



APPENDIX A

Product Information

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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APPENDIX B

Equipment Information

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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APPENDIX C

Packaging Information

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APPENDIX D

Phase Diagram of water

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Appendix A-1

Product information for yoghurt culture

CHR HANSEN

FD-DVS YF-3331 - Yo-Flex®

Product Information

Description

Thermophilic Yoghurt culture.
Defined **mixed strain** culture containing *Streptococcus thermophilus* and *Lactobacillus delbrueckii* subsp. *bulgaricus* blended in a convenient freeze-dried form to produce yoghurt.

Application

YF-3331 will produce set yoghurt with a low body, medium to high gel firmness and strong flavor.

The culture is ideal for manufacturing the following types of yoghurt:

- Cup Set
- Drinking

Packing

Packing size
10 x 50U

Item number
663815

Storage and shelf life

Freeze-dried cultures should be stored at -18°C (0°F) or below. If the cultures are stored at -18°C (0°F) or below, the shelf life is at least 24 months. At +5°C (41°F) the shelf life is at least 6 weeks.

Instructions for use

Remove the cultures from the freezer just prior to use. **DO NOT THAW THESE CULTURES.** Sanitize the top of the pouch with chlorine. Open the pouch and pour the freeze-dried granules directly into the pasteurized product using slow agitation. Agitate the mixture for 10-15 minutes to distribute the culture evenly.

Dosage

Recommended dosage of freeze-dried DVS cultures in units to liters:

DVS inoculation percentage	Amount of milk to be inoculated			
	1,000 l	5,000 l	10,000 l	15,000 l
500U/2500 l	200U	1,000U	2,000U	3,000U

10/5L

Incubation temperature

Recommended incubation temperature is 35-45°C (95-113°F). For more information please use Chr. Hansen's suggested recipes.

Kosher status

YF-3331 is Kosher approved (Circle K D) for year-round use, excluding Passover.

KMH/FD-DVS YF-3331/Oct2002 /1:2

Chr. Hansen A/S, 10-12 Bøge Allé, DK-2970 Hørsholm. Tel: +45 45 747474. Fax: +45 45 748813. Web: chr-hansen.com

Appendix A-2

Product information for probiotic culture

CHR HANSEN					
FD-DVS LA-5® - Probio-Tec™ Product Information					
Description	<p>Thermophilic Lactic Culture.</p> <p>Defined single strain culture containing <i>Lactobacillus acidophilus</i>. The strain has been selected from Chr. Hansen's culture collection and has a long history of safe use. Clinical documentation on possible health benefits are available upon request. LA-5 is supplied in a convenient freeze-dried form. LA-5 is a registered trademark of Chr. Hansen.</p>				
Application	The culture is primarily used in the production of probiotic milk products (fermented or sweet). The culture can be applied alone or in combination with other lactic cultures, eg Bifidobacterium, <i>Streptococcus thermophilus</i> (ABT cultures), Yoghurt cultures and Mesophilic aromatic cultures (type LD).				
Packing	<table border="1"> <thead> <tr> <th>Packing size</th> <th>Item number</th> </tr> </thead> <tbody> <tr> <td>5 x 25 g pouch</td> <td>100021</td> </tr> </tbody> </table>	Packing size	Item number	5 x 25 g pouch	100021
Packing size	Item number				
5 x 25 g pouch	100021				
Availability	LA-5 is also available in frozen form as well as in convenient to use DVS blends with other cultures.				
Storage and shelf life	Freeze-dried cultures should be stored at -18°C (0°F) or below. If the cultures are stored at -18°C (0°F) or below, the shelf life is at least 24 months. At +5°C (41°F) the shelf life is at least 6 weeks.				
Instructions for use	Remove the cultures from the freezer just prior to use. DO NOT THAW THESE CULTURES. Sanitize the top of the pouch with chlorine. Open the pouch and pour the freeze-dried granules directly into the pasteurized product using slow agitation. Agitate the mixture for 10-15 minutes to distribute the culture evenly.				
Dosage	<p>LA-5 has unique high cell count/g of culture. It is micro-aerophilic and slow growing in milk. Lactose is fermented to DL-lactic acid.</p> <p>It is recommended that LA-5 is inoculated according to the desired cell count in the final product. This is influenced by the shelf life and the pH and acidity of the product, the fermentation time and temperature applied. LA-5 is very stable and has a high resistance towards acids in fermented dairy products.</p>				
Incubation temperature	Optimum growth temperature for LA-5 is 37-40°C (99-104°F). Growth will take place in the temperature range 28-43°C (82-109°F). Due to the relatively slow acid formation of LA-5 there is very limited difference in acidification speed in the temperature range 37-43°C (99-109°F).				
Kosher status	LA-5 is Kosher approved (Circle K D) for year-round use, excluding Passover.				

