

CHY-MAX® Plus

Product Information

Version: 2 PI-GLOB-EN 07-22-2013

Description

CHY-MAX® Plus is a pure bovine chymosin produced by submerged fermentation on a vegetable substrate with *Aspergillus niger* var. *awamori* kept under contained conditions and not present in the final product. 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 enzyme is chymosin (EC 3.4.23.4).

Material No:	117404		
Size	5 L	Storage temp:	0 - 8 °C / 32 - 46 °F
Type	Jerry can	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

The product should be transported between -5 and 20 °C with a maximum transit time of 4 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

CHY-MAX® Plus can be used for producing any type of cheese; hard, semi-hard, soft, mould-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 CaCl₂ and NaCl. Factors may vary according to country, dairy and day. Therefore, exact dosage should be optimized to local conditions.

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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 (<=0.5%) , Chymosin

Specification**Properties**

Average activity:	200 IMCU/ml	Guaranteed activity:	>= 190,0 IMCUML
GARNOT average activity:	935 mg/l	GARNOT guaranteed activity:	>= 880 mg/l

Guaranteed activity is the minimum activity at best before date.

Content

Enzyme type:	Fermentation produced chymosin	Chymosin %:	100
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Physical Properties

Color:	Colorless to amber	Form:	Liquid
Solubility:	Water soluble	Odor:	Characteristic
pH:	5.50 - 6.00	Density:	1.08 - 1.12

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

Formulation

Sodium chloride (w/v):	>= 10,0 %	Sodium benzoate (w/v):	<= 0,500 %
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Microbiological quality

Total count:	< 100 cfu/ml	Yeast and mould:	Negative in 1 ml
Clostridia:	< 1 cfu/ml	Coliform bacteria:	Negative in 5 ml
Escherichia coli:	Negative in 25 ml	Salmonella:	Negative in 25 ml
Listeria:	Negative in 25 ml	Staphylococcus aureus:	Negative in 1 ml

Conformity

Amylase:	below detection	Lipase:	below detection
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Amylase and Lipase are tested in 100 IMCU

Comments

Methods are available on request.

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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 (≤ 5 ppm), Cadmium ($\leq 0,5$ ppm), Mercury ($\leq 0,5$ ppm) and Arsenic (≤ 3 ppm).

Certificate of Analysis

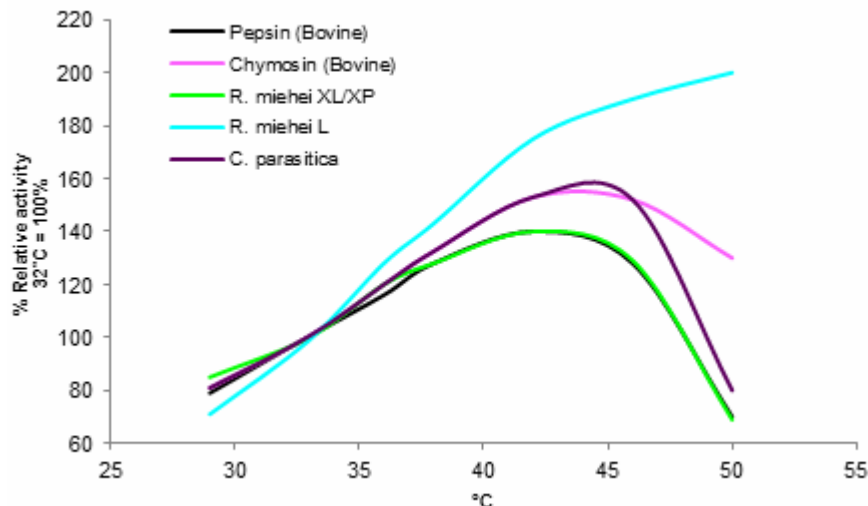
A Certificate of Analysis (CoA) will normally accompany the goods.

