FrieslandCampina

Ingredients

product data sheet

Lactopure® lactose

The Lactopure range represents a broad range of high-quality crystalline alpha monohydrate lactose. All types are suitable as the valuable source of carbohydrates in infant and follow-on nutrition.

Product characteristics

The Lactopure range consists of dry and wet blending quality refined lactose for infant nutrition. The lactose is available in different particle sizes, enabling its use in different stages of the infant nutrition production process.

The Lactopure refined types of lactose are produced using a double crystallisation process with thorough refining steps, resulting in very pure white lactose. Lactopure regular lactose is produced from infant nutrition-quality demineralised cheese whey. It is an infant grade lactose product with a slightly yellowish color, caused by the naturally present riboflavin (vitamin B_2).

FrieslandCampina Domo also has several pharma types of lactose available that can be applied in hypo-allergenic infant nutrition.

All Lactopure lactose products are Halal-certified.

Application

Lactose is a disaccharide, consisting of galactose and glucose. It is the primary carbohydrate source in milk. About 40% of the energy value of human milk is provided by lactose (EFSA Scientific opinion, 2014). Lactose is therefore an important source of energy, which has shown to have additional positive effects such as the ability to stimulate the absorption of calcium (Abrams et al, 2002). Furthermore, when lactose is not fully digested and it reaches the ileum, it supports the growth of beneficial bacteria in the gut (Scientific Committee on Food, 2003).

The EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) points at lactose as the preferred source of carbohydrates in infant and follow-on formula (EFSA Scientific opinion, 2014). In Europe cow's milk-based infant formula should contain at least 1,1g lactose/100 kJ (EFSA Scientific opinion, 2014).

As Lactopure is available in a range of different particle sizes, there is always a type that best suits your specific application. Due to its high quality, Lactopure can be added in the dry phase of infant formula process (for instance on the fluid bed), as part of the mineral/vitamin mix or in a dry blending mixer, resulting in a capacity increase and reduced production costs. It can also be applied in the wet phase of the process.

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Packaging
Lactopure is available in 25kg multiple-layer paper bags with a polyethylene inner liner and in big bags.

Shelf life and storage conditions
Lactopure lactose is stable during long-term storage (36 months) when stored under the proper conditions. Lactopure products are best stored in original, unopened packaging under clean, cool and dry conditions, away from direct sunlight and separated from strongly odorous materials.

Product information

	Refined Coarse	Refined Sieved	Refined Crystals	Refined Sieved Fine	Regular Powder	Refined Powder	Refined Fine	Refined Fine Powder
Mesh	Coarse	70M	Crystals	110M	150M	150M	200M	200M
Sizing	-	Sieved	-	Sieved	Milled	Milled	Milled	Milled
Production location	Veghel	Veghel	Borculo	Veghel	Beilen	Borculo	Veghel	Borculo

Typical composition*

Lactose (%)	99.7		
Protein (%)	< 0.1	0.1	< 0.1
Vitamin B_2 (mg/kg)	< 0.1	4 - 9	< 0.1
Sulfated ash (%)	< 0.1		
Free moisture (%)	0.1		

* Please refer to the specifications for guaranteed limits
Minerals, trace elements and vitamins are not further specified as they do not have a significant contribution to the final infant formula product.

Sensorial

Color	white	off white	white
Taste	slightly sweet		

Microbiology dry blend use

TPC 30 (cfu/g)	max. 500
Yeasts (cfu/g)	max. 10
Moulds (cfu/g)	max. 10
Enterobacteriaceae	absent in 10x10 g*
E. coli	absent in 10 g**
Salmonella	absent in 60x25 g
Cronobacter spp.	absent in 30x10 g

* Differs for Veghel (absent in 3x25 g)
** Differs for Veghel (absent in 3x50 g)

