

PROFICIENCY TESTING SYSTEMS

Program 2023
Preview of 2024

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Proficiency Testing

Our novelties this year

This year we celebrate our 1000th proficiency test (EP). Come and celebrate with us! With your registration for the EP "Chocolate", you will receive a 50 € voucher for our professionally qualified seminars as a thank you.

- ▶ We are expanding our range to include the matrix "**goat milk powder**", it is a new addition to the programme.
- ▶ After the successful introduction of vegan foods last year, we are offering the "**vegan spread**" and "**plant drink**" proficiency tests this year to you again.
- ▶ We have a new department head and deputy. In future, Dr Fichtner and Ms Babel will be happy to answer your enquiries.
- ▶ Our customer portal has now improved at your request. You can now set your order number and the number of additional orders by yourself and view them at any time.
- ▶ Your certificates of proficiency tests will be made available in the customer portal in future, as will the report.
- ▶ By clicking on the corresponding button for the booked proficiency tests, you can see now when and by whom the prescription was booked.

Registration via the customer portal

- ▶ If you do not yet have an account, please register as a customer at <https://service.muva.de/register>
- ▶ If you would like to participate automatically in the following year, we ask you to also register once and register your proficiency tests via the customer portal. When registering, select the option „book a subscription“.
- ▶ Instructions, on how to make an account, register for the EP module, and detailed descriptions from registration for the EP to retrieving the report and certificates can be found on our homepage.

▶ EPQS 1017 Goat Milk Powder (type ZB)

Catalogue: 2023

Price: 298 EUR


Sample materials: 75 EUR

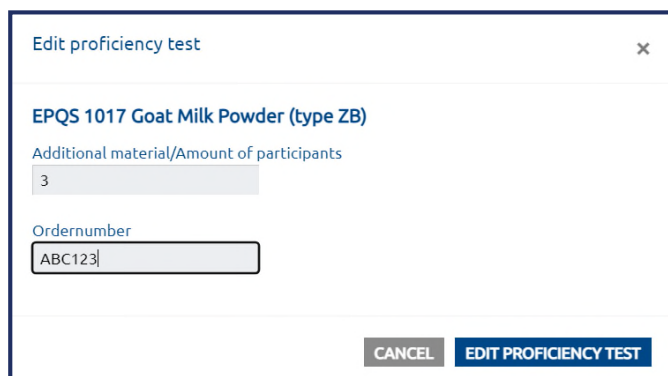
Timeframe: 17.07.2023 - 11.08.2023

Registered

SUBSCRIPTION

Your input via the customer portal

- ▶ Additional sample material for the chemical-physical and microbiological PTs or information on the number of panellists that want to participate in a sensory test, please enter under the Edit button of the respective PT. This allows  you to see at any time how much material you have ordered and to change it up to one week before dispatch.
- ▶ You can also enter, edit and view your order number (to be entered on the invoice) at any time by clicking on the Edit button.



Edit proficiency test

EPQS 1017 Goat Milk Powder (type ZB)

Additional material/Amount of participants
3

Ordernumber
ABC123

CANCEL EDIT PROFICIENCY TEST

- ▶ Please leave any comments/special remarks about the EP in the "Message" field when booking.
- ▶ For an additional charge of 10 €, you can still receive the results report in paper form. If applicable, please also indicate this in the "Message" field.
- ▶ In almost all tests offered, participants receive two samples of the respective matrix with different constituents (e.g. different fat content). The exceptions are marked.
- ▶ Please note that our programme is scheduled for two years, and some proficiency tests are offered alternately every two years.
- ▶ You can book the examinations for 2024 from autumn 2023. Prices are valid for the current year.
- ▶ We reserve the right to make any necessary changes. In such cases, we will of course inform you in advance.

Your contact for questions:

RingRef@muva.de

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Chemical-physical analysis

Type	Proficiency test	EPQS	2023	planned for 2024	Parameter	Price ¹⁾	
						Report PDF	add. result. ²⁾
UHT-Milk							
The samples are commercially available long-life cow's milk. You will receive two different samples of 200-500 ml (40 ml of low-lactose or lactose-free milk) per proficiency test for analysis.							
A	UHT-Milk	985	Jan	Jan	Fat, Dry Matter, Protein, Lactose (monohydrate), Freezing Point, Density	245 €	79 €
A	UHT-Milk	1008	May	May	Fat, Dry Matter, Protein, Lactose (monohydrate), Freezing Point, Calcium	245 €	79 €
A	UHT-Milk	1022	Sep	Sep	Fat, Dry Matter, Protein, Lactose (monohydrate), Freezing Point, pH Value	245 €	79 €
AL	Milk (lactose-reduced, -free)	990	Feb	Feb	Lactose (monohydrate), Galactose, Glucose	169 €	69 €
Raw Milk							
The samples are raw cow's milk . The basic price of the proficiency test (PT) includes four bottles á 40 ml per sample. If you order additional samples, two bottles per sample will be shipped. For PT Aflatoxin in milk, snap-frozen samples á 40 ml with two different aflatoxin M1 contents are supplied. For alkaline phosphatase , cheese is delivered as a second sample. For the EP fatty acid distribution in milk you will receive two samples á 40 ml, each additional order includes a 40 ml sample.							
K	Raw Milk ³⁾	995	Feb	Jan	Fat, Dry Matter, Protein, Lactose (monohydrate), Freezing Point, pH Value, Casein	290 €	120 €
K	Raw Milk ³⁾	1028	Oct	Oct	Fat, Dry Matter, Protein, Lactose (monohydrate), Freezing Point, pH Value, urea	290 €	120 €
VP	Alkaline Phosphatase (milk, cheese)	994	Feb	Jan	Phosphatase Activity; qualitatively and quantitatively	175 €	65 €
AM	Aflatoxin M1 (milk)	1027	Oct	Oct	Aflatoxin M1	169 €	65 €
FM	Fatty Acid Distribution ⁴⁾ (raw milk)	/	/	Nov	C4 to C20; (C14:1, C16:1, C18:1, C18:1- <i>trans</i> , C18:2, C18:2- <i>trans</i> , C18:3)	249 €	79 €
Base Milk							
In the suitability test "Production milk", your previously adjusted milk for powder production and a "cheese milk" for cheese production are offered as sample material. In each case, 40 ml of the shock-frozen milk is provided in the basic package.							
PA	Base Milk (powder and cheese production)	1035	Oct	Oct	Fat, Dry Matter, Protein	215 €	89 €
Diary Products							
The dairy products: cream, butter, evaporated milk and yoghurt are important commercially available dairy products. In the respective proficiency tests, you will receive two different samples (2x cream á approx. 200 ml or butter á approx. 250 g, or yoghurt á approx. 500 g; 1x evaporated milk and 1x coffee cream á approx. 170 ml) of the respective milk product in the basic package.							
D	Cream	991	Feb	Feb	Fat, Dry Matter, Protein	179 €	65 €
D	Cream	1020	Aug	Aug	Fat, Dry Matter, Protein	179 €	65 €
E	Evaporated Milk / Coffee Cream	1010	May	May	Fat, Dry Matter, Protein, Phosphorus, Ash	229 €	75 €
H	Butter	987	Jan	Jan	Water, Solidmin-fat, Dry Matter, pH Value, Cholesterol, Butyric Acid Methyl Ester, Chloride, Sodium (sodium chloride)	215 €	75 €
L	Yoghurt	1001	Feb	Mrz	Fat, Dry Matter, Protein, Total Lactic Acid, pH Value	215 €	80 €

Basically, all testing samples of chem.-phys. and microbiological proficiency tests are unfit for consumption.

