Code	Product	Unit
BCR-660	Wine ethanol - Isotope ratios	450 mL

Certified values

Parameter	Value	Uncertainty
$(D/H)_I$ by ^{2}H-NMR	102.90 ppm	0.16 ppm
$(D/H)_{II}$ by ^{2}H-NMR	131.35 ppm	0.23 ppm
R by ^{2}H-NMR	2.567	0.005
$\delta^{13}C_{VPDB}$ by IRMS	-2.672%	0.009%
$(D/H)_w$ of water (IRMS)	148.68 ppm	0,14 ppm
Alcoholic grade t_D	11.96%	0.06%(1)

(1) in v/v %

Code	Product	Unit
STA-003k	Tetramethylurea (TMU) - Isotopic ratio (D/H)	500 mL

Used as internal standard for the determination of D/H isotope ratios of ethanol by 2H-NMR method (SNIF-NMR®) according to the formula 5-1 of Regulation EEC 2676/90.

	Certified value	Uncertainty
(D/H) by NMR	141.9 x 10-^{6}	0.9 x 10-^{6}

Food and drink products

Code	Product	Unit

Processed food

Code	Product	Unit
LGC7107	Madeira cake - Proximates	160 g

Lemon Madeira cakes were prepared by a UK food company. Each cake, weighing approx. 160 g, was sealed in a can.

Assessed values

Moisture 25.9 g/100 g	Total fat 13.4 g/100 g	Sucrose 28.1 g/100 g
Nitrogen 0.66 g/100 g	Ash 1.76 g/100 g	Lactose 0.9 g/100 g

Indicative value for starch content

Code	Product	Unit
LGC7105	Rice pudding - Proximates and elements	200 g

This reference material is a rice pudding dessert, sealed in retort pouches in 200g portions.

Assessed values

Moisture 71.3 g/100 g	Sucrose 7.2 g/100 g	Mn 0.7 mg/kg
N 0.17 g/100 g	Ca 78 mg/kg	Na 344 mg/kg
Total fat 8.4 g/100 g	K 558 mg/kg	P 346 mg/kg
Ash 0.22 g/100 g	Mg 30 mg/kg	Zn 1.5 mg/kg

Code	Product	Unit
LGC7017	Sugar confectionery - Sugars	15 g

A commercial supply of sugar confectionery, ground and supplied as 15g units contained in 30ml amber glass bottle with tamper evident caps.

Assessed values

Glucose 9.7 g/100 g	Sucrose 52.6 g/100 g
Fructose 2.3 g/100 g	Maltose 4.2 g/100 g

Code	Product	Unit
LGC7103	Sweet digestive biscuit - Proximates and elements	50 g

Assessed values

Nitrogen 1.06 g/100 g	Sucrose 16.6 g/100 g	Na 6300 mg/kg
Total fat 20.9 g/100 g	Chloride 0.55 g/100 g	P 870 mg/kg
Ash 2.08 g/100 g	K 1530 mg/kg	Zn 5.8 mg/kg
Fructose 0.24 g/100 g	Mn 5.9 mg/kg	

Indicative values for Moisture, Glucose, Starch, Ca and Mg

Code	Product	Unit
BCR-644	Artificial foodstuff - Free sugars and starch/glucose	50 g

Sugar	Certified value Mass fraction on dry mass basis (g/100 g)	Uncertainty (g/100 g)
Fructose	16.2	1.1
Sucrose	10.81	0.25
Lactose	15.85	0.29
Starch/glucose	35.1	1.2

Code	Product	Unit
BCR-645	Artificial foodstuff - Free sugars and starch/glucose	50 g

Sugar	Certified value Mass fraction on dry mass basis (g/100 g)	Uncertainty (g/100 g)
Sucrose	26.2	0.8
Lactose	27.8	0.6
Starch/glucose	25.2	0.9

Code	Product	Unit
ERM-BD518	Bran breakfast cereal - Dietary fibre	25 g

Certified using five different methods of dietary fibre analysis

Certified values

AOAC 1990 30.2 g/100 g	AOAC 1992 MES-TRIS 30.5 g/100 g
Englyst (GC) 24.1 g/100 g	Englyst (colorimetry) 25.0 g/100 g
Uppsala 27.6 g/100 g	

