

CODEX STANDARD FOR EMMENTAL

CODEX STAN 269-1967

1. SCOPE

This Standard applies to Emmental intended for direct consumption or for further processing in conformity with the description in Section 2 of this Standard.

2. DESCRIPTION

Emmental is a ripened hard cheese in conformity with the *General Standard for Cheese* (CODEX STAN 283-1978). The body has a ivory through to light yellow or yellow colour and an elastic, sliceable but not sticky texture, with regular, scarce to plentiful distributed, mat to brilliant, cherry to walnut sized (or mostly from 1 to 5 cm in diameter) gas holes, but few openings and splits are acceptable. Emmental is typically manufactured as wheels and blocks of weights from 40 kg or more but individual countries may on their territory permit other weights provided that the cheese exhibit similar physical, biochemical and sensory properties. The cheese is manufactured and sold with or without ¹ a hard, dry rind. The typical flavour is mild, nut-like and sweet, more or less pronounced.

For Emmental ready for consumption, the ripening procedure to develop flavour and body characteristics is normally from 2 months at 10–25°C depending on the extent of maturity required. Alternative ripening conditions (including the addition of ripening enhancing enzymes) may be used, provided a minimum period of 6 weeks is observed and provided the cheese exhibits similar physical, biochemical and sensory properties as those achieved by the previously stated ripening procedure. Emmental intended for further processing need not exhibit the same degree of ripening, when justified through technical and/or trade needs.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Raw materials

Cows' milk or buffaloes' milk, or their mixtures, and products obtained from these milks.

3.2 Permitted ingredients

- Starter cultures of harmless lactic acid and/ or flavour producing bacteria and cultures of other harmless micro-organisms;
- Rennet or other safe and suitable coagulating enzymes;
- Sodium chloride and Potassium Chloride as a salt substitute;
- Safe and suitable processing aids;
- Potable water;
- Safe and suitable enzymes to enhance the ripening process;
- Rice, corn and potato flours and starches: Notwithstanding the provisions in the *General Standard for Cheese* (CODEX STAN 283-1978), these substances can be used in the same function as anti-caking agents for treatment of the surface of cut, sliced, and shredded products only, provided they are added only in amounts functionally necessary as governed by Good Manufacturing Practice, taking into account any use of the anti-caking agents listed in section 4.

¹ This is not to mean that the rind has been removed before sale, instead the cheese has been ripened and/or kept in such a way that no rind is developed (a "rindless" cheese). Ripening film is used in the manufacture of rindless cheese. Ripening film may also constitute the coating that protects the cheese. For rindless cheese see also the Appendix to the Codex General Standard for Cheese (CODEX STAN 283-1978).

3.3 Composition

Milk constituent	Minimum content (m/m)	Maximum content (m/m)	Reference level (m/m)
Milkfat in dry matter:	45%	Not restricted	45% to 55%
Dry matter:	Depending on the fat in dry matter content, according to the table below.		
	Fat in dry matter content (m/m):		Corresponding minimum dry matter content (m/m):
	Equal to or above 45% but less than 50%:		60%
	Equal to or above 50% but less than 60%		62%
	Equal to or above 60%:		67%
Propionic acid in cheese ready for sale ¹ :	minimum 150 mg/100g		
Calcium content ¹ :	minimum 800 mg/100g		

¹ The purpose of these criteria is to provide targets for the validation (initial assessment prior to the design of the manufacturing process), respectively, of (i) whether the intended fermentation and ripening conditions are capable of achieving the activity of propionic acid producing bacteria, and of (ii) whether the curd management and pH development are capable of obtaining the characteristic texture.

Compositional modifications beyond the minima and maxima specified above for milkfat and dry matter are not considered to be in compliance with section 4.3.3 of the *Codex General Standard for the Use of Dairy Terms* (CODEX STAN 206-1999).

3.4 Essential manufacturing characteristics

Emmental is obtained by microbiological fermentation, using thermophilic lactic acid producing bacteria for the primary (lactose) fermentation; the secondary (lactate) fermentation is characterized by the activity of propionic acid producing bacteria. The curd is heated after cutting to a temperature significantly above² the coagulation temperature.

4. FOOD ADDITIVES

Only those additive classes indicated as justified in the table below may be used for the product categories specified. Within each additive class, and where permitted according to the table, only those food additives listed below may be used and only within the functions and limits specified.

Additive functional class	Justified use	
	Cheese mass	Surface/rind treatment
Colours:	X ¹	–
Bleaching agents:	–	–
Acids:	–	–
Acidity regulators:	X	–
Stabilizers:	–	–
Thickeners:	–	–

² The temperature required to obtain the compositional and sensory characteristics specified by this Standard depends on a number of other technology factors, including the suitability of the milk for Emmental manufacture, the choice and activity of coagulating enzymes and of primary and secondary starter cultures, the pH at whey drainage and at the point of whey removal, and the ripening/storage conditions. These other factors differ according to local circumstances: In many cases, in particular where traditional technology is applied, a cooking temperature of approx. 50 °C is typically applied; In other cases, temperatures above and below are applied.

Additive functional class	Justified use	
	Cheese mass	Surface/rind treatment
Emulsifiers:	–	–
Antioxidants:	–	–
Preservatives:	X	X
Foaming agents:	–	–
Anti-caking agents:	–	X ²

¹ Only to obtain the colour characteristics, as described in Section 2.

² For the surface of sliced, cut, shredded or grated cheese, only.

X The use of additives belonging to the class is technologically justified.

– The use of additives belonging to the class is not technologically justified.