Type	Proficiency test	EPQS	2023	planned for 2024	Parameter	Price ¹⁾	
						Report PDF	add. result. ²⁾
Cheese							
Cheese is a versatile dairy product available on the market. In our proficiency tests (PT), we offer two different samples each of processed cheese á 250 g; fresh cheese á 200 g; hard cut cheese á 100 g. The EP alkaline phosphatase in cheese and milk contains one sample of each matrix.							
C	Processed Cheese	993	Feb	Mrz	Fat, Dry Matter, Protein, Lactose (monohydrate), pH Value, Citric Acid, Ash, Chloride, Sodium (sodium chloride)	289 €	95 €
C	Processed Cheese	1019	Aug	Aug	Fat, Dry Matter, Protein, pH Value, Phosphorus, Ash, Chloride, Sodium (sodium chloride)	289 €	95 €
F	Cream Cheese	1004	Apr	Apr	Fat, Dry Matter, Protein, Lactose (monohydrate), pH Value, Total Lactic Acid, Chloride, Sodium (sodium chloride)	199 €	75 €
V	Cheese (hard/semi-hard cheese)	986	Jan	Jan	Fat, Dry Matter, Protein, pH Value, Chloride, Sodium (sodium chloride)	209 €	75 €
VP	Alkaline Phosphatase (milk, cheese)	994	Feb	Jan	Phosphatase Activity; qualitatively and quantitatively	175 €	65 €
Powder							
You will receive two different samples á 80 g for each proficiency test.							
B1	Milk Powder	988	Jan	Mrz	Fat, Free Fat, Dry Matter, Protein, Lactose (monohydrate), Ash, Nitrate	255 €	90 €
B2	Milk Powder	1018	Aug	Sep	Fat, Dry Matter, Protein, Lactose (monohydrate), pH Value, Ash	249 €	90 €
ZB	Goat Milk Powder ⁴⁾	1017	Jul	Jul	Fat, Dry Matter, Protein, Ash	298 €	75 €
G	Whey Powder	1003	Apr	Apr	Fat, Dry Matter, Protein, Lactose (monohydrate), Calcium, Magnesium, Nitrate, NPN, Ash, Total Lactic Acid	310 €	115 €
P	Sodium Caseinate / Whey protein concentrate	1016	Jul	Jul	Fat, Water, Protein, Lactose (monohydrate), Ash	229 €	80 €
T	Carbohydrates (in baby foods)	/	/	Apr	Glucose, Fructose, Lactose (monohydrate), Saccharose	245 €	95 €
T	Vitamins (in baby foods)	/	/	Apr	Vitamin A, Vitamin C, Vitamin E	245 €	95 €
U	Minerals / Trace Elements (in baby foods)	1011	Jun	Jun	Sodium, Potassium, Calcium, Magnesium, Iron, Zinc, Copper, Manganese, Phosphorus, Chloride	299 €	100 €
FM	Fatty Acid Distribution ⁴⁾ (milk powder)	1037	Nov	/	C4 to C20; (C14:1, C16:1, C18:1, C18:1- <i>trans</i> , C18:2, C18:2- <i>trans</i> , C18:3)	249 €	79 €
Vegan Foods							
After successfully carrying out the first proficiency tests with vegan products, we are pleased to be able to include them in our programme permanently. You will receive two vegan products from the range of spreadable creams or vegan drinks (40 ml) included in the basic price.							
VS	Vegan Spread (alternative to dairy products)	1006	Apr	Apr	Fat, Dry Matter, Protein, Ash	299 €	110 €
VM	Plant Based Drink ³⁾ (e. g. almond, coconut, oats)	1024	Sept	Feb	Fat, Dry Matter, Protein	255 €	95 €
Veterinary Drugs							
HST1	Veterinary Drugs, quantitativ (milk)	1033	Oct	/	Possible groups of substances: β -Lactam, Tetracycline, Sulfonamide, Cephalosporine	265 €	89 €
HST2	Veterinary Drugs, qualitativ (milk)	1034	Oct	Oct	Possible groups of substances: β -Lactam, Tetracycline, Sulfonamide, Cephalosporine	165 €	59 €

Basically, all testing samples of chem.-phys. and microbiological proficiency tests are unfit for consumption.

Type	Proficiency test	EPQS	2023	planned for 2024	Parameter	Price ¹⁾	
						Report PDF	add. result. ²⁾
Others							
You will receive two different samples for each proficiency test.							
FS	Fruit Juice	1014	Jun	/	Glucose, Fructose, Titratable Acid, Soluble Solids (°Brix), Ethanol, pH value, Patulin	195 €	75 €
S	Canned Sausage	/	/	Aug	Fat, Water, Protein, Hydroxyproline, Ash, Chloride, Sodium (sodium chloride)	199 €	75 €
N	Chocolate / Nougat	1000	Mrz	/	Fat, Milk Fat, Dry Matter, Protein, Lactose (monohydrate), Saccharose, Theobromine	219 €	75 €

¹⁾ Net price plus packing and shipping costs (will be charged according to the expenses)

²⁾ Additional double determination (results) and/or additional material

Mikrobiologische Analytik

Type	Proficiency test	EPQS	2023	Planned for 2024	Parameter	Price ¹⁾	
						Report PDF	add. result. ²⁾
Milk							
You will receive two samples with different microbiological contamination in the basic package. The basic price includes two tubes for each sample contamination concentration with 30 ml of shock-frozen milk tubes. It includes up to 9 results. Each further result is charged separately as an additional result. When you order additional sample material, you will get one tube per sample.							
All sample materials contain microbiological strains of safety group S1.							
OK	Mesophilic, Aerobic Bacterial Count	996	Mrz	Feb	Total Bacterial Count in frozen Milk	219 €	75 €
OK	Mesophilic, Aerobic Bacterial Count	1029	Oct	Oct	Total Bacterial Count in frozen Milk	219 €	75 €
OEC	E. coli / Coliforme / Enterobacteriaceae	997	Mrz	Feb	E. coli, Enterobacteriaceae, Coliforms in frozen Milk	225 €	85 €
OEC	E. coli / Coliforme / Enterobacteriaceae	1030	Oct	Oct	E. coli, Enterobacteriaceae, Coliforms in frozen Milk	225 €	85 €
OEE	E. coli / Enterobacteriaceae	1039	Nov	Nov	E. coli, Enterobacteriaceae in frozen Milk	209 €	85 €
OH	Yeasts	/	/		Yeasts (Capsules in Milk Products)	219 €	75 €
OHS	Yeasts / Geotrichum	998	Mrz	Feb	Yeasts, Geotrichum in frozen Milk	219 €	75 €
OHS	Yeasts / Geotrichum	1031	Oct	Oct	Yeasts, Geotrichum in frozen Milk	219 €	75 €
OST	Staphylococcus	1032	Oct	Oct	Staphylokokken, gefroren	219 €	75 €
Dairy Products							
You will receive samples with different loads in the basic package. The basic price includes up to 9 results, each additional result is charged separately.							
All sample materials contain microbiological strains of safety group S1.							
OK	Mesophilic, Aerobic Bacterial Count	1013	Jun	Jun	Total bacterial count in powder and freeze dried cheese	210 €	60 €

¹⁾ Net price plus packing and shipping costs (will be charged according to the expenses)

²⁾ Contains additional duplicate determinations (results) and / or additional material

Basically, all testing samples of chem.-phys. and microbiological proficiency tests are unfit for consumption.

