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Agricultural
Marketing
Service

Dairy
Division

USDA Specifications for Mozzarella Cheeses

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I. This document has been developed to aid in the purchase of Mozzarella cheeses which are intended for pizza, cooking, or table uses. It is designed to provide the minimum requirement for acceptable Mozzarella cheeses according to flavor, body and texture, color, finish and appearance, and packing and packaging. These Mozzarella cheeses may be evaluated in the loaf, slice, shredded, or diced form. The cheese shall be graded no sooner than 5 days of age. The following types, forms, and styles of Mozzarella cheeses are covered by this specification:

A. **Type (Composition by fat and moisture).**

Type I -- Mozzarella cheese. Mozzarella cheese shall contain more than 52% but not more than 60% moisture and not less than 45% milkfat on dry basis.

Type II -- Low-moisture Mozzarella cheese. Low-moisture Mozzarella cheese shall contain more than 45% but not more than 52% moisture and not less than 45% milkfat on dry basis.

Type III -- Part-skim Mozzarella cheese. Part-skim Mozzarella cheese shall contain more than 52% but not more than 60% moisture, and less than 45% but not less than 30% milkfat on dry basis.

Type IV --- Low-moisture Part-skim Mozzarella cheese. Low-moisture Part-skim Mozzarella cheese shall contain more than 45% but not more than 52% moisture, and less than 45% but not less than 30% milkfat on dry basis.

B. **Form.**

1. *Loaf*
2. *Sliced*
3. *Shredded*
4. *Diced*

C. **Style.**

1. *Fresh*

2. *Frozen*

II. The following documents of the United States Department of Agriculture form a part of this specification:

- A. General Specifications for Dairy Plants Approved for USDA Inspection and Grading Service.
- B. Methods of Laboratory Analysis for Meltability, Color, Stretchability, and Free Fat for Types of Mozzarella Cheese by Pizza Making -- DA Instruction 918-102-2.
- C. Dairy Plants Surveyed and Approved for USDA Grading Service.
- D. United States Standards for Condition of Food Containers. (Copies are available from: Dairy Division, Agricultural Marketing Service, U.S. Department of Agriculture, Washington, DC 20250.)

III. Requirements.

Mozzarella cheeses. All types of Mozzarella cheeses that meet this specification shall have been manufactured and/or processed in a plant approved by the Dairy Grading Branch, Dairy Division, Agricultural Marketing Service, U.S. Department of Agriculture as complying with the "General Specifications for Dairy Plants Approved for USDA Inspection and Grading Service." Such plants are eligible to be listed in the document, "Dairy Plants Surveyed and Approved for USDA Grading Service."

Mozzarella cheeses covered by this specification shall conform to or exceed the following characteristics:

- A. **Flavor.** The cheese shall have a mild, pleasing, flavor but may possess the following flavors to a slight degree: acid or feed. A slight or definite rancid flavor, which is characteristic to certain traditional markets, may be acceptable when specified by the buyer.

B. Body and texture.

1. *Loaf form.* A slice or plug drawn from all types of Mozzarella cheese shall be flexible. It shall not possess sweet holes or be gassy. The cheese shall be smooth and pliable.
 - a. Mozzarella or low-moisture Mozzarella cheese (Type I and Type II) may possess the following defects to a slight degree: open, coarse, mealy, loosely knitted with or without pockets of free liquid, and pasty; and the following defects to a definite degree: lacking flexibility and weak.
 - b. Part-skim or low-moisture part-skim Mozzarella cheese (Type III and Type IV) may possess the following defects to a slight degree: open, lacking flexibility, mealy, and weak.
2. *Sliced form.* All types of sliced Mozzarella cheese shall not possess sweet holes or be gassy. The slices shall be free and easily separate without breaking. The cheese shall be smooth and pliable.
 - a. Sliced Mozzarella or low-moisture Mozzarella cheese (Type I and Type II) may possess the following defects to a slight degree: open, coarse, mealy, loosely knitted with or without pockets of free liquid, and pasty; and may be weak to a definite degree.
 - b. Sliced part-skim or low-moisture part-skim Mozzarella cheese (Type III and Type IV) may possess the following defects to a slight degree: open, coarse, mealy, pasty, loosely knitted with or without pockets of free liquid, and weak.
3. *Shredded or diced form.* All types of shredded or diced Mozzarella cheese may possess the following defects to a slight degree: coarse, mealy, pasty, and weak. Shredded or diced Mozzarella cheeses shall be loose and free from clumps except those that readily break up with slight pressure.

