A 1 a - Powder Moisture Accurate Standard Method

GEA NIRO® Method No. A 1a

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1. Definition

The moisture content of a powder is the loss in weight (%) after oven drying at 102°C until constant weight is obtained.

2. Scope

This is an accurate standard method which may be used for milk powder and all other powdered dairy products which do not contain crystallized lactose (α-lactose-monohydrate).

3. Principle

The sample is dried by oven drying to constant weight at 102°C ± 2°C for 2 hours. The oven drying is repeated until the two successive weighings do not differ more than 0.5 mg.

4. Apparatus

4.1 Drying oven, with thermostat and without forced air circulation.

4.2 Analytical balance, sensibility ± 0.1 mg.

4.3 Desiccator with colour-indicating desiccant (e.g. silica gel).

4.4 Weighing dishes with lid.

5. Reagents

None

6. Procedure

6.1 Dry weighing dish with open lid in the oven and cool it in desiccator.

6.2 Weigh the empty dish (a), add approx. 3 g of powder and weigh again (b)

6.3 Place the loaded dish with open lid in the oven at 102°C ± 2°C for 2 hours.

6.4 Cool closed dish to room temperature in desiccator, and weigh (c).

6.5 Continue drying the loaded dish with open lid in the oven at 102°C ± 2°C for 1 hour.

6.6 Repeat the cooling 6.4 and weigh again (c).

6.7 Repeat 6.5 until weight (c) is constant (i.e. until two successive weighings differ less than 0.5 mg)

7. Calculation

$$\text{Moisture} = \frac{b-c}{b-a} \times 100\%$$

a = weightof empty dish

b = weight of dish + powder

c = weight of dish + dried powder

8. Reproducibility

± 0.1 %

9. Remarks

A sample for moisture determination has to be handled carefully in order to avoid evaporation or prevent adsorption.

10. Literature

- GEA Niro Research Laboratory
- IDF Standard № 26:2004 / ISO Standard № 5537:2004
- De Knegt, R.J. and Brink, H.v.d.: Improvement of the drying oven method for the Determination of the Moisture Content of Milk Powder. Int. Dairy Journal, 8, 1998, pp. 733-738.