

# Dairy for Global Nutrition

## LACTOSE

Basic guidelines for composition, physical and chemical aspects

### Product Definition

Food grade lactose is produced by concentrating whey or permeate (a co-product of whey protein concentrate production) to supersaturate the lactose, then removing and drying the lactose crystals. Special processes of crystallization, as well as grinding and fractionated sifting, produce types of lactose which differ in particle size distribution. Today, the industry offers several types of lactose ranging from superfine to extra coarse crystals for all applications.

According to the U.S. Code of Federal Regulations (21CFR 168.122), lactose is the carbohydrate normally obtained from whey. It may be anhydrous or contain one molecule of water of crystallization or be a mixture of both forms.

The lactose content is not less than 98%, with the sulfated ash content not more than 0.3%, both on a dry basis. The pH of a 10% solution is not less than 4.5 or more than 7.5.

### Typical Composition\*

Lactose (minimum**)	99.0%***
Protein	0.1%
Fat	0%
Ash	0.1%-0.3%
Moisture	4.5%-5.5%

\* Please consult your U.S. supplier for detailed product specifications.

\*\* Includes bound water.

\*\*\* Includes monohydrate or anhydrous.

### Physical and Chemical Aspects\*

Typical microbiological analysis	
Standard Plate Count	5-15,000/g
Coliform count	<10/g
E. coli	Negative
Listeria	Negative
Salmonella	Negative
Coagulase-positive Staphylococci	Negative
Other characteristics	
Scorched particle content	7.5 mg/25 g (maximum)
Bulk density, tapped	0.7-0.9 g/ml (depends on mesh size specification)

Send us your news, ideas, and feedback: [info@DairyForGlobalNutrition.org](mailto:info@DairyForGlobalNutrition.org)  
c/o U.S. Dairy Export Council, 2101 Wilson Blvd, Suite 400, Arlington, VA 22201 U.S.A.

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Appearance	Crystalline, free-flowing powder
Color	White to pale yellow
Flavor	Slightly sweet
Solution	Clear, colorless to slightly yellowish, odorless

\*Please consult your U.S. supplier for detailed product specifications.

## Typical Composition of Lactose Products\*

Component	Fermentation	Crude Grade	Edible Grade	National Formulary
Lactose	98.00	98.40	99.00	99.80
Non-hydrate moisture	0.35	0.30	0.50	0.10
Protein	1.00	0.80	0.10	0.01
Ash	0.45	0.40	0.20	0.03
Fat	0.20	0.10	0.10	0.00
Acidity as lactic acid	†	†	<2	<1

† Not typically determined.

Source: *Reference Manual for U.S. Whey and Lactose Products*. Arlington, VA: U.S. Dairy Export Council, 2005. p43.

**This product has been inspected by the United States Department of Agriculture (USDA) and meets all applicable quality standards for food grade products according to USDA and U.S. Food and Drug Administration provisions.**

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