INS no.	Name of additive	Maximum level
Colours		
160a(i)	beta-carotene (Synthetic)	35 mg/kg singly or in combination
160a(iii)	beta carotene (<i>Blakeslea trispora</i>)	
160e	beta-apo-8'-Carotenal	
160f	beta-apo-8'-Carotenoic acid, methyl or ethyl esters	
160a(ii)	Carotenes, vegetable	600 mg/kg
160b(ii)	Annatto extracts – norbixin based	25 mg/kg
Preservatives		
1105	Lysozyme	Limited by GMP
200	Sorbic acid	1 000 mg/kg based on sorbic acid. Surface Treatment only*
201	Sodium sorbate	
202	Potassium sorbate	
203	Calcium sorbate	
234	Nisin	12.5 mg/kg
235	Pimaricin (Natamycin)	2 mg/dm ² Not present at a depth of 5 mm. Surface Treatment only*
251	Sodium nitrate	35 mg/kg singly or in combination (expressed as nitrate ion)
252	Potassium nitrate	
Acidity regulators		
170(i)	Calcium carbonate	Limited by GMP
504(i)	Magnesium carbonate	Limited by GMP
575	Glucono delta-lactone	Limited by GMP
Anticaking agents		
460(i)	Microcrystalline cellulose	Limited by GMP
460(ii)	Powdered cellulose	Limited by GMP
551	Silicon dioxide, amorphous	10 000 mg/kg singly or in combination Silicates calculated as silicon dioxide
552	Calcium silicate	
553(i)	Magnesium silicate	
553(iii)	Talc	
554	Sodium aluminosilicate	
556	Calcium aluminium silicate	
559	Aluminium silicate	

* For the definition of cheese surface and rind see Appendix to the *Codex General Standard for Cheese* (CODEX STAN 283-1978).

5. CONTAMINANTS

The products covered by this Standard shall comply with the Maximum Levels of the *Codex General Standard for Contaminants and Toxins in Foods* (CODEX STAN 193-1995) and the maximum residue limits for pesticides and veterinary drugs established by the CAC.

6. HYGIENE

It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the *Recommended International Code of Practice – General Principles of Food Hygiene* (CAC/RCP 1-1969), the *Code of Hygienic Practice for Milk and Milk Products* (CAC/RCP 57–2004) and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice. The products should comply with any microbiological criteria established in accordance with the *Principles for the Establishment and Application of Microbiological Criteria for Foods* (CAC/GL 21-1997).

7. LABELLING

In addition to the provisions of the *Codex General Standard for the Labelling of Prepackaged Foods* (CODEX STAN 1-1985) and the *General Standard for the Use of Dairy Terms* (CODEX STAN 206-1999), the following specific provisions apply:

7.1 Name of the food

The names Emmental or Emmentaler may be applied in accordance with section 4.1 of the *Codex General Standard for the Labelling of Prepackaged Foods*, provided that the product is in conformity with this Standard. Where customary in the country of retail sale, alternative spelling may be used.

The use of the name is an option that may be chosen only if the cheese complies with this standard. Where the name is not used for a cheese that complies with this standard, the naming provisions of the *General Standard for Cheese* (CODEX STAN 283-1978) apply.

The designation of products in which the fat content is above the reference range specified in section 3.3 of this Standard shall be accompanied by an appropriate qualification describing the modification made or the fat content (expressed as fat in dry matter or as percentage by mass whichever is acceptable in the country of retail sale), either as part of the name or in a prominent position in the same field of vision. Suitable qualifiers are the appropriate characterizing terms specified in Section 7.3 of the *General Standard for Cheese* (CODEX STAN 283-1978) or a nutritional claim in accordance with the *Guidelines for the Use of Nutritional Claims* (CAC/GL 23-1997)³.

The designation may also be used for cut, sliced, shredded or grated products made from cheese which cheese is in conformity with this Standard.

7.2 Country of origin

The country of origin (which means the country of manufacture, not the country in which the name originated) shall be declared. When the product undergoes substantial transformation⁴ in a second country, the country in which the transformation is performed shall be considered to be the country of origin for the purpose of labelling.

7.3 Declaration of milkfat content

The milk fat content shall be declared in a manner found acceptable in the country of retail sale. either (i) as a percentage by mass, (ii) as a percentage of fat in dry matter, or (iii) in grams per serving as quantified in the label, provided that the number of servings is stated.

7.4 Date marking

Notwithstanding the provisions of Section 4.7.1 of the *General Standard for the Labelling of Prepackaged Foods* (CODEX STAN 1-1985), the date of manufacture may be declared instead of the minimum durability information, provided that the product is not intended to be purchased as such by the final consumer.

7.5 Labelling of non-retail containers

Information specified in Section 7 of this Standard and Sections 4.1 to 4.8 of the *General Standard for the Labelling of Prepackaged Foods* (CODEX STAN 1-1985) and, if necessary, storage instructions, shall be

³ For the purpose of comparative nutritional claims, the minimum fat content of 45% fat in dry matter constitutes the reference.

⁴ For instance, repackaging, cutting, slicing, shredding and grating is not regarded as substantial transformation.

given either on the container or in accompanying documents, except that the name of the product, lot identification, and the name of the manufacturer or packer shall appear on the container, and in the absence of such a container, on the product itself. However, lot identification and the name and address may be replaced by an identification mark, provided that such mark is clearly identifiable with the accompanying documents.

8. METHODS OF SAMPLING AND ANALYSIS

See CODEX STAN 234-1999.

APPENDIX

Information on usual patterns of manufacturing Emmental

The information below is intended for voluntary application by commercial partners and not for application by governments.

1. Appearance characteristics

Usual dimensions:

Shape:	Wheel	Block
Height:	12–30 cm	12–30 cm
Diameter:	70–100 cm	–
Minimum weight:	60 kg	40 kg

2. Method of manufacture

2.1 Fermentation procedure: Microbiologically derived acid development.