



LACTOSE FREE APPLICATIONS

26.11.2020

CONFECTIONERY

APPLICATIONS

LACTOSE FREE

Global demand for lactose free products has increased significantly during the last few years.

We have solutions to help you in production of lactose free products

Easy to replace basic milk with Valio Eila® lactose free milk powders

- Lactose content of Eila® powders is max 0.1%
- Fresh and pure taste of milk

Option to choose different taste profiles

- Natural milk taste with Valio Eila® PRO lactose free
- Sweet taste with Valio Eila® SWEET

Easy to handle in process with Eila® PRO lactose free powders

- Less hygroscopic than lactose hydrolysed milk powders
- 20-25% smaller dosage



CONFECTIONERY

APPLICATIONS

TASTE ENHANCEMENT

Lactose free chocolate

Option to choose different taste profiles (fig. 1.)

- Natural milk taste with Valio Eila® PRO
- Sweet taste with Valio Eila® SWEET

Easy to process as viscosity and yield stress are stable (table 1)

- Yield stress or viscosity is not increase

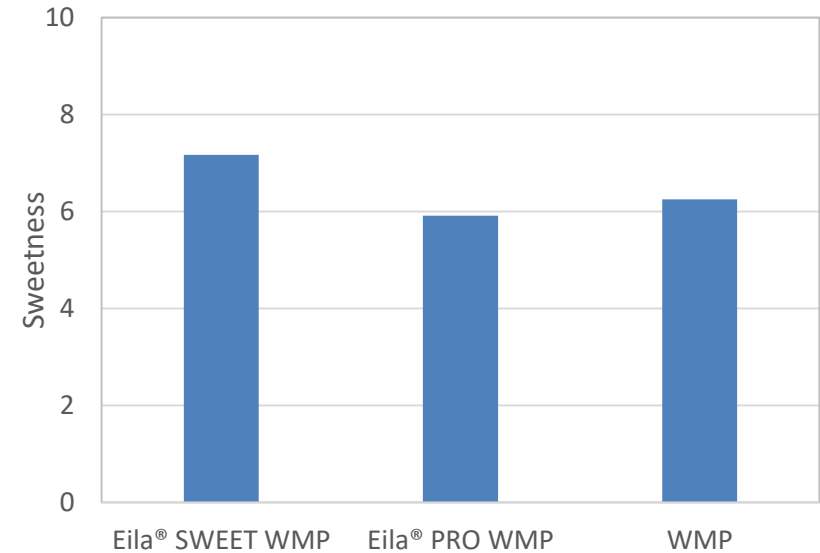


Figure 1. Sweetness of chocolates produced with Eila® SWEET WMP, Eila® PRO WMP and WMP.

Table 1. Use of Eila® powders reduce slightly viscosity of chocolate mass. Chocolate masses are easy to process.

	Yield stress (Pa)	Viscosity (Pas)
Eila® SWEET WMP	17.1	4.3
Eila® PRO WMP	16.1	3.1
WMP	27.9	4.5

ICE CREAM

APPLICATIONS

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ICE CREAM

APPLICATIONS

Lactose free ice creams

Sensory analysis showed significant differences in many attributes (figure 1)

- Lactose free powders
 - Increased dairy odor
 - Reduced melt rate

Ice crystals size measurement showed that with lactose free powders ice crystals size were significant smaller (figure 2)

Texture of lactose free ice creams were significant softer than standard ice cream

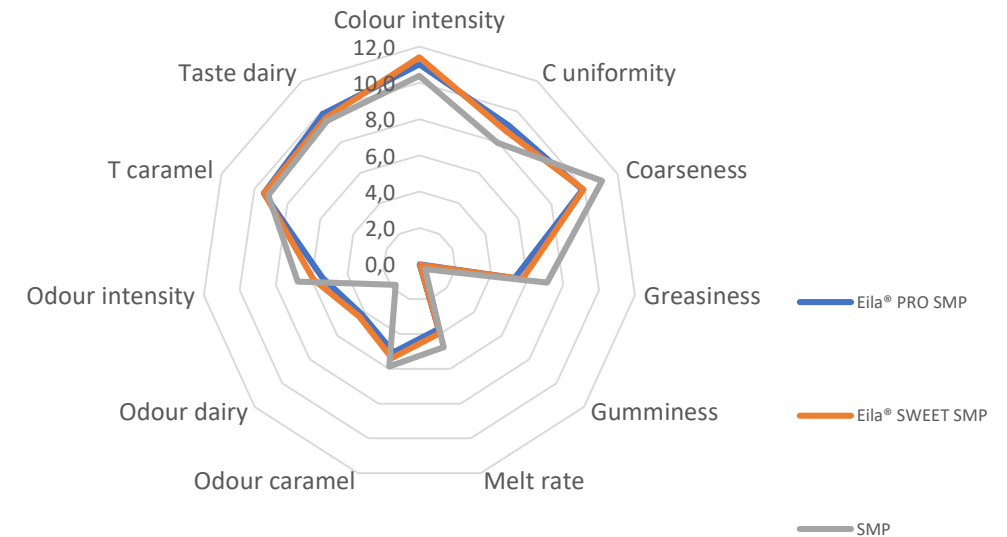


Figure 1. Sensory evaluation of ice creams made with different powders (trained panel, n=16)