ABr/LA-5-FD-PI/nov 2001/1:2

Appendix A-3

Product information for hi-maize starch

National Starch & Chemical
A member of the ICI Group

Food Products Division
7 Stanton Road
Seven Hills
NSW 2147
AUSTRALIA
Tel: (612) 9838 6000
Fax: (612) 9838 6088

TECHNICAL SERVICE BULLETIN

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Page: 1 of 1

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HI-MAIZE® 1043 - EXPORT

PRODUCT DESCRIPTION

Hi-maize®1043 is a natural, unmodified, food grade, high amylose maize starch that is an enriched source of total dietary fibre and resistant starch, and is not organoleptically detected in most product applications.

CHARACTERISTICS

A fine, white, free-flowing powder, with no off odours or flavours.

APPLICATIONS

Hi-maize®1043 may be used as a fibre source in bakery products, bread, breakfast cereals, pasta and noodles, snack foods, soups, cereal drinks, yoghurt and select dairy products.

Note: Hi-maize®1043 is not soluble.

LABELLING

Recommended labelling is MAIZE STARCH or STARCH however please check local food labelling requirements to ensure compliance.

PACKAGING

Available in 25 kg moisture barrier, multiwall paper bags.

TYPICAL ANALYSIS

Moisture	: 10.0 – 13.0%
Dietary Fibre (AOAC)	: 60% dsb min
Protein (N x 6.25)	: 1.0% max
Particle Size	
Retained 212 micron	: 1.0% max
Ash dsb	: 0.5% max
pH	: 4.0 – 6.0
Sulphur Dioxide	: <10mg/kg

Nutritional Information

Typical *as is* 13.0% moisture

Total Carbohydrate*	: 34%
Sugars	: Nil
Fat	: <0.1%
Sodium	: 65 mg/kg
Dietary Fibre*	: 52% min

* as defined by FSANZ food regulations

STORAGE

When stored under normal warehouse conditions, shelf life of unopened bags is indefinite. However, frequent stock rotation is recommended.

GENERAL

Hi-maize®1043 is both Kosher & Halal certified and is Non-GM Identity Preserved.

The information given and the recommendations made herein are based on our research and are believed to be accurate but no guaranty of their accuracy is made. In every case we urge and recommend that purchasers before using any product in full scale production make their own tests to determine to their own satisfaction whether the product is of acceptable quality and is suitable for their particular purposes under their own operating conditions. No representative of ours has any authority to waive or change the foregoing provisions but, subject to such provisions, our engineers are available to assist purchasers in adapting our products to their needs and to the circumstances prevailing in their business. Nothing contained herein shall be construed to imply the non-existence of any relevant patents or to constitute a permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of this patent. We also expect purchasers to use our products in accordance with the guiding principles of the Chemical Manufacturers Association's Responsible Care® program.

Appendix A-4

Product information of Na-alginate

Product Detail

Page 1 of 2

SIGMA-ALDRICH

Welcome Aram Pisuthipot! | Not You? | Login | Your Profile | Order Center | Search |

ORDER CENTER SEARCH CENTER

SubStructure Search Help Browse Product Lines Site Search

[Return](#)

Related Documents

MSDS
 FT-IR Condensed Phase
 FT-IR Raman
 DEA Instructions

Lot Specific Information

[Certificate of Analysis](#)

Lot #:

Options

Print Preview
 Bulk Quote
 Ask A Scientist

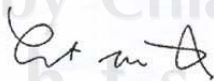
SIGMA-ALDRICH

Certificate of Analysis

Product Name	Alginate Sodium salt from brown algae, BioChemika, for immobilization (of microorganisms)
Product Number	71238
Product Brand	Fluka
CAS Number	9005-38-3
Molecular Formula	
Molecular Weight	

TEST	LOT 1120627 RESULTS
APPEARANCE (COLOUR)	FAINTLY BROWN
APPEARANCE (FORM)	POWDER
SOLUBILITY (COLOUR)	COLOURLESS
SOLUBILITY (TURBIDITY)	VERY FAINTLY TURBID (5.6-12.5 NTU)
SOLUBILITY (METHOD)	0.1G IN 10 ML H ₂ O HEAT
PH	7.5
LOSS ON DRYING	12.5 %
RESIDUE ON IGNITION	30 %
INFRARED SPECTRUM	CORRESPONDS
BIO-TESTS	GELLING CORRESPONDS
DATE OF QC-RELEASE	27/JUL/04

Sigma-Aldrich guarantees the 'Sales-Specification' values only, non-specified tests may be included as additional information. The current 'Sales-Specifications' sheet is available on request. For further information please contact our Technical Service. Sigma-Aldrich warrants, that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product for its particular use. See reverse side of invoice for additional terms and conditions of sale. The values given on the 'Certificate of Analysis' are the results determined at the time of analysis.



