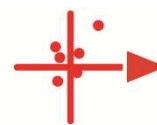


# Reference-materials

Product- and  
Price list



2026 – Version 2

Valid from May 2026



[www.qse-gmbh.de](http://www.qse-gmbh.de)



[www.muva.de](http://www.muva.de)



# Preface

The muva Kempten GmbH and the QSE GmbH make a common cause! We have bundled our strengths since May 2024. Why? Both companies are known for their expertise in the dairy industry. Muva Kempten GmbH has made a name in proficiency testing and reference materials. QSE GmbH, a wholly-owned subsidiary of Milchprüfing Bayern e.V., is firm in the areas of long-term standards and reference materials and also offers proficiency tests.

## Reference material from one hand!

Together we are paving the way for innovations for even higher quality services and products. And you can benefit from it too! Our services are now presented in this first joint catalogue of reference materials, which you are currently browsing through.

## Your advantages:

- **We offer the complete package!**  
Everything from a single source - the right building blocks for your convenience.
- **We combine our experience and improve our quality!**  
Benefit from our combined expertise.
- **We develop innovative offers!**  
Together we can respond even better to your individual requirements.

What belongs together for the benefit of the dairy industry is growing together. We are curious about what lies ahead and look forward to your trust!

Kind regards from Kempten and from Weidenbach-Triesdorf

## Your reference material-team

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# Trust is good – Control is better

In the context of quality assurance in analytical food testing, the question always arises as to how close the test result is to the "true value". This question needs to be addressed and continuously monitored. Only in this way can you demonstrate your expertise and gain the trust of your customers.

## Ensure correct results with our reference material

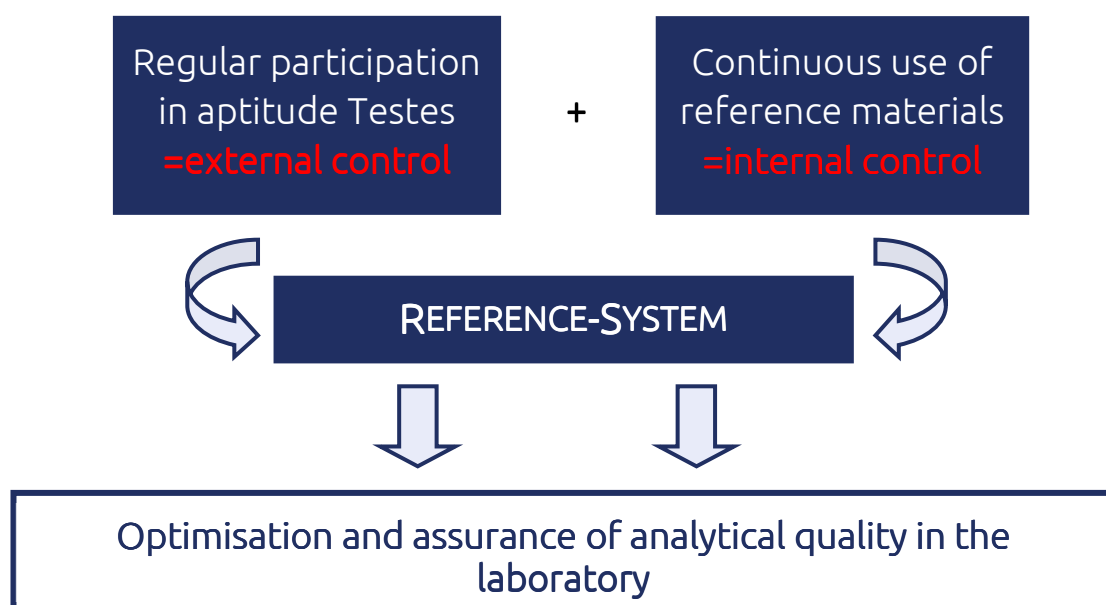
muva kempten GmbH has many years of experience in the characterisation and handling of reference materials, is involved in numerous national and international working groups, and has long been familiar with laboratory quality management and analytical quality assurance. With over 170 employees, we have outstanding expertise in analytics and related issues. Together with the QSE GmbH, an expert in long-term standards and calibration solutions, you get the best possible all-round package. Both companies are accredited by the German Accreditation Body (DAkkS) as providers of international proficiency testing according to DIN EN ISO/IEC 17043. While muva kempten GmbH is also an accredited testing laboratory according to DIN EN ISO/IEC 17025:2018-03, QSE GmbH is accredited for reference materials according to DIN EN ISO 17034 and therefore offers certified reference materials.

Depending on your requirements, you can now obtain both QSE and muva reference materials from both companies.

## Complete quality assurance

In addition to the use of reference materials, regular participation in proficiency tests is essential for every laboratory. We provide you with a complete service package consisting of reference materials, proficiency tests, seminars and in-house training courses, as well as competent support and advice from our accredited laboratory.

With the help of these tools, it is possible to ensure that analytical results are highly likely to be correct, i.e. close to the real value. In addition, complete and plausible documentation of the accuracy of the analyses is possible. This gives you the best possible security and allows you to prove the reliability of your results to business partners and certification bodies at any time.



## Our reference materials

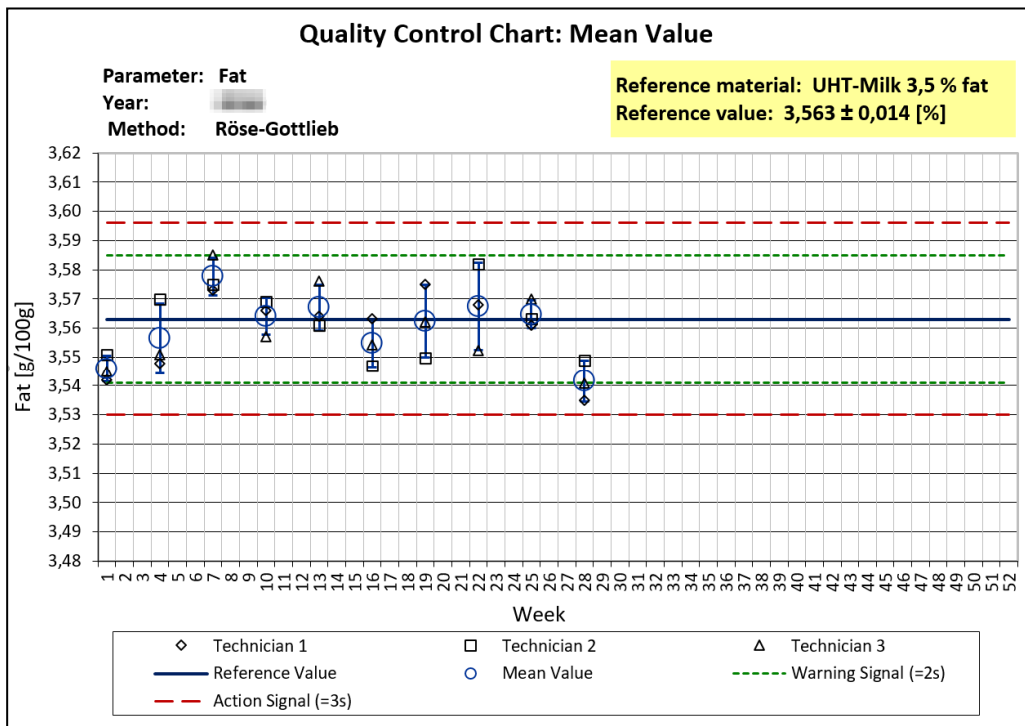
The reference materials of muva kempten GmbH and QSE GmbH are produced following the current international standards and guidelines (e.g. DIN EN ISO 17034) and are high-quality characterised.

- The reference values for the various parameters are based on extensive data sets, usually obtained from several interlaboratory comparisons. This ensures that the values are highly reliable.
- The certified reference materials (CRM) of QSE GmbH are tested by several independent accredited laboratories.
- The reference materials are examined for homogeneity of the material with regard to all parameters.
- The reference materials are primarily designed for long-term stability. They are subject to regular stability monitoring during the storage period.
- You will receive a clear data sheet or certificate for each reference material

## Possible applications of the reference material

Continuous monitoring of chemical, physical and microbiological analysis allows quality control charts to be generated. In addition to the regular control of analytical reproducibility, errors, trends, and systematic deviations can be recognised at a glance and can be quickly and effectively rectified. Furthermore, reference material can be used to:

- Optimizations of analysis processes
- Researching the causes of inconsistencies in analyses
- Training and monitoring of personnel
- Estimation of the measurement uncertainty
- Calibration of analysers
- Validation of methods



# Information

## News

In our catalog, you will find our new designation Retest date instead of MHD. This is the abbreviation for retest date. This date marks the time when a reference material is re-evaluated. This ensures that quality and safety standards are maintained.

## Identification of frozen samples



You will recognise frozen reference material by the following symbol. Your orders for these reference materials will be dispatched in an insulated box. These will be reimbursed on a pro-rata basis if the material will be returned. Refer to page 32 for more information.

## Edition status

This catalogue contains products and prices that are valid from 1st May 2026.

## Our discount system

You will find our new discount scale on page 33:

from 8 units:	5 %
from 15 units:	10 %
from 35 units:	15 %
from 51 units:	subject to agreement

## How to order

Our order forms are on pages 34 and 35. Order the entire range via muva kempten GmbH or via QSE GmbH. You can also order informally via our contact email addresses or by telephone.

Call us if you have any questions. We'll be happy to go over them with you. Please note that invoicing by muva and QSE will continue to be carried out separately.

## Contacts muva / QSE

If you have any questions, contact us by email or telephone. We will respond promptly and provide the assistance you require.

