



## **Programme muva reference materials**

**Product information 6/2011  
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## Trust is good, control is better

Within quality assurance in food analysis the question comes up, to what extent the result of your analysis is close to the true value. Today it is essential to clarify this question, because the consequences of inexact results can be annoying and cost-intensive.

## What can you do?

The use of muva reference materials is a suitable instrument to ensure the accuracy and reliability of your results and it allows in addition a clearly documentation and demonstration to third parties. Besides the participation in proficiency testing schemes, it contributes substantially to the internal and external quality assurance in analysis.

If the analytical results are not satisfying, the application of reference materials is meaningful for training the persons as well as for optimizing the method. Otherwise reference materials can be effectively employed for the internal control of the analytical process, e.g. by the use of control charts.

The regular participation in proficiency testing studies and the use of reference materials present the muva-Reference-System, which provides a precise and complete documentation of your measuring accuracy and therefore ensures maximal certainty.

muva kempten possesses long experience in practice with reference material and is, in addition, a international provider in proficiency testing that has been accredited on the sectors of physical, physical-chemical, chemical, sensory and microbiological analysis of food stuffs.

## muva reference materials

muva reference materials have been predominantly produced for long-term use. Their basic parameters have been tested at the muva kempten laboratories for homogeneity and stability. Reference values are characterized by proficiency testing. A great number of datasets ensures the reliability of the reference values.

During storage at muva kempten, materials are regularly checked for their contents. Before end of durability, they are replaced by new characterized reference material.

**muva reference system ensure the accuracy and reliability of your results**

## Long-term calibration standards

**Parameters: fat, protein, lactose, freezing point, urea, pH-value, dry matter**

Together with muva kempten, QA&D laboratory Triesdorf of the Milchprüfring Bayern developed and produced several **shock frozen raw milk long term calibration materials for IR-analysis**.

The standards are characterized for homogeneity and for reference values by eight laboratories applying reference methods under strict statistical control.

Since 2006, QSE GmbH, a subsidiary company of Milchprüfring Bayern, assumed the production. In the meantime, the offering has been enlarged by cream and goat milk.

There is excellent experience with these materials and their considerable long term stability of calibration in routine use.

You'll find an update version about our muva reference materials and raw milk calibration standards also on our website [www.muva.de](http://www.muva.de) (Category „Reference materials“).

In addition, you will get information about our programme of proficiency testing in the category “Proficiency Testing”. Of course, we are happy to submit you an offer.

# POWDER

Code	Material*	Parameter	Reference value and uncertainty	Packaging unit	Price **
<b>MILK POWDER</b>					
RM 58	Milk powder, mixed  Best before: 01/2013	Fat (Röse-Gottlieb) Free Fat Dry matter (102 °C) Protein (Kjeldahl) Lactose (Monohydrate) Ash Nitrate	13,84 ± 0,15 g/100 g 4,58 ± 0,15 g/100 g 97,34 ± 0,07 g/100 g 32,34 ± 0,11 g/100 g 43,96 ± 0,40 g/100 g 6,83 ± 0,04 g/100 g 7,76 ± 1,09 mg/kg	70 g	32,70 €
RM 59	Milk powder, spray dried  Best before: 06/2014	Fat (Röse-Gottlieb) Free Fat Dry matter (102 °C) Protein (Kjeldahl) Lactose (Monohydrate) Ash Nitrate	26,43 ± 0,15 g/100 g 14,25 ± 0,37 g/100 g 98,00 ± 0,08 g/100 g 26,68 ± 0,07 g/100 g 38,83 ± 0,54 g/100 g 5,72 ± 0,04 g/100 g 7,40 ± 1,09 mg/kg	70 g	32,70 €
muva- MP-0201	Skimmed milk powder, spray dried  Best before: 11/2014	Fat (Röse-Gottlieb) Dry matter (102 °C) Protein (Kjeldahl) Lactose (Monohydrate) Ash Nitrate	0,72 ± 0,12 g/100 g 96,03 ± 0,08 g/100 g 36,57 ± 0,10 g/100 g 50,62 ± 0,54 g/100 g 7,87 ± 0,07 g/100 g 36,34 ± 2,09 mg/kg	70 g	31,70 €
muva- MP-0202	Milk powder, spray dried  Best before: 11/2014	Fat (Röse-Gottlieb) Free Fat Dry matter (102 °C) Protein (Kjeldahl) Lactose (Monohydrate) Ash	26,71 ± 0,54 g/100 g 6,68 ± 0,40 g/100 g 97,78 ± 0,06 g/100 g 27,16 ± 0,18 g/100 g 38,27 ± 0,46 g/100 g 5,67 ± 0,06 g/100 g	70 g	31,30 €
<b>New!!</b> muva- MP-0203	Milk powder, roller dried  Best before: 12/2017	Fat (Röse-Gottlieb) Free Fat Dry matter (102 °C) Protein (Kjeldahl) Lactose (Monohydrate) Ash	26,89 ± 0,06 g/100 g 21,27 ± 0,09 g/100 g 97,46 ± 0,06 g/100 g 24,68 ± 0,06 g/100 g 40,18 ± 0,40 g/100 g 5,79 ± 0,03 g/100 g	80 g	32,30 €
<b>CASEIN / CASEINS</b>					
RM 85	Sodium caseinate  Best before: 06/2012	Fat (SBR) Water Protein (Kjeldahl) Lactose (Monohydrate) Ash Nitrate	1,15 ± 0,09 g/100 g 6,82 ± 0,05 g/100 g 89,00 ± 0,16 g/100 g 0,10 ± 0,02 g/100 g 3,57 ± 0,11 g/100 g 17,9 ± 2,2 mg/kg	60 g	29,20 €
RM 84	Säurecasein  MHD: 06/2012	Fett (SBR) Wasser Protein (Kjeldahl) Lactose (Monohydrat) Asche Nitrat	1,09 ± 0,16 g/100 g 9,30 ± 0,22 g/100 g 88,56 ± 0,27 g/100 g 0,09 ± 0,01 g/100 g 1,73 ± 0,08 g/100 g 4,94 ± 1,28 mg/kg	60 g	29,20 €