	Code	Product	Unit
	ERM-BD272	Crispbread - Acrylamide Certified value Acrylamide .... 0.98 ± 0.09 mg/kg	68 g
	ERM-BD273	Toasted bread - Acrylamide The matrix material ERM-BD273, consists of 30 g of toasted bread powder of particle size smaller than 500 µm, stored in amber glass bottles under inert atmosphere and stored at a temperature of - 20 ºC. Certified value Acrylamide ..... 425 ng/g	vial
New	ERM-BD274	Rusk - Acrylamide Certified value Acrylamide ..... 47 ± 7 µg/kg	48 g
New	ERM-BD272-274	Crispbread - Acrylamide; Rusk - Acrylamide Set of ERM-BD272 and ERM-BD274	set
	BCR-191	Brown bread - Trace elements Certified values Cd ..... 28.4 µg/kg Fe .....40.7 mg/kg Pb ..... 187 µg/kg Cu ..... 2.6 mg/kg Mn .....20.3 mg/kg Zn..... 19.5 mg/kg Indicative values for As,Ca, Cl, Cr, Hg, K, Mg, Na, Ni, P, Se	40 g
	NIST-2384	Baking chocolate - Fat, fatty acids Standard Reference Material (SRM®) 2384 is intended primarily for use in validating methods for determining proximates, fatty acids, calories, vitamins, elements, catechins, caffeine, theobromine, and acrylamide in baking chocolate and similar matrices. Certified values for fat Fat (Extractable) ..... 51.4 ± 1.1 % Fat (Sum of fatty acids)..... 50.3 ± 1.1 % Certified values for selected fatty acids	5 x 91 g

	Mass fraction as the Triglyceride	Mass fraction as the Fatty acid
Tetradecanoic acid (C14:0) (Myristic acid)	0.080 ± 0.005%	0.076 ± 0.005%
Hexadecanoic acid (C16:0) (Palmitic acid)	13.06 ± 0.27%	12.44 ± 0.26%
(Z)-9-Hexadecenoic acid (C16:1) (Palmitoleic acid)	0.133 ± 0.007%	0.127 ± 0.007
Octadecanoic acid (C18:0) (Stearic acid)	18.01 ± 0.40%	17.24 ± 0.38%
(Z)-9-Octadecenoic acid (C18:1) (Oleic acid)	16.44 ± 0.36%	15.73 ± 0.35%
(Z)-11-Octadecenoic acid (C18:1) (Vaccenic acid)	0.180 ± 0.018%	0.172 ± 0.017%
(Z,Z)-9,12-Octadecadienoic acid (C18:2) (Linoleic acid)	1.524 ± 0.048%	1.458 ± 0.046%
(Z,Z,Z)-9,12,15-Octadecatrienoic acid (C18:3) (Linolenic acid)	0.097 ± 0.006	0.093 ± 0.006
Eicosanoic acid (C20:0) (Arachidic acid)	0.521 ± 0.013%	0.501 ± 0.012%
Docosanoic acid (C22:0) (Behenic acid)	0.091 ± 0.006%	0.088 ± 0.006%
Tetracosanoic acid (C24:0) (Lignoceric acid)	0.050 ± 0.002%	0.050 ± 0.002%

Certified values for selected additional analytes

Caffeine ..... 1 060 ± 50	(+)-Catechin ..... 245 ± 51 mg/kg
Theobromine ..... 11600 ± 1 100 mg/kg	(–)-Epicatechin..... 1220 ± 240 mg/kg
Calcium..... 840 ± 74 mg/kg	Catechin monomers..... 1490 ± 220 mg/kg
Iron..... 132 ± 11 mg/kg	

Reference values for proximates and caloric content, fatty acids, trace elements, vitamins and other analytes.

Code	Product	Unit
NIST-2387	Peanut butter - Fat, fatty acids, trace elements and tocopherols	3 x 170 g

This Standard Reference Material® (SRM®) is intended primarily for use in validating methods for determining proximates, fatty acids, calories, vitamins, elements, amino acids, and aflatoxins in peanut butter and similar matrices.

Certified concentrations for fat and selected fatty acids

	Mass fraction (%)
Fat (extractable)	51.6 ± 1.4
Fat (sum of fatty acids)	49.8 ± 1.9
Saturated fat	10.4 ± 0.2
Monounsaturated fat	24.4 ± 0.9
Polyunsaturated fat	13.2 ± 0.4