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# Chemical-physical analyses



Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price € **	
<b>UHT MILK</b>							
<b>muva-M-0159</b>	<b>UHT Milk</b> 1,5 % Fat	Fat	g/100g	1,642	500 ml	31,55	
		Dry matter	g/100g	10,83			
		Protein	g/100g	3,569			
		Lactose (monohydrate)	g/100g	4,687			
		Retest date: 10/2026	Freezing point	°C			-0,5182
		Density	g/ml	1,0329			
		Calcium	mg/kg	1270			
<b>muva-M-0161</b>	<b>UHT Milk</b> 3,5 % Fat	Fat	g/100g	3,487	500 ml	31,55	
		Dry matter	g/100g	12,30			
		Protein	g/100g	3,33			
		Retest date: 07/2026	Lactose (monohydrate)	g/100g			4,997
		Freezing point	°C	-0,5108			
		pH value	/	6,79			
<b>muva-M-0162</b> <i>NEU</i>	<b>Skimmed UHT Milk</b>	Fat	g/100g	0,135	1000 ml	31,55	
		Dry matter	g/100g	9,98			
		Protein	g/100g	3,974			
		Retest date: 07/2026	Lactose (monohydrate)	g/100g			4,978
		Freezing point	°C	-0,5308			
		Density	g/ml	1,0364			
<b>UHT MILK (LACTOSE REDUCED, LACTOSE FREE)</b>							
<b>muva-ML-2323</b>	<b>UHT Milk</b> (lactose free)	Lactose (monohydrate): via HPLC	g/100g	0,004	40 ml	33,80 -15% discount	
		via Enzym. (Gal.)	g/100g	0,010			
		via Enzym. (Glc.)	g/100g	0,015			
		Retest date: 05/2026	Galactose enzym.	g/100 g			2,36
		Galactose (HPLC)	g/100 g	2,41			
		Glucose enzym. & HPLC	g/100 g	2,37			
<b>muva-ML-2324</b>	<b>UHT Milk</b> (lactose reduced)	Lactose (monohydrate): via HPLC	g/100g	0,389	40 ml	33,80 -15% discount	
		via Enzym. (Gal.)	g/100g	0,405			
		via Enzym. (Glc.)	g/100g	0,422			
		Retest date: 05/2026	Galactose enzym.	g/100 g			2,24
		Glucose enzym. & HPLC	g/100 g	2,26			
		<b>muva-ML-2325</b> <i>NEU</i>	<b>UHT Milk</b> (lactose free)	Lactose (monohydrate): via HPLC			g/100g
via Enzym. (Gal.)	g/100g			0,044			
via Enzym. (Glc.)	g/100g			0,017			
Retest date: 05/2027	Galactose enzym.			g/100 g	2,42		
Galactose (HPLC)	g/100 g			2,41			
Glucose enzym.	g/100 g			2,45			
Glucose (HPLC)	g/100 g			2,39			

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price € **
<b>muva-ML-2326</b> <i>NEW</i>	<b>UHT Milk</b> (lactose reduced)	Lactose (monohydrate): via HPLC	g/100g	0,333	40 ml	33,80
		via Enzym. (Gal.)	g/100g	0,375		
	via Enzym. (Glc.)	g/100g	0,364			
	Retest date:	Galactose enzym.	g/100 g	2,26		
	05/2027	Galactose (HPLC)	g/100 g	2,27		
		Glucose enzym.	g/100 g	2,29		
		Glucose (HPLC)	g/100 g	2,24		
<b>ALKALINE PHOSPHATASE ACTIVITY IN MILK</b>						
<b>muva-MAP-2516</b> available starting 06/2026	<b>Milk</b>	Alkaline phosphatase activity	mU/l			❄️
<b>RAW MILK</b>						
<b>muva-RO-0772</b>	<b>Raw milk</b> nat. fat content	Fat	g/100g	4,563	40ml	28,40 -15% discount
		Dry matter	g/100g	13,79		
	Protein	g/100g	3,815			
	Lactose Monohydrat	g/100g	4,624			
	Retest date:	Freezing point	°C	-0,5214		
	06/2026	pH value	/	6,71		
		Casein	g/100g	3,003		
<b>muva-RO-0773</b>	<b>Raw milk</b> 3 % fat content	Fat	g/100g	3,414	40ml	28,40
		Dry matter	g/100g	12,77		
	Protein	g/100g	3,891			
	Lactose Monohydrat	g/100g	4,624			
	Retest date:	Freezing point	°C	-0,5140		
	08/2026	pH value	/	6,74		
		Casein	g/100g	3,083		
<b>muva-RO-0774</b>	<b>Raw milk</b> nat. fat content	Fat	g/100g	4,327	40ml	28,40 -15% discount
		Dry matter	g/100g	13,29		
	Protein	g/100g	3,386			
	Lactose Monohydrat	g/100g	4,807			
	Retest date:	Freezing point	°C	-0,5198		
	07/2027	pH value	/	6,67		
<b>muva-RO-0775</b>	<b>Raw milk</b> 3,7 % fat content	Fat	g/100g	3,719	40ml	28,40
		Dry matter	g/100g	12,87		
	Protein	g/100g	3,585			
	Lactose Monohydrat	g/100g	4,836			
	Retest date:	Freezing point	°C	-0,5223		
	07/2027	pH value	/	6,67		
		Urea	mg/l	203,6		

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**
muva-RO-0776	<b>Raw milk</b>	Fat	g/100g	4,358	40ml	28,40
		Dry matter	g/100g	13,42		
	nat. fat content	Protein	g/100g	3,543		
		Lactose Monohydrat	g/100g	4,760		
	Retest date: 12/2027	Freezing point	°C	-0,5212		
		pH value	/	6,67		
	Casein	g/100g	2,812			
muva-RO-0777	<b>Raw milk</b>	Fat	g/100g	3,486	40ml	28,40
		Dry matter	g/100g	12,74		
	3,5 % fat content	Protein	g/100g	3,717		
		Lactose Monohydrat	g/100g	4,809		
	Retest date: 12/2027	Freezing point	°C	-0,5244		
		pH value	/	6,67		
	Casein	g/100g	2,895			
muva-RO-0778 <i>NEW</i>	<b>Raw milk</b>	Fat	g/100g	4,374	0ml	28,40
		Dry matter	g/100g	13,49		
	nat. fat content	Protein	g/100g	3,587		
		Lactose Monohydrat	g/100g	4,806		
	Retest date: 11/2028	Freezing point	°C	-0,5255		
		pH value	/	6,67		
	Casein	g/100g	2,803			
muva-RO-0779 <i>NEW</i>	<b>Raw milk</b>	Fat	g/100g	3,253	40ml	28,40
		Dry matter	g/100g	12,58		
	3,5 % fat content	Protein	g/100g	3,780		
		Lactose Monohydrat	g/100g	4,792		
	Retest date: 11/2028	Freezing point	°C	-0,5214		
		pH value	/	6,69		
	Casein	g/100g	2,948			

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**
<b>FATTY ACID COMPOSITION IN RAW MILK</b>						
<b>muva-FM-2109</b>	Fatty acid composition in raw milk Retest date: 06/2026	Butyric acid (C4:0)	g/100 g	3,38	40 ml	63,05
		Caproic acid (C6:0)	g/100 g	2,09		
		Caprylic acid (C8:0)	g/100 g	1,23		
		Capric acid (C10:0)	g/100 g	2,78		
		Lauric acid (C12:0)	g/100 g	3,44		
		Myristic acid (C14:0)	g/100 g	11,89		
		Myristoleic acid (C14:1)	g/100 g	1,28		
		Palmitic acid (C16:0)	g/100 g	34,11		
		Palmitoleic acid (C16:1 cis)	g/100g	1,93		
		Stearic acid (C18:0)	g/100 g	6,93		
		Oleic acid (C18:1 cis-9)	g/100 g	17,69		
		C18:1 total trans	g/100 g	2,07		
		Vaccenic acid (C18:1 trans)	g/100 g	1,53		
		Linoleic acid (C18:2 all-cis-9,12)	g/100 g	1,07		
		C18:2 total trans	g/100g	0,98		
Linolenic acid (C18:3 all-cis-9,12,15)	g/100 g	0,45				
Arachidic acid (C20:0)	g/100 g	0,14				
<b>muva-FM-2110</b>	Fatty acid composition in cream powder Retest date: 06/2031	Butyric acid (C4:0)	g/100 g	3,63	80 g	63,05
		Caproic acid (C6:0)	g/100 g	2,22		
		Caprylic acid (C8:0)	g/100 g	1,28		
		Capric acid (C10:0)	g/100 g	2,95		
		Lauric acid (C12:0)	g/100 g	3,52		
		Myristic acid (C14:0)	g/100 g	11,41		
		Myristoleic acid (C14:1)	g/100 g	0,94		
		Palmitic acid (C16:0)	g/100 g	30,62		
		Palmitoleic acid (C16:1 cis)	g/100g	1,65		
		Stearic acid (C18:0)	g/100 g	8,78		
		Vaccenic acid (C 18:1 trans)	g/100 g	0,83		
		Oleic acid (C18:1 cis-9)	g/100 g	19,61		
		C18:1 total trans	g/100 g	1,77		
		Linoleic acid (C18:2 all-cis-9,12)	g/100 g	1,76		
		C18:2 total trans	g/100g	0,83		
Linolenic acid (C18:3 all-cis-9,12,15)	g/100 g	1,76				
Fat	g/100g	0,54				
Arachidic acid (C20:0)	g/100 g	0,13				
<b>AFLATOXIN M1 IN MILK</b>						
<b>muva-MA-2413</b>	Aflatoxin M1 in milk Retest date: 08/2026	Aflatoxin M1 (HPLC)	µg/kg	0,015	40 ml	31,00
		Aflatoxin M1 (ELISA)		0,025		
<b>muva-MA-2412</b>	Aflatoxin M1 in milk Retest date: 08/2026	Aflatoxin M1 (HPLC)	µg/kg	0,039	40 ml	31,00
		Aflatoxin M1 (ELISA)		0,063		