# POWDER

Code	Material*	Parameter	Reference value and uncertainty	Packaging unit	Price **
<b>WHEY POWDER</b>					
RM 71	Whey powder Best before: 12/2011	Fat (Röse-Gottlieb) Dry matter (102 °C) Dry matter (87 °C) Protein (Kjeldahl) Lactose (Monohydrate) Nitrate Calcium Magnesium Ash	1,63 ± 0,04 g/100 g 96,68 ± 0,08 g/100 g 97,31 ± 0,05 g/100 g 25,59 ± 0,16 g/100 g 48,06 ± 0,43 g/100 g 211 ± 11 mg/kg 8129 ± 435 mg/kg 2233 ± 97 mg/kg 15,04 ± 0,08 g/100 g	20 g	14,90 €
RM 72	Whey powder Best before: 12/2011	Fat (Röse-Gottlieb) Dry matter (102 °C) Dry matter (87 °C) Protein (Kjeldahl) Lactose (Monohydrate) Nitrate Ash Calcium Magnesium	0,98 ± 0,05 g/100 g 97,94 ± 0,08 g/100 g 98,33 ± 0,08 g/100 g 13,28 ± 0,10 g/100 g 74,14 ± 0,61 g/100 g 158 ± 5 mg/kg 7,62 ± 0,07 g/100 g 4614 ± 310 mg/kg 1161 ± 66 mg/kg	20 g	14,90 €
RM 74	Whey powder Best before: 01/2013	Fat (Röse-Gottlieb) Dry matter (102 °C) Dry matter (87 °C) Protein (Kjeldahl) Lactose (Monohydrate) Ash Lactic acid Nitrate Calcium Magnesium NPN	1,96 ± 0,12 g/100 g 96,15 ± 0,05 g/100 g 96,79 ± 0,09 g/100 g 30,32 ± 0,63 g/100 g 48,77 ± 0,51 g/100 g 8,42 ± 0,10 g/100 g 1101 ± 60 mg/100 g 34,66 ± 5,25 mg/kg 6593 ± 110 mg/kg 2106 ± 53 mg/kg 5,96 ± 0,16 g/100g	70 g	30,70 €
RM 803	Whey powder Best before: 12/2011	Sodium Potassium Calcium Magnesium Lead	6,26 ± 0,22 mg/g 23,61 ± 0,66 mg/g 4,67 ± 0,13 mg/g 1,15 ± 0,03 mg/g 11 ± 12 µg/kg	20 g	18,90 €
MO-0610	Whey powder Best before: 08/2015	Fat (Röse-Gottlieb) Dry matter (87 °C) Dry matter (102 °C) Protein (Kjeldahl) Lactose (Monohydrate) Ash Calcium (AAS/ICP) Magnesium (AAS/ICP) NPN (Kjeldahl)	0,82 ± 0,06 g/100g 97,85 ± 0,08 g/100 g 97,61 ± 0,05 g/100 g 13,00 ± 0,05 g/100 g 78,84 ± 0,79 g/100 g 3,28 ± 0,02 g/100 g 3100 ± 118 mg/kg 903 ± 21 mg/kg 2,83 ± 0,15 g/100 g	70 g	31,70 €
<b>New!!</b> MPK-0901	whey protein concentrate Best before: 12/2017	Fat (Weibull) Water (102 °C) Protein (Kjeldahl) Lactose (Monohydrat) Ash	4,21 ± 0,12 g/100 g 4,05 ± 0,20 g/100 g 65,40 ± 0,47 g/100 g 19,08 ± 0,40 g/100 g 3,93 ± 0,12 g/100 g	50 g	29,20 €

