INTERNATIONAL STANDARD

ISO 11865

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Instant whole milk powder — Determination of white flecks number

Lait entier instantané en poudre — Détermination du nombre de taches blanches

Reference number
ISO 11865:1995(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 11865 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Subcommittee SC 5, *Milk and milk products*, in collaboration with the International Dairy Federation (IDF) and the Association of Official Analytical Chemists (AOAC) International, and will also be published by these organizations.

Annex A of this International Standard is for information only.

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Instant whole milk powder — Determination of white flecks number

1 Scope

This International Standard specifies a method for the determination of the white flecks number in instant whole milk powder.

2 Definitions

For the purposes of this International Standard, the following definitions apply.

2.1 white flecks: Undissolved particles which are visible when reconstituted milk is observed in a thin layer.

2.2 white flecks number (WFN): The volume fraction of liquid which has not passed the sieve within 15 s when the procedure described in this International Standard is followed.

3 Principle

Contrary to slowly dispersible particles, the white flecks easily clog a filter or a fine mesh because they are numerous and soft. This property is used for their determination. The volume of liquid which remains on a defined sieve after a given time is therefore an expression of the amount of white flecks.

4 Apparatus

Usual laboratory equipment and, in particular, the following.

4.1 Analytical balance, capable of being read to the nearest 0,1 g.

4.2 Glass beaker, of capacity 400 ml, of inside diameter 70 mm and height 130 mm.

4.3 Spatula, of stainless steel, of thickness 1 mm and overall length 250 mm, with length and width of blade 135 mm and 25 mm respectively.

4.4 Sieve, of diameter 100 mm, height about 45 mm and aperture size 63 µm (see ISO 3310-1)[1].

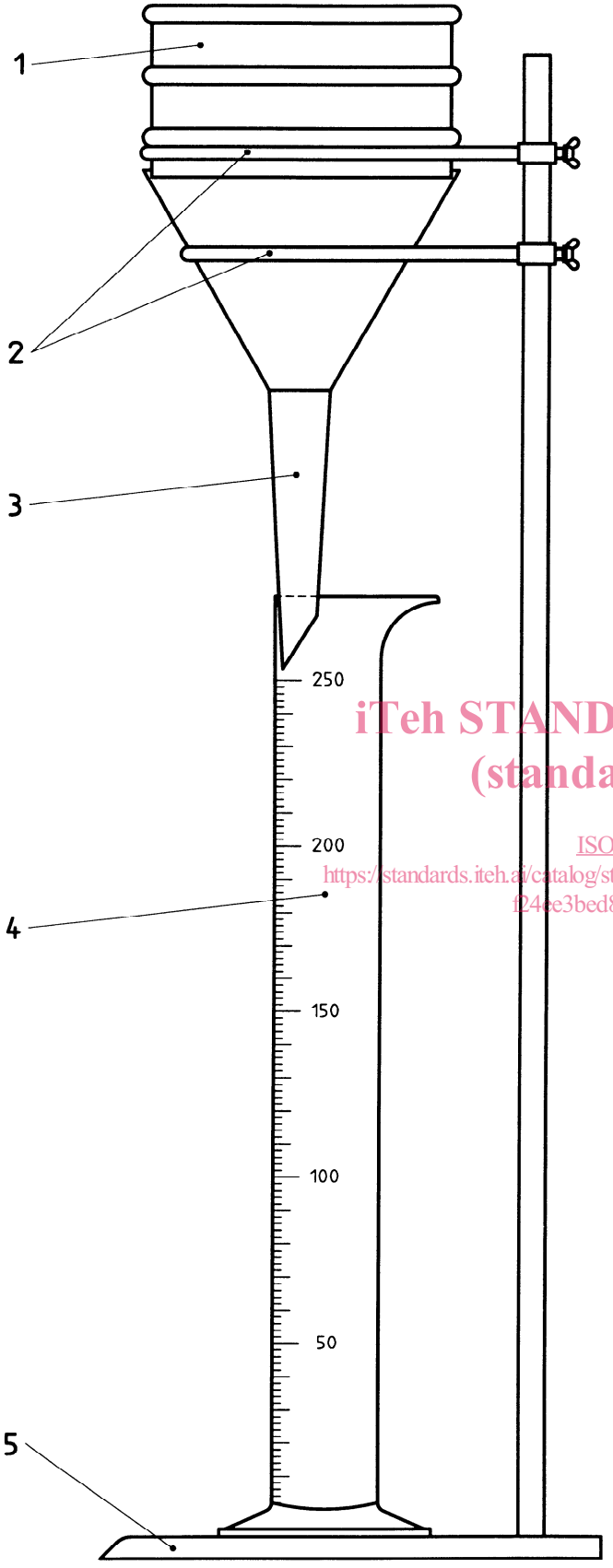
4.5 Glass funnel, of diameter 110 mm to 120 mm (see figure 1).

4.6 Laboratory stand, with two rings, one for the sieve and one for the glass funnel (see figure 1).

4.7 Measuring cylinder, of capacity 250 ml, graduated in 2 ml intervals.

4.8 Stopwatch.

1) A sieve produced by Siebtechnick GmbH, Germany, is an example of a suitable product available commercially. This information is given for the convenience of users of this International standard and does not constitute an endorsement by ISO of this product.



