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A 5 a - Wettability

GEA NIRO® Method No. A 5 a

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1. Definition

The wettability of a powder is the time necessary to achieve complete wetting of a specified amount of powder, when it is dropped into water at a specified temperature.

2. Scope

This method is used for milk powder and all other dried dairy products.

3. Principle

4. Apparatus

4.1 Balance - sensitivity 0.1 g.

4.2 Beaker - 400 ml, diameter 70 mm, height 135 mm.

4.3 Funnel of anti static material - height 100 mm, lower diameter 40 mm, upper diameter 90 mm (see 9.3 and Fig. 1).

4.4 Porcelain pestle - length approx. 130 mm.

4.5 Stop watch.

5. Reagents

None.

6. Procedure

6.1 Weigh out the correct amount of powder ± 0.1 g:

Baby food:	13 g
Skim milk:	10 g
Whole milk:	13 g
Whey:	6 g

6.2 Choose water temperature depending on the powder type:

20°C ± 0.2° C: skim milk, instant whole milk and whey.

40°C ± 0.5°C: whole milk and baby food.

6.3 Pour 100 ml of deionised water with the correct temperature into the beaker. Check the temperature and place the funnel so it rests on the upper edge of the beaker. Place the pestle inside the funnel so it blocks the lower opening.

6.4 Place the powder around the pestle.

6.5 Lift the pestle and start the stopwatch.

6.6 Stop the watch when all powder has been wetted.

6.7 Measurements are always made in duplicate.

7. Result

Wettability = the time in seconds necessary to achieve complete wetting.

The amount of powder and the water temperature have to be stated with the results. If the powder is not wetted after 5 minutes the analysis is stopped, and the result is given as >300 sec.

8. Reproducibility

Two determinations must not differ more than 20% relative.

9. Remarks

9.1 The water temperature of 20°C is the standard temperature used by GEA Niro for testing of instant properties.

9.2 For other products, the amount of sample for analysis should correspond to the powder-in-water concentration at which the given product is intended to be used.

9.3 The funnel is made by making a full-scale drawing of the figure shown in Fig. 1 and using it as a template. The funnel must be made of anti-static material, e.g anti- static plastic and stapled, glued or welded together. The inner surface of the funnel must be smooth to allow the powder to fall quickly down onto the water.

10. Literature

- GEA Niro Research Laboratory
- Mohr's Standprobe, Milchwissenschaft 1960

Fig. 1 Template for the funnel.