# POWDER

Code	Material*	Parameter	Reference value and uncertainty	Packaging unit	Price **
<b>INFANT FOOD</b>					
RM 750	Infant Food Best before: 08/2013	Saccharose Fructose Glucose Starch Vitamin C (HPLC)	1,05 ± 0,32 g/100 g 4,87 ± 0,40 g/100 g 12,52 ± 0,20 g/100 g 16,54 ± 1,10 g/100 g 95,8 ± 10,9 mg/100 g	50 g	26,20 €
<b>New!!</b> muva- KI-1102	Infant Food Best before: 02/2015	Saccharose Fructose Glucose Starch Vitamin C (HPLC)	4,01 ± 0,10 g/100 g 1,06 ± 0,04 g/100 g 2,44 ± 0,04 g/100 g 24,78 ± 1,01 g/100 g 82,91 ± 9,35 mg/100 g	60 g	26,20 €
<b>DIETARY SUPPLEMENT</b>					
RM 752	Dietary Supplement Best before: 03/2013	Sodium Potassium Calcium Magnesium Iron Zinc Phosphorus Chloride	2054 ± 108 mg/kg 9653 ± 517 mg/kg 7024 ± 320 mg/kg 2614 ± 232 mg/kg 22,92 ± 3,83 mg/kg 69,71 ± 5,11 mg/kg 819 ± 22 mg/100 g 455 ± 16 mg/100 g	60 g	34,70 €
RM 753	Dietary Supplement Best before: 08/2012	Sodium Potassium Calcium Magnesium Iron Zinc Phosphorus Chloride Copper Manganese	2980 ± 144 mg/kg 11469 ± 666 mg/kg 9399 ± 289 mg/kg 832 ± 26 mg/kg 18,79 ± 4,79 mg/kg 51,13 ± 2,00 mg/kg 7466 ± 198 mg/kg 6985 ± 226 mg/kg 0,40 ± 0,08 mg/kg 0,21 ± 0,02 mg/kg	50 g	40,70 €
muva- NEM-1601	Dietary Supplement Best before: 03/2015	Sodium Potassium Calcium Magnesium Iron Zinc Phosphorus Chloride Copper Manganese	6385 ± 934 mg/kg 14073 ± 2451 mg/kg 7802 ± 459 mg/kg 1826 ± 135 mg/kg 228,6 ± 15,3 mg/kg 191,6 ± 13,4 mg/kg 6279 ± 211 mg/kg 11130 ± 1896 mg/kg 1,72 ± 0,12 mg/kg 1,42 ± 0,17 mg/kg	50 g	40,70 €
muva- NEM-1602	Dietary Supplement Best before: 02/2015	Sodium Potassium Calcium Magnesium Iron Chloride Copper Manganese Zinc Phosphorus	2489 ± 92 mg/kg 7222 ± 371 mg/kg 5696 ± 114 mg/kg 528 ± 30 mg/kg 56,2 ± 3,4 mg/kg 3706 ± 153 mg/kg 2,7 ± 0,1 mg/kg 1,2 ± 0,6 mg/kg 39,0 ± 2,1 mg/kg 4357 ± 284 mg/kg	50 g	40,70 €

# MILK

Code	Material*	Parameter	Reference value and uncertainty	Packaging unit	Price **
<b>UHT MILK</b>					
muva-M-0110	UHT milk 3,5 % fat (in bottle sterilized)  Best before: 02/2012	Fat (Röse-Gottlieb) Protein (Kjeldahl) Lactose (Monohydrate) Freezing point Dry matter (102 °C) Calcium (ICP/OES)	3,540 ± 0,008 g/100 g 3,368 ± 0,009 g/100 g 4,669 ± 0,025 g/100 g - 0,5162 ± 0,0008 °C 12,35 ± 0,07 g/100 g 1141 ± 48 mg/kg	250 ml	27,50 €
muva-M-0111	Skimmed UHT milk (in bottle sterilized)  Best before: 02/2012	Fat (Röse-Gottlieb) Protein (Kjeldahl) Lactose (Monohydrate) Freezing point Dry matter (102 °C)	0,065 ± 0,004 g/100 g 3,408 ± 0,014 g/100 g 4,638 ± 0,030 g/100 g - 0,4986 ± 0,0015 °C 8,87 ± 0,03 g/100 g	250 ml	25,00 €
muva-M-0112	UHT milk 1,5 % Fett (in bottle sterilized)  Best before: 06/2012	Fat (Röse-Gottlieb) Protein (Kjeldahl) Lactose (Monohydrate) Freezing point Dry matter (102 °C) Calcium (ICP/OES)	1,667 ± 0,004 g/100 g 3,539 ± 0,011 g/100 g 4,712 ± 0,034 g/100 g - 0,5172 ± 0,0008 °C 10,75 ± 0,06 g/100 g 1231 ± 61 mg/kg	250 ml	27,50 €
<b>New!!</b> muva-ML-0113	UHT milk Lactose-free (in bottle sterilized)  Best before: 06/2012	Galactose Lactose	2,323 ± 0,004 g/100g 0,052 ± 0,009 g/100g	250 ml	16,90 €
<b>New!!</b> muva-ML-0114	UHT milk Lactose-reduced (in bottle sterilized)  Best before: 06/2012	Galactose Lactose	1,911 ± 0,019 g/100g 0,830 ± 0,024 g/100g	250 ml	16,90 €
<b>SHOCK FROZEN RAW MILK</b>					
muva-RO-0717	Shock frozen raw milk  Best before: 01/2013	Fat (Röse-Gottlieb) Protein (Kjeldahl) Casein Lactose (Monohydrat) Freezing Point pH-value NPN	4,264 ± 0,010 g/100 g 3,774 ± 0,018 g/100 g 2,956 ± 0,034 g/100 g 4,730 ± 0,054 g/100 g - 0,5238 ± 0,0010 °C 6,68 ± 0,02 0,170 ± 0,019 g/100 g	mind. 40 ml	23,75 €
muva-RO-0718	Shock frozen raw milk  Best before: 01/2013	Fat (Röse-Gottlieb) Protein (Kjeldahl) Casein Lactose (Monohydrat) Freezing Point pH-value NPN	4,802 ± 0,013 g/100 g 3,453 ± 0,012 g/100 g 2,705 ± 0,024 g/100 g 4,747 ± 0,038 g/100 g - 0,5208 ± 0,0010 °C 6,68 ± 0,02 0,167 ± 0,014 g/100 g	mind. 40 ml	23,75 €
muva-RO-0719	Shock frozen raw milk  Best before: 12/2013	Fat (Röse-Gottlieb) Protein (Kjeldahl) Casein Lactose (Monohydrat) Freezing Point pH-value NPN	2,524 ± 0,013 g/100 g 3,797 ± 0,016 g/100 g 2,971 ± 0,041 g/100 g 4,825 ± 0,048 g/100 g - 0,5227 ± 0,0009 °C 6,67 ± 0,01 0,179 ± 0,013 g/100 g	mind. 40 ml	23,75 €
muva-RO-0720	Shock frozen raw milk  Best before: 12/2013	Fat (Röse-Gottlieb) Protein (Kjeldahl) Casein Lactose (Monohydrat) Freezing Point pH-value	3,261 ± 0,010 g/100 g 3,548 ± 0,019 g/100 g 2,764 ± 0,043 g/100 g 4,515 ± 0,040 g/100 g - 0,4900 ± 0,0010 °C 6,69 ± 0,01	mind. 40 ml	21,75 €