Key

1 Sieve, of diameter 100 mm and aperture size 63 µm

2 Supporting rings

3 Glass funnel, of diameter 110 mm to 120 mm

4 Measuring cylinder, 250 ml

5 Laboratory stand

Figure 1 — Stand with sieve and funnel (see ref. [5])

5 Sampling

It is important that the laboratory receive a sample which is truly representative and has not been damaged or changed during transport or storage.

Sampling is not part of the method specified in this International Standard. A recommended sampling method is given in ISO 707.

6 Preparation of test sample

Mix the laboratory sample well and take test samples directly from it.

7 Procedure

NOTE 1 If it is required to check whether the repeatability requirement is met, carry out two single determinations in accordance with 7.1 to 7.7 under repeatability conditions.

7.1 Wet the sieve (4.4) and remove excess water using a filter paper. Fit the sieve and glass funnel (4.5) into the rings of the stand (4.6), placing the measuring cylinder (4.7) below the funnel so that the stem is positioned as shown in figure 1.

Adjust the sieve to a horizontal position.

7.2 Measure 100 ml ±1 ml of water, at a temperature of 20 °C ± 1 °C in a dry glass beaker (4.2). Add 24 g ± 0,1 g of test sample to the beaker, simultaneously starting the stopwatch.

7.3 When the stopwatch indicates 5 s, insert the spatula down the side of the beaker until it touches the bottom. Over the next 5 s, stir the contents of the beaker with the spatula, making one complete stirring movement per second. Use a smooth continuous movement of the spatula across the beaker from one side to the opposite side and back for 1 s, with the end of the spatula blade in continuous contact with the bottom of the beaker. Slightly tilt the spatula away from the side of the beaker at the end of each half stirring movement so as to minimize accumulation of unwetted test sample on the sides of the beaker. Without interruption, continue the stirring for 15 s in the same manner except that the spatula is maintained in a vertical position throughout. While making the 20 complete stirring movements in 20 s, continuously rotate the beaker on its base so that approximately one complete turn (360°) is achieved during the stirring.

7.4 After completion of the stirring, allow the contents of the beaker to stand for 30 s, i.e. until the stopwatch indicates 55 s, then add a further 100 ml ± 1ml of water at 20 °C ± 1 °C. When the stopwatch indicates 60 s, repeat the stirring making 20 complete stirring movements in 20 s, continuously rotating the beaker as described in 7.3. Stop the stopwatch.

7.5 Within about 5 s, pour off the liquid on the wetted sieve, and start the stopwatch again.

7.6 When the stopwatch shows 15 s, read the volume (V) of liquid in the measuring cylinder to the nearest 2 ml.

7.7 After each use, rinse the sieve under running water, followed by washing in warm water containing some detergent.

CAUTION — It is important to keep the sieve clean.

8 Calculation and expression of results

8.1 Calculation

Calculate the white flecks number, WFN, using the following formula:

$$WFN = \frac{215 - V}{215}$$

where

215 is the numerical value of the calculated volume, in millilitres, of the reconstituted liquid used as test sample;

V is the numerical value of the volume of the filtrate, in millilitres, obtained in 15 s.

8.2 Expression of results

Take as the result the arithmetic mean of two results, if the repeatability (9.1) requirement is satisfied.

Express the result to two decimal places.

9 Precision

The values for repeatability limit and reproducibility limit have been derived from the results of an interlaboratory test carried out in accordance with ISO 5725.

9.1 Repeatability

The absolute difference between two independent single test results, obtained using the same method on identical test material in the same laboratory by the same operator using the same equipment within a short interval of time, shall not exceed 0,02.

Reject both results if the difference exceeds 0,02 and carry out two new single determinations.

9.2 Reproducibility

The absolute difference between two single test results, obtained using the same method on identical test material in different laboratories with different operators using different equipment, shall not exceed 0,07.

10 Test report

The test report shall specify

— the method in accordance with which sampling was carried out, if known,

— the method used,

— the test result(s) obtained, and

— if the repeatability has been checked, the final quoted result obtained.

It shall also mention all operating details not specified in this International Standard, or regarded as optional, together with details of any incidents that may have influenced the test result(s).

The test report shall include all information required for the complete identification of the sample.

Annex A
(informative)

Bibliography

[1] ISO 707:—[2], *Milk and milk products — Guidance on sampling.*

[2] ISO 3310-1:1990, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth.*

[3] ISO 5725:1986, *Precision of test methods — Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests.*

[4] LITMAN, I.I. and ASHWORTH, U.S. Insoluble scum-like materials on reconstituted whole milk powders. *J. Dairy Sci.*, **40**, 1957, p. 403.

[5] Niro Atomizer Dairy Research Group. *Analytical Methods for Dry Milk Products.* 4th edn., Niro Atomizer, Copenhagen, 1978.

2) To be published. (Revision of ISO 707:1985)

ICS 67.100.10

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