



**United States Department of Agriculture**

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**Marketing and  
Regulatory  
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**Agricultural  
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**Dairy  
Program**

# **USDA Specifications for Mozzarella Cheeses**

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## USDA Specifications for Mozzarella Cheeses

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## 1.0 Scope

The USDA Specifications for Mozzarella Cheeses includes Mozzarella, Low-moisture Mozzarella, Part-skim Mozzarella, Low-moisture Part-skim Mozzarella, and Lite Mozzarella Cheeses. The Cheeses may be in Loaf, Sliced, Shredded, or Diced forms.

## 2.0 Plant Requirements

Mozzarella cheeses shall be manufactured and packaged in plants inspected by the AMS, Dairy Grading Branch and eligible for listing in the “Dairy Plants Surveyed and Approved for USDA Grading Service” publication.

## 3.0 Product age and Temperature Requirements

Mozzarella cheeses shall be aged no less than 5 days at 38° F to 42° F (3.5° C to 5.5° C) prior to inspection unless the cheese is shredded or diced and frozen. If the shredded or diced cheese is not frozen immediately after manufacture, the cheese shall be stored at 38° F to 42° F (3.5° C to 5.5° C) until frozen.

## 4.0 Regulatory Requirements

- Mozzarella cheese shall comply with all applicable Federal regulations including those contained in 21 CFR Part 133.155 for Mozzarella cheese.
- Low-moisture Mozzarella cheese shall comply with all applicable Federal regulations contained in 21 CFR 133.156.
- Part-skim Mozzarella cheese shall comply with all applicable Federal regulations contained in 21 CFR Part 133.157.
- Low-moisture part-skim Mozzarella cheese shall comply with all applicable Federal regulations contained in 21 CFR Part 133.158.
- Lite Mozzarella cheese shall comply with all applicable Federal regulations including those contained in 21 CFR Part 133.155 for mozzarella cheese, 21 CFR Part 101.56 for nutrient content claims for “light” or “lite”, 21 CFR Part 101.13 for general principles for nutrient content claims, and 21 CFR Part 130.10 for foods named by use of a nutrient content claim and a standardized term.
- Shredded Mozzarella cheeses shall also comply with 21 CFR Part 133.146 for grated cheeses.

## 5.0 Composition Requirements

Samples of shredded or diced, frozen Mozzarella cheeses shall be taken prior to tempering.

### Mozzarella cheese

- *Milk fat* - not less than 45% on dry basis.
- *Moisture* – more than 52% but not more than 60%.
- *pH* – not less than 5.1 and not more than 5.4.

### Low-moisture Mozzarella cheese

- *Milk fat* - not less than 45% on dry basis.
- *Moisture* – more than 45% but not more than 52%.
- *pH* – not less than 5.1 and not more than 5.4.

### Part-skim Mozzarella cheese

- *Milk fat* - less than 45% but not less than 30% on dry basis.
- *Moisture* – more than 52% but not more than 60%.
- *pH* – not less than 5.1 and not more than 5.4.

### Low-moisture Part-skim Mozzarella cheese

- *Milk fat* - less than 45% but not less than 30% on dry basis.
- *Moisture* – more than 45% but not more than 52%.
- *pH* – not less than 5.1 and not more than 5.4.

### Lite Mozzarella Cheese

- *Milk fat* - not less than 10.8% on dry basis.
- *Moisture* – not less than 52% and not more than 60%.
- *pH* – not to exceed 5.3.

## 6.0 Quality Requirements

### *Flavor*

Mozzarella Cheeses shall have a mild, pleasing flavor and may possess slight acid or feed flavors. The flavor should be absent whey taint, sour notes, heated or off notes associated with the use of non-fat dry milk. Vinegar flavor will not be acceptable.

### *Body and Texture*

#### Loaf Mozzarella cheeses and Sliced Mozzarella cheeses

A plug drawn from loaf Mozzarella cheeses or a slice from sliced Mozzarella cheeses shall be flexible, smooth and pliable and where sliced the slices shall separate easily. The cheeses shall not possess sweet holes or be gassy.

Shredded or Diced Mozzarella cheeses

Shredded or diced Mozzarella cheeses shall be loose and free from clumps except those that readily break up with slight pressure. The cheeses shall be free flowing and shall not be matted. An approved anticaking agent may be added as a processing aid. If an anticaking agent is used, the amount used shall be the minimum required to produce the desired effect, but shall not exceed 2.0 percent of the weight of the shredded cheeses.