Dr. Gert van Look, Manager
 Quality Control
 Buchs Switzerland

Appendix B-1

Information of Spray dryer



Specification condition

- SDE 50 manufactured by J.C. Machinery and civil work Co., Ltd.
- A nozzle atomizer with a length of 44 cm
- An atomizer pressure at 15 ± 5 psi
- A co-current air flow
- An air inlet temperature at 180°C
- A blower speed at 38 Hz
- A pump speed at 40-42 Hz

Appendix C-1

Oxygen transfer rate result



ใบแจ้งผลการวิเคราะห์

ภาควิชาเทคโนโลยีการบรรจุ
คณะอุตสาหกรรมเกษตร มหาวิทยาลัยเชียงใหม่

ผู้ขอรับบริการ	โครงการเพิ่มมูลค่าให้น้ำแครอทโดยการเติมจุลินทรีย์โปรไบโอติกและการสกัดสารแคโรทีนอยดจากกากในขบวนการผลิตน้ำแครอท	วันที่ 10 กันยายน 2550
ชนิดตัวอย่าง	ถุง 2 ตัวอย่าง	

1.) Laminate Aluminium pouch

ผลการทดสอบการต้านทานการซึมผ่านของก๊าซออกซิเจน $7.342 \times 10^{-6} \text{ cm}^3/\text{m}^2 \cdot \text{d} \cdot \text{Pa}$

2.) Laminate Nylon pouch

ผลการทดสอบการต้านทานการซึมผ่านของก๊าซออกซิเจน $1.115 \times 10^{-3} \text{ cm}^3/\text{m}^2 \cdot \text{d} \cdot \text{Pa}$

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ลงชื่อ.....

(นายเปรม ทองชัย)

นักวิทยาศาสตร์

ลงชื่อ.....

(ผู้ช่วยศาสตราจารย์ ดร. พัชรินทร์ ระวีขันธ์)

รักษาการหัวหน้าภาควิชาเทคโนโลยีการบรรจุ

Appendix C-2

Oxygen transfer rate result of laminated pouch (PET/PP/Al)

Report

Company	SITTIPORN	Batch	0001
TestName	O2	Thickness	120 um
SampleName	aluminiumfoil	TestArea	S1
SampleMark	composite	SampleAmount	1
SampleFrom	THAILAND	T0	273.15
MadeModel		P0	76cmHg
Standard	ASTM1434	P1-P2	0.1Mpa
Machine	VAC-V1	GTR	0.744 cm ³ /m ² .24h.0.1MPa
Temperature	23.1Degrees	Coefficient_P	1.359E-13 cm ³ .cm/cm ² .s.cmHg
Humidity	21.7%RH	Coefficient_D	2.278E-09 cm ³ /s
Date	9/9/2007	Coefficient_S	5.966E-05 cm ³ /cm ² .s.cmHg
Provider	BANGKOK	Operator	Prem
GTR(GB1038-2000)		7.342E-06 cm ³ /m ² .d.Pa	
Coefficient_P(2000)		1.019E-16 cm ³ .cm/cm ² .s.Pa	

Appendix C-3

Oxygen transfer rate result of laminated pouch (nylon/PE)

