



Alkaline Phosphatase activity in Swiss Cheese



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Method: ISO 11816-2 / IDF 155-2

Milk and milk products — Determination of alkaline phosphatase activity in Cheese



ISO TC 34/SC 5 N

Date: 2010-04-29

ISO/CD 11816-2 | IDF 155-2

ISO TC 34/SC 5/WG

Milk and milk products — Determination of alkaline phosphatase activity —

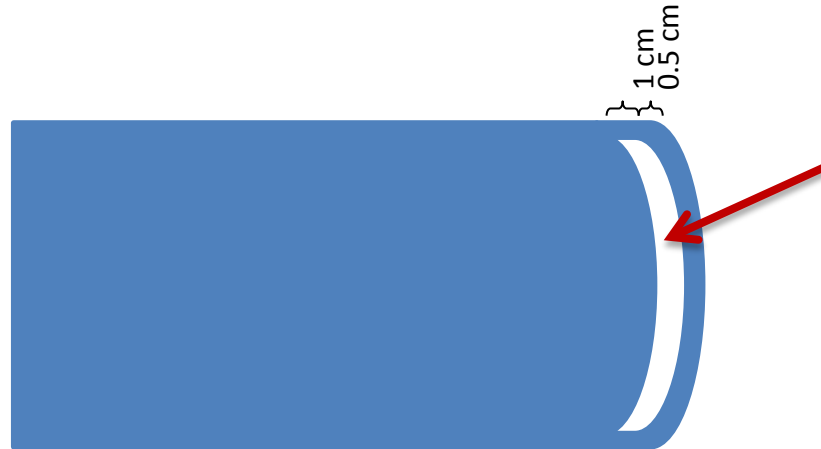
**Part 2:
Fluorometric method for cheese**

Lait et produits laitiers — Détermination de l'activité de la phosphatase alcaline —

Partie 2: Méthode fluorométrique pour le fromage

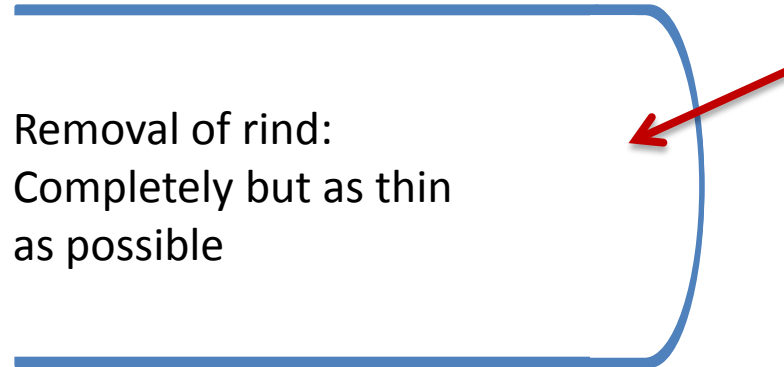
Sampling of cheese according to the revised ISO 11816-2 Method:

- Hard cheese:

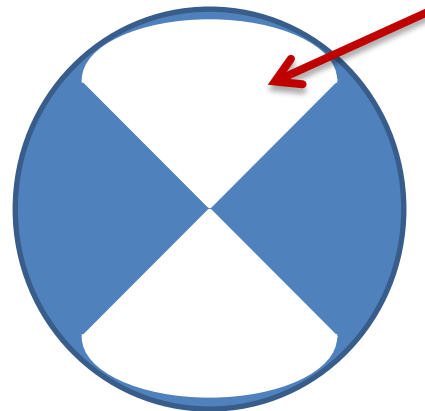


- Semi-hard cheese

Removal of rind:
Completely but as thin
as possible



- Soft cheese



Removal of rind:
completely
but as thin
as possible

Categories of Swiss Cheeses and AP activities

- Hardcheese:

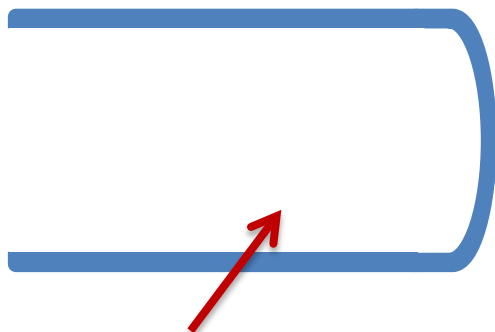


Cheese	Heat treatment	AP activity mU/g
Gruyère	raw	670-703
Sbrinz	raw	1409-1548
Etivaz (special Gruyère)	raw	3435
Bernese Hobel-cheese	raw	3094-3589
Emmentaler	raw	757-2870
Hard cheeses	raw	670 - 3589

