NOLA™ Fit 5500
Product Information
Version: 21 PI GLOB EN 11-16-2020

Description
NOLA™ Fit 5500 is a novel highly-purified and standardized liquid wide spectrum *Bifidobacterium bifidum* β-galactosidase (lactase). It is produced by submerged fermentation on a vegetable substrate using a selected strain of *Bacillus licheniformis* kept under contained conditions and not present in the final product. The product hydrolyses lactose to a mixture of glucose and galactose. The product is a premium lactase particularly suitable for fermented milks and cheese manufacture and to avoid off-flavor typically associated with lactose free UHT/ESL milk products.

![Chemical structure of lactose, glucose, and galactose](image)

Shelf life
24 months from quality release when stored according to the recommended storage conditions. The shelf life is limited to 3 months after opening, provided the product is maintained according to the recommended storage conditions.

Transport condition
Ambient temperature. If transit time is more than 7 days, transport the product between 2 and 8 °C / 32 and 46 °F.

Patent information*
Patented

Application
NOLA™ Fit 5500 may be used in various dairy-based products such as milk, cream, fermented products, cheese, whey drinks, whey/whey permeate, dulce de leche, ice cream and other desserts. The product is suitable for:
- Lactose free/reduced lactose products (Lactose malabsorption/intolerance);
- Increased sweetness without increasing caloric content;
- Reduction of added sugar, flavors;
- Improved appearance/stability by preventing lactose crystallization;
- Improved product characteristics (e.g. improved scoopability in ice cream);

Dosage
500-18000 BLU/l milk

Material No: 350502
Size 6X1 L
Type Bottle in box
Storage temp: 0 - 8 °C / 32 - 46 °F
Conditions: Protect from light. Keep closed in the original container.

*The information contained herein is to the best of our knowledge and belief, true and accurate and the product(s) mentioned herein does not infringe the intellectual property rights of any third party. The product(s) may be covered by pending or issued patents, registered or unregistered trademarks, or similar intellectual property rights. All rights reserved.
Dosage in Denmark limited to \(=5,600\) BLU/L milk.

The composition of the milk/substrate and preceding treatment will influence lactase activity during hydrolysis. Dosage is dependent on the initial lactose concentration. Contrary to yeast neutral lactase typically used, the product continues to hydrolyze lactose in fermented milk products down to approx. pH 4.5 and also remains at a higher relative activity at both low(er) and high(er) temperatures. The activity of the product is expressed in Bifido Lactase Units (BLU), a proprietary Chr. Hansen test methodology. The test method is available on request.

Directions for use
Directions for use are highly dependent on the application. Application sheets for milk, yogurt and ice cream are available upon request.

Composition
Glycerol (E 422), Water, Beta-galactosidase

Specification

Properties
Average activity: 5500 BLU/g Guaranteed activity: \(\geq 5.000\) BLU/g
Guaranteed activity is the minimum activity at best-before date.

Content
Enzyme type: Lactase Enzymatic composition: 100 % beta-galactosidase

Physical Properties
Color: Colorless to amber Form: Liquid
Solubility: Water soluble Odor: Slightly fermented
pH: 5,40 - 7,00 Density: 1,10 - 1,20

The product may exhibit batch-to-batch color variations. This has no influence on the activity.

Formulation
Glycerol %: 45,0 %

Microbiological quality
Aerobic plate count: \(< 100\) cfu/ml Yeast and mould: \(< 1\) cfu/ml
Coliform bacteria: \(< 1\) cfu/ml Escherichia coli: Absent in 25ml
Salmonella spp.: Absent in 25ml Listeria monocytogenes: Absent in 25ml
Anaerobic Sulphite-reducers: \(< 1\) cfu/ml Coagulase-positive staphylococci: Absent in 1ml

Comments
Methods are available on request.
Our fermentation produced enzymes are tested for the relevant mycotoxins and metabolites according to JECFA's General Specifications for Enzymes.
This product complies with the recommended purity specifications for food-grade enzymes given by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the Food Chemical Codex (FCC) with heavy metal specifications for Lead (\(\leq 5\) ppm), Cadmium (\(\leq 0.5\) ppm), Mercury (\(\leq 0.5\) ppm) and Arsenic (\(\leq 3\) ppm).