C. Color. All types of 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. There may be a slight variation in color due to salt penetration.

D. Finish and appearance. The wrapper or covering shall be properly sealed with adequate overlapping at the seams to prevent entrance of air or drying of the cheese, or sealed by any other satisfactory type of closure. The wrapper or covering shall be neat, and adequately and securely envelop the cheese, but may be

definitely wrinkled. Allowances shall be made for wrinkles caused by crimping or sealing when vacuum sealing is used. The cheese shall be free from mold under the wrapper or covering but may be misshapen to a definite degree.

- E. **Packing and Packaging.** The packaging shall satisfactorily protect the cheese for its final use. All types of Mozzarella cheeses covered by this specification should be evaluated in accordance with the United States Standards for Condition of Food Containers.

IV. Optional Requirements. There are certain requirements that may be requested at the option of an interested party. The optional requirements for pizza making are as follows when following DA Instruction 918-102-2:

- A. **Meltability.** The melted cheese shall be evenly distributed over the surface of the pizza and be free from blisters.
- B. **Color.** The cheese shall have a rich, even, natural white, to light cream, uniform bright color, and attractive sheen.
- C. **Stretchability.** Insert the tip of a fork into the cheese and lift vertically at least 3 inches from the surface of the pizza. The cheese shall be stringy, and unbroken from the fork to the surface of the pizza. The cheese may be chewy but not gummy.
- D. **Free Fat.** There shall be no free fat drippage when a wedge shaped cut is removed from the pizza.

V. 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 puckery 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.
4. *Rancid.* A flavor caused by the activity in the milk of the enzyme lipase. The lipase enzyme, in the form of rennet paste or commercial lipase powder preparations, may be added to milk for making Mozzarella cheeses to impart a mild "piquant" flavor.

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. *Slight pressure*. Only sufficient pressure to readily disintegrate the lumps.
4. *Coarse*. Feels rough, dry, and sandy.
5. *Gassy*. Gas holes of various sizes and may be scattered.
6. *Flexible*. The plug may be bent without breaking.
7. *Lacking flexibility*. The plug tends to break when bent.
8. *Loosely knitted*. Knitted loosely enough to be separated with or without occasional pockets of liquid.
9. *Mealy*. Short body, does not mold well, and looks and feels like corn meal when worked between the thumb and fingers.
10. *Open*. Includes mechanical openings that are irregular in shape and those holes that are caused by trapped air or steam during the make procedure.
11. *Pasty*. Weak body, and when the cheese is worked between the thumb and fingers, it becomes sticky and smeary.
12. *Plug*. The cheese drawn from a block of cheese using a number 8 cheese trier.
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. *Natural white to light cream.* Color that is obtained from milk.
3. *Wavy.* Unevenness of color which appears as layers or waves.

D. With respect to finish and appearance.

1. *Definite.* An attribute which is readily identifiable and present to a large degree.
2. *Misshapen.* Deformed from its characteristic shape.
3. *Wrinkled packaging.* Rough or uneven.

VI. Supplemental Information.

- A. The buyer should specify when the product is to be inspected and a certificate issued by the Dairy Grading Branch.
- B. Fresh Mozzarella cheeses have an estimated shelf life of approximately 30 days when held at a temperature of 35⁰ F. (2⁰ C.). Freezing will prolong the shelf life of this product for as long as 12 months. Care should be taken when moving frozen cheese because the wrappers will tear easily at freezer temperatures.
- C. All types of frozen Mozzarella cheeses should be thawed gradually at a temperature between 40⁰ F. and 45⁰ F. (4⁰ C. and 7⁰ C.) and held for a minimum of 14 days to a maximum of 21 days to eliminate a crumbly cheese caused by freezing. After 21 days at this temperature, the product will return to its original body and texture, and should be used within a few days.
- D. For immediate use in institutions, fresh cheese or properly thawed Mozzarella cheeses should be stored at a temperature between 40⁰ F. And 45⁰ F. (4⁰ C. and 7⁰ C.).
- E. The buyer should specify when the package is to be evaluated according to the U.S. Standards for Condition of Food Containers.
- F. The buyer should specify the type of packaging desired.
- G. The buyer should specify the degree of rancid flavor permitted when the flavor is acceptable.