➔ All tested hardcheeses in Switzerland are made from raw milk
AP activities are above 10 mU/g

Categories of Swiss Cheeses

- Semi hard cheeses:

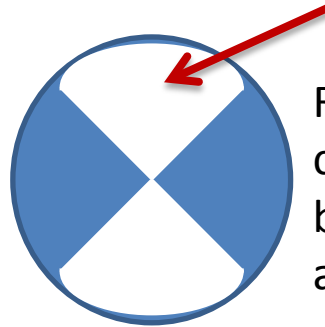


Cheese	Heat treatment	AP activity mU/g	Range mU/g
Tête de Moine	raw	4374	194 - 4374
Tilsiter red	raw	2274	
Appenzeller	raw	757	
Winzer	raw	194	
Mountain cheese from Grison	therm	1396	36 - 1396
Flösser Cheese	therm	537	
Bernese Cheese	therm	362	
„Dream“ of Argovie	therm	286	
„spicy Max“	therm	36	
Raclette tradition	past	1-4	0.7 - 4
Tilsiter green	past	3.7	
Semi hard Cream cheese	past	3.6	
St. Pauli	past	2.1	
Raclette garlic	past	2.1	
Raclette pepper	past	1.9	
Luzerner	past	0.7	

➡ All tested pasteurized semi hard cheeses have AP activities below 10 mU/g

Categories of Swiss Cheeses

- Soft cheeses:

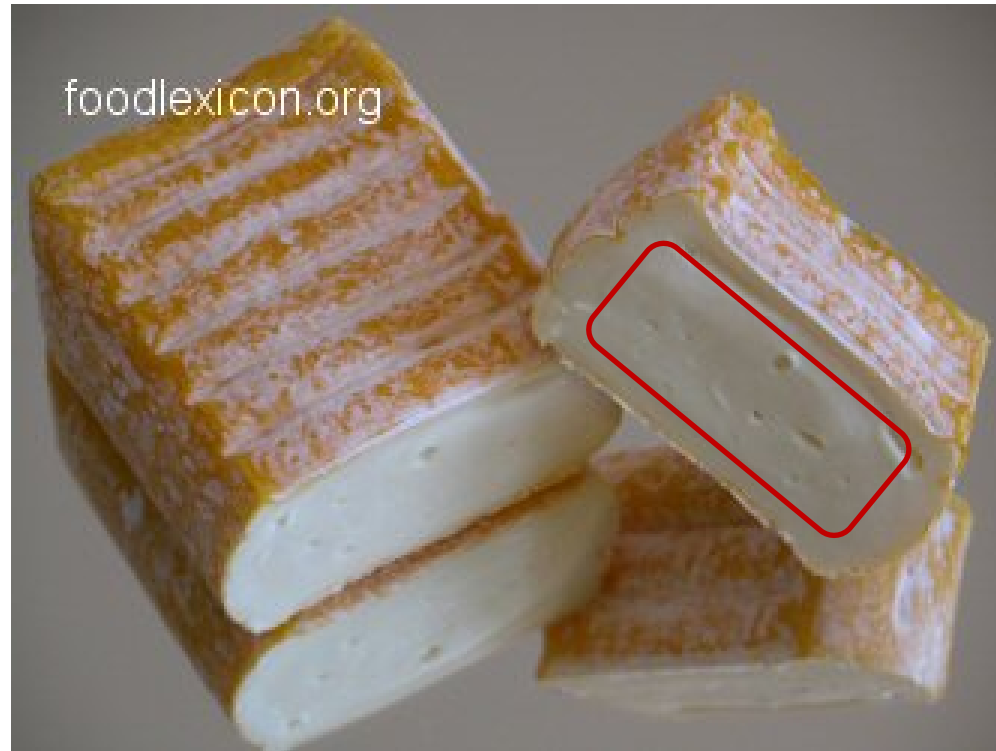
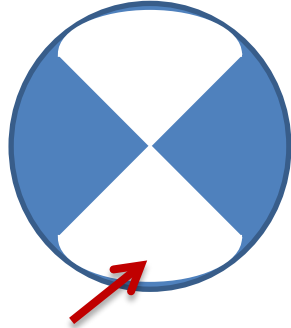


Removal of rind:
completely
but as thin
as possible

Cheese	Heat treatment	AP activity mU/g	Range mU/g
Camembert Baer CH	past	8.2	0.7-8.2
Brie CH	past	4.7	
„Paradiso“ Baer	past	2.36	
La Tomme Vaudoise CH	past	0.7	
→ Limburger CH	past	23.6	