# MILK PRODUCTS

Code	Material*	Parameter	Reference value and uncertainty	Packaging unit	Price **
<b>EVAPORATED MILK</b>					
muva-KM-0504	Evaporated milk 4 % fat  Best before: 2/2013	Fat (Röse-Gottlieb) Dry matter (102 °C) Protein (Kjeldahl) Ash Phosphorus	4,03 ± 0,01 g/100 g 24,16 ± 0,08 g/100 g 7,37 ± 0,03 g/100 g 1,63 ± 0,01 g/100 g 2142 ± 128 mg/100 g	170 g	26,60 €
muva-KM-0505	Coffee Cream 10 % fat  Best before: 2/2014	Fat (Röse-Gottlieb) Dry matter (102 °C) Protein (Kjeldahl) Ash Phosphorus	10,15 ± 0,05 g/100 g 18,44 ± 0,12 g/100 g 3,20 ± 0,03 g/100 g 0,67 ± 0,02 g/100 g 855 ± 36 mg/100 g	100 ml	26,60 €
<b>CREAM</b>					
muva-R-0416	Cream 30 %  Best before: 05/2012	Fat (SBR) Dry matter (102°C) Protein (Kjeldahl)	30,08 ± 0,10 g/100 g 36,73 ± 0,17 g/100 g 2,35 ± 0,02 g/100 g	100 ml	14,90 €
<b>New !!</b> muva-R-0418	Cream 30 % lactose reduced  Best before: 01/2012	Fat (SBR) Dry matter (102°C) Protein (Kjeldahl)	29,17 ± 0,25 g/100 g 35,96 ± 0,28 g/100 g 2,49 ± 0,04 g/100 g	340 g	17,90 €
<b>New !!</b> muva-R-0419	Cream 36 %  Best before: 01/2012	Fat (SBR) Dry matter (102°C) Protein (Kjeldahl)	35,30 ± 0,25 g/100 g 41,42 ± 0,19 g/100 g 2,19 ± 0,01 g/100 g	340 g	17,90 €

# MILK PRODUCTS

Code	Material*	Parameter	Reference value and uncertainty	Packaging unit	Price **
<b>FRESH CHEESE</b>					
<b>muva-FK-1207</b>	<b>Fresh Cheese 18% f.i.d.m.  Best before: 05/2012</b>	Fat (SBR) Dry matter (102°C) Protein (Kjeldahl) Lactic acid (enzym)	4,31 ± 0,07 g/100 g 20,42 ± 0,18 g/100 g 10,35 ± 0,08 g/100 g 602,2 ± 19,0 mg/100 g	200 g	21,60 €
<b>muva-FK-1208</b>	<b>Fresh Cheese 50% f.i.d.m.  Best before: 05/2012</b>	Fat (SBR) Dry matter (102°C) Protein (Kjeldahl) Lactic acid (enzym)	14,30 ± 0,08 g/100 g 27,19 ± 0,27 g/100 g 6,99 ± 0,12 g/100 g 522,1 ± 16,6 mg/100 g	200 g	21,60 €
<b>YOGHURT</b>					
<b>muva-YO-1407</b>	<b>Yoghurt 1,8%  MHD:05/2012</b>	Fat (Röse-Gottlieb) Dry matter (102°C) Protein (Kjeldahl) Lactic acid (enzym.) pH	1,95 ± 0,04 g/100 g 14,37 ± 0,11 g/100 g 4,84 ± 0,14 g/100 g 1123 ± 42 mg/100 g 4,18 ± 0,02	500 g	25,90 €
<b>muva-YO-1408</b>	<b>Yoghurt 3,8 %  MHD:05/2012</b>	Fat (Röse-Gottlieb) Dry matter (102°C) Protein (Kjeldahl) Lactic acid (enzym.) pH	3,82 ± 0,23 g/100 g 15,46 ± 0,17 g/100 g 4,48 ± 0,08 g/100 g 1053 ± 44 mg/100 g 4,17 ± 0,02	500 g	25,90 €
<b>BUTTER</b>					
<b>muva-BU-1305</b>	<b>salted Butter  Best before: 01/2013</b>	Solids non-fat (102°C) Water (102°C) pH-Value Cholesterol Sodium chloride	2,79 ± 0,22 g/100 g 16,00 ± 0,13 g/100 g 5,02 ± 0,01 2217 ± 105 mg/ kg 1,20 ± 0,02 g/100 g	250 g	28,00 €
<b>muva-BU-1306</b>	<b>Sweet Cream Butter  MHD: 06/2013</b>	Solids non-fat (102°C) Water (102°C) pH-Value Cholesterol	1,70 ± 0,08 g/100 g 15,83 ± 0,04 g/100 g 6,73 ± 0,02 2291 ± 68 mg/ kg	250 g	25,00 €
<b>muva-BU-1307</b>	<b>salted Butter  Best before: 01/2013</b>	Solids non-fat (102°C) Water (102°C) pH-Value Cholesterol Sodium chloride	2,61 ± 0,03 g/100 g 15,66 ± 0,19 g/100 g 5,23 ± 0,02 2219 ± 187 mg/ kg 1,10 ± 0,01 g/100 g	250 g	28,00 €

