CODEX ALIMENTARIUS
INTERNATIONAL FOOD STANDARDS

Food and Agriculture Organization of the United Nations
World Health Organization

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STANDARD FOR MOZZARELLA

CXS 262-2006

Adopted in 2006. Amended in 2010, 2013, 2016, 2018, 2019, 2022, 2023.

2022 Amendment

The following amendment was made to the text of the standard following decisions taken at the Forty-fifth Session of the Codex Alimentarius Commission in December 2022.

Page	Location	Text in previous version	Text in amended version
6	Section 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 (CXS 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.	The labelling of non-retail containers should be in accordance with the *General Standard for the Labelling of Non-Retail Containers of Foods* (CXS 346-2021).

2023 Amendments

Following decisions taken at the Forty-sixth Session of the Codex Alimentarius Commission in December 2023, the food additives provisions were amended in this standard and have been included in the *General Standard for Food Additives* (GSFA) (CXS 192-1995)[1] in line with the process of alignment of all food additive provisions with the GSFA.

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* (CXS 283-1978)[2] and the *Standard for Unripened Cheese Including Fresh Cheese* (CXS 221-2001).[3] It is a smooth, elastic cheese with a long stranded parallel-orientated fibrous protein structure without evidence of curd granules. The cheese is rindless[i] 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 microorganisms;
- 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; and
- rice, corn and potato flours and starches: Notwithstanding the provisions in the *General Standard for* Cheese (CXS 283-1978),[3] 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.

[i] The cheese has been kept in such a way that no rind is developed (a "rindless" cheese).

3.3 Composition

<table>
<tr><th>Milk constituent</th><th>Minimum content (m/m)</th><th>Maximum content (m/m)</th><th>Reference level (m/m)</th></tr>
<tr><td>Milkfat in dry matter:</td><td></td><td></td><td></td></tr>
<tr><td>with high moisture:</td><td>20%</td><td>Not restricted</td><td>40% to 50%</td></tr>
<tr><td>with low moisture</td><td>18%</td><td>Not restricted</td><td>40% to 50%</td></tr>
<tr><td>Dry matter:</td><td colspan="3">Depending on the fat in dry matter content, according to the table below.</td></tr>
<tr><td rowspan="9"></td><td colspan="2" rowspan="2">Fat in dry matter content (m/m):</td><td colspan="2">Corresponding minimum dry matter content (m/m):</td></tr>
<tr><td>With low moisture</td><td>With high moisture</td></tr>
<tr><td colspan="2">Equal to or above 18% but less than 30%:</td><td>34%</td><td>–</td></tr>
<tr><td colspan="2">Equal to or above 20% but less than 30%:</td><td>–</td><td>24%</td></tr>
<tr><td colspan="2">Equal to or above 30% but less than 40%:</td><td>39%</td><td>26%</td></tr>
<tr><td colspan="2">Equal to or above 40% but less than 45%:</td><td>42%</td><td>29%</td></tr>
<tr><td colspan="2">Equal to or above 45% but less than 50%:</td><td>45%</td><td>31%</td></tr>
<tr><td colspan="2">Equal to or above 50% but less than 60%:</td><td>47%</td><td>34%</td></tr>
<tr><td colspan="2">Equal to or above 60% but less than 85%:</td><td>53%</td><td>38%</td></tr>
</table>

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 *General Standard for the Use of Dairy Terms* (CXS 206-1999).[4]

4. FOOD ADDITIVES

Only those additives classes indicated as justified in the table below may be used for the product categories specified.

Acidity regulators, anticaking agents, colours, preservatives and stabilizers used in accordance with Table 1 and Table 2 of the *General Standard for Food Additives* (CXS 192-1995)[5] in food category 01.6.1 (Unripened cheese) and only certain acidity regulators, anticaking agents, colours, preservatives and stabilizers in Table 3 are acceptable for use in foods conforming to this standard.

	JUSTIFIED USE			
Additive functional class	**Mozzarella with low moisture content**		**Mozzarella with high moisture content**	
	Cheese mass	**Surface treatment**	**Cheese mass**	**Surface treatment**
Acidity regulators:	X	–	X	–
Anti–caking agents:	–	X(b)	–	X(d)
Colours:	X(a)	–	X(a)	–
Preservatives:	X	X	X	X(c)
Stabilizers:	X	–	X	–
Thickeners:	X	–	X	–

(a) Only to obtain the colour characteristics, as described in Section 2.

(b) For the surface of sliced, cut, shredded or grated cheese, only.

(c) Only for high moisture mozzarella not packaged in liquid

(d) For the surface treatment of shredded and/or diced 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.

