

## NATUREN® Premium 145

### Product Information

Version: 8 PI GLOB EN 09-06-2017

### Description

NATUREN® Premium 145 is a standardized rennet manufactured from extracts of the fourth stomach of calves and/or adult bovines. The product contains a milk-clotting enzyme which is highly specific for kappa-casein, resulting in very good curd formation. The general proteolytic activity also has a significant influence on the flavor and texture development of cheeses. The active milk-coagulating enzymes are chymosin (EC 3.4.23.4) and bovine pepsin (EC 3.4.23.1).

Material No: 113504

Size 5 L

Type Can

Storage temp: 0 - 8 °C / 32 - 46 °F

Conditions: Protect from light . 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 3 months after opening, provided the product is maintained according to the recommended storage conditions.

### Transport condition

The product should be transported between -5 and 20 °C / 23 and 68 °F with a maximum transit time of 7 days outside this interval. Prolonged exposure to heat above this temperature may influence the shelf life and activity of the product.

### Patent information\*

Patented

### Application

NATUREN® Premium 145 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.

### Directions for use

Heat the milk to the desired renneting temperature. It is recommended to dilute 1 part of coagulant in 5-15 parts of water prior to use. Dilution water must have a pH <6.4 and be free of chlorine. If pH and chlorine are not under control, we recommend to mix 80% of cold water with 20% of cold milk, and use this solution for dilution. The diluted coagulant should be added immediately to the milk while stirring for 2-3 minutes to distribute the coagulant properly in the cheesemilk.

### Composition

Water, Sodium chloride, Sodium benzoate E211 (<1%), Chymosin, Pepsin

### Specification

#### Properties

Average activity: 145 IMCU/ml

Guaranteed activity: >= 138,0 IMCUML

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

#### Content

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Enzyme type:	Animal rennet	Chymosin:	83 - 88 %
Pepsin:	12 - 17 %		

### Physical Properties

Color:	Yellowish to amber	Form:	Liquid
Solubility:	Water soluble	Odor:	Characteristic
pH:	5,30 - 5,80	Density:	1,13 - 1,14

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

### Formulation

Sodium chloride (w/v):	>= 15,0 %	Sodium benzoate (w/v):	<1,0 %
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### 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.

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).

### Certificate of Analysis

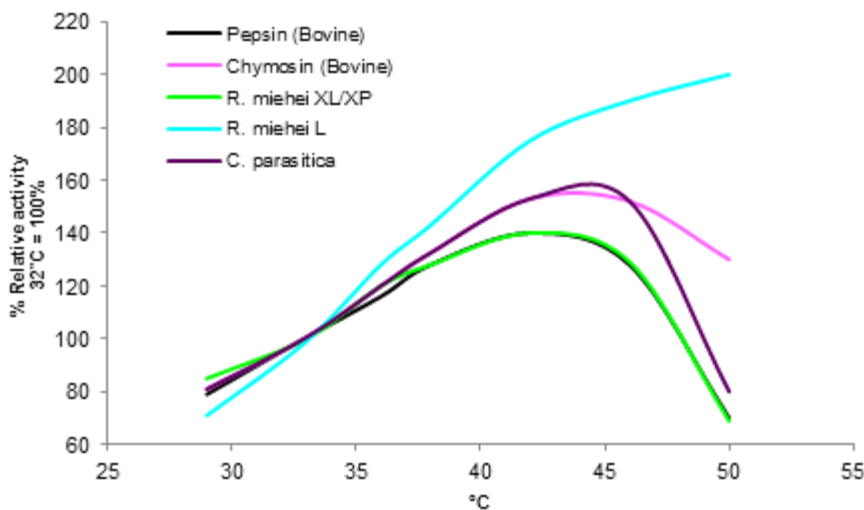
A Certificate of Analysis (CoA) will normally accompany the goods.

### Technical Data

#### Temperature

The relative activity of different coagulants depends on the temperature. For this product, the temperature optimum is approximately 36-40°C / 97-104°F.