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**
<b>VETERINARY DRUGS (quantitative)</b>						
muva-TAZ-2701	Veterinary drugs in milk Retest date: 01/2027	Enrofloxacin	µg/kg	103,73	40 ml	74,50 ❄️
		Sulfadimidin		101,50		
		Tetracyclin		118,88		
muva-TAZ-2706	Veterinary drugs in milk Retest date: 01/2027	Penicillin G	µg/kg	4,06	40 ml	74,50 ❄️
		Oxacillin		31,20		
		Cloxacillin		31,14		
		Amoxicillin		4,09		
		Ampicillin		4,30		
		Cefalexin		106,1		
		Cefapirin		71,07		
		Cefoperazone		52,60		
muva-TAZ-2707	Veterinary drugs in milk Retest date: 01/2027	Gentamicin	µg/kg	102,0	40 ml	34,50 ❄️
muva-TAZ-2708	Veterinary drugs in milk Retest date: 01/2027	Erythromycin	µg/kg	42,99	40 ml	34,50 ❄️
<b>VETERINARY DRUGS in Milk (qualitative) for inhibitor test system</b>						
muva-TAM-2804	Inhibitor positiv Retest date: 10/2026	Cefalonium		Content ca. 10% above MRL	40 ml	34,40 ❄️
muva-TAM-2805	Inhibitor positiv Retest date: 10/2026	Penicillin G		Content ca. 10% above MRL	40 ml	34,40 ❄️
muva-TAM-2807	Inhibitor negativ Retest date: 10/2026	Inhibitor-free			40 ml	34,40 ❄️
<b>EVAPORATED MILK / COFFEE CREAM</b>						
muva-KM-0520	Evaporated milk 8 % Fat Retest date: 09/2026	Fat	g/100g	8,14	170 g	31,00 -15% discount
		Dry matter	g/100g	25,71		
		Protein	g/100g	6,16		
		Ash	g/100g	1,32		
		Phosphorus	mg/kg	1696		
muva-KM-0521	Coffee cream 10 % Fat Retest date: 11/2026	Fat	g/100g	10,14	250 g	31,00
		Dry matter	g/100g	18,49		
		Protein	g/100g	3,22		
		Ash	g/100g	0,65		
		Phosphorus	mg/kg	895,7		
muva-KM-0522	Evaporated milk 4 % Fat Retest date: 11/2026	Fat	g/100g	4,02	170 g	31,00
		Dry matter	g/100g	24,34		
		Protein	g/100g	7,06		
		Ash	g/100g	1,51		
		Phosphorus	mg/kg	2046,0		
muva-KM-0523 <i>NEW</i>	Evaporated milk 8 % Fat Retest date: 05/2027	Fat	g/100g	8,14	170 g	31,00
		Dry matter	g/100g	25,81		
		Protein	g/100g	6,11		
		Ash	g/100g	1,29		
		Phosphorus	mg/kg	1707,0		

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**	
<b>YOGHURT</b>							
muva- JO-1437 <i>NEW</i>	Yoghurt 1,8% Fat	Fat	g/100g	1,86	500 g	32,00	
		Dry matter	g/100g	11,93			
		Protein	g/100g	4,81			
		L-lactic acid	mg/100g	918			
		Retest date: 09/2026	Lactic acid	mg/100g			1010
			pH value	/			4,18
muva- JO-1438 <i>NEW</i>	Yoghurt 3,8% Fat	Fat	g/100g	3,76	500 g	32,00	
		Dry matter	g/100g	13,43			
		Protein	g/100g	4,69			
		L-lactic acid	mg/100g	951			
		Retest date: 09/2026	Lactic acid	mg/100g			1028
			pH value	/			4,15
<b>UHT CREAM</b>							
muva- R-0445	UHT Cream 30% Fat	Fat	g/100g	30,28	ca. 140 ml	29,00  -15% discount	
		Dry matter	g/100g	36,54			
		Retest date: 07/2026	Protein	g/100g			2,38
muva- R-0446	UHT Cream 36% Fat	Fat	g/100g	35,26	ca. 140 ml	29,00 	
		Dry matter	g/100g	41,01			
		Retest date: 09/2026	Protein	g/100g			2,23
muva- R-0447	UHT Cream 15% Fat	Fat	g/100g	14,96	200 ml	29,00	
		Dry matter	g/100g	22,88			
		Retest date: 06/2026	Protein	g/100g			3,10
muva- R-0448	UHT Cream 30% Fat	Fat	g/100g	29,73	200 ml	29,00	
		Dry matter	g/100g	36,21			
		Retest date: 06/2026	Protein	g/100g			2,50
muva- R-0449 <i>NEW</i>	UHT Cream 12% Fat	Fat	g/100g	12,49	200 ml	29,00	
		Dry matter	g/100g	20,83			
		Retest date: 07/2026	Protein	g/100g			3,14
			Lactose monohydrate (enzym.)	g/100g			4,11
muva- R-0450 <i>NEW</i>	UHT Cream 30% Fat	Fat	g/100g	29,71	200 ml	29,00	
		Dry matter	g/100g	35,99			
		Retest date: 07/2026	Protein	g/100g			2,45
			Lactose monohydrate (enzym.)	g/100g			< 0,10

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price € **	
<b>BUTTER</b>							
muva-BU-1315	<b>Sweet cream butter</b>	Solids non-fat	g/100g	1,54	250 g	33,30 -15% discount	
		Water	g/100g	15,63			
		pH value	/	6,75			
		Retest date: 09/2026	Cholesterol	mg/kg			2262
		Butyric acid methyl ester	g/100g	3,86			
muva-BU-1316	<b>Sweet cream Butter salted</b>	Solids non-fat	g/100g	2,45	250 g	33,30 -15% discount	
		Water	g/100g	15,89			
		pH value	/	6,51			
		Cholesterol	mg/kg	2299			
		Retest date: 08/2026	Sodium	mg/100g			463
		Chloride	mg/100g	709			
		Sodium Chloride via Chloride	g/100g	1,17			
		Sodium Chloride via Sodium	g/100g	1,18			
Butyric acid methyl ester	g/100g	3,72					
muva-BU-1317	<b>Mild acid butter</b>	Solids non-fat	g/100g	1,35	250 g	33,30	
		Water	g/100g	15,51			
		Retest date: 09/2026	pH value	/			6,19
		Cholesterol	mg/kg	2304			
		Butyric acid methyl ester	g/100g	3,81			
muva-BU-1318	<b>Sweet cream Butter</b>	Solids non-fat	g/100g	1,44	250 g	33,30	
		Water	g/100g	15,72			
		pH value	/	6,82			
		Retest date: 10/2028	Cholesterol	mg/kg			2329
		Butyric acid methyl ester	g/100g	3,83			
muva-BU-1319	<b>Mild acid Butter</b>	Solids non-fat	g/100g	2,75	250 g	33,30	
		Water	g/100g	16,21			
		pH value	/	6,47			
		Cholesterol	mg/kg	2237			
		Retest date: 10/2028	Sodium	mg/100g			559
		Chloride	mg/100g	873			
		Sodium Chloride via Chloride	g/100g	1,44			
		Sodium Chloride via Sodium	g/100g	1,42			
Butyric acid methyl ester	g/100g	3,81					





Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**
<b>PROCESSED CHEESE</b>						
<b>muva-SK-0324</b>	<b>Processed cheese</b>	Fat	g/100 g	26,16	250 g	41,30
		Dry matter	g/100 g	45,86		
	55 % f.i.d.m.	Protein N x 6,38	g/100 g	8,31		
		Lactose (monohydrate)	g/100 g	7,53		
	Retest date:	Ash	g/100g	3,07		
	4 weeks after shipment	pH value	/	5,74		
		Citronic acid	mg/100g	256,4		
	Frozen shipping possible on request	Chloride	mg/100g	338		
		Sodium Chloride: aus Chloride	g/100g	0,56		
		Retest date: Sodium	mg/100g	657		
	09/2026	Sodium Chloride: aus Sodium	g/100g	1,67		
		Gesamtphosphorus	g/100g	0,76		
<b>muva-SK-0325</b>	<b>Processed cheese</b>	Fat	g/100 g	13,85	250 g	41,30
		Dry matter	g/100 g	36,39		
	40 % f.i.d.m.	Protein N x 6,38	g/100 g	10,89		
	Retest date:	Lactose (monohydrate)	g/100 g	7,84		
	4 weeks after shipment	Ash	g/100g	3,26		
		pH value	/	5,66		
	Frozen shipping possible on request	Citronic acid	mg/100g	327,0		
		Chloride	mg/100g	236		
		Sodium Chloride: aus Chloride	g/100g	0,39		
		Retest date: Sodium	mg/100g	589		
	02/2028	Sodium Chloride: aus Sodium	g/100g	1,50		
<b>muva-SK-0326</b>	<b>Processed cheese</b>	Fat	g/100 g	17,97	250 g	41,30
		Dry matter	g/100 g	36,05		
	50 % f.i.d.m.	Protein N x 6,38	g/100 g	11,21		
	Retest date:	Ash	g/100g	3,12		
	4 weeks after shipment	pH value	/	5,75		
		Chloride	mg/100g	149		
	Frozen shipping possible on request	Sodium Chloride: aus Chloride	g/100g	0,25		
		Sodium	mg/100g	585		
		Retest date: Phosphorus	g/100g	0,752		
		07/2028	Sodium	g/100g		