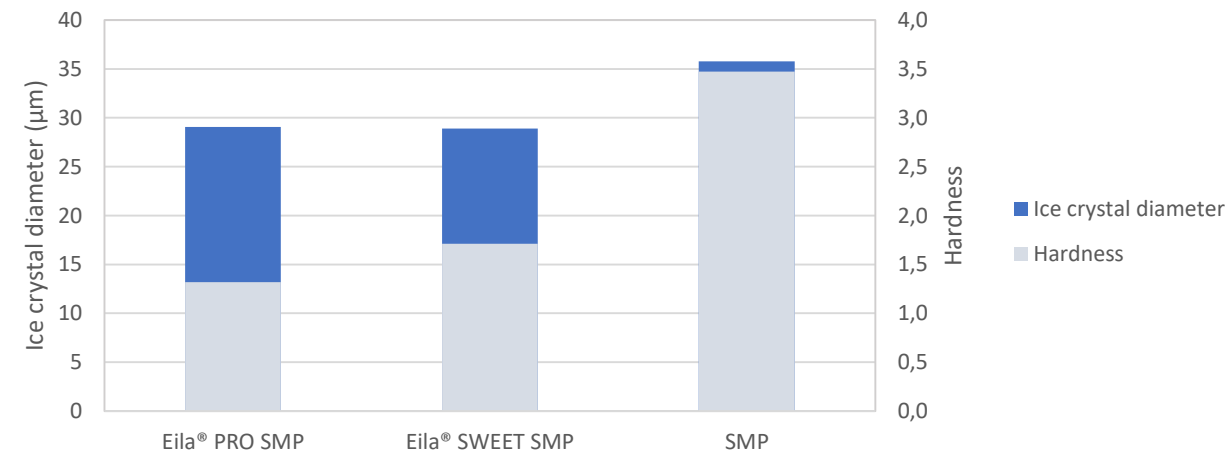


Figure 2. Hardness of ice cream and ice crystal size in ice creams made with different powders (n=3).

DAIRY

APPLICATIONS

Valio Eila[®] lactose free milk powders contain nutritionally high quality milk proteins and minerals and give rich and milky taste for dairy applications

- **Excellent, rich, milky, slightly sweet taste**
- **Well-balanced combination of all milk components**
- **High in protein – Valio Eila[®]SMP 47% & Valio Eila[®] WMP 32%**
 - Option to reduce dosage 20–25%
 - Option to increase protein level
- **Low in carbohydrates**
 - 25% lower than standard SMP
- **Suitable for pasteurised, ESL and UHT (direct steam injection) flavoured milk drinks and spoonable dairy products**

Nutrition content of milk drink produced with SMP and Eila[®]SMP.

Dosage level is 20% less and total carbohydrate level 40% lower.

	Milk drink with SMP	Milk drink with Eila [®] SMP
Dosage of ingredient (%)	9.1	7.3
Protein (%)	3.2	3.4
Fat (%)	0.09	0.04
Lactose (%)	4.8	<0.01
Carbohydrate (%)	4.8	2.9

DRINK POWDER

APPLICATIONS

- **Excellent, natural milky taste**
- **High in protein and calcium & low in carbohydrates -> ideal for products with health benefits, such as bone health, weight management, growth support and muscle strength**
Valio Eila® SMP for high protein and low fat drink powder products
Valio Eila® WMP for extra energy and nutritional boost
- **Easily digested**
- **Examples of consumer groups for drink powders made with Valio Eila® lactose free milk powders**
 - Children of different ages
 - Adults who exercise regularly
 - Pregnant and lactating women
 - Seniors
 - All age groups with sensitive stomach



BAKERY

APPLICATIONS

Eila® lactose free milk powders give a golden brown colour, excellent taste, texture and longer self life for different bakery applications

- **Bakery products stay fresh for longer**
Good water binding properties
- **Lower dosage than regular SMP due to high protein content**
- **Shorter baking time than with products containing standard milk powders**
Browning is faster
- **Improving texture and taste in gluten free bakery products**