Problem: Limburger

- Soft cheeses:



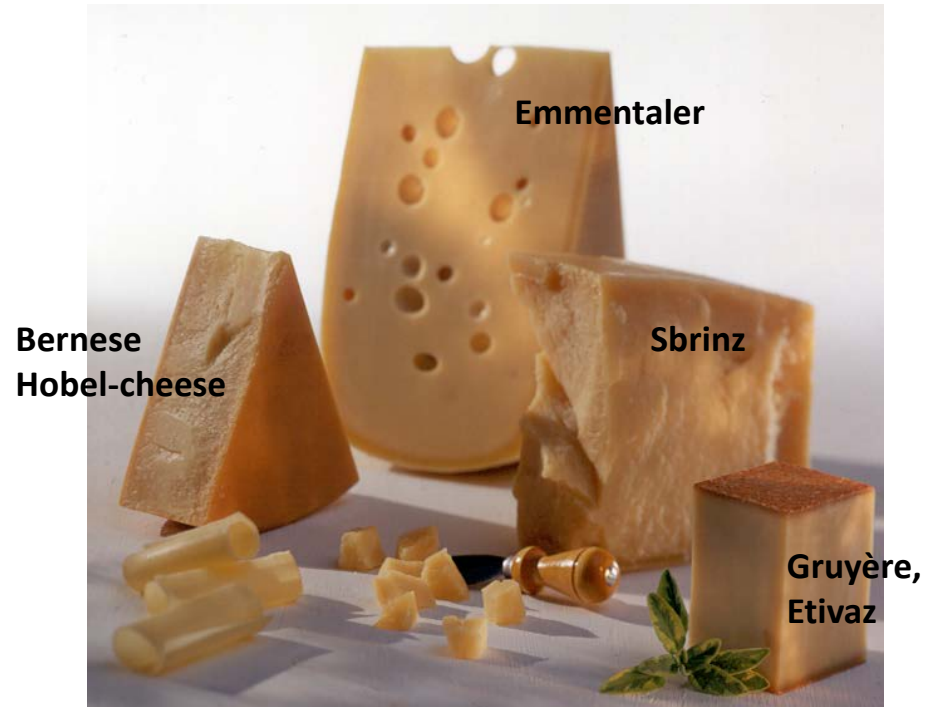
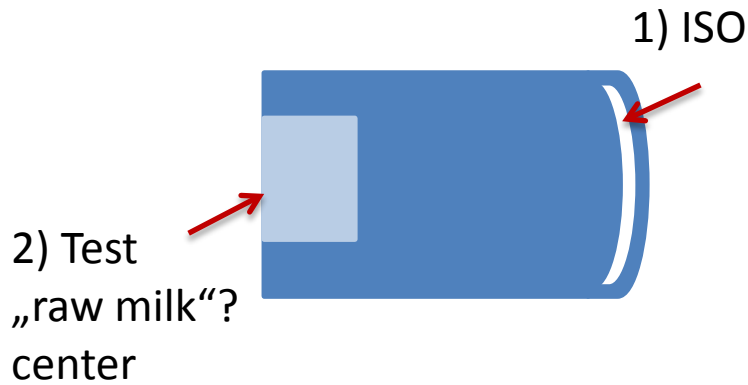
Removal of rind:
0.5 cm of rind
were removed

Limburger CH	Heat treatment	AP activity mU/g
2.	past	9.3
3.	past	8.6

➔ Adapt sampling for soft cheeses: remove 0.5 cm of rind?
Test more different soft cheeses to ensure AP activity is below 10 mU/g

Differences according to sampling

- Hardcheese:



Cheese	Heating after coagulation (°C)	Diameter (cm)	Height (cm)	Weight (kg)	AP activity 1) ISO, mU/g	AP activity 2) center mU/g
Emmentaler	52-54	80-100	16-27	75-120	757-2869	7.1 - 7.5
Gruyère	56-57	55-65	9.5-12	24-40	690-703	50 - 301
Sbrinz	54-57	45-65	12-17	25-45	1409 - 1548	11.4 - 86
Etivaz (Gruyère special)	max 57	30-65	8-11	10-38	3435	341.5
Bernese „Hobel“-cheese	min 50	28-48	8-9.9	5-16	3095-3589	1108 -1380

AP activity in cheeses from goat and sheep

Cheese	Heat treatment	AP activity mU/g
Sheep	past	11.3
Goat	past	2.0



Limit of 10 mU/g seems possible for goat but not for sheep
Testing of more samples is needed!



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Thanks for your attention!



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