

Dairy Permeate Standard

Product Definition

Dairy Permeate is produced by the removal of protein and other solids from milk or whey resulting in a product with a high concentration of lactose. Removal of the dairy constituents is accomplished by physical separation techniques such as filtration and diafiltration. The acidity of Dairy Permeate may be adjusted by the addition of safe and suitable pH adjusting ingredients. Dairy Permeate meets the definition of Dairy Product Solids, which is the subject of a GRAS notification to the U.S. Food and Drug Administration, and complies with all provisions of the U.S. Federal Food, Drug, and Cosmetic Act.

Composition

Classifications	Protein	Lactose	Fat	Ash	Moisture
Milk Permeate	Typical 3-5% Min. 2%	Typical 78-88% Min. 76%	Typical 0-1.0% Max. 1.5%	Typical 8-11% Max. 14%	Typical 3-4.5% Max. 5.0%
Whey Permeate	Typical 2-7% Max. 7%	Typical 76-85% Min. 76%	Typical 0-1.0% Max. 1.5%	Typical 8-11% Max. 14%	Typical 3-4.5% Max. 5.0%

Other Characteristics

Scorched Particle Content ≤ 15.0 mg
 pH 5.5 - 6.6
 Color white to cream
 Flavor bland, clean

Microbiological Analysis

Standard Plate Count ≤ 30,000/g
 Coliform ≤ 10/g
 Salmonella negative by test
 Listeria negative by test
 Yeast & Mold 100/g

Methods of Analysis

Criteria	Reference Method
Lactose (anhydrous)	HPLC: ISO 22662/IDF 198
Protein	Kjeldahl method: AOAC 991.20 (N x 6.38)
Fat	Mojonnier: AOAC 989.05
Ash	Oven at 550C: AOAC 942.05
Total Moisture	Vacuum oven: AOAC 925.45

Product Labeling

Product may be identified on the label as: “Milk Permeate” (for permeate derived from milk only), “Whey Permeate” or “Dairy Product Solids.”

Alternate names could include: Modified Whey, Deproteinized Whey, Dried Whey Product or Dried Whey Solubles.

Product Applications and Functionality

May be used as a direct replacement of other dairy solids in many food applications, including: bakery products and pizza crust dough; confectionary products; as a replacement for sucrose or corn syrups; to reduce the level of salt in formulated products; and for fermentation. Milk permeate may also be used for standardizing skim milk or whole milk powders.

Permeate can be a source of lactose and minerals required for the development of nutritional products for the feed sector – especially for baby animals.

Storage & Shipping

Product should be stored and shipped in a cool, dry environment with temperatures below 80°F and relative humidities below 65%. Stocks should be rotated and utilized within 9 mo - 1 yr.

Packaging

Multiwall kraft bags with polyethylene inner liner or other suitable closed container – i.e., “tote bins,” etc.

CODEX ALIMENTARIUS COMMISSION



Food and Agriculture
Organization of the
United Nations



World Health
Organization

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STANDARD FOR DAIRY PERMEATE POWDERS

CXS 331-2017

Adopted in 2017.

1. SCOPE

This Standard applies to dairy permeate powders, in conformity with the description in Section 2 of this Standard, intended for further processing and/or as ingredient in other foods.

2. DESCRIPTION

Dairy permeate powders are dried milk products¹ characterized by a high content of lactose:

- a) manufactured from permeates which are obtained by removing, through the use of membrane filtration, and to the extent practical, milk fat and milk protein, but not lactose, from milk, whey² (excluding acid whey), cream³ and/or sweet buttermilk, and/or from similar raw materials, and/or
- b) obtained by other processing techniques involving removal of milk fat and milk protein, but not lactose, from the same raw materials listed under (a) and resulting in an end-product with the same composition as specified in section 3.3.

Whey permeate powder is the dairy permeate powder manufactured from whey permeate. Whey permeate is obtained by removing whey protein, but not lactose, from whey.

Milk permeate powder is the dairy permeate powder manufactured from milk permeate⁴.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Raw materials

Dairy permeate powders: Milk permeate, whey permeate, cream permeate, sweet buttermilk permeate and/or similar lactose-containing milk products

Whey permeate powder: Whey permeate

Milk permeate powder: Milk permeate

3.2 Permitted ingredients

Seed lactose⁵ in the manufacture of pre-crystallized products.

3.3 Composition

Criteria	Dairy permeate powder	Whey permeate powder	Milk permeate powder
Minimum lactose, anhydrous ^(a) (m/m)	76.0%	76.0%	76.0%
Maximum nitrogen (m/m)	1.1%	1.1%	0.8 %
Maximum milk fat (m/m)	1.5%	1.5%	1.5%
Maximum ash (m/m)	14.0%	12.0%	12.0%
Maximum moisture ^(b) (m/m)	5.0%	5.0%	5.0%

(a) Although the products may contain both anhydrous lactose and lactose monohydrate, the lactose content is expressed as anhydrous lactose. 100 parts of lactose monohydrate contain 95 parts of anhydrous lactose.

(b) The moisture content does not include the water of crystallization of the lactose.

In accordance with the provision of section 4.3.3 of the *General Standard for the Use of Dairy Terms* (CXS 206-1999), the dairy permeate powders covered by this standard may be modified in composition to meet the desired end-product composition, for instance, partial demineralization. However, compositional modifications beyond the minima or maxima specified above for lactose, nitrogen, milk fat, ash and moisture are not considered to be in compliance with the Section 4.3.3 of the *General Standard for the Use of Dairy Terms*.

4. FOOD ADDITIVES

4.1 The use of food additives is not permitted for dairy permeate powders covered by this standard.

¹ Definition of *milk product*, see *General Standard for the Use of Dairy Terms* (CXS 206-1999)

² Definition of *whey*, see *Standard for Whey Powders* (CXS 289-1995)

³ Definition of *cream*, see the *Standard for Cream and Prepared Creams* (CXS 288-1976)

⁴ Definition of *milk permeate*, see *Standard for Milk Powders and Cream Powder* (CXS 207-1999)

⁵ Definition of *lactose*, see the *Standard for Sugars* (CXS 212-1999)

4.2 Processing aids

The processing aids used in products covered by this standard shall comply with the *Guidelines on Substances used as Processing Aids* (CXG 75-2010).

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).

The milk used in the manufacture of the raw materials 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) and with the maximum residue limits for veterinary drug residues and pesticides established for milk 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 *General Principles of Food Hygiene* (CXC 1-1969), the *Code of Hygienic Practice for Milk and Milk Products* (CXC 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 and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CXG 21-1997).

7. LABELLING

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

7.1 Name of the food

The name of the food shall be dairy permeate powder. Products complying with the relevant descriptions in Section 2 and compositions in Section 3.3 may be named milk permeate powder and whey permeate powder, respectively.

Where appropriate in the country of sale, the name may be supplemented by the designation "lactose-rich deproteinized ____ powder", the blank being filled with the term dairy, whey or milk, as appropriate to the nature of the product.

7.2 Labelling of non-retail containers

Information required 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 and address of the manufacturer or packer shall appear on the container. However, lot identification, and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

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) relevant to the provisions in this standard, shall be used.