# CHEESE

Code	Material*	Parameter	Reference value and uncertainty	Packaging unit	Price **
<b>PROCESSED CHEESE</b>					
muva-SK-0303	<p><b>Processed cheese</b> 45 % f.i.d.m.</p> <p><b>Best before: 05/2013</b></p>	Fat (SBR) Dry matter (102 °C) Protein (Kjeldahl) Sodium chloride pH value Citric acid Phosphorus Calcium	22,89 ± 0,13 g/100 g 50,77 ± 0,24 g/100 g 20,32 ± 0,08 g/100 g 1,88 ± 0,07 g/100 g 5,67 ± 0,02 174 ± 22 mg/100 g 0,96 ± 0,01 g/100g 6413 ± 148 mg/kg	75 g	30,90 €
muva-SK-0304	<p><b>Processed cheese</b> 55 % f.i.d.m.</p> <p><b>Best before: 03/2013</b></p>	Fat (SBR) Dry matter (102 °C) Protein (Kjeldahl) Sodium chloride Citric acid pH-value Sodium Calcium Ash Nitrate Phosphorus	22,92 ± 0,39 g/100 g 43,71 ± 0,72 g/100 g 15,10 ± 0,17 g/100 g 1,45 ± 0,04 g/100 g 139 ± 13mg/100 g 5,91 ± 0,02 11286 ± 607 mg/kg 1709 ± 1028 mg/kg 4,28 ± 0,05 g/100 g 4,7 ± 0,8 mg/kg 0,70 ± 0,03 g/100g	97 g	30,90 €
muva-SK-0305	<p><b>Processed cheese</b> 38 % f.i.d.m.</p> <p><b>Best before: 03/2014</b></p>	Fat (SBR) Dry matter (102 °C) Protein (Kjeldahl) Sodium chloride pH value Citric acid Sodium Calcium Ash Nitrate	17,21 ± 0,39 g/100 g 46,46 ± 0,34 g/100 g 22,60 ± 0,15 g/100 g 1,13 ± 0,05 g/100 g 5,56 ± 0,03 108,5 ± 4,5 mg/100 g 10248 ± 932 mg/kg 6830 ± 260 mg/kg 4,81 ± 0,03 g/100 g 4,1 ± 1,4 mg/kg	125 g	30,90 €
<b>GRANA PADANO / HARD CHEESE</b>					
HA-1505	<p><b>Grana Padano</b> (grated)</p> <p><b>Best before: 4 weeks after shipment</b></p>	Fat (SBR) Dry matter (102 °C) Protein (Kjeldahl) Sodium chloride pH-value Lactic acid	27,39 ± 0,30 g/100 g 68,68 ± 0,22 g/100 g 34,25 ± 0,30 g/100 g 1,31 ± 0,04 g/100 g 5,54 ± 0,02 1452 ± 262 mg/100 g	100 g	29,70 €
HA-1506	<p><b>Hard cheese</b> (grated, dehydrated)</p> <p><b>Best before: 4 weeks after shipment</b></p>	Fat (SBR) Dry matter (102 °C) Protein (Kjeldahl) Sodium chloride pH-value	31,93 ± 0,11 g/100 g 88,84 ± 0,20 g/100 g 46,70 ± 0,17 g/100 g 3,36 ± 0,03 g/100 g 5,53 ± 0,05	100 g	29,70 €