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**
<b>CREAM CHEESE</b>						
muva- FK-1235	<b>Cream cheese</b> 66 % F.i.d.m.	Fat	g/100g	21,38	300 g	33,30
		Dry matter	g/100g	32,18		
	Protein	g/100g	5,77			
	Lactose	g/100g	3,03			
	Retest date:	pH value	/	4,82		
	10/2026	Chloride	mg/100g	479		
	Sodium chloride	g/100g	0,79			
	Sodium (Na)	g/100g	0,76			
Sodium	mg/100g	298				
muva- FK-1236	<b>Cream cheese</b> 45 % F.i.d.m.	Fat	g/100g	10,79	300 g	33,30
		Dry matter	g/100g	23,75		
	Protein	g/100g	7,26			
	Lactose	g/100g	2,78			
	Retest date:	pH value	/	4,57		
	10/2026	Chloride	mg/100g	433		
	Sodium chloride	g/100g	0,71			
	Sodium (Na)	g/100g	0,69			
Sodium	mg/100g	272				
muva- FK-1237	<b>Cream cheese</b> 18 % F.i.d.m.	Fat	g/100g	3,69	300 g	33,30
		Dry matter	g/100g	19,58		
	Protein	g/100g	10,30			
	Lactic acid	mg/100 g	600,8			
	Lactose	g/100g	2,75			
	Retest date:	pH value	/	4,52		
	11/2026	Chloride	mg/100g	352		
	Sodium chloride	g/100g	0,58			
Sodium (Na)	g/100g	0,52				
Sodium	mg/100g	203				
<b>HARD CHEESE</b>						
muva- HA-1516	<b>Hard cheese</b> Type Emmentaler	Fat	g/100g	28,18	100 g	35,00
		Dry matter	g/100g	62,07		
	Protein	g/100g	27,96			
	pH value	/	5,62			
	Chloride	mg/100g	566			
	Retest date:	Sodium Chloride: via Chloride	g/100g	0,93		
	12/2026	Sodium	mg/100g	396		
Sodium Chloride: via Sodium	g/100g	1,01				
muva- HA-1517 <i>NEW</i>	<b>Hard cheese</b> Type Emmentaler	Fat	g/100g	33,68	100 g	35,00
		Dry matter	g/100g	65,62		
	Protein	g/100g	27,13			
	pH value	/	5,90			
	Chloride	mg/100g	780			
	Retest date:	Natrium	mg/100g	489		
	09/2028	Sodium	mg/100g	1,24		
Sodium Chloride: via Sodium	g/100g	1,29				

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price € **
<b>SEMI HARD CHEESE</b>						
muva-K-1806	Semi hard cheese Retest date: 12/2027	Fat	g/100g	33,74	100 g	35,00 ❄️
		Dry matter	g/100g	63,62		
		Protein	g/100g	25,36		
		pH value	/	5,86		
		Chloride	mg/100g	719		
		Sodium Chloride: via Sodium	g/100g	0,17		
		Sodium Chloride: via Chloride	g/100g	0,44		
<b>ALKALINE PHOSPHATASE - CHEESE</b>						
muva-HAP-2507	Hard cheese freeze-dried Retest date: 02/2029	Alkaline Phosphatase Activity	mU/g	14	ca. 5 g	29,40
<b>MILK POWDER</b>						
muva-MP-0224	Cream powder roller dried Retest date: 10/2027	Fat	g/100g	42,27	80 g	36,15
		Dry matter	g/100g	98,03		
		Protein	g/100g	19,21		
		Lactose (monohydrate)	g/100g	30,63		
		Ash	g/100g	4,44		
		pH value	/	6,69		
		Free Fat	g/100g	32,82		
Nitrate	mg/kg	2,89				
muva-MP-0225	Skimmed milk powder Retest date: 06/2031	Fat	g/100g	0,90	80 g	36,15
		Dry matter	g/100g	96,31		
		Protein	g/100g	37,65		
		Lactose (monohydrate)	g/100g	47,92		
		pH value	/	6,67		
Ash	g/100g	7,84				
muva-MP-0226	Whole milk powder roller-dried Retest date: 06/2031	Fat	g/100g	26,05	80 g	36,15
		Dry matter	g/100g	97,19		
		Protein	g/100g	26,43		
		Lactose (monohydrate)	g/100g	37,34		
		pH value	/	6,66		
Ash	g/100g	5,81				
muva-MP-0227	Cream-powder roller-dried Retest date: 06/2031	Fat	g/100g	42,39	80 g	36,15
		Dry matter	g/100g	97,84		
		Protein	g/100g	30,00		
		Lactose (monohydrate)	g/100g	31,11		
		Free Fat	g/100g	32,96		
		Nitrate	mg/kg	6,35		
Ash	g/100g	4,49				

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**	
muva- MP-0230	Skimmed milk powder (lactose free)	Fat	g/100g	0,66	80 g	36,15	
		Dry matter	g/100g	96,52			
		Protein	g/100g	36,48			
		Ash	g/100g	7,72			
		Retest date: 06/2031	Lactose (monohydrate)	g/100 g			0,022
		pH value	/	6,56			
<b>WHEY POWDER</b>							
muva- MO-0616	Whey powder	Fat	g/100g	2,59	80 g	38,85	
		Dry matter (87 °C)	g/100g	96,02			
		Dry matter (102 °C)	g/100g	95,75			
		Protein	g/100g	35,56			
		Lactose (monohydrate)	g/100g	49,49			
		Retest date: 10/2026	Ash	g/100g			6,35
		Calcium	mg/kg	4988			
		Magnesium	mg/kg	964			
		Nitrate	mg/kg	20,0			
		NPN	g/100g	3,01			
Total lactic acide	mg/100g	319,0					
muva- MO-0617	Whey powder	Fat	g/100g	0,77	80 g	38,85	
		Dry matter (102 °C)	g/100g	98,57			
		Protein	g/100g	12,66			
		Lactose (monohydrate)	g/100g	72,63			
		Retest date: 02/2027	Ash	g/100g			7,64
		Calcium	mg/kg	5145			
		Magnesium	mg/kg	1153			
		Nitrate	mg/kg	36,6			
		NPN	g/100g	2,88			
		Total lactic acide	mg/100g	389,8			
muva- MO-0618	Whey powder	Fat	g/100g	2,11	80 g	38,85	
		Dry matter (87 °C)	g/100g	95,41			
		Dry matter (102 °C)	g/100g	95,00			
		Protein	g/100g	36,09			
		Lactose (monohydrate)	g/100g	48,68			
		Retest date: 06/2029	Ash	g/100g			5,52
		Calcium	mg/kg	5479			
		Magnesium	mg/kg	969			
		Nitrate	mg/kg	37,90			
		NPN	g/100g	3,41			
Total lactic acide	mg/100g	620,0					

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**	
<b>WHEY PROTEIN CONCENTRATE</b>							
muva- MPK-0908	<b>Whey protein concentrate</b>	Fat	g/100g	5,35	80 g	34,40	
		Water	g/100g	5,06			
		Protein	g/100g	77,51			
		Retest date: 05/2030	Lactose (monohydrate)	g/100g			6,31
		Ash	g/100g	3,28			
muva- MPK-0909	<b>Whey protein concentrate</b>	Fat	g/100g	5,48	80 g	34,40	
		Water	g/100g	4,99			
		Protein	g/100g	72,06			
		Retest date: 06/2031	Lactose (monohydrate)	g/100g			10,535
		Ash	g/100g	3,58			
<b>SODIUM-CASEINATE</b>							
muva- CA-0908	<b>Sodium Caseinate</b>	Fat	g/100g	0,77	60 g	34,40	
		Water	g/100g	5,44			
		Protein	g/100g	91,02			
		Retest date: 01/2028	Lactose (monohydrate)	g/100g			0,057
		Ash	g/100g	3,48			
<b>CARBOHYDRATES</b>							
muva- KI-1110	<b>Carbohydrates</b>	Glucose	g/100g	0,69	80 g	35,00	
		Infant food (powder):	Fructose	g/100g			1,60
			Lactose (monohydrate)	g/100g			23,73
		Retest date: 06/2029	Saccharose	g/100g			0,97
muva- KI-1111	<b>Carbohydrates</b>	Glucose	g/100g	1,04	80 g	35,00	
		Infant food (powder):	Fructose	g/100g			0,87
			Lactose (monohydrate)	g/100g			24,03
		Retest date: 06/2029	Saccharose	g/100g			0,84
<b>VITAMINS</b>							
muva- VI-3301 <i>NEW</i>	<b>Vitamins</b>	Infant food (pre-mixed)	Vitamin A	µg/100ml	52,7	200 ml	40,00
			Vitamin C	mg/100ml	13,8		
			Vitamin E	mg/100ml	1,64		
			Vitamin B 1	µg/100ml	138,3		
		Retest date: 07/2026	Vitamin B 2	µg/100ml	149,0		
			Vitamin B 6	µg/100ml	56,9		
			Vitamin B 12	µg/100ml	0,30		
muva- VI-3302 <i>NEW</i>	<b>Vitamins</b>	Infant food (pre-mixed)	Vitamin A	µg/100ml	62,5	200 ml	40,00
			Vitamin C	mg/100ml	10,1		
			Vitamin E	mg/100ml	0,91		
			Vitamin B 1	µg/100ml	65,0		
		Retest date: 07/2026	Vitamin B 2	µg/100ml	208,4		
			Vitamin B 6	µg/100ml	28,2		
			Vitamin B 12	µg/100ml	0,20		