Mozzarella cheeses may possess body and texture characteristics outlined in Table I:

**Table I. Classification of Body and Texture Defects**

Body and Texture Characteristics	Mozzarella or low-moisture Mozzarella			Part-skim or low-moisture part-skim Mozzarella			Lite Mozzarella		
	loaf	sliced	shredded diced	loaf	sliced	shredded diced	loaf	sliced	shredded diced
<b>Open</b>	<b>S</b>	<b>S</b>	----	<b>S</b>	<b>S</b>	----	<b>S</b>	<b>S</b>	----
<b>Mealy</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
<b>Coarse</b>	<b>S</b>	<b>S</b>	<b>S</b>	----	<b>S</b>	<b>S</b>	----	----	<b>S</b>
<b>Pasty</b>	<b>S</b>	<b>S</b>	<b>S</b>	----	<b>S</b>	<b>S</b>	----	<b>S</b>	<b>S</b>
<b>Lacking Flexibility</b>	<b>D</b>	----	----	<b>S</b>	----	----	<b>S</b>	----	----
<b>Weak</b>	<b>D</b>	<b>D</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
<b>Sticky</b>	----	----	----	----	----	----	<b>S</b>	<b>S</b>	<b>S</b>
<b>Rubbery</b>	----	----	----	----	----	----	<b>S</b>	<b>S</b>	<b>S</b>

**S = Slight**  
**D = Definite**  
**---- = Not allowed**

*Color and Appearance*

Mozzarella cheeses shall have a natural white to light cream, uniform bright color, and attractive sheen. It may be wavy to a very slight degree, and may have a slight color variation due to salt penetration.

*Shred and Dice Size*

- Shredded Mozzarella cheeses shall have a height and width up to 3/16 inch in either dimension.
- Diced Mozzarella cheeses shall have all dimensions of the dice relatively equal.

*Fines*

Shredded Mozzarella cheeses shall not contain more than 6.0 percent fines.

For shreds whose height and/or width is 1/16 inch or less, the fines content shall be determined using a Standard Test Sieve #14 (1.4 mm). For shreds whose height and/or width is greater than 1/16 inch, the fines content shall be determined using a Standard Test Sieve #8 (2.36 mm).

Note: The manufacturer shall provide shred size information. This information will determine the sieve used to measure the fines content. If shred size information is not provided, the Standard Test Sieve #8 will be used.

## **7.0 Meltability, Stretchability and Free fat Characteristics**

The cheese shall melt completely and evenly distributed over the surface of the crust on which it is spread. There should be no blisters. The cheese should have an even, slighter darker cheese color than the cheese before cooking. The melted cheese may be chewy, but not gummy. There should be no burnt areas. The cheese should be stringy and should not break. There shall be no free fat drippage when a slice is made and held at a slight angle.

## **8.0 Test Methods**

All test methods, shall be made in accordance with test methods published in the latest revision of the "Official Methods of Analysis of the Association of Official Analytical Chemists," methods published in the latest revision of "Standard Methods for the Examination of Dairy Products," or methods published by the International Dairy Federation. The meltability, stretchability and free fat content shall be determined by the methods contained in the latest revision of DA Instruction 918-RL, Laboratory Methods and Procedures, USDA/AMS/Dairy Programs, Dairy Grading Branch.

## **9.0 Official Identification**

Mozzarella cheeses officially inspected and found to meet these requirements may be identified with the official USDA Quality Approved Inspection Shield.

## **10.0 Explanation of Terms**

### **A. With respect to flavor**

1. *Slight*. An attribute which is barely identifiable and present only to a small degree.
2. *Acid*. Sharp and pucker to the taste, characteristic of lactic or acetic acid.
3. *Feed*. Feed flavors (such as alfalfa, sweet clover, silage, or similar feed) in milk carried through into the cheese.

B. With respect to body and texture

1. *Slight*. An attribute which is barely identifiable and present only to a small degree.
2. *Definite*. An attribute which is readily identifiable and present to a substantial degree.
3. *Coarse*. Feels rough, dry and sandy.
4. *Gassy*. Gas holes of various sizes and may be scattered.
5. *Flexible*. The plug may be bent without braking.
6. *Lacking Flexibility*. The plug tends to break when bent.
7. *Mealy*. Short body, does not mold well, and looks and feels like corn meal when worked between the thumb and fingers.
8. *Open*. Includes mechanical openings that are irregular in shape and those holes that are caused by trapped air or steam during the procedure.
9. *Pasty*. Weak body, and when the cheese is worked between the thumb and fingers, it becomes sticky and smeary.
10. *Plug*. The cheese drawn from a loaf of cheese using a number 8 cheese trier.
11. *Rubbery*. The cheese returns to its original shape after definite pressure on the plug, slice, or shred.
12. *Sticky*. Slices or shreds that do not separate easily or cheese that adheres to the knife when a loaf is sliced.
13. *Sweet hole*. Spherical gas holes, glossy in appearance; usually about the size of BB shots.
14. *Weak*. Requires little pressure to crush, is soft, but is not necessarily sticky like pasty cheese.

C. With respect to color

1. *Very slight*. An attribute which is detected only upon critical examination and present only to a minute degree.



2. *Wavy*. Unevenness of color which appears as layers or waves.

D. With respect to meltability, stretchability and free fat characteristics.

1. *Chewy*. The cheese is slightly rubbery but breaks down quickly when chewed.
2. *Gummy*. The cheese does not readily break down when chewed.