

A 4 a - Scorched Particles

GEA NIRO® Method No. A 4 a

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1. Definition

The amount of scorched particles in a powder is determined by comparison with the ADMI chart: 'Scorched Particle Standards for Dry Milk'.

2. Scope

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

3. Principle

4. Apparatus

- 4.1 Original ADMI chart 'Scorched Particle Standard for Dry Milk' (see Fig. 1).
- 4.2 Balance, sensitivity 0.1 g.
- 4.3 Cenco Mixer, Cenco Instrumenten B.V, Breda, The Netherlands.
- 4.4 Standard filter pads - diameter 32 mm (1¼"), Lintine brand, milk-cream sediment testers, Johnson & Johnson.
- 4.5 Scorched particles tester - aspirator or pressure type, filtering diameter 28.5 mm (1⅛"), Nagashima S.S. Ltd.
- 4.6 Water jet pump.

5. Reagents

Defoaming agent – Octylalcohol or diglycol laurate S.

6. Procedure

- 6.1 Weigh out the correct amount of powder \pm 0.1 g:

Non-fat milk:	25.0 g
Whey:	15.0 g
Whole milk:	32.5 g

- 6.2 Pour the powder into the blender glass with 250 ml of 18-27°C water.
- 6.3 Add 2 or 3 drops of defoaming agent.
- 6.4 Mix for 60 seconds in the Cenco Mixer.
- 6.5 Using a vacuum to filter the solution immediately through the filter in the tester. Rinse the blender glass with about 50 ml water and filter it through the same filter.
- 6.6 Let the filters dry for 2 hours at approx. 35°C.
- 6.7 Measurements are carried out as single determinations.

7. Results

Compare the results with the original ADMI standard chart. The comparison is visual. The standard chart is divided into a scale from A-D, where

A =	7.5 mg
B =	15.0 mg
C =	22.5 mg
D =	32.5 mg

If a sample is classified as being between two standards it is always set at the highest value. A sketch of the ADMI chart is shown on Fig. 1.

8. Reproducibility

Single determination.

9. Remarks

- 9.1 The filtration (E4) can also be carried out with compressed air.
- 9.2. The procedure for caseinate and casein:
 - 9.2.1 Weigh out 25 g powder \pm 0.1 g.
 - 9.2.2 Pour the powder into 200 ml sodium carbonate 9.09% V/W.
 - 9.2.3 Add 300 ml of 18-27°C water.
 - 9.2.4 Add 2 or 3 drops of defoaming agent.
 - 9.2.5 Mix for 60 seconds in the Cenco Mixer.
 - 9.2.6 Use a vacuum to filter the solution immediately through the filter in the tester. Rinse the blender glass with about 50 ml water and filter it through the same filter.
 - 9.2.7 Let the filter dry for 2 hours at approx. 35°C.
 - 9.2.8 Measurements are carried out as single determinations.

10. Reference

- GEA Niro Research Laboratory
- ADPI, Bulletin 916. (previously called ADMI, American Dry Milk Institute)
- Modification of the Harland-Ashworth method, published by Kuramoto, Jeness, Coulter and Choi. Journal of Dairy Science 42:28, 1959.

Fig.1 ADMI chart 'Scorched Particles Standards for Dry Milk'

