.9	27.1	27.3	27.5	27.6	27.8	28.0	28.3	28.5	28.8	29.0	29.2	29.5	29.7	30.0	30.2
30	27.9	28.1	28.3	28.5	28.6	28.8	29.0	29.3	29.5	29.8	30.0	30.2	30.5	30.7	31.0	31.2
31	28.8	28.0	29.2	29.4	29.6	29.8	30.0	30.3	30.5	30.8	31.0	31.2	31.5	31.7	32.0	32.2
32	29.3	30.0	30.2	30.4	30.6	30.7	31.0	31.2	31.5	31.8	32.0	32.3	32.5	32.8	33.0	33.3
33	30.7	30.8	31.1	31.2	31.5	31.7	32.0	32.2	32.5	32.8	33.0	33.3	33.5	33.8	34.1	34.3
34	31.7	31.9	32.1	32.3	32.5	32.7	33.0	33.2	33.5	33.8	34.0	34.3	34.4	34.8	35.1	35.3
35	32.6	32.8	33.1	33.3	33.5	33.7	34.0	34.2	34.5	34.7	35.0	35.3	35.5	35.8	36.1	36.3
36	33.5	33.8	34.0	34.3	34.5	34.7	34.9	35.2	35.6	35.7	36.0	36.2	36.5	36.7	37.0	37.2