CODEX STANDARD FOR MOZZARELLA

CODEX STAN 262-2007

1. SCOPE

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

2. DESCRIPTION

Mozzarella is an unripened cheese in conformity with the *General Standard for Cheese* (CODEX STAN 283-1978) and the *Standard for Unripened Cheese Including Fresh Cheese* (CODEX STAN 221-2001). It is a smooth elastic cheese with a long stranded parallel-orientated fibrous protein structure without evidence of curd granules. The cheese is rindless [1] and may be formed into various shapes.

Mozzarella with a high moisture content is a soft cheese with overlying layers that may form pockets containing liquid of milky appearance. It may be packed with or without the liquid. The cheese has a near white colour.

Mozzarella with a low moisture content is a firm/semi-hard homogeneous cheese without holes and is suitable for shredding.

Mozzarella is made by "pasta filata" processing, which consists of heating curd of a suitable pH value kneading and stretching until the curd is smooth and free from lumps. Still warm, the curd is cut and moulded, then firmed by cooling. Other processing techniques, which give end products with the same physical, chemical and organoleptic characteristics are allowed.

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;
- Vinegar;
- Potable water;
- 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 Mozzarella with a low moisture content 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] The cheese has been kept in such a way that no rind is developed (a "rindless" cheese).

3.3 Composition

Milk constituent	Minimum content *(m/m)*	Maximum content *(m/m)*	Reference level *(m/m)*
Milkfat in dry matter:			
with high moisture:	20%	Not restricted	40% to 50%
with low moisture	18%	Not restricted	40% to 50%

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)*:	
	With low moisture	With high moisture
Equal to or above 18% but less than 30%:	34%	–
Equal to or above 20% but less than 30%:	–	24%
Equal to or above 30% but less than 40%:	39%	26%
Equal to or above 40% but less than 45%:	42%	29%
Equal to or above 45% but less than 50%:	45%	31%
Equal to or above 50% but less than 60%:	47%	34%
Equal to or above 60% but less than 85%:	53%	38%

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).

4. FOOD ADDITIVES

Only those additives 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			
	Mozzarella with low moisture content		Mozzarella with high moisture content	
	Cheese mass	Surface treatment	Cheese mass	Surface treatment
Colours:	X[1]	–	X[1]	–
Bleaching agents:	–	–	–	–
Acids:	X	–	X	–
Acidity regulators:	X	–	X	–
Stabilizers:	X	–	X	–
Thickeners:	X	–	X	–
Emulsifiers:	–	–	–	–

Additive functional class	JUSTIFIED USE			
	Mozzarella with low moisture content		Mozzarella with high moisture content	
	Cheese mass	Surface treatment	Cheese mass	Surface treatment
Antioxidants:	–	–	–	–
Preservatives:	X	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
Preservatives		
200	Sorbic acid	1 000 mg/kg singly or in combination as sorbic acid
201	Sodium sorbate	
202	Potassium sorbate	
203	Calcium sorbate	
234	Nisin	12.5 mg/kg
235	Pimaricin (Natamycin)	Not exceeding 2 mg/dm^2 and not present in a depth of 5 mm
280	Propionic acid	Limited by GMP
281	Sodium propionate	
282	Calcium propionate	
283	Potassium propionate	
Acidity regulators		
170(i)	Calcium carbonate	Limited by GMP
261(i)	Potassium acetate	Limited by GMP
261(ii)	Potassium diacetate	Limited by GMP
262(i)	Sodium acetate	Limited by GMP
263	Calcium acetate	Limited by GMP
325	Sodium lactate	Limited by GMP
326	Potassium lactate	Limited by GMP
327	Calcium lactate	Limited by GMP
350(i)	Sodium hydrogen malate	Limited by GMP
350(ii)	Sodium malate	Limited by GMP
351(i)	Potassium hydrogen malate	Limited by GMP
351(ii)	Potassium malate	Limited by GMP
352(ii)	Calcium malate	Limited by GMP
500(i)	Sodium carbonate	Limited by GMP
500(ii)	Sodium hydrogen carbonate	Limited by GMP
500(iii)	Sodium sesquicarbonate	Limited by GMP
501(i)	Potassium carbonate	Limited by GMP
501(ii)	Potassium hydrogen carbonate	Limited by GMP
504(i)	Magnesium carbonate	Limited by GMP
504(ii)	Magnesium hydrogen carbonate	Limited by GMP
575	Glucono-delta-lactone	Limited by GMP

