AMERICAN Dairy Products INSTITUTE™

Lactose

Also known as: Milk Sugar

Product Definition

Lactose (Milk Sugar) is a white to creamy white crystalline product, possessing a mildly sweet taste. It may be anhydrous; contain one molecule of water of hydration; or may be a mixture of both forms. It is manufactured from whey or permeate by evaporating, crystallizing, refining and then drying the lactose crystals. Lactose for human consumption complies with all provisions of the U.S. Federal Food, Drug, and Cosmetic Act.

Composition

PARAMETER	UNITS OF MEASURE	INDUSTRIAL/ FERMENTATION GRADE LACTOSE	EDIBLE (FOOD GRADE) LACTOSE	REFINED EDIBLE GRADE LACTOSE	INFANT FORMULA GRADE[2]
		LIMITS			
LACTOSE	%, dry basis	98.0 minimum	99.0 minimum	99.50 minimum	99.0 minimum
PROTEIN	%, dry basis	1.0 maximum	0.30 maximum	0.15 maximum	0.30 maximum
ASH (PHOSPHATED)	%, dry basis	0.45 maximum	0.30 maximum	0.20 maximum	0.30 maximum
TOTAL MOISTURE[1]	%, as-is basis	6.0 maximum	6.0 maximum	6.0 maximum	6.0 maximum

[1] Includes water of crystallization

[2] Infant Formula Grade for DRY BLENDING ONLY. See Infant Formula Grade for Dry Blending Only Ingredient Standard for more specific composition and characteristics

Other Characteristics

PHYSICO-CHEMICAL PROPERTIES PARAMETER	UNITS OF MEASURE	LACTOSE LIMITS	INFANT FORMULA GRADE LACTOSE LIMITS
SCORCHED PARTICLES	mg/25g	15.0 maximum	7.5 maximum
PH	10% solution	4.5 – 7.5	4.5 - 7.5
COLOR	visual	white to pale yellow	white to cream white powder
FLAVOR	sensory	slightly sweet; free from offensive flavors	slightly sweet
PHYSICAL APPEARANCE	visual	free of lumps that do not break up under slight pressure; free of foreign materials	–

Mesh Size

Edible Lactose is often sized through a combination of pulverizing and/ or screening steps to yield a suitable particle size distribution. Mesh size requirements are variable and are determined by the individual manufactuer and/or customer.

Infant Formula Grade Lactose for Dry Blending can be milled to produce various mesh sizes.

PRODUCT	SIEVE SIZES (MESH)	% PASS THROUGH
40 mesh	40	80 minimum
100 mesh	100	80 minimum
200 mesh	200	80 minimum

Product Labeling

Recommended identifications: Lactose
                                 Milk Sugar

Functionality and Applications

💧💧💧 **HIGH PERFORMANCE:**

Browning
Acid Stability

💧💧 **MEDIUM PERFORMANCE:**

Hydration Rate
Heat Stability

Lactose applications include: infant foods, chemicals/pharmaceuticals, dairy products, prepared dry mixes, bakery products, soft drinks, special dietary foods, confections, and others.

Lactose is a crystalline sugar that has a similar functionality to sucrose but with less sweetness and a lower solubility. Lactose is a disaccharide that can easily be hydrolyzed into glucose and galactose in an application to provide more sweetness without added sugar. It provides a low amount of sweetness (about 40% less sweet than sucrose) and its solubility in room temperature water is about 195 g/liter compared to sucrose which is about 2000 g/liter. Lactose has no aftertaste and a clean mouthfeel.

Product Examples

(launched in the last 2 years) *Credit: Innova Market Insights*

Webber Naturals Vitamin B12: Lactose is used in this vitamin supplement as an excipient or tableting agent. Its crystalline properties provide the necessary functionality to be used in many supplements and medications.

WarHeads Sour Popping Candy: Lactose is commonly used in popping candy formulations where crystalline sugars help to trap carbon dioxide under high atmospheric pressure. When the sugar dissolves in your mouth, the carbon dioxide bubbles are released and create the popping and crackling sounds characteristic of this candy.

Kirkland Procare Formula: Infant formula uses lactose to provide the same carbohydrate source as human milk. Lactose is a source of energy and is important for the growth of beneficial bacteria in the GI tract of an infant which helps support their immune system.

Dee's Nuts Dill Pickle Peanuts: The seasoning blend for these pickle flavored peanuts uses lactose as a carrier for the seasonings. Lactose helps to keep the seasoning application evenly distributed and also helps the seasoning to adhere to snacks.

Superflux Beer: The milk sugar listed on this label is lactose. Lactose is used in beer to contribute to the fermentation process and resulting flavor. Lactose is commonly used in Milk Stout type beers.

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