	Mass fraction (%) (as the triglyceride)	Mass fraction (%) (as the fatty acid)
Tetradecanoic acid (C14:0) (Myristic acid)	0.025 ± 0.002	0.024 ± 0.002
Hexadecanoic acid (C16:0) (Palmitic acid)	5.18 ± 0.15	4.94 ± 0.15
(Z)-9-Hexadecenoic acid (C16:1 n-7) (Palmitoleic acid)	0.046 ± 0.011	0.044 ± 0.010
Octadecanoic acid (C18:0) (Stearic acid)	2.23 ± 0.08	2.13 ± 0.08
(Z)-9-Octadecenoic acid (C18:1 n-9) (Oleic acid)	24.43 ± 0.94	23.38 ± 0.90
(Z)-11-Octadecenoic acid (C18:1 n-7) (Vaccenic acid)	0.266 ± 0.017	0.255 ± 0.016
(Z,Z)-9,12-Octadecadienoic acid (C18:2 n-6) (Linoleic acid)	13.75 ± 0.43	13.15 ± 0.41
(Z,Z,Z)-9,12,15-Octadecatrienoic acid (C18:3 n-3) (Linolenic acid)	0.031 ± 0.001	0.030 ± 0.001
Eicosanoic acid (C20:0) (Arachidic acid)	0.739 ± 0.030	0.710 ± 0.029
(Z)-11-Eicosenoic acid (C20:1 n-9) (Gondoic acid)	0.669 ± 0.032	0.643 ± 0.031
Docosanoic acid (C22:0) (Behenic acid)	1.88 ± 0.08	1.81 ± 0.08
Tetracosanoic acid (C24:0)	0.808 ± 0.045	0.781 ± 0.044

Certified concentration values for elements and tocopherol

	Mass fraction (mg/kg)		Mass fraction (mg/kg)
Ca	411 ± 18	K	6070 ± 200
Cu	4.93 ± 0.15	Na	4890 ± 140
fe	16.4 ± 0.8	Zn	26.3 ± 1.1
Mg	1680 ± 70	δ -Tocopherol	10 ± 3
Mn	16.0 ± 0.6	γ - + β -Tocopherol	100 ± 19
P	3378 ± 92	α -Tocopherol	108 ± 11

Reference values for proximates, caloric content, fatty acids, amino acids, water-soluble vitamins, aflatoxins and acrylamide

Code	Product	Unit

New **NIST-1849** — Infant/Adult nutritional powder (milk) - Trace elements, proximates and nutrients — 10 x 10 g

NIST-1849 is intended primarily for validation of methods for determining proximates, fatty acids, vitamins, elements, amino acids, and nucleotides in infant and adult nutritional formulas and similar materials. It can also be used for quality assurance when assigning values to in-house reference materials. This material is a milk-based, hybrid infant/adult nutritional powder prepared by a manufacturer of infant formula and adult nutritional products. A unit of NIST-1849 consists of 10 packets, each containing approximately 10 g of material.

Certified concentrations for fatty acids as triglycerides

Octanoic acid (C8:0) (Caprylic acid)	0.638 ± 0.067%
Decanoic acid (C10:0) (Capric acid)	0.473 ± 0.019%
Dodecanoic acid (C12:0) (Lauric acid)	3.712 ± 0.075%
Tetradecanoic acid (C14:0) (Myristic acid)	1.521 ± 0.021%
Pentadecanoic acid (C15:0)	0.0070 ± 0.0003%
Hexadecanoic acid (C16:0) (Palmitic acid)	2.50 ± 0.16 %
(Z)-9-Hexadecenoic acid (C16:1 n-7) (Palmitoleic acid)	0.0262 ± 0.0016%
Octadecanoic acid (C18:0) (Stearic acid)	0.905 ± 0.056%
(Z)-9-Octadecenoic acid (C18:1 n-9) (Oleic acid)	10.63 ± 0.88%
(Z)-11-Octadecenoic acid (C18:1 n-7) (Vaccenic acid)	0.203 ± 0.021%
(Z,Z)-9,12-Octadecadienoic acid (C18:2 n-6) (Linoleic acid)	6.02 ± 0.10%
(Z,Z,Z)-9,12,15-Octadecatrienoic acid (C18:3 n-3) (α-Linolenic acid)	0.561 ± 0.043%
Eicosanoic acid (C20:0) (Arachidic acid)	0.095 ± 0.003%
(Z,Z,Z,Z)-5,8,11,14-Eicosatetraenoic acid (C20:4 n-6) (Arachidonic acid)	0.206 ± 0.022%
(Z,Z,Z,Z,Z,Z)-4,7,10,13,16,19-Docosahexaenoic acid (C22:6)	0.067 ± 0.006%
Tetracosanoic acid (C24:0) (Lignoceric acid)	0.039 ± 0.003%