Sensory analytics

Type	Proficiency test	EPQS	2023	Planned for 2024	Parameter	Price ¹⁾	
						Report PDF	add. results. ³⁾
Sensory According to DIN ISO 22935; 1-3 The assessment of milk and milk products as well as powder according to the assessment scheme of DIN ISO 22935 using a 5-point scale. You will receive two different test samples for each proficiency test.							
SeDLG1	Milk	989	Jan	Jan	Parameter according to DIN ISO 22935; 1-3 (5-point scale)	219 €	89 €
SeDLG2	Dairy Products	1023	Sep	Sep	Parameter according to DIN ISO 22935; 1-3 (5-point scale)	219 €	89 €
SeDLG3	Powder	999	Mrz	Mrz	Baby foods and Milk Powder: Parameter according to DIN ISO 22935; 1-3 (5-point scale)	219 €	89 €
Sensory - Four Sense Test your senses - smell, taste, touch and sight. You will receive a ranking test consisting of 4 test samples per attribute.							
SeS	Rank Order	1021	Aug	Aug	4 Rank Order Sets (haptic and visual test, taste, odour)	389 €	169 €
Sensory – Taste You can prove your sense of taste in different matrices and methods. With rank order tests, you will receive 1 to 2 sets of four test samples each. The task is both: to recognise the basic taste type and sort the test samples into the correct order. In triangle tests , each tester receives six distinct triangle tests, with the task of recognising the deviating test sample in each case. In the PT profile test , a test sample is profiled in at least five attributes based on two given references. In the packaging test , a triangle test and an intensity test of a commodity according to DIN 10955 in smell and taste are carried out.							
Se2	Rank Order	1009	May	May	2 Sets of Basic Taste (fruit juice and liquid)	250 €	99 €
Se3	Rank Order	1036	Nov	Nov	2 Sets of Basic Taste (dairy products)	250 €	99 €
Se4	Rank Order	1038	Nov	/	1 Set of flavour (dairy product)	199 €	95 €
SeRF	Rank Order in Sausage	1007	Apr	Apr	1 Taste in sausage	189 €	89 €
SeP	Profile Testing	1002	Mrz	Mrz	5 Attributes	389 € ⁶⁾	89 €
SeV	Packaging Material	1025	Sep	Sep	Intensity test with triangle test for taste and odour (water)	389 € ⁶⁾	109 €
SeD	Triangle Test	1005	Apr	Apr	Taste (e. g. basic taste, aroma, off-flavour)	199 €	89 €
SeDW	Triangle Test in Sausage	1015	Jul	Jul	Taste in Sausage (e. g. basic taste, aroma, off-flavour)	199 €	95 €
Sensory – Odour In the PTs rank order and triangle tests , you can put your sense of smell to the test. In the ranking test, you receive two different aroma sets with four test samples each. The task is both to recognise the aroma and to sort the test samples into the correct order. In the triangle tests, each taster receives six different triangle tests with the task of recognising the deviating test sample in each case.							
SeA	Rank Order	/	/	Feb	Aromatic Solutions (e. g. fruits, nuts, herbs)	189 €	89 €
SeDA	Triangle Test	992	Feb	/	Aromatic Solutions (e. g. fruits, nuts, herbs)	199 €	89 €

Sensory - Fat and Oil

The sensory evaluation of intrinsic as well as extrinsic attributes according to the standard method C-II 1 of the DGF (Deutsche Gesellschaft für Fettwissenschaften e.V.).

SeO1	Virgin, cold pressed Rapeseed Oil	1012	Jun	Jun	Parameter according to DGF-Einheits-Methode (fat)	210 €	69 €
SeO2	Frying Fat		/	Nov	Parameter according to DGF-Einheits-Methode (fat)	215 €	69 €

Sensory - Drinking Water

The basic price already includes up to 3 examiners; the costs for additional examiners are only charged from the 4th examiner onwards. In any case, please indicate how many examiners you would like to participate with before sending the form!

SeTW	Drinking Water TON / TFN acc. to DIN EN 1622	1026	Oct	Mai	Odour Threshold Value and Flavour Threshold Value in Drinking Water acc. to DIN EN 1622	389 €	89 €
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¹⁾ Net price plus packing and shipping costs (will be charged according to the expenses)

²⁾ Contains additional duplicate determinations (results) and / or additional material / or penellists

Only for sensory proficiency tests:

Please inform us of the number of participating panel lists when registering or, at the latest, when announcing the EP via the customer portal under the "Edit" button.



Discount system for sensory proficiency tests:

- ▶ From 3 test persons 5 % discount
- ▶ From 9 test persons 10 % discount

About us

We, muva kempten GmbH, offer one of the broadest ranges of tests and analyses in the food and water sector as well as competent advice, seminars, and products for your quality assurance. In the milk and dairy sector, we play a leading role in Bavaria, Germany, and internationally. With over 170 employees, we have outstanding expertise in analytics and related issues.

Proficiency tests are a powerful instrument for internal and external quality assurance for analytical laboratories. In the case of accreditations or certifications, participation in proficiency tests has meanwhile become indispensable to demonstrate the analytical competence of a laboratory. The use of manageable resources provides a wealth of information regarding the effectiveness and accuracy of the methods used and the skills of your employees. Analytical sources of error can be identified and trends can be clarified. As a result, the analytical performance of a laboratory can be measurably confirmed and continuously improved. Reliable analysis results avoid costs, thus leading to improved economic efficiency and, above all, to more credibility towards certification bodies and your customers.

[Proficiency tests for quality assurance](#) at muva kempten GmbH are among the world's leading systems for chemical-physical, microbiological and sensory analysis of food. We have over 30 years of experience in the organization and evaluation of proficiency tests, work in numerous national and international working groups, and have long been familiar with quality management in the laboratory and analytical quality assurance.

[Muva kempten GmbH](#) is approved as a provider of proficiency tests in food and packaging by the German coordination center for laboratory proficiency tests in official food monitoring of the Federal Office for Consumer Protection and Food Safety (DKLL) and accredited by the German accreditation body GmbH (DAkkS) according to DIN EN ISO / IEC 17043: 2010-05.