Technical Data

Temperature
The desired degree of hydrolysis can be obtained by selecting the appropriate temperature, time and dosage for the reaction. The optimal temperature is between 35-45 °C (95-113 °F).
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**pH**
The product is a wide spectrum lactase with the optimum pH being between 5.0 and 7.0. The enzyme is strongly inhibited at pH values below 4.5.

The figure below illustrates the influence of pH on lactase activity using whey permeate substrate (5% lactose) at 37°C (104°F).

![Graph showing pH effect on lactase activity](image)

**Purity**
This product is one of the purest lactase products available on the market.

**Technical support**
Chr. Hansen's Application and Product Development Laboratories and personnel are available if you need further information.

**Dietary Information**

<table>
<thead>
<tr>
<th>Kosher</th>
<th>Kosher Pareve Excl. Passover</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halal</td>
<td>Certified</td>
</tr>
<tr>
<td>Vegetarian</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Handling precautions**
For detailed handling information, please refer to the appropriate Safety Data Sheet. Enzymes may cause sensitization upon inhalation and irritation upon skin contact. The use of personal protection equipment such as gloves, goggles and respiratory protection can prevent sensitization. For additional guidelines refer to 'Guide to the safe handling of microbial enzymes preparations' published by the Association of Manufacturers and Formulators of Enzyme Products (AMFEP) and 'Working Safely With Enzymes' by the Enzyme Technical Association (ETA).

According to EU legislation, disposal of packaging material of this product should be treated as hazardous waste. Alternatively, or for non EU countries, packaging may be disposed of as normal waste by rinsing with plenty of water to ensure no enzyme residues are present.

**Legislation**
The product complies with JECFA (FAO/WHO) and FCC recommended specifications for food grade enzymes. The legal use of enzymes in food processing is governed by the general food law and by Reg. (EC) No 1332/2008. In France and in Denmark additional requirements may apply.
The product is intended for use in food.

**Labeling**
Enzymes, as processing aids, generally do not need to be labeled on the final product. However, local legislation and standards of identity for the final product should always be consulted.

**Trademarks**
Product names, names of concepts, logos, brands and other trademarks referred to in this document, whether or not appearing in large print, bold or with the ® or TM symbol are the property of Chr. Hansen A/S or an affiliate thereof or used under license. Trademarks appearing in this document may not be registered in your country, even if they are marked with an ®.

*Patent No.*
US20170156357A1, EP2234501, CN104472683, CN104322666, CN101932248

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**GMO Information**
In accordance with the below mentioned legislation of the European Union we can inform that:

NOLA™ Fit 5500 is not a GM (genetically modified) food *.
As such GM labelling is not required for NOLA™ Fit 5500 or the food it is used to produce**. Moreover, the product does not contain any GM labelled raw materials.


Please note the information presented here does not imply that the product can either be used in, or is externally certified to be used in, food or feed labelled as ‘organic’ or ‘GMO free’. Requirements to make these claims vary per country, please contact us for more information.
**NOLA™ Fit 5500**

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### Allergen Information

<table>
<thead>
<tr>
<th>List of common allergens in accordance with the US Food Allergen Labeling and Consumer Protection Act of 2004 (FALCPA) and EU Regulation 1169/2011/EC with later amendments</th>
<th>Present as an ingredient in the product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals containing gluten* and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Crustaceans and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Eggs and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Fish and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Peanuts and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Soybeans and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Milk and products thereof (including lactose)</td>
<td>No</td>
</tr>
<tr>
<td>Nuts* and products thereof</td>
<td>No</td>
</tr>
</tbody>
</table>

### List of allergens in accordance with EU Regulation 1169/2011/EC only

<table>
<thead>
<tr>
<th></th>
<th>Present as an ingredient in the product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Celery and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Mustard and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Sesame seeds and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Lupine and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Mollusks and products thereof</td>
<td>No</td>
</tr>
<tr>
<td>Sulphur dioxide and sulphites (added) at concentrations of more than 10 mg/kg or 10 mg/litre expressed as SO₂</td>
<td>No</td>
</tr>
</tbody>
</table>

* Please consult the EU Regulation 1169/2011 Annex II for a legal definition of common allergens, see European Union law at: www.eur-lex.europa.eu