Reference Material

muva-SK-0318 Processed Cheese (40 % fat in dry matter)

Data sheet and certificate of quality (version (3) 08.01.2019)

REFERENCE VALUES AND STATISTICAL DATA

Parameter	Unit	Reference value	Extended uncertainty U	Standard deviation s	Number of results
Fat (SBR)	g/100 g	**18,96**	**± 0,33**	± 0,22	27
Dry matter (102 °C)	g/100 g	**43,25**	**± 0,44**	± 0,37	65
Protein N x 6,38 (Kjeldahl)	g/100 g	**17,84**	**± 0,13**	± 0,17	36
Lactose (monohydrate) (enzyme.)	g/100 g	**0,51**	**± 0,03**	± 0,05	14
Ash (550°C)	g/100g	**4,38**	**± 0,06**	± 0,10	30
pH value	/	**5,68**	**± 0,02**	± 0,04	73
Citric acid (enzyme.)	mg/100g	**84,6**	**± 5,1**	± 4,7	8
Total phosphorus	g/100g	**0,85**	**± 0,05**	± 0,08	15
Chloride (potentiom.)	mg/100g	**691**	**± 22**	± 17	30
Sodium chloride (calculated via chloride)	g/100g	**1,14**	**± 0,04**	± 0,03	30
Sodium (AAS / ICP)	mg/100g	**1019**	**± 22**	± 54	25
Sodium chloride (calculated via sodium)	g/100g	**2,59**	**± 0,05**	± 0,14	25

1. Evaluation of the reference value (characterization)

   The determination of the reference value is based on the results of proficiency testing studies (please see: Basis of reference values). If there are more than one PT studies, the means and the corresponding statistical data are weighted.

2. Uncertainty U

   The combined and extended uncertainty of the reference values is calculated by the use of the standard uncertainty of the assigned values deriving from the proficiency testing study and the standard deviation of the homogeneity tests as well as the stability tests of the key parameters. The extension factor k=2 is valid for the confidence level with 95 % probability. (For more information please see the "statistical protocol" www.muva.de)

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3. Standard deviation s

This is the standard deviation of the reference value. If the basis of the reference value are several assigned values a weighted standard deviation is calculated.

GENERAL INFORMATION ON THE MATERIAL

1. Product specification

This material is a commercially produced processed cheese with approx. 55 % fat in dry matter.

Production date: March 2017
Packaging: Plastic cup; packaging unit: ca. 250 g

The material is unfit for human consumption!

2. Stability

The stability of the material is monitored under regular control by muva kempten GmbH. During storage it`s kept by - 20 °C ± 2 °C until shipment.

The material is best before at minimum 4 weeks after shipment at a storage temperature of + 6 °C ± 2 °C.

3. Homogeneity

From the charge, 10 bags were selected at random, divided in two subsamples and each subsample was analyzed. With the analysis of variances (ANOVA) the homogeneity between the packages was identified and expressed as the standard deviation ($u_{hom} = s_{bb}$) between the packages.

Parameter	**Unit**	**Uncertainty u_{hom}**
Fat	g/100g	± 0,100
Dry Matter	g/100g	± 0,187
Protein N x 6,38	g/100g	± 0,054
Lactose (monohydrate)	g/100g	± 0,005
Ash	g/100g	± 0,024
pH Value	/	± 0,004
Citric acid	mg/100g	± 1,94
Total phosphorus	g/100g	± 0,012
Chloride	mg/100g	± 10,7

BASIS OF REFERENCE VALUES

Results of interlaboratory studies

Parameter	Interlaboratory study	Unit	Assigned value x_{pt}	Standard uncertainty u_{pt}	No of results
Fat	EPQS 690 09/17 EPQS 712 03/18 EPQS 744 09/18	g/100 g	19,07 18,81 19,02	± 0,07 ± 0,07 ± 0,06	9 10 8
Dry matter	EPQS 690 09/17 EPQS 712 03/18 EPQS 744 09/18	g/100 g	43,41 42,71 43,36	± 0,04 ± 0,05 ± 0,06	26 13 26
Protein N x 6,38	EPQS 690 09/17 EPQS 712 03/18 EPQS 744 09/18	g/100 g	17,86 17,76 17,90	± 0,06 ± 0,04 ± 0,03	15 10 11
Lactose (monohydrate)	EPQS 712 03/18	g/100 g	0,51	± 0,01	14
Ash	EPQS 690 09/17 EPQS 712 03/18 EPQS 744 09/18	g/100 g	4,37 4,35 4,43	± 0,02 ± 0,03 ± 0,04	11 10 9
pH value	EPQS 690 09/17 EPQS 712 03/18 EPQS 744 09/18	/	5,68 5,68 5,67	± 0,01 ± 0,01 ± 0,01	33 20 20
Citric acid	EPQS 712 03/18	mg/100g	84,6	± 1,7	8
Total phosphorus	EPQS 690 09/17 EPQS 744 09/18	g/100g	0,87 0,83	± 0,04 ± 0,02	8 7
Chloride	EPQS 690 09/17 EPQS 712 03/18 EPQS 744 09/18	mg/100g	691 688 694	± 4 ± 7 ± 6	13 9 8
Sodium	EPQS 690 09/17 EPQS 712 03/18 EPQS 744 09/18	mg/100g	1031 1015 1010	± 23 ± 20 ± 12	9 8 8

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HOW TO USE THE MATERIAL

The material is suitable to be used for regular performance control in chemical analysis of processed cheese and other types of cheese, especially with regard to accuracy, as well as for validation of a laboratory's own methods.

Before analysis, the material should be completely defrosted and stored at + 6 °C ± 2 °C. **In unfreezing condition, the material should be used within 4 weeks.**
Further sample preparation complies with the used method.

In the opened sample, reference values may change. muva kempten GmbH can therefore only guarantee for reference values, as far as the material has been used for analysis immediately after opening.

If the material is stored - after opening - under optimal conditions (e.g. at + 6°C ± 2°C) it may be used for a limited time at the laboratory's own responsibility. Before opening the container, it should again be brought to room temperature.

Reference values and their uncertainties are guaranteed under the precondition that the material is stored and used as described above.

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