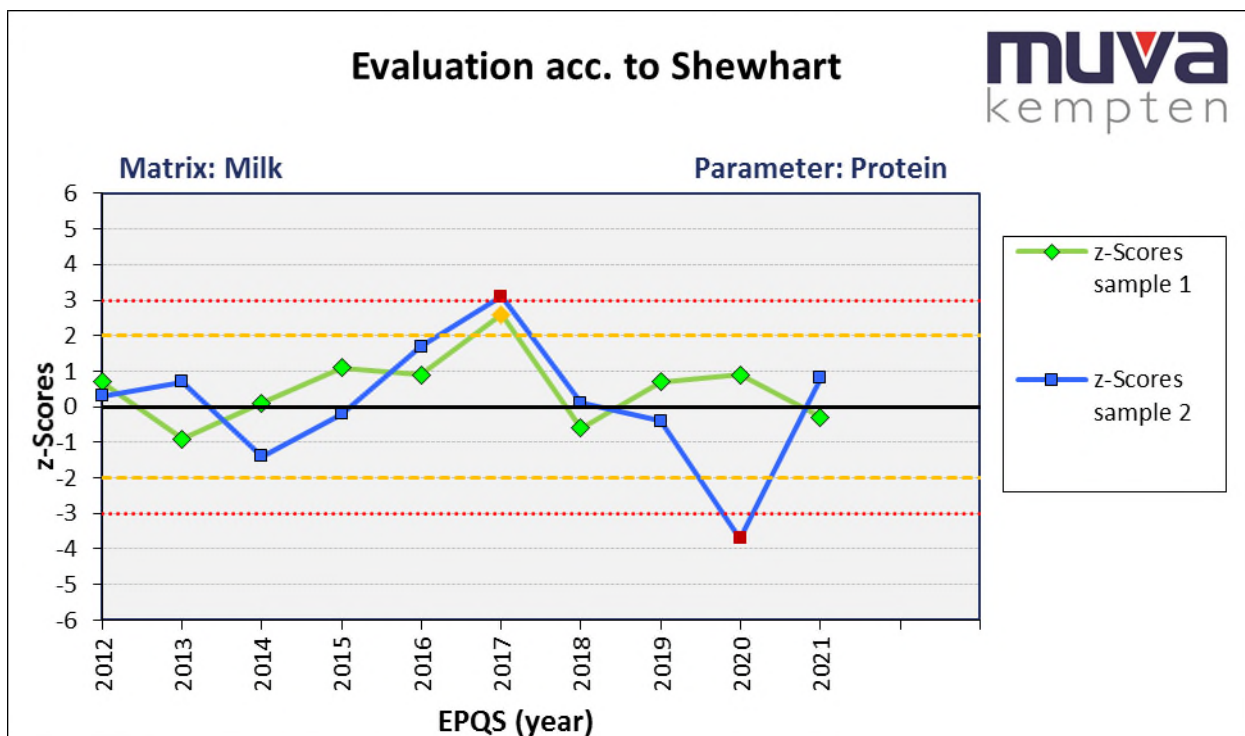
The specialists' knowledge of the entire muva kempten GmbH is available to our proficiency testing team, which our customers are of course also welcome to fall back on.



The [accreditation](#) is valid for the scope defined in the [annex](#) to the certificate D-EP-20469-01-00

We offer you:

- ▶ Precise, reliable planning and organization that meet internationally recognized specifications such as the standards DIN EN ISO / IEC 17043: 2010-05 and DIN ISO 13528: 2020-09
- ▶ An objective evaluation in which your results are treated confidentially and are anonymously coded
- ▶ A meaningful report with a comprehensible and easily understandable evaluation, with clear tables and graphics as well as clear evaluations of your analysis performance
- ▶ Graphic evaluations that show the competence of your laboratory at a glance and can be presented to third parties
- ▶ Graphic recognizability of trends or systematic deviations in the data analysis
- ▶ The possibility of comparing the performance of individual employees, devices, methods, etc. with other laboratories and tracking them over a longer period of time
- ▶ The freedom to use your own routine methods in the proficiency test and, if available, to compare them with the reference methods
- ▶ A certificate of your performance for each proficiency test, in which the z- and z'-scores of your laboratory are clearly listed for each parameter
- ▶ Competent support for questions in chemical-physical, microbiological, and sensory analysis and the associated statistical analysis
- ▶ On request, a personal performance report on your participation in recent years



Representation of the performance curve using a Shewhart control chart

Register and sign up

Register in the Customer Portal

Register easily in our [Customer Portal](#) and generate your personal account in which you can access all your activities at any time.

If you have any questions about registering or using our Customer Portal, we offer detailed [instructions](#) and information on our homepage.

Register for the proficiency test

Have you discovered one or more proficiency tests in our program? Then we look forward to your registration.

- ▶ You have the advantage of sign up to a proficiency test quickly and easily using your personal account in our Customer Portal.
- ▶ You will then receive a confirmation of your registration for the proficiency test by email.
- ▶ You can use the "Edit" button to collect additional sample material.
- ▶ If you have decided at short notice to order additional sample material, please let us know immediately in an informal e-mail.
- ▶ You can use the "message" function to inform us of other specific requests. This is of course also possible at a later point in time by sending an informal email to RingRef@muva.de.
- ▶ You also have the option of subscribing to proficiency tests so that you do not have to re-register every year. Termination of the standing order is possible at any time before the start of the examination (sample shipment)

- ▶ If you have missed the registration deadline but want to take part in a proficiency test, please contact us by email or phone.

We configure, organize, and inform

- ▶ You will receive an announcement with the exact dates (sample dispatch, notification of results) not later than 2 weeks before the samples' shipment of your proficiency test. All accompanying documents will be available in the Customer Portal in due course and can be downloaded as downloads.
- ▶ If you have decided at short notice to order additional sample material, please inform us immediately via an informal email.
- ▶ You will be informed about the sending of the samples by a separate e-mail on the day of dispatch.
- ▶ You will usually receive your samples within 3-4 days.
- ▶ You are free to analyze all or only some of the parameters offered. Ideally, you should determine two values (duplicate determination) or more for each parameter using a method of your choice.
- ▶ Further analyses (e. g. with other methods, at a different point in time, or by different processors) are possible.
- ▶ Please submit the results via the Customer Portal by the specified deadline (within 3 weeks of receiving the samples). Results for one or both samples as well as for the individual parameters of your choice can be entered and either collected or transmitted gradually.

- ▶ We will inform you by email as soon as the proficiency test report is available for you to view and download from the Customer Portal.
- ▶ If you would like to receive the report in paper form for a surcharge of €10.00, please inform us informally by e-mail.
- ▶ After the proficiency test, we will be happy to answer any questions and suggestions you may have. We recommend that you use our reference materials between the individual participations and in the event of deviations.

Suspension or failure of a proficiency test

- ▶ Via the Customer Portal you can sign out from the planned proficiency test until one calendar week after receipt of the letter of announcement.
- ▶ Beyond this point in time, we allow ourselves to charge the costs incurred up to then. After the samples have been dispatched, you must pay the full costs of the proficiency test.

