

## Powder Moisture Accurate Standard Method

### GEA Niro analytical method A 1 a

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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 ( $\alpha$ -lactose-monohydrate).

#### 3. Principle

The sample is dried by oven drying to constant weight at 102°C  $\pm$  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  $\pm$  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  $\pm$  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  $\pm$  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)

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7. Calculation

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

a = weight of 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 N° 26:2004 / ISO Standard N° 5537:2004](#)
- De Knecht, 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.

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