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**	
<b>MINERALS / TRACE ELEMENTS</b>							
muva- NEM-1610	Minerals / trace elements Infant food (powder)	Sodium	mg/kg	1281	80 g	47,00	
		Kalium	mg/kg	6081			
		Calcium	mg/kg	4841			
		Magnesium	mg/kg	848,0			
		Iron	mg/kg	30,1			
		Zinc	mg/kg	21,6			
		Retest date: 06/2029	Phosphorus	mg/kg			4363
		Copper	mg/kg	2,54			
	Manganese	mg/kg	10,32				
	Chloride	mg/kg	2372				
muva- NEM-1611	Minerals / trace elements Infant food (powder)	Sodium	mg/kg	1210	80 g	47,00	
		Kalium	mg/kg	5618			
		Calcium	mg/kg	4743			
		Magnesium	mg/kg	510,7			
		Iron	mg/kg	18,1			
		Zinc	mg/kg	11,7			
		Retest date: 06/2029	Phosphorus	mg/kg			3360
		Copper	mg/kg	1,38			
	Manganese	mg/kg	2,36				
	Chloride	mg/kg	2343				
<b>MILK POWDER WITH DEFINED CONTENT OF RENNET WHEY POWDER</b>							
muva- GMP-2602	Retest date: 01/2027	Content of rennet whey powder	g/100g	1,07	25 g	45,85	
muva- GMP-2605 <i>NEW</i>	Retest date: 04/2032	Content of rennet whey powder	g/100g	5,03	25 g	45,85	
muva- GMP-2606 <i>NEW</i>	Retest date: 04/2032	Content of rennet whey powder	g/100g	0,99	25 g	45,85	
<b>PLANT DRINK</b>							
muva- VM-3102	Plant drink (Soja)	Fat	g/100g	2,05	40 ml	48,85 	
		Retest date: 08/2026	Dry matter (102 °C)	g/100g			7,52
		pH-value	/	7,03			
		Protein	g/100g	3,38			
muva- VM-3101	Plant drink (Oats)	Fat	g/100g	1,00	40 ml	48,85 -15% discount 	
		Retest date: 08/2026	Dry matter (102 °C)	g/100g			10,80
		Protein	g/100g	1,27			
		pH value	/	7,50			
muva- VM-3103	Plant drink (Pea)	Fat	g/100g	2,90	40 ml	48,85 	
		Retest date: 11/2027	Dry matter (102 °C)	g/100g			9,44
		pH-value	/	7,71			
		Protein	g/100g	1,57			
muva- VM-3104	Plant drink (Oats)	Fat	g/100g	3,50	40 ml	48,85 	
		Retest date: 11/2027	Dry matter (102 °C)	g/100g			10,21
		pH-value	/	6,97			
		Protein	g/100g	0,82			

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**	
<b>PLANT BASED SPREAD CREAM</b>							
muva- VS-3002	<b>Cashew base</b>	Fat	g/100g	22,55	100 g	59,70	
		Dry matter (102 °C)	g/100g	34,82			
	Retest date:	Protein	g/100g	4,29			
	09/2026	Ash	g/100g	1,16			
muva- VS-3004 <i>NEW</i>	<b>Sunflower seed base</b>	Fat	g/100g	39,38	100 g	59,70	
		Dry matter (102 °C)	g/100g	57,24			
	Retest date:	Protein	g/100g	4,87			
	09/2026	Ash	g/100g	2,21			
<b>PLANT BASED CHEESE ALTERNATIVE</b>							
muva- VK-3201	<b>Starch base</b>	Fat	g/100g	23,18	100 g	59,70 -15% discount	
		Dry matter (102 °C)	g/100g	46,90			
		Retest date:	Protein	g/100g			1,19
		08/2026	pH value	/			3,78
			Chloride	mg/100 g			886
muva- VK-3202 <i>NEW</i>	<b>Starch base</b>	Fat	g/100g	22,58	100 g	59,70	
		Dry matter (102 °C)	g/100g	50,80			
		Retest date:	Protein	g/100g			2,99
		09/2027	pH value	/			5,28
			Chloride	mg/100 g			1281
			Sodium	mg/100 g			839
<b>FRUIT JUICE</b>							
muva- FS-1920 <i>NEW</i>	<b>Apple juice</b> naturally cloudy	Glucose	g/l	21,67	150 ml	35,55	
		Fructose	g/l	52,82			
		Patulin	µg/l	52,1			
		Retest date:	Titrateable acid	mmol H <sup>+</sup> /l			87,43
		07/2027	pH value	/			3,46
			Ethanol	mg/l			361,2
			Soluble solids	°Brix			11,27
<b>CHOCOLATE</b>							
muva- S-0820	<b>Whole milk chocolate</b>	Fat	g/100g	40,37	100 g	52,75	
		Dry matter	g/100g	98,94			
		Retest date:	Protein	g/100g			7,65
		06/2026	Lactose (monohydrate)	g/100g			8,10
			Saccharose	g/100g			35,01
			Theobromine	mg/kg			1920
			Coffeine	mg/kg			361
			Milk fat	g/100g			4,91
muva- S-0821	<b>Nougat</b>	Fat	g/100g	30,36	100 g	52,75	
		Dry matter	g/100g	99,37			
		Retest date:	Protein	g/100g			7,19
		02/2027	Lactose (monohydrate)	g/100g			4,76
			Saccharose (enzym.)	g/100g			50,15
			Coffeine	mg/kg			155

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price €**	
<b>CANNED SAUSAGE</b>							
muva- BR-1007	<b>Canned sausage (calf liver sausage)</b>	Fat	g/100 g	35,12	125 g	44,75	
		Water	g/100 g	46,97			
		Protein (N x 6,25)	g/100 g	13,98			
		Chloride	mg/100 g	1093			
		Retest date: 07/2026	Sodium Chloride: via Chloride	g/100 g			1,80
		Ash	g/100 g	2,30			
		Hydroxyproline	g/100 g	0,24			
muva- BR-1009	<b>Canned sausage (Lyoner)</b>	Fat	g/100 g	22,64	125 g	44,75	
		Water	g/100 g	61,57			
		Protein (N x 6,25)	g/100 g	12,73			
		Chloride	mg/100 g	1121			
		Retest date: 07/2028	Sodium Chloride: via Chloride	g/100 g			1,85
		Ash	g/100 g	2,55			
		Hydroxyproline	g/100 g	0,20			
Sodium (Na)	g/100 g	1,90					
Nitrate	mg/kg	21,38					
muva- BR-1010	<b>Canned sausage (Leberwurst)</b>	Fat	g/100 g	31,44	125 g	44,75	
		Water	g/100 g	50,09			
		Protein (N x 6,25)	g/100 g	14,57			
		Chloride	mg/100 g	1065			
		Retest date: 07/2028	Sodium Chloride: via Chloride	g/100 g			1,76
		Ash	g/100 g	2,20			
		Hydroxyproline	g/100 g	0,34			
Nitrate	mg/kg	53,67					
Sodium (Na)	g/100 g	1,78					

\* None of the reference materials are suitable for consumption!

\*\* Prices do not include VAT

\*\*\* Values may differ from the data sheet

# Microbiological analysis

All microorganisms belong to risk group S1

Sample	Material*	Parameter	Unit	Reference value***	Packaging unit	Price € **
<b>TOTAL BACTERIAL COUNT</b>						
muva-MBK-1721	<b>Hard cheese</b> (freeze-dried) Retest date: 07/2026	Mesophilic, aerobic Bacterial Count	log <sub>10</sub> cfu/g	6,14	40 g	26,40
muva-MBK-1722	<b>Curd powder</b> Retest date: 11/2026	Mesophilic, aerobic Bacterial Count	log <sub>10</sub> cfu/g	2,66	40 g	26,40
muva-GKZ-1729 <i>NEU</i>	<b>Milk</b> Retest date: 11/2026	Mesophilic, aerobic Bacterial Count	log <sub>10</sub> cfu/ml	4,47	30 ml	34,40 ❄️
muva-GKZ-1730 <i>NEU</i>	<b>Milk</b> Retest date: 11/2026	Mesophilic, aerobic Bacterial Count	log <sub>10</sub> cfu/ml	5,45	30 ml	34,40 ❄️
<b>E. COLI / ENTEROBACTERIACEAE / COLIFORMS</b>						
muva-ECE-1729 <i>NEW</i>	<b>Milk</b> Retest date: 11/2026	E. Coli Enterobacteriaceae Coliforms	log <sub>10</sub> cfu/ml	4,01 4,29 4,31	30 ml	42,45 ❄️
muva-ECE-1730 <i>NEW</i>	<b>Milk</b> Retest date: 11/2026	E. Coli Enterobacteriaceae Coliforms	log <sub>10</sub> cfu/ml	5,05 5,34 5,36	30 ml	42,45 ❄️
<b>YEAST / GEOTRICHUM</b>						
muva-HS-1731 <i>NEW</i>	<b>Milk</b> Retest date: 08/2026	Hefen Geotrichum	log <sub>10</sub> cfu/ml	4,93 3,20	30 ml	37,90 ❄️
muva-HS-1732 <i>NEW</i>	<b>Milk</b> Retest date: 08/2026	Hefen Geotrichum	log <sub>10</sub> cfu/ml	5,92 4,09	30 ml	37,90 ❄️
<b>STAPHYLOCOCCUS</b>						
muva-ST-1721	<b>Milk</b> Retest date: 07/2026	Staphylokokken	log <sub>10</sub> cfu/ml	5,11	30 ml	37,90 ❄️
muva-ST-1722	<b>Milk</b> Retest date: 07/2026	Staphylokokken	log <sub>10</sub> cfu/ml	6,05	30 ml	37,90 ❄️

\* None of the reference materials are suitable for consumption!