Technical Data

Temperature

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

Influence of temperature on clotting activity of different coagulants



pH

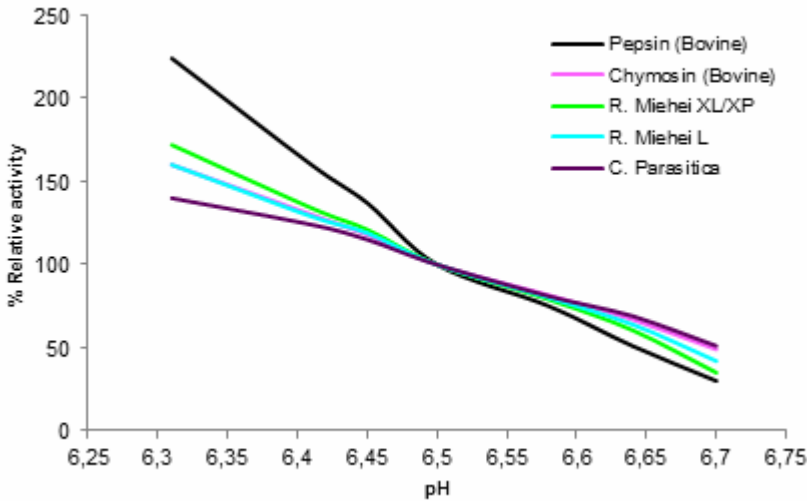
The activity of coagulants is pH dependent; the lower the pH, the higher the activity.

Influence of pH on clotting activity of different coagulants

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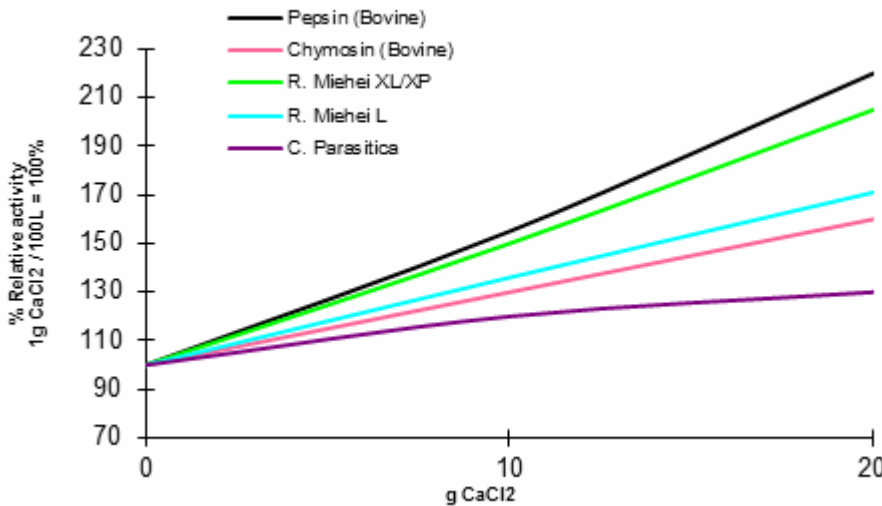
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Calcium

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.

Influence of CaCl₂ on clotting activity of different coagulants



Stability

The product is inactivated (>98%) during normal whey pasteurization (72°C for 15 sec) at pH 6.0.

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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

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.

The product is intended for use in food.

Labeling

The product is a processing aid. There are no legislative requirements for labelling processing aids on final food products.

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 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 0429490, US 6509171, US 5840570, CA 1333777, US 5364770, US 6103490, US 5578463, US 6004785, US 6379928, US 6171817, EP 0429628, FI 0110124, US 5679543, US 6130063, CA 2034487, AU 627334, JP 3153234, EP 0477280, FI 10053.

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GMO Information

In accordance with the legislation in the European Union* we can state that CHY-MAX® Plus 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 CHY-MAX® Plus 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%20us/Policies%20and%20positions/Quality%20and%20product%20safety).

* 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 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.

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 and amending Directive 2001/18/EC.

Allergen Information

List of common allergens in accordance with the US Food Allergen Labeling and Consumer Protection Act of 2004 (FALCPA) and EU labeling Directive 2000/13/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 labeling Directive 2000/13/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 at concentrations of more than 10 mg/kg or 10 mg/litre expressed as SO ₂	No

* Please consult the EU Labeling Directive 2000/13 Annex IIIa for a legal definition of common allergens, see European Union law at: www.eur-lex.europa.eu