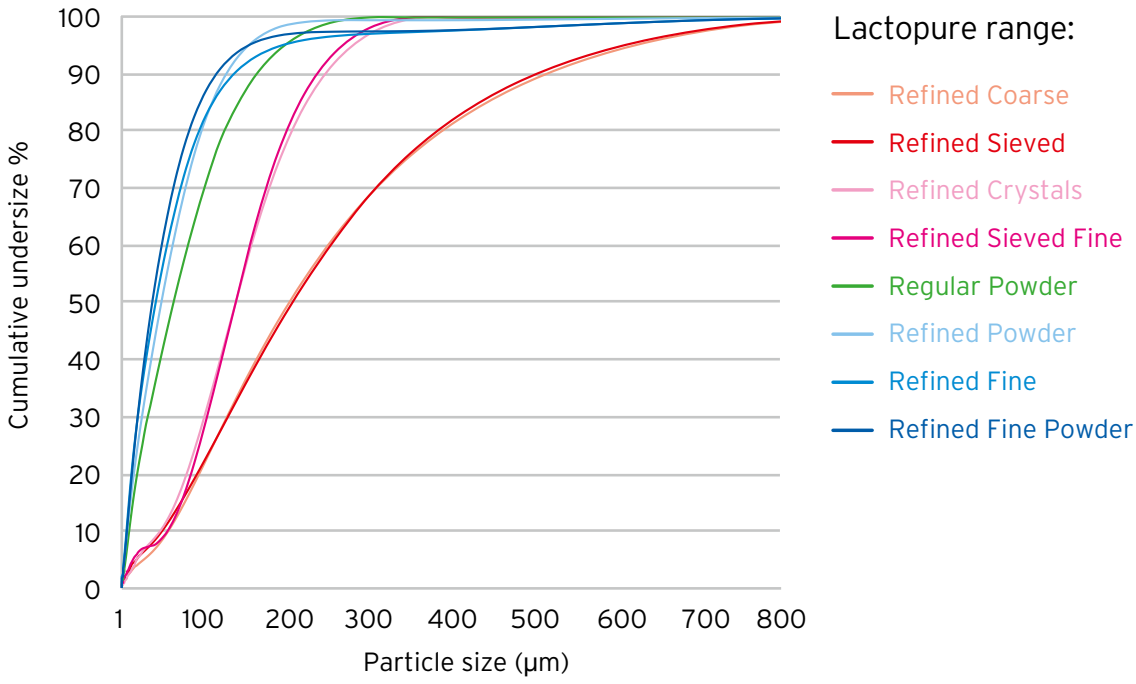
Microbiology wet blend use

TPC 30 (cfu/g)	max. 1,000
Yeasts (cfu/g)	max. 50
Moulds (cfu/g)	max. 50
Enterobacteriaceae	absent in 10 g
E. coli	absent in 10 g
Salmonella	absent in 60x25 g

Nutritional	
Energy (kcal/100g)	380
Total fat (g/100g)	0
Total carbohydrate (g/100g)	95
Lactose (g/100g)	95
Total Protein (g/100g)	0

Particle size distribution*	Refined Coarse	Refined Sieved	Refined Crystals	Refined Sieved Fine	Regular Powder	Refined Powder	Refined Fine	Refined Fine Powder
D_{10} (µm)	60	50	50	55	10	8	7	7
D_{50} (µm)	210	210	140	140	65	50	40	40
D_{90} (µm)	500	500	250	240	165	125	140	115

* Indicational values as measured using Malvern laser diffraction (D10, D50 and D90 represent the value where, respectively, 10, 50 and 90% of the volume of the particles are smaller)



Particle size distribution

As shown in the graph above, the Lactopure range covers a broad particle size spectrum. Lactopure Refined Coarse and Lactopure Refined Sieved are the coarsest types of lactose, with similar particle size distribution on average. In the latter type, the largest crystals/agglomerates are sieved off, which results in a more uniform particle size.

Lactopure Refined Crystals and Lactopure Refined Sieved Fine both contain somewhat smaller lactose crystals. The relatively large particle size of all unmilled lactose types enhances a uniform distribution in the dry blending process.

Lactopure Regular Powder is the coarsest of the milled lactose products. Lactopure Refined Powder, Refined Fine and Refined Fine Powder are finer milled types of lactose with decreasing particle sizes. Milled lactose is used, for example, in vitamin/mineral premixes or dosed on the fluid bed.

Alongside the other benefits, our broad range of lactose products provides continuity and added flexibility in product interchangeability.

References

EFSA Scientific opinion on the essential composition of infant and follow-on formulae, EFSA Journal 2014;12(7):3760.

Abrams SA, Griffin IJ, Davilla PM. Calcium and zinc absorption from lactose-containing and lactose-free infant formulas. Am J Clin Nutr 2002;76:442-6.

Scientific Committee on Food. Report of the Scientific Committee on Food on the Revision of Essential Requirements of Infant Formulae and Follow-on Formulae (2003).

Potential consumer benefits are not to be considered as health claims. They should be considered as potential leads that might be developed into health claims complying with the local legal requirements.

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