Contents of your chem.-phys. and microbiological report

In addition to the measurement uncertainty and the graphic representation, the report contains the following information:

- ▶ Data on sample homogeneity
- ▶ The evaluation criteria z-score and z'-score
- ▶ The number and type of participating laboratories. (Milk industry laboratories, laboratories from the food industry, private laboratories and official monitoring bodies, among others, take part in the proficiency tests)
- ▶ The analytical methods used
- ▶ All individual results (anonymized) in tables with individual, and mean values, the associated methods and comments
- ▶ The statistical evaluation data (comprehensive information on the statistical evaluation can be found in the statistical protocol)
- ▶ A summary of the results and analytical recommendations

Determination of the method-dependent measurement uncertainty on the basis of the Nordtest

From three laboratory results (for chemical-physical proficiency tests at least 6 individual results), based on one method, the contributions to the uncertainty are calculated from the standard deviation of the individual results (= reproducibility) and from the deviation of the individual results to the assigned value (= BIAS). The expanded measurement uncertainty estimated on the basis of the Nordtest can be found in the evaluation tables for the individual parameters. If a laboratory has used several methods and sufficient values are available, the measurement uncertainties are estimated and specified separately.

These measurement uncertainties are used for information purposes and can be extremely helpful for plausibility control or for calculating the laboratory's own measurement uncertainties. However, they cannot replace your own assessment.

Example: Extract from an evaluation table with information on the expanded measurement uncertainty of a laboratory

Tab. 1: Ergebnisse in Probe 1 Table 1: Results of sample 1					Zugewiesener Wert ± Unsicherheit Assigned value ± uncertainty					
Lab Code	X _{lab}			Meth. Code	Methode / Method Beschreibung Description	Norm (Standard) Standard	Kommentar Comment	Bewertung Performance		Messunsicherheit / measurement uncertainty U _{lab}
	Wert 1 Value 1 (g/100g)	Wert 2 Value 2 (g/100g)	Mittelw. Mean (g/100g)					z-Score	z'-Score	
1,1	1,51	1,47	1,49	b52	102 °C	VDLUFA C 35.9		-1,02	-0,69	
1,2	1,42	1,47	1,45	b52	102 °C	VDLUFA C 35.9		-1,53	-1,04	
2	keine Ergebnisse / no results									
3	1,58	1,54	1,56		102 °C	ÖNORM EN ISO 3727-1		-0,23	-0,15	
4	1,64	1,66	1,65		102 °C		int. Meth.	0,80	0,54	
5,1	1,58	1,64	1,61	b52	102 °C	VDLUFA C 35.9		0,34	0,23	0,20
5,2	1,55	1,54	1,55	b52	102 °C	VDLUFA C 35.9		-0,40	-0,27	
5,3	1,47	1,46	1,47	b52	102 °C	VDLUFA C 35.9		-1,31	-0,89	
6	1,50	1,57	1,54	b53	102 °C	VDLUFA C 35.10		-0,51	-0,35	

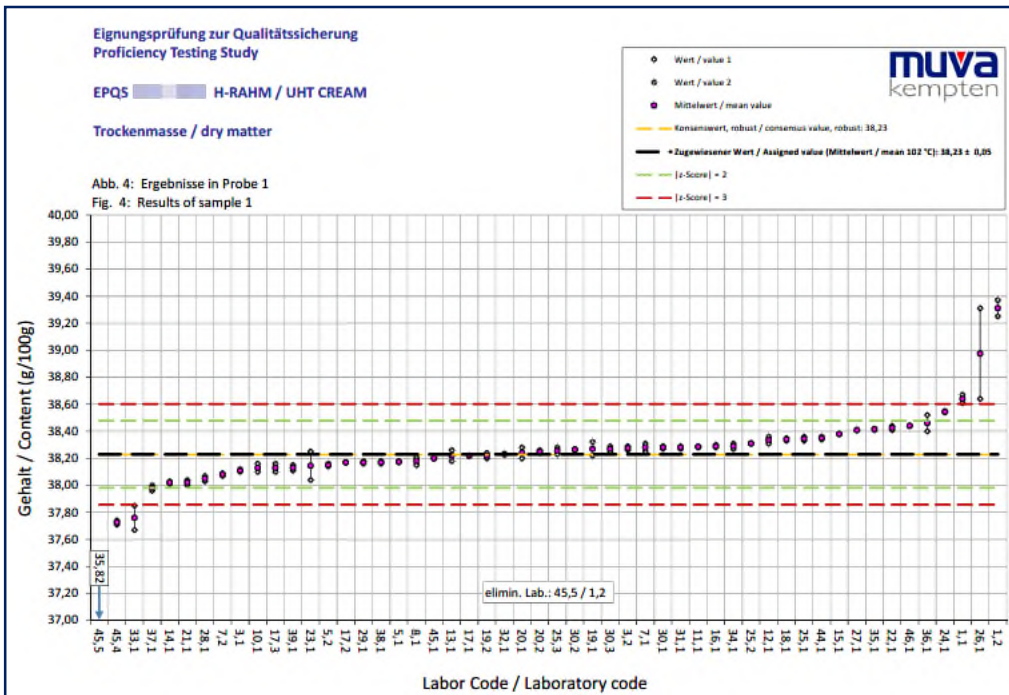
Graphic representation of proficiency test results

The different graphic schemes help you to get a quick overview of all data and to gain additional information.

The following figure shows the data sorted in ascending order. In addition, the warning and action limits of the corresponding evaluation criteria are drawn in. The distribution with regard

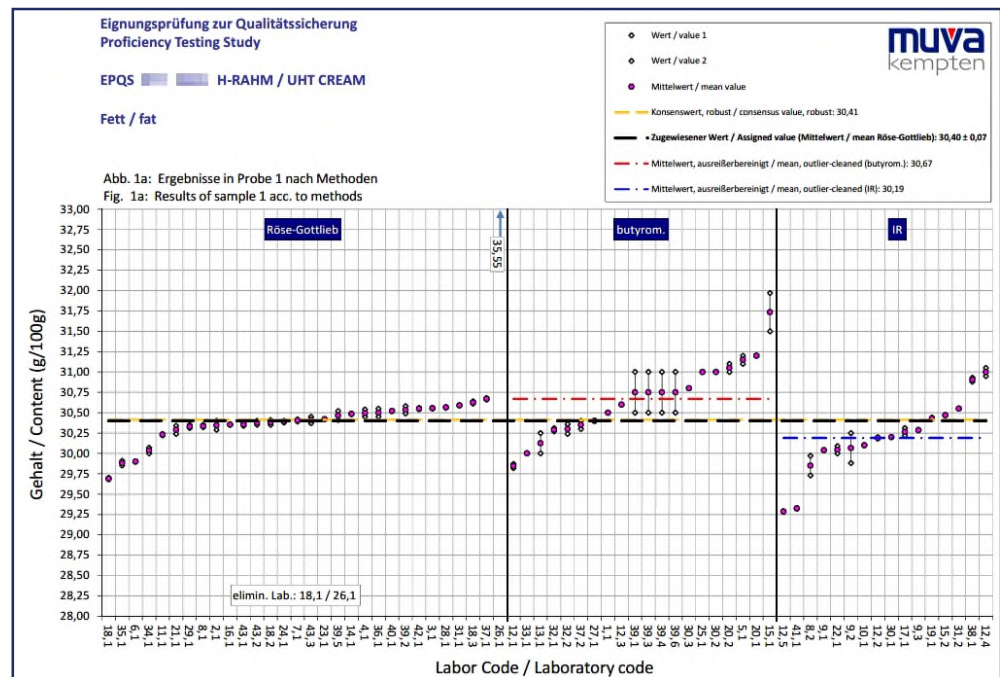
to the evaluation criteria can thus be recorded at a glance.

