PRODUCT INFORMATION SHEET

Heavy Metals and Trace Elements: in dietary food with milk and soy protein

PT originated REFERENCE MATERIAL (RM)

Description of the RM

Name / Material of related PT	*DLA 49-2018 Heavy Metals and Trace Elements: in dietary food with milk and soy protein*
Identifier / LOT	*RM 49-2018*
Expiry date	*June 2027*
Matrix	*a mixture of two supplements containing milk and soy protein, see Table 1*
Physical description	*Powder*
Packaging / weight	*Sealed foil pouche / 8 g*
Storage conditions	*2 - 10°C, long term < -18°C (dry and dark)*
Name and address manufacturer	***DLA - Proficiency Tests GmbH*** *Hauptstr. 80, 23845 Oering, Germany* *Tel. ++49-(0)4532-9183358, Fax. ++49(0)4102-9944976* *eMail. pt@dla-lvu.de, website. www.dla-lvu.de*

Composition of Material

Ingredients	**Amounts**
Supplementary food 1 Ingredients: Milk protein, soy protein, low-fat cocoa powder, flavouring, L-ascorbic acid, magnesium hydroxide, sweeteners: sodium cyclamate, saccharin sodium, beetroot juice powder, L-leucine, L-valine, L-isoleucine, separating agent: Silicon dioxide, salt, alpha-tocopheryl acetate, nicotinamide, zinc oxide, calcium D-pantothenate, pyridoxine hydrochloride, thiamine mononitrate, riboflavin, folic acid, B-biotin. Nutrients per 100 g: protein 83 g, salt 1,0 g, fat 1,5 g, carbohydrates 2,9 g	50 g/100g
Supplementary food 2 Ingredients: Skimmed milk, whey products, vegetable oils, starch, lactose, calcium carbonate, iron sulphate, emulsifier soyalecitine, potassium chloride, potassium citrate, L-tyrosine, vitamin C, sodium chloride, magnesium carbonate, zinc sulphate, L-tryptophan, niacin, pantothenic acid, copper sulphate, vitamin A, vitamin B1, vitamin B6, vitamin E, manganese sulphate, vitamin B2, folic acid, potassium iodide, vitamin K, sodium selenite, vitamin D, biotin, vitamin B12. Nutrients per 100 g: protein 10,2 g, salt 0,4 g, fat 25,5 g, carbohydrates 59,1 g	50 g/100g

Note: The metrological traceability of temperature, mass and volume during production of the PT samples is ensured by DAkkS calibrated reference materials.

The **mixture homogeneity before bottling** was examined 5-fold by determination of copper by ICP/MS (DIN EN ISO 17294-2). The repeatability standard deviation was 2,54% and thus within the range of repeatability standard deviations of comparable methods (e.g. ASU §64 L 00.00-144, s. 3.6.1).

The calculation of the **repeatability standard deviations S_r of the participants** was also used as an indicator of homogeneity. The coefficient of variation (CV_r) for all analytes ranges from 0,99% - 7,18%. Cadmium is an exception (CV_r 11,5%). Thus they were similar to the repeatability standard deviations of the corresponding official methods (e.g. ASU §64 L 00.00-144).

Reference Values
All reference values were derived from the related PT round (for more details see final report).

Reference Values quantitative in mg/kg

Parameter	AL - Aluminium	Ba – Barium
Numbers of results	7	5
Number of outliers	0	0
Assigned Value (Xpt)	***5,86***	***0,708***
Robust standard deviation	2,08	0,0791
Standard uncertainty	0,982	0,0442
Target standard deviation σpt	1,22	0,119
Target range	***3,43 – 8,29***	***0,469 – 0,947***

Parameter	Ca – Calcium	Cd – Cadmium
Numbers of results	9	6
Number of outliers	0	0
Assigned Value (Xpt)	***6540***	***0,0116***
Robust standard deviation	259	0,00263
Standard uncertainty	108	0,00134
Target standard deviation σpt	497	0,00362
Target range	***5550 - 7530***	***0,00432 – 0,0188***

