

## MICROLANT® Supreme 200 NB

### Product Information

Version: 1 PI GLOB EN 12-11-2019

### Description

MICROLANT® Supreme 200 NB is a microbial coagulant, mucorpepsin, produced by submerged fermentation on a vegetable substrate with a select strain of the fungus *Rhizomucor miehei* kept under contained conditions and not present in the final product. The product contains milk-clotting enzymes which are active on kappa-casein, resulting in curd formation. It is widely used in the cheese industry as an alternative to bovine/calf rennet and Fermentation Produced Chymosin (FPC). NB indicates that this product is formulated with "No Benzoate" added. As benzoate helps maintain the microbial quality of liquid enzyme products, Chr. Hansen strongly advises customers to adhere to the recommended storage and transportation temperatures for NB products. If this is not possible, a benzoate-free powder product or liquid formulated with benzoate should be used.

Material No: 206204

Size 5 L

Type Drum

Storage temp: 0 - 8 °C / 32 - 46 °F

Conditions: Cool . Keep closed in the original container.

### Shelf life

12 months from quality release when stored according to the recommended storage conditions. The shelf life is limited to 6 weeks after opening, provided the product is kept 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 / 36 and 46 °F.

### Patent information\*

Patented

### Application

MICROLANT® Supreme 200 NB can be used for producing any type of cheese; hard, semi-hard, soft, mold-ripened, low-fat and ingredient cheeses.

### Dosage

30-60 IMCU/l milk

The correct dosage of coagulants depends on the following factors: cheese type, temperature and pH of the cheese milk, characteristics of cultures and dosage of CaCl<sub>2</sub> and NaCl. Factors may vary according to country, dairy and day. Therefore, exact dosage should be optimized to local conditions. Due to the presence of an inhibitor in some colostrum, the dosage of *Rhizomucor miehei* coagulants may have to be increased by 20% or more in raw milk if colostrum is present. Alternatively, the use of CHY-MAX® M may be considered.

### Composition

Water, Sodium chloride, Mucorpepsin

### Specification

#### Properties

Average activity: 200 IMCU/ml

Guaranteed activity:

190,0 IMCUML

Guaranteed activity is the minimum activity at best-before date.

#### Content

Enzyme type: Rhizomucor miehei

Enzymatic composition:

100 % mucorpepsin

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### Physical Properties

Color:	Light tan to brown	Form:	Liquid
Solubility:	Water soluble	Odor:	Characteristic
pH:	4,50 - 5,50	Density:	1,07 - 1,15

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

### Formulation

Sodium chloride (w/v):  $\geq 10,0\%$

### 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

### Conformity

Amylase:	Negative	Lipase:	Below detection
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Amylase and Lipase are tested in 200 IMCU

### 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.

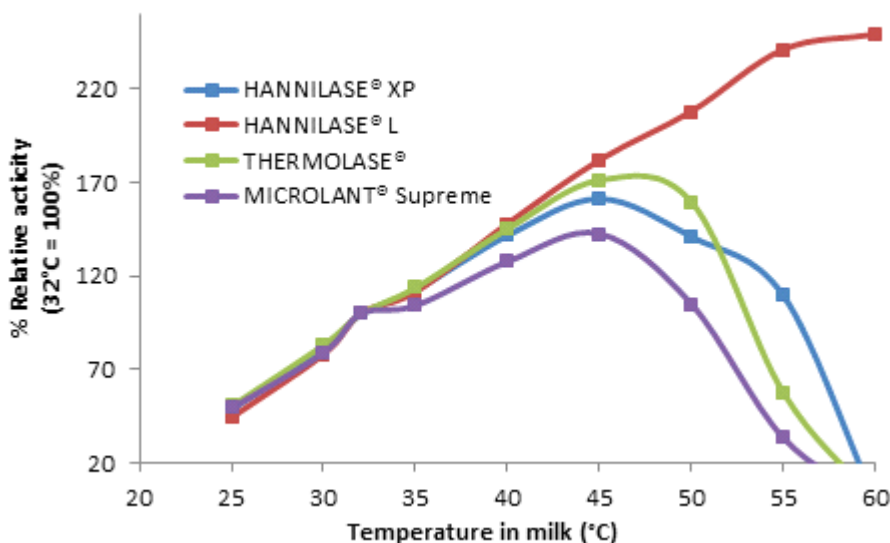
This product complies with the recommended purity specifications for food-grade enzymes given by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the Food Chemical Codex (FCC) with heavy metal specifications for Lead ( $\leq 5$  ppm), Cadmium ( $\leq 0,5$  ppm), Mercury ( $\leq 0,5$  ppm) and Arsenic ( $\leq 3$  ppm).

### Technical Data

#### Temperature

The relative activity of different coagulants depends on the temperature. For this product, the temperature optimum is approximately 36-41°C / 97°F-106°F.

The following graph demonstrates the influence of temperature on coagulant activity in milk.



**MICROLANT® Supreme 200 NB**

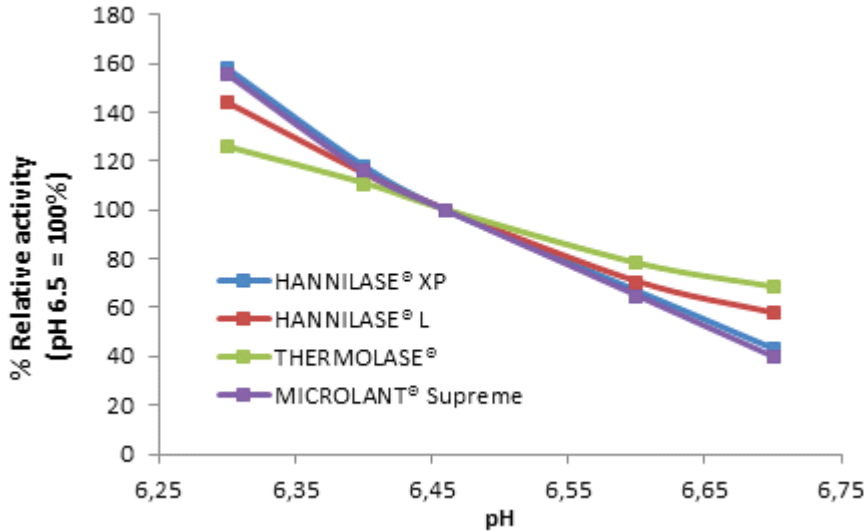
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**pH**

The activity of coagulants is pH dependent; the lower the pH, the higher the activity.

