

16.3.04

AOAC Official Method 994.05
Light Filth in Cheeses
Alternative Sieving Method
First Action 1994

(Applicable to hard, semi-hard, semi-soft, soft, blue, and processed cheeses containing at least one of following: whey, plant gums, or emulsifiers [e.g., sodium phosphate, sodium citrate]. Not applicable to bloom rind cheeses [e.g., brie], smoked cheeses, and cheeses containing plant tissue, herbs, and spices.)

See Table 994.05 for the results of the interlaboratory study supporting acceptance of the method.

A. Principle

Cheese is digested in acid with 2 surfactants and wet-sieved on No. 230 screen. Residue is dispersed with successive treatments of 2 additional surfactants to attain filterable amounts of residue. Filth (hairs and insect fragments) is unaffected by the treatments and is retained on the sieve. The residue is filtered and the filth is counted microscopically.

B. Reagents

(a) *Emulsifiers*.—Igepal CO-730, 945.75C(j)(1) (see 16.1.01), and Igepal DM-710, 945.75C(j)(2) (see 16.1.01), or equivalent.

(b) *Wetting agent*.—Sodium tetradecyl sulfate (Tergitol Anionic 4, Sigma Chemical Co., or equivalent).

(c) *Detergent solution*.—Sodium lauryl sulfate, 945.75C(i) (see 16.1.01).

C. Preparation of Test Sample

Trim any waxes, paper labels, molds, and other coatings from the cheese surface. Add 225 g cheese test portion to 2 L beaker as follows: (1) Cut cheese in ca 13 mm cubes. Cut to ca 5 mm pieces

products that have hardened, products made from whey, and processed products containing 1 of following: whey, plant gums, or emulsifiers (e.g., sodium phosphate, sodium citrate). (2) Grate product as normally grated for use (e.g., Parmesan, Romano). (3) Use tablespoon to sample grated or spreadable product.

D. Isolation

Add 1 L hot tap water (>50°C) and 60 mL HCl (37%) to test portion in beaker. Add 5 mL Igepal CO-730, and 10 mL Igepal DM-710, B(a). Cover beaker with watch glass and bring mixture to full boil with magnetic stirring. Remove watch glass and boil mixture 30 min with magnetic stirring, so that top of stirring bar is visible at bottom of vortex. Wet-sieve portionwise, 970.66B(a) (see 16.1.02), on No. 230 plain-weave sieve, 945.75B(r) (see 16.1.01), with forceful stream of hot tap water until foaming is minimal or gone. Add ca 10 mL Tergitol Anionic 4, B(b), and gently wet-sieve until foaming disappears.

Place sieve (submerged sufficiently to cover residue) in pan of 1% sodium lauryl sulfate, B(c), maintained at 65 –75°C (use hot plate to heat solution). Gently swirl residue to disperse, then let pan stand for 10 min. Gently and thoroughly wash sides of sieve with hot tap water, and then gently wet-sieve, 970.66B(a) (see 16.1.02), residue with hot tap water. Repeat tergitol/sodium lauryl sulfate washes until residue is reduced to filterable amounts. Do not exceed 4 washes.

Quantitatively transfer residue with H₂O to 400 mL beaker. Filter beaker contents with suction through rapid filter paper, 945.75B(i) (see 16.1.01), using Hirsch funnel, 945.75B(k) (see 16.1.01). Wash beaker with H₂O and filter washings. Examine microscopically at ca 30 \times , 945.75B(o)(2) (see 16.1.01).

Reference: *J. AOAC Int.* 77, 1153(1994).

Table 994.05. Interlaboratory study results for filth (rat hairs and insect fragments) in Parmesan cheese

Spike added	\bar{x}	\bar{x} , %	r	R	RSD _r	RSD _R
Rats hairs						
5	3.9 (4.0) ^a	78.9 (80.0)	0.8 (0.5)	0.9 (1.1)	20.5 (12.5)	23.1 (27.5)
10	6.3 (6.8)	63.3 (68.3)	1.4 (1.5)	2.1 (1.9)	22.2 (22.1)	33.3 (27.9)
15	11.6 (12.1)	77.4 (80.7)	2.7 (2.6)	3.2 (2.7)	23.3 (21.5)	27.6 (22.3)
Insect fragments						
5	4.8	97.1 (96.7)	0.4 (1.0)	0.5 (1.0)	8.3 (20.8)	10.4 (20.8)
15	12.7 (13.4)	84.8 (89.6)	3.0 (2.5)	3.7 (2.5)	23.6 (14.9)	29.1 (18.6)
30	26.2 (27.4)	87.3 (91.5)	1.4 (2.5)	3.9 (3.2)	5.3 (9.1)	14.9 (11.7)

^a Third party counts in parentheses.