INS no.	Name of additive	Maximum level
577	Potassium gluconate	Limited by GMP
578	Calcium gluconate	Limited by GMP
Acids		
260	Acetic acid	Limited by GMP
270	Lactic acid (L-, D- and DL-)	Limited by GMP
296	Malic acid (DL-)	Limited by GMP
330	Citric acid	Limited by GMP
338	Orthophosphoric acid	880 mg/kg, as phosphorus
507	Hydrochloric acid	Limited by GMP
Stabilizers		
331(i)	Sodium dihydrogen citrate	Limited by GMP
332(i)	Potassium dihydrogen citrate	Limited by GMP
333	Calcium citrates	Limited by GMP
339(i)	Monosodium orthophosphate	4 400 mg/kg, singly or in combination, expressed as phosphorus
339(ii)	Disodium orthophosphate	
339(iii)	Trisodium orthophosphate	
340(i)	Monopotassium orthophosphate	
340(ii)	Dipotassium orthophosphate	
340(iii)	Tripotassium orthophosphate	
341(i)	Monocalcium orthophosphate	
341(ii)	Dicalcium orthophosphate	
341(iii)	Tricalcium orthophosphate	
342(i)	Monoammonium orthophosphate	
342(ii)	Diammonium orthophosphate	
343(ii)	Dimagnesium orthophosphate	
343(iii)	Trimagnesium orthophosphate	
450(i)	Disodium diphosphate	
450(iii)	Tetrasodium diphosphate	
450(v)	Tetrapotassium diphosphate	
450(vi)	Dicalcium diphosphate	
451(i)	Pentasodium triphosphate	
451(ii)	Pentapotassium triphosphate	
452(i)	Sodium polyphosphate	
452(ii)	Potassium polyphosphate	
452(iv)	Calcium polyphosphate	
452(v)	Ammonium polyphosphate	
406	Agar	Limited by GMP
407	Carrageenan and its Na, K, NH_4, Ca and Mg salts (includes furcelleran)	Limited by GMP
407a	Processed Euchema seaweed (PES)	Limited by GMP
410	Carob bean gum	Limited by GMP
412	Guar gum	Limited by GMP
413	Tragacanth gum	Limited by GMP
415	Xanthan gum	Limited by GMP
416	Karaya gum	Limited by GMP
417	Tara gum	Limited by GMP
440	Pectins	Limited by GMP

INS no.	Name of additive	Maximum level
466	Sodium carboxymethyl cellulose	Limited by GMP
Colours		
140	Chlorophyll	Limited by GMP
141(i)	Chlorophyll copper complexes	5 mg/kg singly or in combination
141(ii)	Chlorophyllin copper complex, sodium and potassium salts	
171	Titanium dioxide	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 as silicon dioxide
552	Calcium silicate	
553(i)	Magnesium silicate	
554	Sodium aluminosilicate	
556	Calcium aluminium silicate	
559	Aluminium silicate	

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 name Mozzarella 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 Mozzarella with a high moisture content shall be accompanied by a qualifying term describing the true nature of the product.

The designation of products in which the fat content is below or above the reference range but above the absolute minimum 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 023-1997)[2].

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 transformation[3] 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 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 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.
Determination of equivalency between "pasta filata" processing and other processing techniques:
Identification of the typical structure by confocal laser scanning microscopy.

APPENDIX

Information on usual patterns of manufacturing Mozzarella

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

Mozzarella with a high moisture content

1. Method of manufacture

1.1 The principal starter culture micro-organisms are *Streptococcus thermophilus* and/or *Lactococcus* spp.

1.2 Products made from buffalo's milk shall be salted in cold brine.

[2] For the purpose of comparative nutritional claims, the minimum fat content of 40% fat in dry matter constitutes the references.
[3] For instance, repackaging, cutting, slicing, shredding and grating is not regarded as substantial transformation.