\*\* Prices do not include VAT.

\*\*\* Values may differ from the data sheet

# Sensory Analyses

Code	Material*	Parameter	Number of Packs	Packaging unit	Price € **
<b>SENSORY RANK ORDER</b>					
<b>muva- SeRF-56</b>	<b>Flavored Water</b> Retest date: 06/2027	sweet	4 samples	4x 50 ml	58,50
<b>muva- SeRF-57</b>	<b>Flavored Water</b> Retest date: 06/2027	sour	4 samples	4x 50 ml	58,50
<b>muva- SeRF-54</b>	<b>Flavored Water</b> Retest date: 06/2027	salty	4 samples	4x 50 ml	58,50
<b>SENSORY TRIANGLE TEST</b>					
<b>muva- SeD-22</b>	<b>Plant based spreadable cream based on sunflower seeds</b> Retest date: 08/2026		3 samples	3x 50 g	44,75
<b>SENSORY FATS &amp; OILS</b>					
<b>muva- SeO-17</b>	<b>Rapeseed oil</b> Retest date: 12/2026	deficient	1 sample	30 ml	28,15
<b>muva- SeO-18</b>	<b>Rapeseed oil</b> Retest date: 12/2026	neutral	1 sample	30 ml	28,15

\* We offer other materials (milk, milk powder, etc.) on request.

\*\* Prices do not include VAT.

# QSE reference samples for calibration

## Products made of raw milk

for calibration and adjustment of analytical instruments and for checking bench chemistry methods

**Certified shock-frozen long-term standard (LZS) (F1-F8/E1-E4 3 years shelf life from date of manufacture / PM 8 2 years shelf life from date of manufacture)**



QSE Prod.-Nr.	Product appellation	Reference value (varies due to batch slightly)																	Packaging unit	Price/Unit
		Fat [g/100g]	Protein [g/100g]	Lactose monohydrate [g/100g]	Dry matter [g/100g]	Urea [mg/L]	Freezing point [°C]	pH value	Casein [g/100g]	NPN [g/100g]	Fatty acids [g/100g milk]									
											uFA	SFA	MUFA	PUFA	C14:0	C16:0	C18:0	C18:1		
5100018	F1	2,2	-	-	-	100	-	-	-	-	-	-	-	-	-	-	-	-	40 mL	9,40 €
5100035	F5	2,7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40 mL	9,35 €
5100019	F2	3,2	-	-	-	550	-	-	-	-	-	-	-	-	-	-	-	-	40 mL	9,40 €
5100036	F6	3,7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40 mL	9,35 €
5100020	F3	4,2	3,5	4,7	13,3	200	-0,520	6,68	2,7	0,02	1,3	2,9	1,1	0,2	0,5	1,3	0,5	1,0	40 mL	12,55 €
5100037	F7	4,7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40 mL	9,35 €
5100021	F4	5,5	-	4,8	-	300	-	-	-	-	-	-	-	-	-	-	-	-	40 mL	9,40 €
5100038	F8	6,0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	40 mL	9,35 €
5100039	E1	-	3,0	4,2	11,5	-	-0,450	-	2,3	-	-	-	-	-	-	-	-	-	40 mL	10,50 €
5100040	E2	-	3,3	-	-	-	-0,510	-	2,6	-	-	-	-	-	-	-	-	-	40 mL	9,75 €
5100041	E3	-	3,8	-	-	-	-0,525	-	3,0	-	-	-	-	-	-	-	-	-	40 mL	9,75 €
5100042	E4	-	4,2	5,3	14,5	-	-0,600	-	3,3	-	-	-	-	-	-	-	-	-	40 mL	10,50 €
5100022	Set F1-F4	Slope/Intercept for fat, urea; Intercept for protein, lactose monohydrate, dry matter, freezing point, pH value, casein, NPN, fatty acids																	4 x 40 mL	32,90 €
5100034	Set F1-F8	Slope/Intercept for fat, urea; Intercept for protein, lactose monohydrate, dry matter, freezing point, pH value, casein, NPN, fatty acids																	8 x 40 mL	65,20 €
5100033	Set F1-F4, PM8 <sup>1</sup>	Slope/Intercept for fat, urea; Intercept for protein, lactose monohydrate, dry matter, freezing point, pH value, casein, NPN, fatty acids																	5 x 40 mL	44,70 €
5100043	Set E1-E4	Slope/Intercept for protein, freezing point, casein; Intercept bei lactose monohydrate, dry matter																	4 x 40 mL	34,40 €
5100045	2 Sets E1-E4 <sup>2</sup>	Slope/Intercept for protein, freezing point, casein, lactose monohydrate, dry matter																	8 x 40 mL	68,70 €
5100044	Set E1, E4, F3 <sup>3</sup>	Slope/Intercept for protein, lactose monohydrate, dry matter, freezing point, casein; Intercept for fat, urea, pH value, NPN, fatty acids																	3 x 40 mL	28,70 €

<sup>1</sup> For calibration up to 7 % fat, raw milk LZS F1-F4 can be complemented with pasteurized milk LZS PM8. Test calibrations were carried out successfully.

<sup>2</sup> By mixing different batches E1-E4, different samples for Slope/Intercept calibration and adjustment are available. Test calibrations were carried out successfully.

<sup>3</sup> By mixing different batches E1, E4, F3, 3 different samples for Slope/Intercept calibration and adjustment are available. Test calibrations were carried out successfully.

## Products made of raw milk

for calibration and adjustment of analytical instruments and for checking bench chemistry methods

**Certified shock-frozen long-term standard (LZS) (3 years shelf life from date of manufacture)**

QSE Product no.	Product appellation	Reference value (varies due to the batch slightly)						Packaging unit	Price/Unit
		Fat [g/100g]	Protein [g/100g]	Lactose monohydrate [g/100g]	Dry matter [g/100g]	Freezing point [°C]	Casein [g/100g]		
5100046	E&F1	2,5	3,3	14,80 €	10,9	-0,470	2,6	40 mL	15,65 €
5100047	E&F2	5,5	3,5	14,80 €	14,4	-0,521	2,8	40 mL	15,65 €
5100048	E&F3	3,5	3,9	14,80 €	13,0	-0,536	3,1	40 mL	15,65 €
5100049	E&F4	4,5	4,4	14,80 €	15,1	-0,605	3,5	40 mL	15,65 €
5100050	Set E&F1-E&F4	Slope/Intercept for fat, protein, lactose monohydrate, dry matter, freezing point, casein						4 x 40 mL	48,10 €

## Products for checking fatty acids

for calibration and adjustment of analytical instruments

**Certified shock-frozen long-term stable standards for raw milk (3 years shelf life from date of manufacture)**

QSE Product no.	Product appellation	Reference value (varies due to the batch slightly)								Packaging unit	Price/Unit
		Fatty acids [g/100g milk] <small>another 7 short-chain fatty acids according to FOSS Application Note AN 0064, AN 5465<sup>6</sup></small>									
		uFA	SFA	MUFA	PUFA	C14:0	C16:0	C18:0	C18:1		
5100110	FS1 <sup>5</sup>	0,6	1,5	0,5	0,05	0,25	0,6	0,2	0,5	40 mL	15,90 €
5100111	FS2 <sup>5</sup>	0,8	2,1	0,7	0,07	0,35	1,0	0,3	0,6	40 mL	15,90 €
5100112	FS3 <sup>5</sup>	1,2	2,7	1,0	0,10	0,40	1,2	0,4	0,9	40 mL	15,90 €
5100113	FS4 <sup>5</sup>	1,5	3,7	1,3	0,11	0,60	1,8	0,5	1,2	40 mL	15,90 €
5100114	Set FS1 – FS4	Slope/Intercept for fatty acids								4 x 40 mL	49,20 €

<sup>5</sup> includes also characterization according to F1 – F4

<sup>6</sup> short chain fatty acids according to FOSS Application Note: SCFA, MCFA, LCFA, trans FA, mixed FA, preformed FA, de nova FA

## Products for checking free fatty acids

for calibration and adjustment of analytical instruments and for checking bench chemistry methods

**Shock-frozen long-term stable raw milk** (1 year shelf life from date of manufacture)

QSE Product no.	Product appellation	Product description	Packaging unit	Price/Unit
5100115	Free fatty acids	Shock-frozen raw milk 0,5 – 0,7 mmol/100 g fat – not in the accredited area	40 mL	9,55 €

## Products made of raw milk for checking analysis of fatty acids with gas chromatography


**Certified shock-frozen long-term standards (LZS)** (1 year shelf life from date of manufacture)

QSE Product no.	Product appellation	Reference value (various due to the batch slightly)		Packaging unit	Price/Unit
		Fatty acids [g/100g fatty acids in fat]			
5100109	FSM	C 4:0	3,60	40 mL	45,40 €
		C 6:0	2,10		
		C 8:0	1,30		
		C 10:0	2,80		
		C 12:0	3,30		
		C 14:0	10,80		
		C 14:1 (c9)	0,90		
		C 15:0	1,10		
		C 16:0	30,30		
		C 16:1 (c9)	1,70		
		C 17:0	0,60		
		C 18:0	8,70		
		C 18:1 (total of cis-Isomere)	20,90		
		C18:1 (total of trans-Isomere)	1,80		
		C 18:2 (c9, c12)	1,60		
		C 18:2 (c9, t11)	0,60		
		C 18:3 (c9, c12, c15)	0,40		
		C 20:5 (c5, c8, c11, c14, c17)	0,05		
		C 22:0	0,05		
		SFA	66,40		
MUFA	24,10				
PUFA	2,40				
TRANS	2,10				
CLA	0,60				

