

## A 5 b - Wettability IDF Method

### GEA Niro Method No. A 5 b

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#### 1. Definition

The wettability is defined as the time in seconds required for all the particles of an instant dry milk sample to become wetted (to sink below the water surface or assume a 'typical' wet appearance) when placed on the surface of water.

#### 2. Scope

This method may be used routinely to determine the wetting time in water of instant dried dairy products.

#### 3. Principle

#### 4. Apparatus

- 4.1 Balance (sensitivity 0.01 g).
- 4.2 Weighing dish.
- 4.3 600 ml beaker, internal diameter 90 mm  $\pm 2$  mm and height 120 mm  $\pm 3$  mm, glass plate and glass or stainless steel tube (see Fig. 1).
- 4.4 250 ml beaker.
- 4.5 Small brush.
- 4.6 Stop watch.
- 4.7 Thermometer, 0-100°C (calibrated to within  $\pm 0.5^\circ\text{C}$ ).

#### 5. Reagents

Deionised water.

#### 6. Procedure

- 6.1 Weigh a 10 g  $\pm 0.05$  g well mixed instant dried milk into a weighing dish.
- 6.2 Measure 250 ml  $\pm 1$  ml of deionised water adjusted to 25°C  $\pm 0.5^\circ\text{C}$  into a dry 600 ml glass beaker ensuring that the inside of the beaker above the final water level remains dry.
- 6.3 Place the steel plate on top of the beaker, with one edge of the plate close to the rim of the beaker. Place the glass tube on top of the plate as shown in Fig. 1.
- 6.4 Transfer the test portion from the weighing dish to the glass tube, and spread the sample evenly over the glass plate.

6.5 Start the stop watch. After 10 seconds, withdraw the glass plate with one hand (holding the steel tube with the other hand) allowing the powder sample to fall progressively, over a period of 2.5 seconds, onto the surface of the water.

6.6 Record the time in seconds from the beginning of withdrawal of the glass plate until all the particles have become wetted.

6.7 Measurements are to be carried out in duplicate.

## 7. Result

The wetting time =  $T-10$

where:

$T$  = time recorded (in 6.6) in seconds.

$10$  = time elapsed before withdrawal of the glass plate.

Samples with wetting times in excess of 60 seconds are considered non-instant and the results may be given as >60 seconds.

## 8. Reproducibility

If two determinations do not agree within 20% relative, make two new determinations and report single determinations together with the average.

## 9. Remarks

9.1 To maintain a reasonably consistent water surface area, it is mandatory that the 600 ml beaker used is with the correct dimensions as indicated in 4.3.

9.2 Since particle size influences the wettability of dried milk, care should be taken to minimize particle breakdown. This may be achieved by careful sampling and subsequent handling. Sample containers should be completely filled, and bags should be packed carefully to avoid agitation of the powder.

## 10. Literature

GEA Niro Research Laboratory

IDF Standard 87:1979.