



# Product Sheet

DSM Food Specialties B.V.

P.O. Box 1  
2600 MA Delft  
The Netherlands

## DELVO<sup>®</sup>TEC MT-50

[www.dsm.com](http://www.dsm.com)

### Description and Composition

DIRECT-SET™ highly concentrated, free-flowing, deep-frozen pelletised (DSF) or lyophilised granular (DSL) lactic acid bacteria starters, ready to be added straight to the vat.

The DELVO<sup>®</sup>TEC MT-50 DSF and DSL DIRECT-SET™ range consists of defined-strain blends of:

*Lactococcus lactis* ssp *cremoris* and/or *Lactococcus lactis* ssp *lactis*  
*Streptococcus thermophilus*

The MT-50 cultures have proven to be phage robust and stable for a long period of time. Several bacteriophage unrelated versions of the product are included in this range:

DELVO <sup>®</sup> TEC MT-50 DSF		DELVO <sup>®</sup> TEC MT-50 DSL
MT-53A, MT-53B, MT-53C, MT-53D, MT-53E, MT-53F	MT-53X, MT-53Y, MT-53Z	MT-53X
MT-54A, MT-54B, MT-54C, MT-54D, MT-54E, MT-54F	MT-54X, MT-54Y, MT-54Z	MT-54Y
MT-55A, MT-55B, MT-55C, MT-55D, MT-55E, MT-55F	MT-55X, MT-53Y, MT-55Z	MT-55Z
<i>Lc. lactis</i> ssp <i>cremoris</i> , <i>Lc. lactis</i> ssp <i>lactis</i> , <i>S. thermophilus</i>	<i>Lactococcus lactis</i> ssp <i>lactis</i> , <i>S. thermophilus</i>	

These cultures were not genetically modified according to the European Directive 2001/18/EC. They are approved for general Kosher dairy and Halal use. Kosher and Halal certificates are available upon request.

### Acidification Specifications

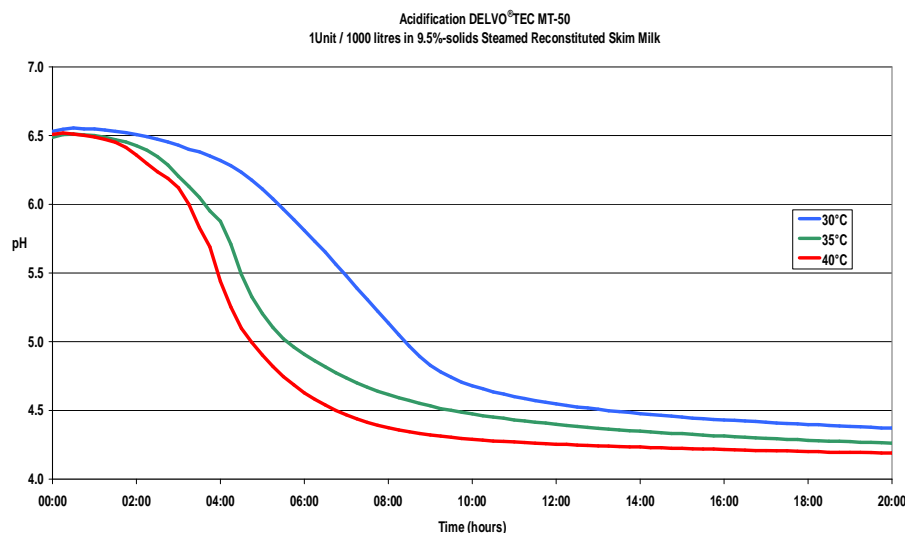
#### DSM Mesophilic Activity test

Test conditions	Substrate: RSM 9.5%-solids, 100°C/20min Temperature: 32°C Dosage: 2 Units/1000 litres
Performance	Time: 5.5 hours pH: 5.85 ± 0.10

Although diligent care has been used to ensure that the information provided herein is accurate, nothing contained herein can be construed to imply any representation or warranty for which we assume legal responsibility, including without limitation any warranties as to the accuracy, currency or completeness of this information or of non-infringement of third party intellectual property rights. The content of this document is subject to change without further notice. Please contact us for the latest version of this document or for further information. Since the user's product formulations, specific use applications and conditions of use are beyond our control, we make no warranty or representation regarding the results which may be obtained by the user. 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.

