

16.3.03

AOAC Official Method 960.49 Filtration Methods

Filtration Methods

First Action 1960

Final Action 1996

Use following methods independently or in various combinations. Weigh 225 g, except in **F**, into suitable container and use S&S ruled No. 8 paper for filtration. Cut hard cheese into small pieces.

A. Evaporated Milk, Condensed Milk, Sweet Cream, Spray-Dried Whole or Skim Milk

Reconstitute dried or concentrated products. Dilute reconstituted product with equal volume hot water, hot 3% Na₂C₂O₄ solution, or hot 2% Na₂CO₃ solution, and filter with suction. During filtration, continually wash paper with stream of near boiling water to prevent accumulation of layer of particles which clogs paper. Examine paper microscopically.

B. Butter

Place container in water bath or oven at ca 80°C. When fat separates, filter directly through paper with suction, retaining most of curd and water in container. After fat passes through, filter remaining material. To facilitate filtration of curd, wash paper with near boiling water during filtration. (For butter not filterable by this process, use **C**.) Examine paper microscopically.

C. Soft and Semi-Soft Cheese and Sour Cream; Some Dried Whole and Skim Milks; and Butter That Cannot Be Filtered by 960.49B

Cut 225 g cheese into 6 mm cubes and add to 800–1000 mL boiling H₃PO₄ (1 + 40) in 1.5–2 L beaker, stirring continuously with slow speed mechanical stirrer, **945.75B(e)** (see 16.1.01), or on magnetic stirrer-hot plate, **945.75B(n)** (see 16.1.01), with stirring bar ca 75–12 mm, until product is dispersed (usually >20 min). Filter, without letting mixture accumulate on paper, and continually wash filter with stream of near boiling water to prevent clogging. When filtration is impeded, add H₂O, dilute (1–5%) alkali, H₃PO₄ (1 + 40), or hot alcohol, until paper clears; then resume addition of suspension and H₂O. Examine paper microscopically.

D. Hard Cheeses, Hard Skim, Part Skim Milk Cheeses (Romano, Ricotta, Feta, Pecorino, Sardo, Goats' Milk Cheeses, Sbrinz, Goya, Whey Cheeses, etc.)

(Not applicable to cheese containing herbs, spices, or molds throughout.)

Prepare cheese for sampling by trimming and discarding thin layers to remove all “old” cut surfaces and to keep paraffin coating and mold out of test portion. Cut and break up 225 g trimmed cheese into 4 L beaker. Add ca 700 mL ca 55 °C filtered water. Set beaker under mechanical stirrer, **945.75B(e)** (see 16.1.01), and stir 15 min, maintaining mixture at 55°C. Add 100 mL 20% aqueous Na₄EDTA

solution, stir, and adjust mixture to pH 8 with NH₄OH or dilute HCl (1 + 2). Rinse sides of beaker free of adhering cheese particles with ca 60°C H₂O. Maintain pH 8 by addition of NH₄OH and keep adding ca 60°C H₂O to dilute cheese mixture to ca 3 L. If foaming occurs, place wet vegetable parchment paper, 27 lb weight, formerly Patapar paper (available from James River Corp., KVP Group, 100 Island Ave, Parchment, MI 49004, USA), or Parafilm M (Cat. No. 13-374, Fisher Scientific Co.), split to accommodate stirrer blades, over top of beaker to break foam. Continue stirring until cheese becomes finely dispersed.

Cool dispersion to 40°C and adjust to pH 8 with NH₄OH or HCl (1 + 2). Add 300 mL pancreatin solution, **945.75C(q)** (see 16.1.01), (except use 600 mL pancreatin solution for ricotta). Let mixture digest at 40°C with continued stirring ca 1.5 h. Maintain pH 8 by addition of NH₄OH.

After digestion, place beaker on hot plate and heat to 65–68 °C, continuing mechanical stirring. Adjust to pH 6.0–0.2 with HCl (1 + 2). Carefully adjust stirrer blades close to bottom of beaker to pick up any cheese particles which settle. Continue stirring 15 min or until cheese appears completely solubilized. Rinse inside of beaker, stirrer blades, etc., with ca 65°C H₂O and filter through ruled paper, using ca 65°C H₂O and then alcohol to rinse beaker. If filtration becomes slow (e.g., cream cheese), let paper clear, wash with alcohol, and use additional paper. Mixture will filter more easily if No. 60 screen (ca 5 cm diameter) is placed under paper and small amount of mixture is allowed to suck dry before filtering is continued. Examine paper microscopically.

Reference: *JAOAC* **50**, 501(1967).

E. Cheese Containing Mold, Plant Tissues, and Spices

Disperse cheese by **C** or first paragraph of **D**. Pour through No. 140 sieve, **945.75B(r)** (see 16.1.01), washing thoroughly with forcible stream of water. Transfer material retained on sieve to beaker. Add 200 mL H₃PO₄ (1 + 49), boil until lumpy residue dissolves, and pour again through No. 140 sieve, washing thoroughly with forcible stream of hot water. Transfer material on sieve with ca 200 mL 60% alcohol to trap flask and cool. Trap off, using heptane, **945.75C(l)** (see 16.1.01), and H₂O, filter, and examine microscopically.

F. Casein

Weigh 50 g test portion into 1 L beaker. Slowly stir in 170 mL 20% Na₄EDTA solution until well mixed with product. With constant stirring, bring volume to 1 L using hot tap water (55–70 °C). Wet sieve on No. 230 sieve, **945.75B(r)** (see 16.1.01), with forcible spray of hot tap water until foam subsides. Wash sieve retainings into beaker and filter through ruled filter paper. Examine papers microscopically.

Reference: *JAOAC* **53**, 552(1970).