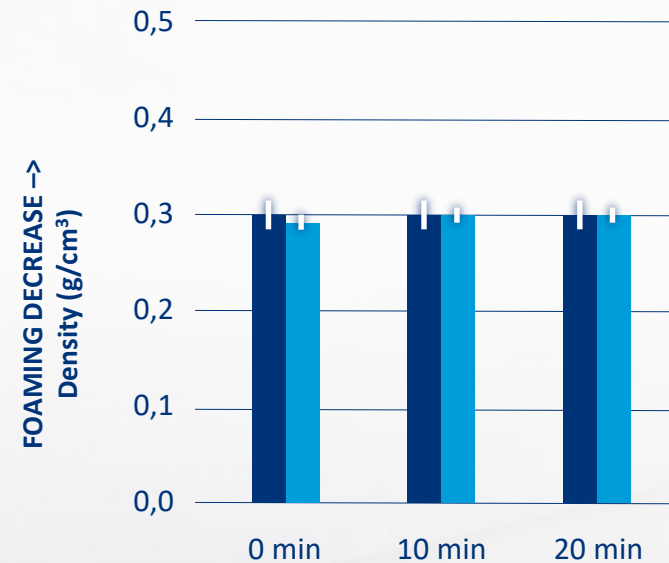


DESSERT

APPLICATIONS

Valio Eila® lactose free milk powders give delicious and rich, slightly toffee-like taste and excellent texture with good foaming properties for dessert applications

- **Option to get different flavour profiles**
 - Fresh taste
 - Intensive taste of caramel
- **Good foaming properties**
 - Similar foaming properties than egg (see figure)
- **Easy to handle in process**
 - Fast caramelization time
 - Option to reduce dosage
 - 25% lower for Valio Eila® SMP
 - 5% lower for Valio Eila® WMP
- **Option to increase protein level in dessert**



Densities and stability of sugar-egg (reference) and sugar-Eila® foams after whipping up for 6 min (n=3).

- Reference
- Eila® 10% without egg



READY MEAL

APPLICATIONS

Valio Eila® lactose free milk powders give excellent rich taste and texture for ready meal and meat applications

- **Provide excellent, rich taste**
- **Maintain good texture without syneresis**
Proteins improve water binding
- **Improves the nutritional value of meat products**
High milk protein level
Natural milk minerals
- **Lower dosage due to high protein content**
20-25% smaller dosage than standard milk powders
- **Valio Eila® lactose free WMP provides especially good boiling properties and creamy taste due to its high fat content**



LACTOSE FREE INFANT FORMULAS WITH VALIO EILA® MILK POWDERS

Lactose-free infant formula can be used to prevent abdominal distension and other intestinal irritation caused by lactose malabsorption.

Lactose free infant formulas can be based on Valio Eila® powder with a suitable carbohydrate source such as maltodextrin or glucose syrup and whey protein to achieve optimal whey casein ratio close to breast milk.

The recent relaxation of China's one-child policy has led to a baby boom, fuelling milk formula sales. Lactose-free special baby milk formula has benefited most. Value sales shot up by 28% in 2015. The next most dynamic markets were Argentina, Mexico, Saudi Arabia and Hungary.

Source: Euromonitor International



Breast milk is the best choice for baby

Using infant formulas is second to breastfeeding, a fact supported by WHO. Babies should be breastfed exclusively for 6 months, with continued breastfeeding after introduction of complementary food. A healthcare professional should be consulted before introducing infant formula or complementary food to a child's diet.

International Code Of Marketing of Breast-milk Substitutes. World Health Organization. Geneva 1981.

VALIO SOLUTIONS IN LACTOSE FREE IMF

WE OFFER BEST SOLUTIONS AND SUPPORT FOR PRODUCTION
OF LACTOSE FREE INFANT MILK FORMULAS

EXAMPLE OF LACTOSE FREE IMF RECIPE

INGREDIENTS:

Source of carbohydrate:	Maltodextrin
Source of casein:	Valio Eila® skimmed milk powder / Valio Eila® whole milk powder
Source of whey protein:	whey protein isolate
Source of fat:	vegetable oil
Other nutrients:	minerals, vitamins

VALIO SOLUTION:

EILA® LACTOSE FREE MILK POWDER

- GOOD SOLUBILITY AND WETTABILITY
- GOOD, RICH MILKY TASTE
- NATURAL MILK MINERALS AND VITAMINS

SUPPORT IN MARKET SPECIFIC REGULATORY REQUIREMENTS



NUTRITIONAL SUPPLEMENTS

Valio Eila® lactose free milk powders contain nutritionally high quality milk protein and minerals for different nutritional supplement applications like sport, weight management and ageing

- **High in protein - Valio Eila® SMP 47% & Valio Eila® WMP 32%**
- **High quality milk proteins**
Casein helps to maintain a steady supply of amino acids for muscles
Whey protein is needed rapidly after exercising
- **Low in carbohydrates**
- **High content of milk minerals and vitamins**
Opportunity to use claims *such as normal energy-yielding metabolism, normal muscle function, the maintenance of normal bones
- **Delicious taste for high protein applications**

**Depend on concentration of minerals/vitamins in final products. EU- legislation.*