The graphical representation of the results sorted by method allows you to assess the efficiency of the various methods. Furthermore, one's own results can be compared with the results of the other participants both within and between the methods.



Results sorted by size with limits of the evaluation criterion z-Score

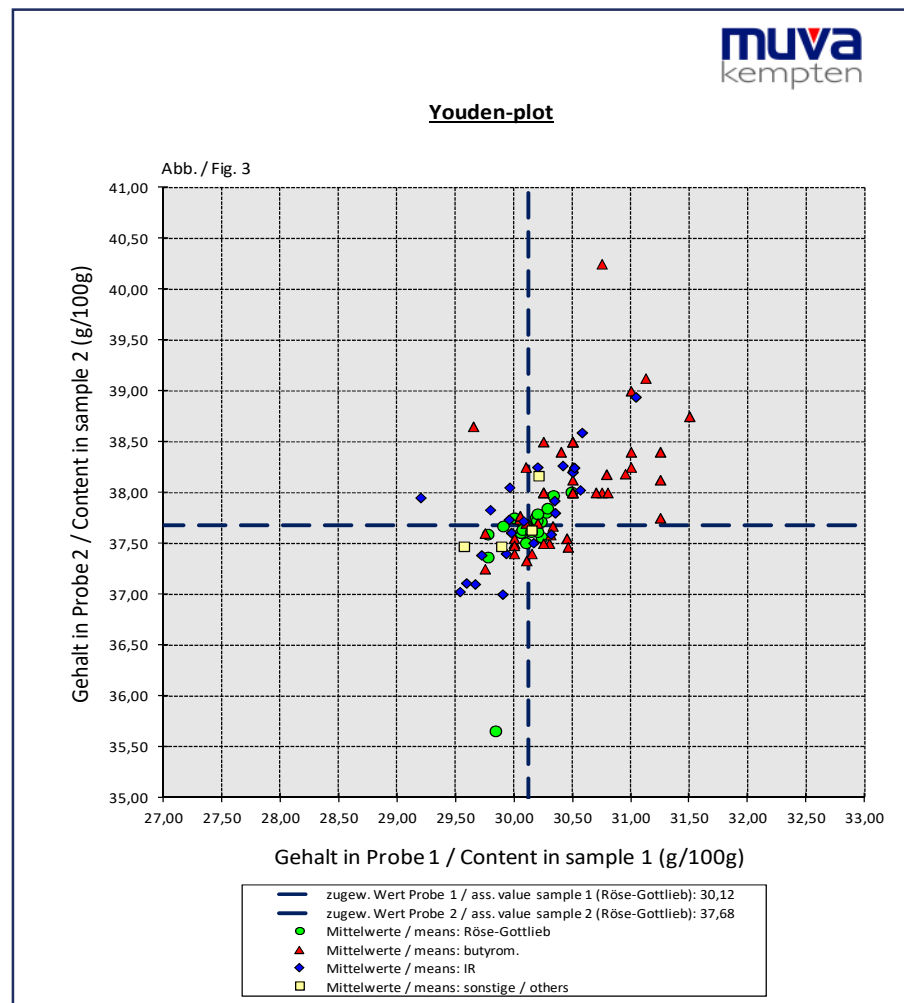
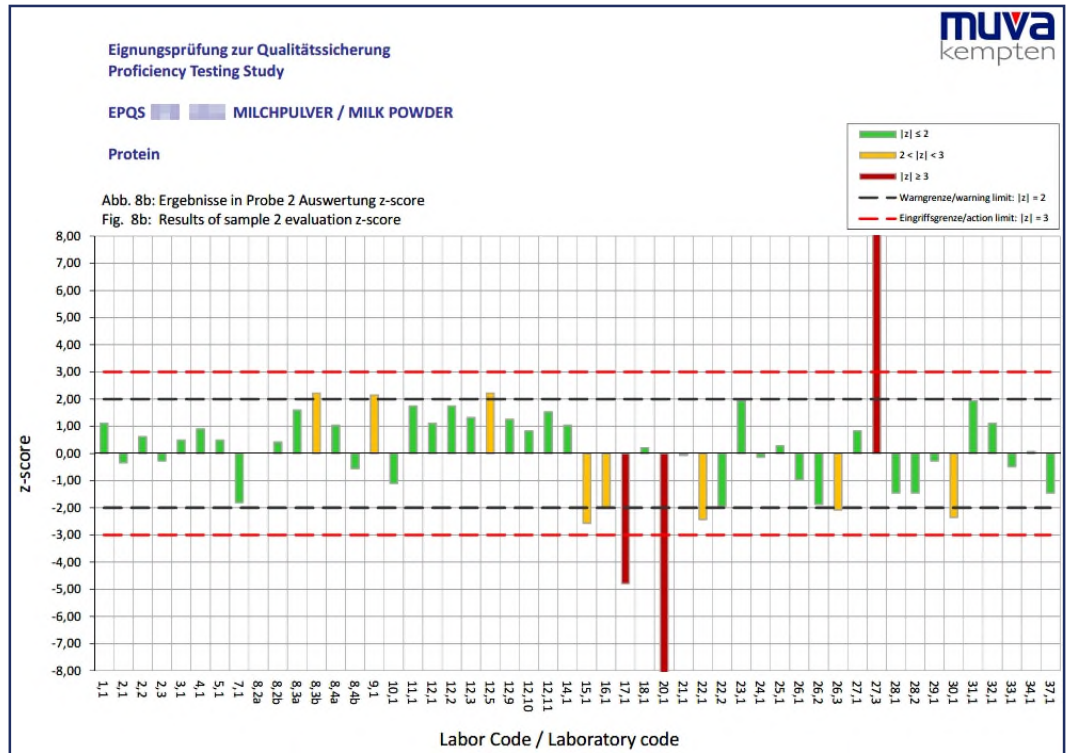
Evaluation of the results according to methods used



The performance of all participants is clearly shown in the z-Score graphic. In addition, systematic deviations can be recognized at a glance (e. g. if the z-values for both samples are > 3)

The Youden plot shows very clearly when a method is subject to a systematic error.

Example: Colored z-score graphic



Example: Youden plot, comparison of the fat content of two cream samples for error diagnosis

Ensure the quality of your senses!