## OTHER FOOD

Code	Material*	Parameter	Reference value and uncertainty	Packaging unit	Price **
<b>CHOCOLATE</b>					
RM 404	<b>Dark Chocolate</b> Best before: 010/2012	Fat (Weibull-Stoldt) Protein (Kjeldahl) Saccharose Theobromine (HPLC)	33,09 ± 0,32 g/100 g 5,91 ± 0,09 g/100 g 49,6 ± 1,0 g/100 g 4873 ± 195 mg/kg	ca. 150 g	23,30 €
muva-S-0811	<b>Milk chocolate</b> Best before: 06/2013	Fat (Weibull-Stoldt) Milk fat Protein (Kjeldahl) Lactose (monohydrate) Saccharose Theobromine Dry matter	33,38 ± 0,16 g/100 g 6,02 ± 0,57 g/100 g 7,41 ± 0,06 g/100 g 9,14 ± 0,11 g/100 g 43,88 ± 0,51 g/100 g 1332 ± 47 mg/kg 99,29 ± 0,09 g/100 g	100 g	31,00 €
<b>BOILED SAUSAGE</b>					
RM 700	<b>Boiled Sausage</b> Best before: 04/2012	Fat Water (103 °C) Protein (Kjeldahl) Hydroxyproline Sodium chloride Nitrate Calcium Phosphorus Ash	22,34 ± 0,48 g/100 g 60,67 ± 0,28 g/100 g 13,04 ± 0,09 g/100 g 0,220 ± 0,026 g/100 g 1,85 ± 0,19 g/100 g 66,04 ± 4,84 mg/kg 140 ± 42 mg/kg 185 ± 16 mg/100 g 2,77 ± 0,04 g/100 g	48 g	34,70 €
<b>New !!</b> muva-BR-1001	<b>Lyoner</b> Best before: 08/2012	Fat Water (103 °C) Protein (Kjeldahl) Hydroxyproline Sodium chloride Ash	19,71 ± 0,36 g/100 g 63,65 ± 0,44 g/100 g 13,69 ± 0,20 g/100 g 0,270 ± 0,015 g/100 g 1,96 ± 0,09 g/100 g 2,69 ± 0,04 g/100 g	200 g	34,70€
<b>CHOCOLATE MILK</b>					
<b>New !!</b> muva-SM-2001	<b>Chocolate milk (version 1)</b> Best before: 03/2012	Saccharin Acesulfam K Theobromin Caffeine	21,63 ± 1,32 mg/kg 48,17 ± 1,00 mg/kg 323,07 ± 13,33 mg/kg 22,95 ± 1,27 mg/kg	100 ml	22,90 €
<b>New !!</b> muva-SM-2002	<b>Chocolate milk (version 2)</b> Best before: 03/2012	Saccharin Acesulfam K Theobromin Caffeine	69,13 ± 3,48 mg/kg 278,27 ± 5,15 mg/kg 425,54 ± 19,72 mg/kg 30,83 ± 1,36 mg/kg	100 ml	22,90 €

# SENSORY / MICROBIOLOGY

## Sensory-reference materials for determination of basic tastes

Code	Material*	Parameter	Reference value and uncertainty	Packaging unit	Price **
Set 1-4	Chocolate milk for determination of one basic taste	Basic taste bitter	4 different values of intensity	4 x 340 ml	51,00 €
Set 1-4	Lemonade for determination of one basic taste	Basic taste sour	4 different values of intensity	4 x 500 ml	51,00 €
Set 1-4	Apple juice for determination of one basic taste	Basic taste sweet	4 different values of intensity	4 x 200 ml	51,00 €

## Microbiological reference materials for quantitative analysis

Code	Material*	Parameter	Reference value and uncertainty	Packaging unit	Price **
MBK-1705	Bacterial count Best before: 12/2011	Curd powder	$3,06 \pm 0,38 \log \text{Cfu/g}$	30g	19,40 €
MBK-1704	Bacterial count Best before: 12/2011	Hard chees, freeze dried	$6,14 \pm 0,47 \log \text{Cfu/g}$	20g	19,40 €
MBH-1708	Yeasts Best before: 01/2012	Chocolate milk	$3,93 \pm 0,70 \log \text{Cfu /ml}$	500 ml	19,40 €
MBH-1709	Yeasts Best before: 01/2012	Whey drink	$3,71 \pm 0,74 \log \text{Cfu /ml}$	500 ml	19,40 €

\* Modifications reserved

## Programme muva reference materials

### Long term calibration standards of QSE GmbH \*\*, Package: 40 ml

*Expiry date: 3 years after production (by new products after testing)*

Code	Range of Parameters (depending on production)									Price per unit**
	Fat g/100g	Protein g/100g	Lactose g/100g	Freezing point °C	Urea mg/l	pH-Value	Dry matter g/100g	Casein g/100g	ufa <sup>1)</sup> g/100g	
LZS Fat F1	2,0 - 2,5			70 – 150						8,10 €
LZS Fat F2	3,0 - 3,5			320 – 420						8,10 €
LZS Fat F3	4,0 - 4,5	3,2 - 3,7	4,5 - 4,9	160 – 300	-0,510 - -0,530	6,6 – 6,7	13 – 13,5	ca. 2,6	ca. 1,3	10,60 €
LZS Fat F4	5,0 - 6,0			220 – 300						8,10 €
<b>Set LZS F1 - F4</b>										<b>27,50 €</b>
LZS PM1	ca. 1,5	ca. 3,0			-0,470 - -0,500		ca. 11			9,80 €
LZS PM2	ca. 3,5	ca. 4,0			-0,560 - -0,600		ca. 14			9,80 €
LZS PM3	ca.4	ca. 3,5			-0,510 - -0,530		ca. 13,5			9,80 €
<b>Set LZS PM1-PM3</b>										<b>25,00 €</b>
LZS PM4	ca. 10,0	ca. 3,2					ca. 17			9,80 €
LZS PM5 (F7)	ca. 12,5	ca. 3,1					ca. 20			9,80 €
LZS PM6 (F8)	ca. 16,5	ca. 3,0					ca. 24			12,50 €
LZS PM7 (F9)	ca. 20,5	ca. 2,8					ca. 28			12,50 €
<b>Set LZS PM4 – PM7</b>										<b>37,90 €</b>
Past. Milk PM 8	ca. 7	ca. 3					ca. 16			9,80 €
Skimmed Milk M1	ca. 0,05	ca. 3,5			-0,517 - -0,525		ca. 9			8,60 €
Skimmed Milk M2	ca. 0,10				-0,505 - -0,510					7,90 €
Skimmed Milk M3	ca. 0,15				-0,490 - -0,498					7,90 €
Skimmed Milk M4	ca. 0,20									7,90 €
<b>Set M1 – M4</b>										<b>27,20 €</b>