## Products for checking, calibration and adjustment analysis of somatic cells

**Certified shock-frozen long-term stable cell milk for carry-over test with instruments for somatic cell counting** (4 years shelf life from date of manufacture) 


QSE Product no.	Product appellation	Product description	Packaging unit	Price/Unit
5100094	High cell sample	Shock-frozen raw milk with somatic cell count between 750.000 - 1.700.000 Cells/mL	40 mL	4,20 €

**Certified shock-frozen or lyophilized long-term stable somatic cell standard** (shelf life 2 years for frozen standards, 4½ years for lyophilized standards from date of manufacture) 

*Determination of the reference value with the inclusion of the „Golden Standard“ of the European Commission ERM-BD001*

5100096	Set SCC1 - SCC5 Standard 40 mL	Shock-frozen raw milk with somatic cell count between 100.000 - 1.200.000 Cells/mL	5 x 40 mL	83,20 €
5100097	Set SCC2 + SCC3 Standard 40 mL	Shock-frozen raw milk with somatic cell count between 200.000 - 500.000 Cells/mL	2 x 40 mL	33,35 €
5100098	Set SCC2 + SCC4 Standard 40 mL	Shock-frozen raw milk with somatic cell count between 200.000 - 720.000 Cells/mL	2 x 40 mL	33,35 €
5100099	Set SCC2 – SCC4 Standard 40 mL	Shock-frozen raw milk with somatic cell count between 200.000 - 720.000 Cells/mL	3 x 40 mL	50,00 €
5100102	SCC1 Standard 40 mL	Shock-frozen raw milk with somatic cell count between 100.000 - 200.000 Cells/mL	1 x 40 mL	16,70 €
5100100	SCC2 Standard 40 mL	Shock-frozen raw milk with somatic cell count between 200.000 - 300.000 Cells/mL	1 x 40 mL	16,70 €
5100101	SCC3 Standard 40 mL	Shock-frozen raw milk with somatic cell count between 400.000 - 550.000 Cells/mL	1 x 40 mL	16,70 €
5100103	SCC4 Standard 40 mL	Shock-frozen raw milk with somatic cell count between 700.000 - 800.000 Cells/mL	1 x 40 mL	16,70 €
5100104	SCC5 Standard 40 mL	Shock-frozen raw milk with somatic cell count between 950.000 – 1.200.000 Cells/mL	1 x 40 mL	16,70 €
5100095	Set SCC1 - SCC5 Standard 15 mL	Lyophilized milk with somatic raw milk cell count between 100.000 - 1.200.000 Cells/mL	5 x 15 mL	90,95 €

## Products for checking bacterial count with milkstandards

**Shock-frozen long-term stable bacterial count for calibration and adjustment of flow cytometry instruments** (6 months shelf life from date of manufacture) 

QSE Product no.	Product appellation	Product description	Packaging unit	Price/Unit
5100134	MS A150-200 IBC	MS A with 150-200 impulses/mL (Manufactured by MIH – Dr. Hüfner accredited)	40 mL	4,25 €
5100135	MS B 300-450 IBC	MS B with 300-450 impulses/mL (Manufactured by MIH – Dr. Hüfner accredited)	40 mL	4,25 €
5100136	MS C ≈ 1000 IBC	MS C with ≈ 1000 impulses/mL (Manufactured by MIH – Dr. Hüfner accredited)	40 mL	6,00 €

## Products made of pasteurized milk

for calibration and adjustment of analytical instruments and for checking bench chemistry methods

Certified shock frozen long-term standard (LZS) (M1-M5, PM1-PM3 3 years shelf life from date of manufacture / PM8 2 years shelf life from date of manufacture)



QSE Product no.	Product appellation	Reference value (varies due to the batch slightly)				Packaging unit	Price/Unit
		Fat[g/100g]	Protein [g/100g]	Dry matter [g/100g]	Freezing point [°C]		
<b>Pasteurized skimmed milk:</b>							
5100051	M1	0,05	3,5	9,6	-0,520	40 mL	9,95 €
5100052	M2	0,10	-	-	-0,510	40 mL	9,25 €
5100053	M3	0,15	-	-	-0,495	40 mL	9,25 €
5100054	M4	0,20	-	9,5	-	40 mL	9,25 €
5100056	M5	0,80	-	10,0	-	40 mL	9,25 €
5100055	Set M1-M4	Slope/Intercept for fat, freezing point; Intercept for protein, dry matter				4 x 40 mL	32,20 €
<b>Pasteurized milk:</b>							
5100023	PM1 <sup>4</sup>	1,5	3,0	11,0	-0,470	40 mL	11,30 €
5100029	PM2 <sup>4</sup>	3,5	3,8	13,5	-0,600	40 mL	11,30 €
5100030	PM3 <sup>4</sup>	4,2	3,5	13,5	-0,520	40 mL	11,30 €
5100032	PM8	7,0	3,0	16,0	-	40 mL	11,30 €
5100031	Set PM1-PM3 <sup>4</sup>	Slope/Intercept for fat, protein, dry matter, freezing point				3 x 40 mL	29,40 €

<sup>4</sup>pasteurized and homogenized milk

## Products made of pasteurized cream

for calibration and adjustment of analytical instruments and for checking bench chemistry methods

Certified shock-frozen long-term standard (LZS) (2 years shelf life from date of manufacture)



QSE Product no.	Product appellation	Reference value (varies due to the batch slightly)			Packaging unit	Price/Unit
		Fat [g/100g]	Protein [g/100g]	Dry matter [g/100g]		
<b>Pasteurized cream (low fat content):</b>						
6017	PM4	10	3,2	17	40 mL	11,30 €
6018	PM5	12	3,1	20	40 mL	11,30 €
6019	PM6	16	3,0	24	40 mL	11,30 €
6020	PM7	20	2,8	28	40 mL	11,30 €
6021	Set PM4-PM7	Slope/Intercept for fat, protein, dry matter			4 x 40 mL	39,25 €
<b>Pasteurized cream (high fat content):</b>						
6700	R1	25	-	32	40 mL	13,70 €
6701	R2	30	2,2	37	40 mL	14,25 €
6706	R5	33	-	39	40 mL	13,70 €
6702	R3	35	-	40	40 mL	13,70 €
6707	R6	37	-	43	40 mL	13,70 €
6703	R4	40	2,0	45	40 mL	14,25 €
6709	R7	47	-	52	40 mL	14,25 €
6704	Set R1-R4	Slope/Intercept for fat (25-40%), dry matter; Intercept for protein			4 x 40 mL	47,60 €
6710	Set R1-R4, R7	Slope/Intercept for fat (25-47%), dry matter; Intercept for protein			5 x 40 mL	59,10 €
6708	Set R2, R5, R6, R4	Slope/Intercept for fat (30-40%), dry matter; Intercept for protein			4 x 40 mL	46,40 €
6705	Set PM6, PM7, R2, R4	Slope/Intercept for fat (16-40%), protein, dry matter			4 x 40 mL	47,80 €

## Products made of whey

for calibration and adjustment of analytical instruments and for checking bench chemistry methods

**Certified shock-frozen long-term standard (LZS)** (1 year shelf life from date of manufacture)



QSE Product no.	Product appellation	Reference value (varies due to the batch slightly)				Packaging unit	Price/Unit
		Fat [g/100g]	Protein [g/100g]	Lactose monohydrate [g/100g]	Dry matter [g/100g]		
5100085	MO1	0,04	0,4	2,3	3,0	40 mL	10,40 €
5100086	MO2	0,2	0,7	4,3	5,5	40 mL	10,40 €
5100087	MO3	0,5	0,9	4,5	7,0	40 mL	10,40 €
5100088	MO4	0,4	1,1	5,7	8,5	40 mL	10,40 €
5100089	Set MO1-MO4	Slope/Intercept for fat, protein, lactose monohydrate, dry matter				4 x 40 mL	35,50 €

## Products made of UHT milk

for calibration and adjustment of analytical instruments and for checking bench chemistry methods

**Certified shock-frozen long-term standard (LZS)** (3 years shelf life from date of manufacture)



QSE Product no.	Product appellation	Reference value (varies due to the batch slightly)			Packaging unit	Price/Unit
		Fat [g/100g]	Protein [g/100g]	Dry matter [g/100g]		
5100057	H1	0,05	3,6	9,2	40 mL	9,95 €
5100058	H2	1,5	3,5	10,5	40 mL	9,95 €
5100059	H3	3,5	3,4	12,3	40 mL	9,95 €
5100060	Set H1-H3	Slope/Intercept for fat, protein, dry matter			3 x 40 mL	25,90 €

## Products made of raw goat milk

for calibration and adjustment of analytical instruments and for checking bench chemistry methods

**Certified shock-frozen long-term standard (LZS)** (5 years shelf life from date of manufacture)

QSE Product no.	Product appellation	Reference value (varies due to the batch)					Packaging unit	Price/Unit	
		Fat [g/100g]	Protein [g/100g]	Lactose monohydrate [g/100g]	Dry matter [g/100g]	Urea [mg/L]			Somatic cells [mL]
5100072	Z1	2,9	2,9	4,0	11,9	247	1.000.000	40 mL	12,95 €
5100073	Z2	3,4	3,0	4,4	13,4	268	1.300.000	40 mL	12,95 €
5100074	Z3	3,2	3,4	4,9	14,6	290	1.100.000	40 mL	12,95 €
5100075	Set Z1-Z3	Slope/Intercept for fat, protein, somatic cells, dry matter, urea, lactose monohydrate					3 x 40 mL	32,30 €	

## Products made of raw sheep milk

for calibration and adjustment of analytical instruments and for checking bench chemistry methods