- ▶ smell
- ▶ taste
- ▶ touch
- ▶ visual test

The development of a sensory proficiency test is a great contribution to sensory quality assurance in product developments and daily routine tastings. A panel has the opportunity to compare its senses with other panels nationally and internationally. For quality assurance, not only the evaluation of the entire panel but also of the individual testers within a panel is important and can include, among others, the assistance in the selection of examiners. The broad spectrum of the sensory proficiency test system consists of different tests that are used in daily sensory testing and the range of four senses - smell, taste, touch, and sight - thus offers many options for ensuring the quality and performance of your panellists and your panel.

Example: performance card of continuous participation in proficiency tests

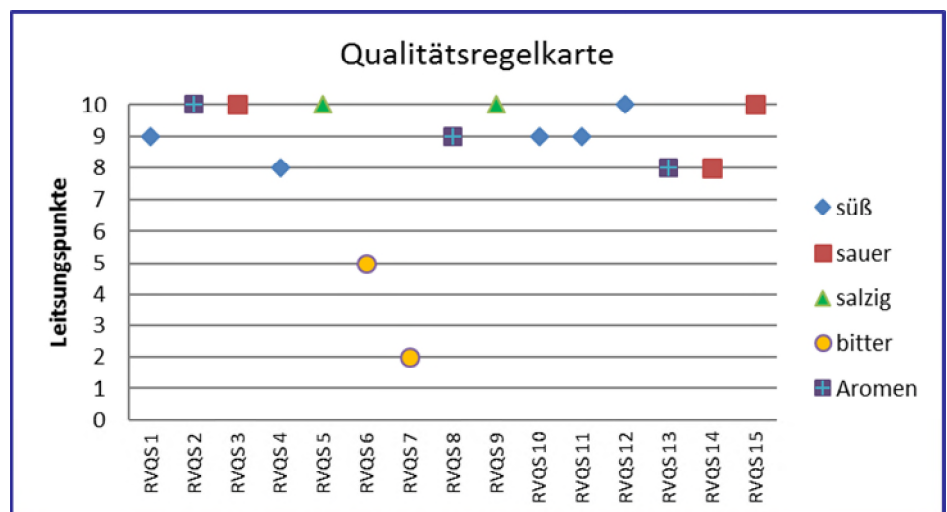
Performance development for panellists and panels using quality control cards

As part of the proficiency test systems for the ranking test methodology, we developed a point system for assessing performance for panellists. In this point system, based on the page test and considering the correctly recognized basic taste, points from 0 - 10 are awarded. The maximum number of 10 points is awarded if the ranking is correctly sorted and the basic taste is recognized. Since the recognition of the basic taste or the aroma is decisive for the sensory performance, the number of points achieved is divided by 2 if the identification was incorrect.

In the Proficiency testing studies according to DIN ISO 22935 and for fats and oils the performance rating is based on the evaluation of the z-scores.

With the help of this evaluation system, it is now possible to display a continuous review of the performance of individual panellists in the form of quality control cards.

Also clearly visible is the performance in the EP's triangle tests through the determination of significance.



Description and evaluation of the proficiency tests

The structure and process of the proficiency test systems in sensor technology correspond to the chem.-phys. and microbiological proficiency tests.

▶ Rank Order

Identification of the test criteria in taste (basic tastes) or odour (aroma) and ranking test according to DIN ISO 8587 with 4 analyzing samples.

▶ Profil Testing

Profiling of an analyzing sample by two reference samples in at least 5 attributes.

▶ Triangle Test

Evaluation of the level of significance of the panellists and panels according to DIN EN ISO 4120 by testing 6 identical sets of triangle tests.

▶ Fats and Oils

The analysis of “virgin, cold-pressed rapeseed oil” and “frying fat” according to characteristic and dissimilar attributes given in the German Method “DGF Einheitsmethode C-II 1” (DGF = German society of fat science).

▶ Packaging Material

Intensity test in odour and taste of a utensil according to DIN 10955 and a triangle test.

▶ Testing acc. to DIN ISO 22935

Evaluation of milk and dairy products according to the 5-point-scale of DIN ISO 22935.

▶ Threshold Odour Number (TON) and Threshold Flavour Number (TFN)

Determination of the odour threshold value (TON) and the taste threshold value (TFN) in drinking water by the use of a comparison of pairs according to DIN EN 1622.