* For the definition of cheese surface and rind see Appendix to the *General Standard for Cheese* (CXS 283-1978).[2]

5. CONTAMINANTS

The products covered by this standard shall comply with the maximum levels for contaminants that are specified for the product in the *General Standard for Contaminants and Toxins in Food and Feed* (CXS 193-1995).[6]

The milk used in the manufacture of the products covered by this standard shall comply with the maximum levels for contaminants and toxins specified for milk by the *General Standard for Contaminants and Toxins in Food and Feed* (CXS 193-1995)[6] and with the maximum residue limits for veterinary drug residues and pesticides established for milk by the Codex Alimentarius Commission.

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 *General Principles of Food Hygiene* (CXC 1-1969),[7] the *Code of Hygienic Practice for Milk and Milk Products* (CXC 57-2004)[8] 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 and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CXG 21-1997).[9]

7. LABELLING

In addition to the provisions of the *General Standard for the Labelling of Pre-packaged Foods* (CXS 1-1985)[10] and the *General Standard for the Use of Dairy Terms* (CXS 206-1999),[4] 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 *General Standard for the Labelling of Pre-packaged Foods* (CXS 1-1985),[10] 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* (CXS 283-1978)[2] 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* (CXS 283-1978)[2] or a nutritional claim in accordance with the *Guidelines for the Use of Nutritional Claims* (CXG 23-1997).[ii,11]

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[iii] 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

The labelling of non-retail containers should be in accordance with the *General Standard for the Labelling of Non-Retail Containers of Foods* (CXS 346-2021).[12]

8. METHODS OF SAMPLING AND ANALYSIS

For checking the compliance with this standard, the methods of analysis and sampling contained in the *Recommended Methods of Analysis and Sampling* (CXS 234-1999)[13] relevant to the provisions in this standard, shall be used.

Determination of equivalency between “pasta filata” processing and other processing techniques: Identification of the typical structure by confocal laser scanning microscopy.

[ii] For the purpose of comparative nutritional claims, the minimum fat content of 40 percent fat in dry matter constitutes the references.

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

APPENDIX – ADDITIONAL INFORMATION

The additional information below does not affect the provisions in the preceding sections which are those that are essential to the product identity, the use of the name of the food and the safety of the food.

Mozzarella with a high moisture content

1. Method of manufacture

1.1 The principal starter culture microorganisms are *Streptococcus thermophilus* and/or *Lactococcus* spp.

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

NOTES

[1] FAO and WHO. 1995. *General Standard for Food Additives*. Codex Alimentarius Standard, No. CXS 192-1995. Codex Alimentarius Commission, Rome.

[2] FAO and WHO. 1978. *General Standard for Cheese*. Codex Alimentarius Standard, No. CXS 283-1978. Codex Alimentarius Commission, Rome.

[3] FAO and WHO. 2001. *Standard for Unripened Cheese Including Fresh Cheese*. Codex Alimentarius Standard, No. CXS 221-2001. Codex Alimentarius Commission, Rome.

[4] FAO and WHO. 1999. *General Standard for the Use of Dairy Terms*. Codex Alimentarius Standard, No. CXS 206-1999. Codex Alimentarius Commission, Rome.

[5] FAO and WHO. 1995. *General Standard for Food Additives*. Codex Alimentarius Standard, No. CXS 192-1995. Codex Alimentarius Commission, Rome.

[6] FAO and WHO. 1995. *General Standard for Contaminants and Toxins in Food and Feed*. Codex Alimentarius Standard, No. CXS 193-1995. Codex Alimentarius Commission, Rome.

[7] FAO and WHO. 1969. *General Principles of Food Hygiene*. Codex Alimentarius Code of Practice, No. CXC 1-1969. Codex Alimentarius Commission, Rome.

[8] FAO and WHO. 2004. *Code of Hygienic Practice for Milk and Milk Products*. Codex Alimentarius Code of Practice, No. CXC 57-2004. Codex Alimentarius Commission, Rome.

[9] FAO and WHO. 1997. *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods*. Codex Alimentarius Guideline, No. CXG 21-1997. Codex Alimentarius Commission, Rome.

[10] FAO and WHO. 1985. *General Standard for the Labelling of Pre-packaged Foods*. Codex Alimentarius Standard, No. CXS 1-1985. Codex Alimentarius Commission, Rome.

[11] FAO and WHO. 1997. *Guidelines for the Use of Nutritional Claims*. Codex Alimentarius Guideline, No. CXG 23-1997. Codex Alimentarius Commission, Rome.

[12] FAO and WHO. 2021. *General Standard for the Labelling of Non-Retail Containers of Foods*. Codex Alimentarius Standard, No. CXS 346-2021. Codex Alimentarius Commission, Rome.

[13] FAO and WHO. 1999. *Recommended Methods of Analysis and Sampling.* Codex Alimentarius Standard, No. CXS 234-1999. Codex Alimentarius Commission, Rome.