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



**NATUREN® Premium 145**

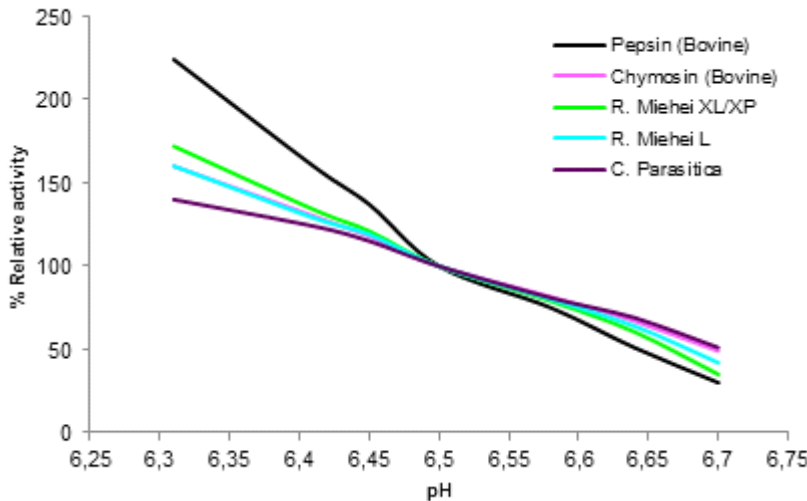
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**pH**

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

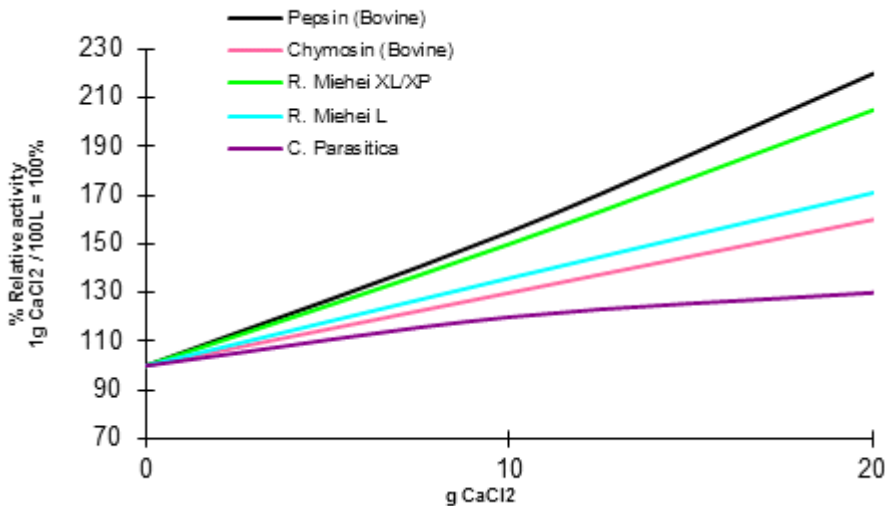
The following graph demonstrates the influence of pH on coagulant activity in milk.



**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%		

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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:	Non kosher
Halal:	Not certifiable
Vegetarian:	No
VLOG:	Certified

### Handling precautions

For detailed handling information, please refer to the appropriate Safety Data Sheet. Enzymes may cause irritation upon inhalation or skin contact among sensitive individuals. The use of personal protection equipments such as gloves, goggles and respiratory equipment can prevent sensitisation. 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).

Packaging material of this product can be disposed of as normal waste.

### Legislation

This product complies with JECFA- (FAO/WHO) and FCC-recommended specifications for food-grade enzymes. The application of enzymes in food processing is governed by general food laws and by Reg. (EC) No 1332/2008. However, the approval system provided by Reg. 1332/2008 is not yet fully operational. Chr. Hansen A/S will ensure EU approval in due time. Meanwhile, please check for local/national rules or regulations as national requirements may apply.

This product meets the French legal definition of "présure", as defined by Décret no 69-475.

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.

EP 0758380, US 5,888,966, AU 684162, AU 701254, NZ 285373.

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### GMO Information

In accordance with the legislation in the European Union\* NATUREN® Premium 145 does not contain GMOs and does not contain GM labeled raw materials\*\*. In accordance with European legislation on labeling of final food products\*\* we can inform that the use of NATUREN® Premium 145 does not trigger a GM labeling of the final food product. Chr. Hansen's position on GMO can be found on: [www.chr-hansen.com/About us/Policies and positions/Quality and product safety](http://www.chr-hansen.com/About-us/Policies-and-positions/Quality-and-product-safety).

\* Directive 2001/18/EC of the European Parliament and of the Council of 12 March 2001 on the deliberate release into the environment of genetically modified organisms with later amendments, and repealing Council Directive 90/220/EEC.

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

Regulation (EC) No 1830/2003 of the European Parliament and of the Council of 22 September 2003 concerning the traceability and labeling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms amending Directive 2001/18/EC, and with later amendments.

### 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)