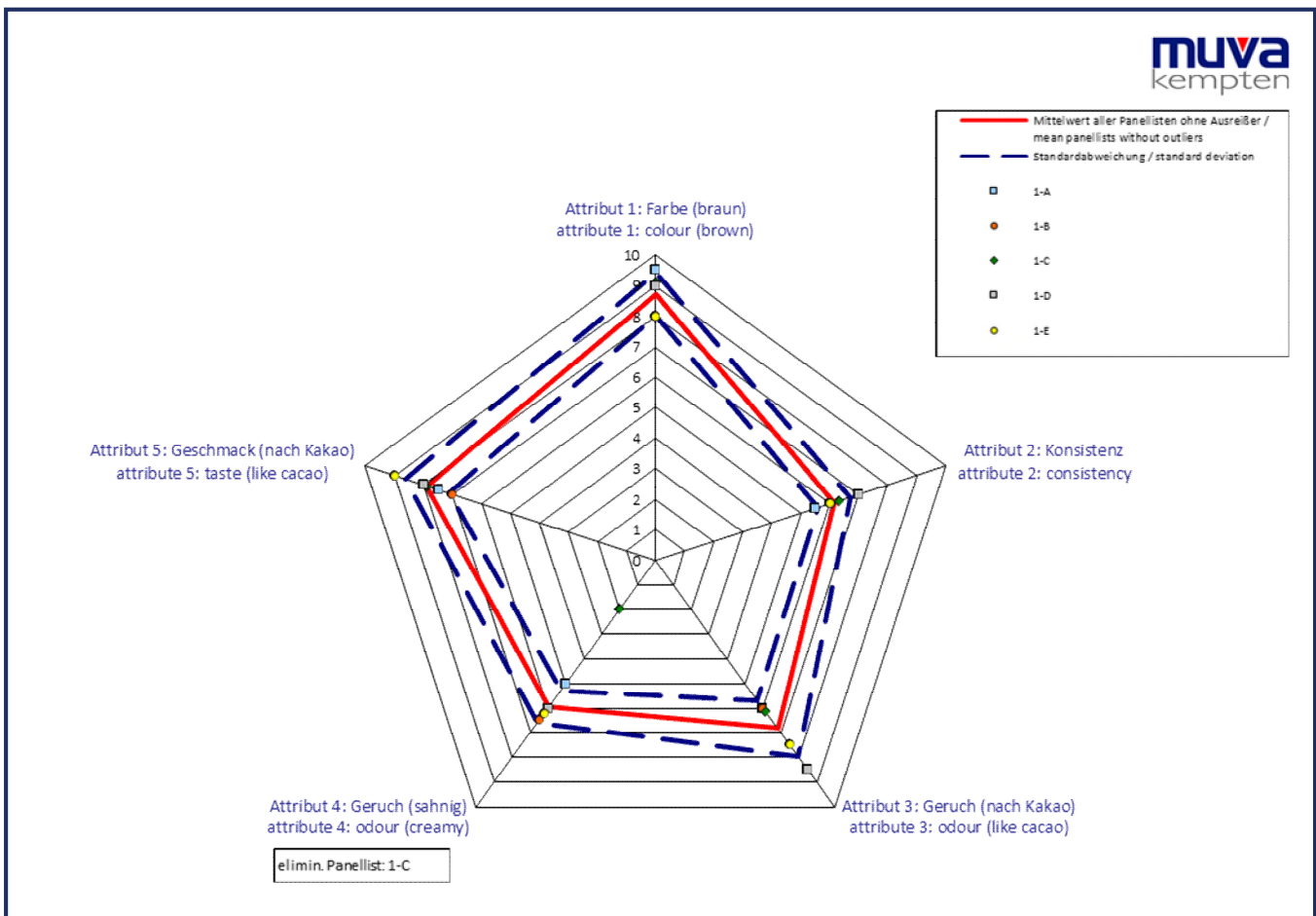
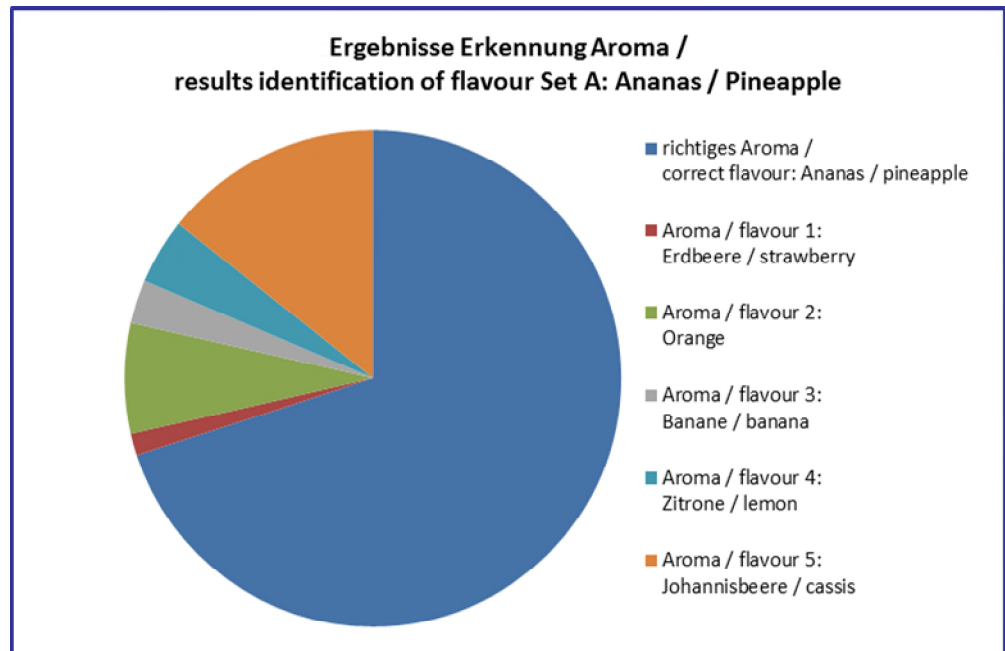
For comparability at a glance, all results are listed encoded in tables and graphics. See the examples at point “graphical presentation of the results”. In all proficiency testing studies, the interesting statistical values – for example, mean, median, standard deviation, etc. – are calculated. In the reports, there is also stated about the qualification for sensory measurements for each panel and each assessor.

Assurance of the material

The material is tested for its homogeneity on the basis of sensory analyzes using a special procedure based on BCR / 48/93. The sensory measurements are carried out by test persons from muva kempten GmbH who are regularly trained in sensory skills. The synchronous chemical-physical and microbiological quality assurance of the offered material is carried out by our accredited laboratory.

Examples of graphical representation of the results

Example: Graphic representation of the identification of the correct aroma as a pie chart



Example: Graphical representation of the results of a profile test in the spider web

We also offer...

Reference material

After the proficiency tests have been carried out, you have the option of ordering the sample material from the proficiency tests as reference material (www.muva.de/Referenzmaterialien).

We recommend the use of our reference materials for regular (statistical) control of your chemical-physical, sensory and microbiological analysis between proficiency tests.

Do you need reference material "made to measure" specially made to your needs? We would be happy to make you a non-binding offer.

Seminars and in-house training

Twice a year we offer a seminar on quality assurance and the basics of applied statistics in analytics. You can find more information on our homepage at www.muva.de/Seminare.

In addition, we would be happy to come to you with a program developed to your needs. Please contact us if you are interested.

Discount system for chem.-phys. and take part in the microbiological proficiency test

The discount for the chemical-physical and microbiological proficiency tests is based on the turnover of the participant in the proficiency tests/reference materials from the previous year. The discounts are graded as follows:

- ▶ From 6.000,- €: 5 % discount
- ▶ From 15.000,- €: 10 % discount
- ▶ From 55.000,- €: 15 % discount

Discount system for sensory proficiency tests

The discount for the sensory proficiency tests depends on the number of panel participants as follows:

- ▶ From 3 test persons 5 % discount
- ▶ From 9 test persons 10 % discount

Shipping conditions

The test samples for the proficiency tests are shipped ex works.

Packaging and shipping costs are calculated depending on the effort. If you have any questions, please do not hesitate to contact us.

❄ 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 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.

The shipment of frozen reference materials abroad may only be possible to a limited extent, as the material may thaw if delivery times are too long or outside temperatures are too high. **In this case, MUVA KEMPTEN GMBH assumes no liability.**

Please note the [applicable general terms and conditions](#) and the [data protection declaration](#) of muva kempten GmbH.

❄ Packaging Costs:

Package size	Number of bottles	Packaging materials	Packaging costs	Credit note for return delivery of packaging materials ²⁾
VP 1	Up to 12 bottles	Styroporbox + 7 TP ¹⁾	20,00 €	20,00 €
VP2	Up to 30 bottles	Styroporbox + 11 TP ¹⁾	35,00 €	35,00 €

¹⁾ TP = Thermal packs (cool packs)

²⁾ The credit note is reduced for 2.00 € for every not returned thermal pack

Wir feiern unsere 1000ste Eignungsprüfung!

Seit dem Jahr 1991 bietet die muva kempten Eignungsprüfungen (früher Ringversuche genannt) und Referenzmaterialien für Ihre Qualitätssicherung an.

Dieses Jahr feiern wir mit der Eignungsprüfung „Schokolade“ unsere 1000ste Eignungsprüfung zur Qualitätssicherung (EPQS).



EPQS **1000** „Schokolade“

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Gutschein

Feiern Sie mit uns und erhalten bei Anmeldung zur EPQS 1000 „Schokolade“ einen 50,- € Gutschein* für unsere hochwertigen Seminare der muva-Akademie!

Unsere aktuelle Fort- und Weiterbildungsübersicht finden Sie unter:

www.muva.de/akademie

Wir freuen uns auf Ihre Teilnahme!
Ihr EP/RM-Team und Akademie-Team