<sup>1)</sup> unsaturated fatty acids

Code	Range of Parameters (depending on production)							Price per unit**
	Fat g/100g	Protein g/100g	Lactose g/100g	Freezing point °C	Urea mg/l	pH-Value	Dry matter g/100g	
LZS Protein E1		2,7 – 3,1	4,0 – 4,3	-0,440 - -0,470			11 – 12	8,60 €
LZS Protein E2		3,2 – 3,4		-0,510 - -0,530				8,10 €
LZS Protein E3		3,6 – 3,9		-0,510 - -0,530				8,10 €
LZS Protein E4		4,0 – 4,4	5,3 – 5,6	-0,580 - -0,620			14 - 15	8,60 €
Set LZS E1 - E4								28,40 €
LZS Cream R1	ca. 25						ca. 33	12,00 €
LZS Cream R2	ca. 30						ca. 36	12,00 €
LZS Cream R3	ca. 35						ca. 39	12,00 €
LZS Cream R4	ca. 40						ca. 45	12,00 €
Set LZS R1 - R4								40,80 €
Whey MO1	ca. 0,1	ca. 0,45					ca. 3,5	8,60 €
Whey MO2	ca. 0,15	ca. 0,8					ca. 6	8,60 €
Whey MO3	ca. 0,45	ca. 0,85					ca. 7	8,60 €
Whey MO4	ca. 0,4	ca. 1,15					ca. 9	8,60 €
Set Whey MO1 - MO4	ca. 25							29,30 €
Freeze dried milk LM	ca. 3,5	ca. 3,5					ca. 12,8	14,00 €
Somatic cell milk	Raw milk with high somatic cell count > 1 Mio. applicable for carry-over test							2,90 €
Freezing point standard	Water spiked with sodium chloride			-0,408				5,30 €
Freezing point standard	Water spiked with sodium chloride			-0,512				5,30 €
Freezing point standard	Water spiked with sodium chloride			-0,520				5,30 €
Freezing point standard	Water spiked with sodium chloride			-0,600				5,30 €
Control standard for inhibitor	Raw milk spiked with 4 ng penicillin per ml							6,00 €

Up to date: 01.02.2011, modifications reserved!)v

\* All reference materials and long term calibration standards are – excepting the sensory material – unfit for consumption.

# REMAINDER

## REFERENCE MATERIALS - IN HIGH QUALITY TO LOW PRICES

The quality of the materials is guaranteed on highest level. Since the number of our materials is limited you may order the rests of the materials to bargain prices.  
Snatch at the offer, while stocks last!