Parameter	Co – Cobalt	Cr – Chromium
Numbers of results	5	7
Number of outliers	0	0
Assigned Value (Xpt)	***0,0388***	***0,218***
Robust standard deviation	0,00564	0,0594
Standard uncertainty	0,00315	0,0280
Target standard deviation σpt	0,0101	0,0704
Target range	***0,0186 – 0,0590***	***0,0774 – 0,359***

Parameter	Cu – Copper	Fe – Iron
Numbers of results	9	9
Number of outliers	0	0
Assigned Value (Xpt)	***4,28***	***60,3***
Robust standard deviation	0,611	4,41
Standard uncertainty	0,255	1,84
Target standard deviation σpt	0,550	5,20
Target range	***3,18 – 5,38***	***49,8 – 70,7***

Parameter	K – Potassium	Mg – Magnesium
Numbers of results	9	7
Number of outliers	0	0
Assigned Value (Xpt)	***3930***	***1150***
Robust standard deviation	347	36,3
Standard uncertainty	145	17,1
Target standard deviation σpt	181	63,7
Target range	***3570 - 4290***	***1020 - 1280***

Parameter	Mn – Manganese	Mo – Molybdenum
Numbers of results	9	6
Number of outliers	0	0
Assigned Value (Xpt)	***3,58***	***0,830***
Robust standard deviation	0,326	0,130
Standard uncertainty	0,136	0,0666
Target standard deviation σpt	0,473	0,137
Target range	***2,64 – 4,53***	***0,557 – 0110***

Parameter	Na – Sodium	Ni – Nickel
Numbers of results	7	6
Number of outliers	0	0
Assigned Value (Xpt)	***2940***	***0,418***
Robust standard deviation	154	0,0590
Standard uncertainty	72,7	0,0301
Target standard deviation σpt	142	0,0763
Target range	***2660 - 3230***	***0,265 - 0,571***

Parameter	P – Phosphorus	
Numbers of results	6	
Number of outliers	0	
Assigned Value (Xpt)	***4870***	
Robust standard deviation	386	
Standard uncertainty	197	
Target standard deviation σpt	217	
Target range	***4440 - 5310***	

Parameter	Se – Selen	Zn – Zinc
Numbers of results	6	9
Number of outliers	0	0
Assigned Value (Xpt)	***0,219***	***109***
Robust standard deviation	0,0461	15,2
Standard uncertainty	0,0236	6,32
Target standard deviation σpt	0,0440	8,57
Target range	***0,131 – 0,307***	***91,4 - 126***

Intended Use

- for laboratory use only, no food!
- validation of analytical methods
- control sample for quality control charts
- test material for inter-laboratory comparisons
- no medical use

Storage Instructions and Handling Information

The material should be stored as stated on page 1. Before use of the material should be warmed up to room temperature. The content should be mixed thoroughly prior to subsampling (see minimum sample size above). The material should be weighed immediately after opening of the foil pouche/bottle and closed again afterwards in order to avoid uptake of moisture. Frequent freezing and thawing should be avoided as this can lead to changes in the properties of the material. The expiry date of this RM is based on the current knowledge and applies only for proper storage conditions in the originally closed foil pouche/bottle.

Safety Precautions
The usual laboratory safety precautions should be applied when working with the RM considering the type of ingredients, parameters and its concentration.

Data Source
The material was analyzed by 9 laboratories within the related proficiency test (PT). Different analytical methods have been used.

Various
The user must determine the suitability of this RM for its particular purpose. DLA makes no warranty of any kind, expressed or implied, other than its products meet all quality control standards set by DLA. We do not guarantee this product can be used for a special application.

approved (PT-Coordinator)	updated
Matthias Besler-Scharf, PhD	Ulrike Vorreiter
signed M. Besler-Scharf	*signed U. Vorreiter*
5 November 2023	30 June 2026