**Certified shock-frozen long-term standard (LZS)** (3 years shelf life from date of manufacture)



QSE Product no.	Product appellation	Reference value (varies due to the batch slightly)				Packaging unit	Price/Unit
		Fat [g/100g]	Protein [g/100g]	Lactose monohydrate [g/100g]	Dry matter [g/100g]		
5100076	S1	3,9	4,4	4,6	13,6	40 mL	12,60 €
5100077	S2	5,4	4,7	5,0	15,8	40 mL	12,60 €
5100078	S3	6,5	4,9	5,2	17,3	40 mL	12,60 €
5100079	Set S1-S3	Slope/Intercept for fat, protein, lactose monohydrate, dry matter				3 x 40 mL	31,20 €€

## Products made of raw buffalo milk

for calibration and adjustment of analytical instruments and for checking bench chemistry methods

**Certified shock-frozen long-term standards (LZS)** (3 years shelf life from date of manufacture)



QSE Product no.	Product appellation	Reference value (varies due to the batch)				Packaging unit	Price/Unit
		Fat [g/100g]	Protein [g/100g]	Lactose monohydrate [g/100g]	Dry matter [g/100g]		
5100080	B1	4,5	4,0	4,8	14,6	40 mL	10,70 €
5100081	B2	5,7	4,1	5,0	15,5	40 mL	10,70 €
5100082	B3	6,2	5,1	5,0	18,8	40 mL	10,70 €
5100083	B4	8,5	4,3	5,2	17,0	40 mL	10,70 €
5100084	Set B1-B4	Slope/Intercept for fat, protein, lactose monohydrate, dry matter				4 x 40 mL	33,80 €

## Products for checking inhibitor analysis

Certified shock-frozen long-term stable control standards (3 years shelf life from date of manufacture, neomycin 1½ years)

QSE Product no.	Product appellation	Product description	Packaging unit	Price/Unit
5100116	Positive-control	Shock-frozen raw milk with 4 µg/kg penicillin G	6 mL*	7,20 €
5100118	Positive-control	Shock-frozen raw milk with 30 µg/kg oxacillin	6 mL	7,20 €
5100119	Positive-control	Shock-frozen raw milk with 30 µg/kg cloxacillin	6 mL	7,20 €
5100120	Positive-control	Shock-frozen raw milk with 4 µg/kg amoxicillin	6 mL	7,20 €
5100121	Positive-control	Shock-frozen raw milk with 4 µg/kg ampicillin	6 mL	7,20 €
5100122	Positive-control	Shock-frozen raw milk with 20 µg/kg cefalonium	6 mL	7,20 €
5100123	Positive-control	Shock-frozen raw milk with 60 µg/kg cephapiri	6 mL	7,20 €
5100124	Positive-control	Shock-frozen raw milk with 50 µg/kg cefoperazone	6 mL	7,20 €
5100125	Positive-control	Shock-frozen raw milk with 1500 µg/kg neomycin	6 mL	7,20 €
5100126	Positive-control	Shock-frozen raw milk with 50 µg/kg tylosin	6 mL	7,20 €
5100127	Positive-control	Shock-frozen raw milk with 100 µg/kg sulfamethoxypyridazine	6 mL	7,20 €
5100128	Positive-control	Shock-frozen raw milk with 100 µg/kg oxytetracycline	6 mL	7,20 €
5100129	Positive-control	Shock-frozen raw milk with 100 µg/kg enrofloxacin	6 mL	7,20 €
5100130	Positive-control	Shock-frozen raw milk with 100 µg/kg ciprofloxac	6 mL	7,20 €
5100131	Positive-control	Shock-frozen raw milk with 75 µg/kg marbofloxacin	6 mL	7,20 €
5100117	Negative-control	Shock-frozen inhibitor-free raw milk	6 mL*	3,35 €

\* 40 mL on demand

## Products for checking milk pregnancy-test-systems

Certified shock-frozen long-term stable raw milk (2 years shelf life from date of manufacture)

QSE Product no.	Product appellation	Product description	Packaging unit	Price/Unit
5100132	PAG-positive frozen	Shock-frozen raw milk (PAG-Pregnancy-Associated Glycoprotein), positive	40 mL	7,20 €
5100133	PAG-negative frozen	Shock-frozen raw milk (PAG-Pregnancy-Associated Glycoprotein), negative	40 mL	7,20 €

## Products for checking cryoscopy

Certified aqueous freezing point standards for calibration of cryoscopes (2 month shelf life from date of manufacture)

QSE Product no.	Product appellation	Product description	Packaging unit	Price/Unit
5100105	GP -0,408 °C	Aqueous standard (freezing point -0,408 °C)	40 mL	6,15 €
5100106	GP -0,512 °C	Aqueous standard (freezing point -0,512 °C)	40 mL	6,15 €
5100107	GP -0,520 °C	Aqueous standard (freezing point -0,520 °C)	40 mL	6,15 €
5100108	GP -0,600 °C	Aqueous standard (freezing point -0,600 °C)	40 mL	6,15 €

## Products made of milk powder

For calibration and adjustment of analytical instruments and for checking bench chemistry methods

Pulverized long-term standard

QSE Product no.	Product appellation	Reference value (varies due to the batch slightly)					Packaging unit	Price/Unit
		Fat [g/100g]	Protein [g/100g]	Dry matter [g/100g]	Lactose monohydrate [g/100g]	Ash [g/100g]		
<b>Sweet whey powder:</b>								
5100091	PSM1	0,85	13,0	98,0	77,0	4,0	100g	14,30 €
<b>Skimmed milk powder:</b>								
5100092	PMM1	0,60	36,0	96,0	51,0	8,0	100g	14,30 €

# Terms of Payment and Transport

EXW „ex works“ delivery [Incoterms®2010]

Our list prices are net prices plus the current VAT and delivery costs (charged according to time and effort). For deliveries abroad, higher delivery costs are to be expected.

Companies based in other EU countries that have provided us with their **EU VAT identification number** are not charged German VAT.

Please transfer the invoice amount **within 10 days** to the bank details mentioned on the bottom of the invoice.

For international bank transactions (outside the European Economic Area) a bank processing fee of 35,00 € will be charged.

Discount:

from 8 units: 5 %  
 from 15 units: 10 %  
 from 35 units: 15 %  
 from 51 units: subject to agreement.

The delivery condition for frozen material:



Frozen reference materials are delivered in frozen condition and separately from non-frozen products (express delivery). The data sheet or instruction for usage of frozen long-term standards contains precise instructions on how to thaw the material. There will be an additional charge for packaging costs (see table below). However, you have the option of returning the packaging to us. In this case, the packaging costs will be credited.

## ❄ Packaging Costs

Package size	Number of bottles	Packaging materials	Packaging costs	Credit note for return delivery of packaging materials <sup>1)</sup>
VP 1	Up to 12 bottles	Styrofoambox + 7 TP	20,00 €	13,00 €
VP2	Up to 30 b.	Styrofoambox + 11 TP	35,00 €	27,00 €
VP3	Up to 52 b.	Styrofoambox + 16 TP	38,00 €	29,00 €
VP4	Up to 65 b.	Styrofoambox + 24 TP	48,00 €	38,00 €
VP5	Up to 104 b.	Styrofoambox + 26 TP	51,00 €	40,00 €
VP6	Up to 150 b.	Styrofoambox + 28 TP	53,00 €	41,00 €
VP3 and VP6	Up to 50 b.	Styrofoambox + Dry ice	different	different

TP = Thermal packs (cool packs)

<sup>1)</sup> The credit note is reduced for 1.50 € for every not returned thermal pack

The last valid version of the general trading conditions of muva kempten GmbH apply in each case ([www.muva.de](http://www.muva.de)).



# Order Form QSE GmbH

Please send back the filled in order form to **E-Mail: [sales@qse-gmbh.com](mailto:sales@qse-gmbh.com)**

If you have questions or if you want some individual consultancy, please do not hesitate and contact us phone number. +49 (0) 9826 / 6234-30.

Company:		
Consignee (name/department):		
Delivery address:		
Billing adress (only if differing from delivery address):		
Email:		
Telephone number:		
Fax number:		
Customer ID (if available):		
VAT number:		
Product no. or product appellation	Quantity/unit	Comment (e.g. standing order for a regular delivery)

Prices valid at the moment of order apply.

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Date and Signature

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QSE GmbH  
Company office: Wolnzach / local court Ingolstadt: HRB 4147  
Management: Alfred Enderle, Christine Röhl  
Hochstatt 2  
D-85283 Wolnzach

Contact us at:  
Tel.: +49 (0) 9826/6234-30  
Email: [sales@qse-gmbh.com](mailto:sales@qse-gmbh.com)  
Web: [www.qse-gmbh.de](http://www.qse-gmbh.de)

# Order Form for Reference Materials

Order-No.: \_\_\_\_\_ Customer-No.: \_\_\_\_\_

Please send me the following materials in the following quantities (packaging units):

Desired quantity	Material	Remarks (e.g. frequency of regular delivery)*

\*Delivery is possible at any time. We also offer weekly and monthly delivery

Company:		
Street:		
Post (Zip) Code/ City:		
Person to contact:		
Phone:		
E-mail:		
EU-VAT-Identification-No. (delivery into EU countries):		

The general terms of business drawn up by muva kempten GmbH apply at all times ([www.muva.de](http://www.muva.de))

(For EU countries outside Germany: Benefits of muva kempten are accessed by using the EU-VAT-Identification-No. since 01.01.2010)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

muva kempten GmbH  
Registered Office: Kempten / Local Court Kempten: HRB 13347  
Managing Director: Dr. Maximilian Moravek  
Ignaz-Kiechle-Straße 20-22  
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