COFFEE CREAM					
<b>muva-KM-0503</b>	<b>Coffee cream 10 % fat</b>  <b>Best before: 03/2012</b>	Fat (Röse-Gottlieb) Dry matter (102 °C) Protein (Kjeldahl) Ash Phosphorus	10,24 ± 0,08 g/100 g 18,49 ± 0,08 g/100 g 3,16 ± 0,02 g/100 g 0,66 ± 0,01 g/100 g 893 ± 61 mg/100 g	100ml	15,00 €
BUTTER					
<b>muva-BU-1303</b>	<b>Sweet Cream Butter</b>  <b>Best before: 03/2012</b>	Solids non-fat (102°C) Water pH-Value Cholesterol	1,72 ± 0,13 g/100 g 15,78 ± 0,11 g/100 g 6,72 ± 0,03 2380 ± 184 mg/ kg	250 g	15,00 €
<b>muva-BU-1304</b>	<b>Mild acid Butter</b>  <b>Best before: 05/2012</b>	Solids non-fat (102°C) Water (102°C) pH-Value Cholesterol	1,83 ± 0,25 g/100 g 15,84 ± 0,34 g/100 g 5,01 ± 0,04 2432 ± 314 mg/ kg	250 g	15,00 €
RAW MILK					
<b>muva-RO-0714</b>	<b>Shock frozen raw milk</b>  <b>Best before: 01/2012</b>	Fat (Röse-Gottlieb) Protein (Kjeldahl) Lactose (Monohydrate) Freezing point pH value Caseine NPN	2,336 ± 0,007 g/100 g 3,546 ± 0,013 g/100 g 4,880 ± 0,019 g/100 g - 0,5245 ± 0,0011 °C 6,67 ± 0,01 2,782 ± 0,020 g/100 g 0,191 ± 0,011 g/100 g	mind. 40 ml	15,00 €
<b>muva-RO-0716</b>	<b>Shock frozen raw milk</b>  <b>Best before: 06/2012</b>	Fat (Röse-Gottlieb) Dry matter Protein (Kjeldahl) Lactose (Monohydrat) Freezing point Urea pH value	3,003 ± 0,010 g/100 g 11,67 ± 0,05 g/100g 3,382 ± 0,023 g/100 g 4,663 ± 0,031 g/100 g - 0,4921 ± 0,0009 °C 196 ± 18 mg/l 6,68 ± 0,01	mind. 40 ml	15,00 €
CHOCOLATE					
<b>RM 407</b>	<b>Dark Chocolate</b>  <b>Best before: 10/2012</b>	Fat (Weibull-Stoldt) Milk fat Protein (Kjeldahl) Saccharose Theobromine (HPLC) Dry matter	41,99 ± 0,22 g/100 g 1,48 ± 0,34 g/100 g 9,73 ± 0,13 g/100 g 24,40 ± 0,42 g/100 g 7558 ± 122 mg/kg 99,32 ± 0,07 g/100 g	150 g	15,00 €
MILKPOWDER					
<b>RM 56</b>	<b>Milk powder, roller dried</b>  <b>Best before: 12/2011</b>	Fat (Röse-Gottlieb) Free Fat Dry matter (102 °C) Protein (Kjeldahl) Lactose (Monohydrate) Ash	26,02 ± 0,11 g/100 g 21,50 ± 0,18 g/100 g 96,16 ± 0,04 g/100 g 26,70 ± 0,09 g/100 g 37,48 ± 0,22 g/100 g 5,64 ± 0,04 g/100 g	50 g	15,00 €

1) The prices are each for one sample. The rebate system of the reference materials does not work on this offer to snip prices.

**\*\* Our terms of payment and transport:**

Our list prices are net prices plus VAT (**excluding** companies in the European Union outside Germany who have notified their **VAT identification number** to us) and forwarding charges.

Please transfer **the net amount invoiced within 8 days**.

The international bank transaction costs are 15,00 €. To decrease this bank transfer costs we recommend using our international **bank account (IBAN and BIC-Code)**. In this case, please **deduct the 15,00 €** that we claim in our invoice for international money transfer.

***Our international bank account:***

**Raiffeisenbank Kempten eG**  
**UST-ID-Nr. DE 128803322**

**IBAN: DE04 73369902 0007124511**  
**BIC-Code: GENO DE F1 KM1**

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Terms of delivery for „Standard reference materials:

- ex muva kempten; plus shipping costs
- will be shipped at ambient temperature

<b>Discount:</b>	from 5 units:	10 %
	from 10 units:	15 %
	from 25 units:	20 %
	from 50 units:	25 %

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Terms of delivery for „Raw milk reference materials / Long-Term-Calibration-Standards for shock frozen raw milk/shock frozen cream”:

- ex QSE GmbH or muva kempten; plus packaging and shipping costs (Express shipping)
- Raw milk/cream materials will be shipped separately from other materials in frozen state. The data sheet contains a clear advice how to handle the material before use. It may be recommend to order the necessary number of units for 3 or 6 months to avoid unnecessary costs for separate shipping of single or small numbers of units

A delivery to other countries is more expensive. Shock frozen raw milk/cream can be delivered into foreign countries to only a limited extend, because the carriers take too long and during this time the samples will be expected to thaw. We therefore regret to be not able to take any liability for a delivery to a number of countries.

muva kempten  
 Postfach 32 54  
 D-87441 Kempten/Allgäu

## Order form for muva-reference materials

<b>Order Number</b>	
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**Please send me the following materials:**

No. of units	Material	Remarks (e.g. frequency of regular delivery)*

\* usual date of dispatch is every Tuesday, but it is anytime possible. Also we offer week- and month dispatch.

**Company:**

**Company:**

**Street:**

**Post(Zip) Code/City:**

**Person to contact:**

**Phone:**

**Fax:**

**E-mail:**

**EU-VAT-Identification-No. (delivery into EU countries):**

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

Date

surname, first name

Simone Regel    Fon +49 (0) 831/5290-233  
**Fax-Nr.: +49 (0) 831/5290-197**  
**E-Mail: [ring-ref@muva.de](mailto:ring-ref@muva.de)**

muva kempten  
 Postfach 32 54  
 D-87441 Kempten/Allgäu

## Order form for muva-reference materials

<b>Order Number</b>	<input style="width: 95%;" type="text"/>
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**Please send me the following materials:**

No. of units	Material	Remarks (e.g. frequency of regular delivery)*
<input style="width: 95%;" type="text"/>	<input style="width: 95%;" type="text"/>	<input style="width: 95%;" type="text"/>
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\* usual date of dispatch is every Tuesday, but it is anytime possible. Also we offer week- and month dispatch.

**Company:**

**Company:**

**Street:**

**Post(Zip) Code/City:**

**Person to contact:**

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**E-mail:**

**EU-VAT-Identification-No. (delivery into EU countries):**

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

Date

surname, first name



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