DSM Food Specialties B.V. | A. Fleminglaan 1 | 2613 AX Delft | The Netherlands | [info.food@dsm.com](mailto:info.food@dsm.com) | Trade Register Number 27235314

## Acidification curves



*NB.* The curves above are obtained in experimental laboratory conditions and are only shown for illustration purposes.

## Application guidelines

Examples	Indicative Dosage	Possibly together with
Semi-hard cheeses, e.g. Cheddar, Dutch & Continental types	1 - 2 Units /1000 L	Other DELVO <sup>®</sup> TEC and various DELVO <sup>®</sup> ADD cultures

## Microbiological properties

Microorganisms	Specifications DSF	Specifications DSL
Non lactic acid bacteria	< 500 CFU/g	< 500 CFU/g
Yeasts & Moulds	< 1 CFU/g	< 10 CFU/g
<i>Enterobacteriaceae</i>	< 1 CFU/g	< 10 CFU/g
Coagulase-positive staphylococci	< 1 CFU/g	< 10 CFU/g
<i>E. coli</i>	Absent in 25 g	Absent in 25 g
<i>Salmonella</i> spp	Absent in 25 g	Absent in 25 g
<i>Listeria monocytogenes</i>	Absent in 25 g	Absent in 25 g
Typical lactic acid bacteria count DELVO <sup>®</sup> TEC MT-50 DSF	Mesophilic	minimum 1 x 10 <sup>10</sup> cfu/g
	Thermophilic	minimum 5 x 10 <sup>9</sup> cfu/g
Typical lactic acid bacteria count DELVO <sup>®</sup> TEC MT-50 DSL	Mesophilic	minimum 1 x 10 <sup>10</sup> cfu/g
	Thermophilic	minimum 1 x 10 <sup>10</sup> cfu/g

Although diligent care has been used to ensure that the information provided herein is accurate, nothing contained herein can be construed to imply any representation or warranty for which we assume legal responsibility, including without limitation any warranties as to the accuracy, currency or completeness of this information or of non-infringement of third party intellectual property rights. The content of this document is subject to change without further notice. Please contact us for the latest version of this document or for further information. Since the user's product formulations, specific use applications and conditions of use are beyond our control, we make no warranty or representation regarding the results which may be obtained by the user. 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.

DSM Food Specialties B.V. | A. Fleminglaan 1 | 2613 AX Delft | The Netherlands | info.food@dsm.com | Trade Register Number 27235314



## Distribution and Storage

DELVO<sup>®</sup>TEC MT-50 cultures are packed in laminated sachets in standard pack sizes and shipped in polystyrene boxes with dry ice (DSF) or in cardboard boxes under ambient conditions (DSL).

Minimum Order conditions apply

DSF: Below -45°C. The shelf life is 9 months at -45°C from the date of manufacture.

DSL: Below -18°C. The activity is guaranteed for 12 months stored at or below -18°C or for 3 months stored at + 5°C.

The "Best Before" date is printed on each pack.

## Technical Service

Our Technical Service Teams can help you in selecting the most suitable starter solutions for your application by designing, supervising and discussing the results of laboratory and plant trials.

## Quality Assurance

DSM Food Specialties production sites comply with ISO 9001:2000 requirements, and apply GMP/HACCP.

DELVO<sup>®</sup>TEC products are manufactured to meet international legislative standards and can be provided with a certificate of conformity and specification sheets.

For further information please contact:

or our local representative:

DSM Food Specialties B.V.  
P.O. Box 1, 2600 MA Delft  
The Netherlands  
Tel.: +31 15 279 4001  
info.food@dsm.com  
www.dsm-foodspecialties.com

Although diligent care has been used to ensure that the information provided herein is accurate, nothing contained herein can be construed to imply any representation or warranty for which we assume legal responsibility, including without limitation any warranties as to the accuracy, currency or completeness of this information or of non-infringement of third party intellectual property rights. The content of this document is subject to change without further notice. Please contact us for the latest version of this document or for further information. Since the user's product formulations, specific use applications and conditions of use are beyond our control, we make no warranty or representation regarding the results which may be obtained by the user. 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.

DSM Food Specialties B.V. | A. Fleminglaan 1 | 2613 AX Delft | The Netherlands | info.food@dsm.com | Trade Register Number 27235314

Date of issue: December 7, 2011