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A 15 a - Degree of Caking

GEA NIRO® Method No. A 15 a

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1. Definition

The degree of caking is the amount of powder appearing as lumps which cannot pass through a 500µ sieve, after allowing the powder first to absorb moisture to equilibrium and then to release moisture by drying.

2. Scope

This method may be used for dried products, especially whey powders.

3. Principle

The powder is allowed to absorb moisture from air with 79.5% relative humidity until the equilibrium is reached. The powder is then dried and sieved under standard conditions. What is left on the sieve is expressed as the degree of caking.

4. Apparatus

1. Analytical balance sensitivity ± 0.1 mg.
2. Drying oven.
3. Desiccator with silica gel or an equivalent drying agent.
4. Shaker for sieves. Engelsmann (See Method A 8 a).
5. 500µ sieve, lid and base.
6. Spatula and brush.

5. Reagents

None.

6. Procedure

1. Determine the hygroscopicity (See Method A 14 a).
2. Place the Gooch filter with the wet material in a drying oven at 102°C ± 2°C for one hour.
3. Cool in desiccator for 1/2 an hour.
4. Transfer the powder quantitatively to a piece of paper by means of the spatula. Weigh powder and paper and transfer the sample to the 500µ sieve using the brush. Weigh the paper alone.
5. Sieve for 5 min. in the sieving apparatus. Transfer the powder remaining on the sieve to the paper and weigh again.

7. Result

$$\% \text{ Degree of caking} = \frac{b \times 100}{a}$$

a = g of powder used

b = g of powder left on sieve

Calculate the result with 1 decimal.

8. Reproducibility

± 15% relative

9. Remarks

1. The following table may be used for characterisation of the degree of caking:

Degree of caking	
Non-caking powder:	10%< /P>
Slightly caking powder:	10.1-20%
Very caking powder:	>20.1-50%
Very caking powder:	>50%
Extremely caking powder:	100%

2. In some cases it is not possible to remove the hard, glassy cake from the filter. The powder is then said to be 100% caking.
3. It is important to keep the Gooch filter in the humid atmosphere, 79.5% relative humidity, until the drying can be started.

10. Literature

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