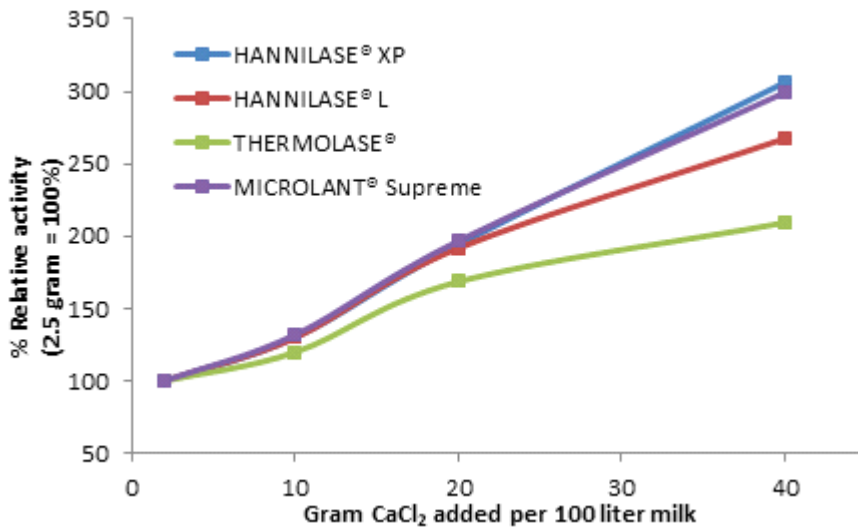
The following graph demonstrates the influence of pH on coagulant activity in milk.



**Calcium**

The addition of calcium chloride to milk increases the activity of coagulants due to a decrease in pH and also has an effect on aggregation. Excessive use of calcium chloride may induce bitterness in the cheese.

The following graph demonstrates the influence of calcium chloride on coagulant activity in milk.



**Stability**

Residual milk clotting activity in whey following pasteurization for 15 seconds at pH > 6.0 and a temperature of 72°C/ 162°F:

NATUREN® Stabo	> 5%	HANNILASE® XP	< 1%	CHY-MAX®	< 1%
NATUREN® Stamix	> 2%	HANNILASE® L	> 30%	CHY-MAX® M	< 1%
NATUREN® Premium	< 2%	THERMOLASE®	< 1%	CHY-MAX® Special	< 1%
NATUREN® Extra	< 2%	MICROLANT® Supreme	< 1%	CHY-MAX® Supreme	< 1%

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### Technical support

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

### Dietary Information

Kosher:	Kosher Pareve Excl. Passover
Halal:	Certified
Vegetarian:	Yes
VLOG:	Conform

### 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.

### Disclaimer

On request of the customer, this product is manufactured with "no benzoate added" which in case of incorrect storage or treatment may make it vulnerable to microbial contamination. Incorrect storage or treatment obliges the owner and/or user to indemnify unconditionally and to hold harmless Chr. Hansen A/S and/or its affiliates from any and all liability claims, including claims made by third parties for damages caused in connection with the use of the products in which the enclosed product is processed. The above disclaimer is without prejudice to limitations of other product specifications or to the shelf life of the product. The disclaimer does not affect any limitation of liability that is contractually agreed with the buyer of the product. It shall be the responsibility of the user to determine the suitability of our products for the user's specific purposes and the legal status for the user's intended use of our products.

### 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. However the first positive list is only expected to be published in a few years from now. In the meantime, the regulatory situation is unchanged. The safety of the enzyme has been established and documented and as such the enzyme can be used as a processing aid in all countries that do not have specific requirements for approval. In the EU, this currently means all countries except Denmark and France, which have their own national approval systems.

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 ®.

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### GMO Information

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

MICROLANT® Supreme 200 NB is not a GM (genetically modified) food\*.

As such GM labelling is not required for MICROLANT® Supreme 200 NB or the food it is used to produce\*\*. Moreover, the product does not contain any GM labelled raw materials.

\* Regulation (EC) No 1829/2003 of the European Parliament and of the Council of 22 September 2003 on genetically modified food and feed.

\*\* Regulation (EC) No 1830/2003 of the European Parliament and of the Council of 22 September 2003 concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC.

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.

### Allergen Information

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	Present as an ingredient in the product
Cereals containing gluten* and products thereof	No
Crustaceans and products thereof	No
Eggs and products thereof	No
Fish and products thereof	No
Peanuts and products thereof	No
Soybeans and products thereof	No
Milk and products thereof (including lactose)	No
Nuts* and products thereof	No
List of allergens in accordance with EU Regulation 1169/2011/EC only	
Celery and products thereof	No
Mustard and products thereof	No
Sesame seeds and products thereof	No
Lupine and products thereof	No
Mollusks and products thereof	No
Sulphur dioxide and sulphites (added) at concentrations of more than 10 mg/kg or 10 mg/litre expressed as SO <sub>2</sub>	No

\* 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](http://www.eur-lex.europa.eu)