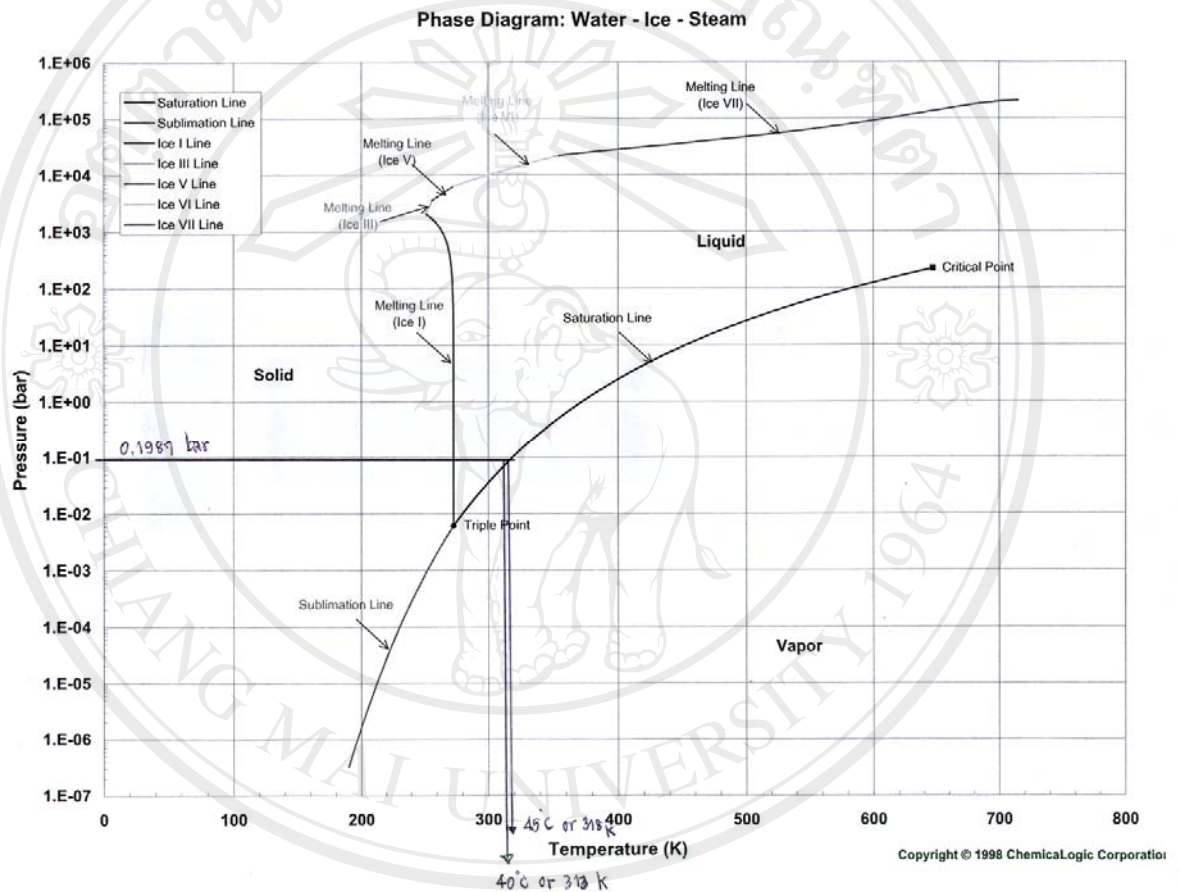
Report

Company	SITTIPORN	Batch	0001
TestName	O2	Thickness	90 um
SampleName	Nylon	TestArea	S1
SampleMark	composite	SampleAmount	1
SampleFrom	THAILAND	T0	273.15
MadeModel		P0	76cmHg
Standard	ASTM1434	P1-P2	0.1Mpa
Machine	VAC-V1	GTR	113.056cm ³ /m ² .24h.0.1MPa
Temperature	22.8Degrees	Coefficient_P	1.549E-11 cm ³ .cm/cm ² .s.cmHg
Humidity	19.6%RH	Coefficient_D	0 cm ² /s
Date	9/8/2007	Coefficient_S	0.0 cm ³ /cm ² .s.cmHg
Provider	BANGKOK	Operator	Prem
GTR(GB1038-2000)	1.115E-03 cm ³ /m ² .d.Pa		
Coefficient_P(2000)	1.161E-14 cm ³ .cm/cm ² .s.Pa		

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Appendix D

Phase Diagram of water



Vacuum Oven

- 0.1987 bar absolute pressure
- vacuum temperature 40°C or ($40 + 273 = 313^{\circ}\text{K}$)
- 45°C or ($45 + 273 = 318^{\circ}\text{K}$)

CURRICULUM VITAE

Name	Miss Tiparat Tikapunya
Date of Birth	February 6, 1979
Education	2001 Bachelor of Science degree in Biotechnology, Mahidol University, Bangkok, Thailand
Experience	2001 HACCP Supporter of Wall's Ice cream, Unilever Thai-holding Co., Ltd, Bangkok, Thailand
	2002-2003 Document Supervisor, Nipro Thailand Co., Ltd, Phra Nakhon Si Ayutthaya, Thailand
	2003-2004 Quality Assurance Supervisor, Nipro Thailand Co., Ltd, Phra Nakhon Si Ayutthaya, Thailand

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