Certified concentrations for selected elements

Ca 4900 ± 130 mg/kg	I 1.37 ± 0.41 mg/kg	Na 4150 ± 140 mg/kg
Cl 6280 ± 140 mg/kg	K 8860 ± 130 mg/kg	P 3782 ± 36 mg/kg
Cr 1.09 ± 0.21 mg/kg	Mg 1578 ± 69 mg/kg	Zn 152.3 ± 5.1 mg/kg
Cu 20.29 ± 0.43 mg/kg	Mn 51.00 ± 0.53 mg/kg	
Fe 177.1 ± 3.3 mg/kg	Mo 1.62 ± 0.15 mg/kg	

Certified concentrations for selected vitamins

Retinol (Vitamin A)	16.4 ± 1.3 mg/kg
Cholecalciferol (Vitamin D3)	0.251 ± 0.027 mg/kg
α-Tocopherol	369 ± 16 mg/kg
γ-Tocopherol	189 ± 13 mg/kg
δ-Tocopherol	79.2 ± 2.4 mg/kg
β-Tocopherol	5.77 ± 0.79 mg/kg
Phylloquinone (Vitamin K1)	2.20 ± 0.18 mg/kg
Thiamine (Vitamin B1) hydrochloride	15.8 ± 1.3 mg/kg
Riboflavin (Vitamin B2)	17.4 ± 1.0 mg/kg
Niacinamide	97.5 ± 2.3 mg/kg
Pantothenic acid	64.8 ± 2.2 mg/kg
Pyridoxine (Vitamin B6) hydrochloride	14.2 ± 1.5 mg/kg
Folic acid	2.11 ± 0.13 mg/kg
Biotin	1.92 ± 0.25 mg/kg

Indicative values for selected fatty acids as triglycerides, proximates, cholesterol, lactose, and calories, selected vitamins, Se, amino acids, taurine and nucleotides

NIST-1548a — Typical diet - Trace elements — set (2)

A unit of NIST-1548a consists of two bottles, each containing approximately 6.5 g of the freeze-dried homogenate of mixed diet foods.

Certified values

Al 72.4 mg/kg	Cu 2.32 mg/kg	Ni 0.369 mg/kg
As 0.20 mg/kg	Fe 35.3 mg/kg	P 3486 mg/kg
Ca 1967 mg/kg	I 0.759 mg/kg	S 1928 mg/kg
Cd 0.035 mg/kg	Mg 580 mg/kg	Se 0.245 mg/kg
Cl 12078 mg/kg	Mn 5.75 mg/kg	Sn 17.2 mg/kg
Cs 0.0098 mg/kg	Na 8132 mg/kg	Zn 24.6 mg/kg

Indicative values for Ash, carbohydrate, fat, N, protein, dietary fibre, calories, B, Ba, Br, Co, Hg, Mo, Sb, Sc, Si, Sr, Ti

NIST-1544 — Diet composite - Fatty acids and cholesterol — 4 x 15 g

Certified values

Cholesterol 0.1483 g/kg	Palmitic acid 5.77 g/kg	Linoleic acid 6.56 g/kg
Lauric acid 1.31 g/kg	Stearic acid 2.00 g/kg	
Myristic acid 1.01 g/kg	Oleic acid 11.64 g/kg	

Indicative values for protein, moisture, total fat, ash, carbohydrate, calories, remaining fatty acids, Ca, K, Na

Food and drink products

Code	Product	Unit
NIES27	Typical Japanese diet - Minor and trace elements This certified reference material (CRM) is intended for use in the quality assurance of the analysis of minor and trace elements in the Japanese diet and in similar food matrices. Certified values Ca ..... 0.125 ± 0.004 % K ..... 0.550 ± 0.015 % Na ..... 1.00 ± 0.04 % As ..... 0.60 ± 0.04 mg/kg Ba ..... 1.1 ± 0.1 mg/kg Cd ..... 0.069 ± 0.009 mg/kg Cu ..... 2.8 ± 0.1 mg/kg Mg ..... 576 ± 12 mg/kg Mn ..... 8.9 ± 0.2 mg/kg Se ..... 0.25 ± 0.02 mg/kg Sn ..... 1.6 ± 0.1 mg/kg Sr ..... 4.9 ± 0.2 mg/kg Zn ..... 20.9 ± 0.9 mg/kg U ..... 0.0029 ± 0.0004 mg/kg Reference values for Br, Cl, Co, Cs, I, Fe	18 g

Drinks

	LGC7140	Soft drink - Colours Known weights of three food colours were added to a diluted solution of commercial soft drink concentrate. Certified values Ponceau 4R (E124) ..... 18.7 mg/L Sunset yellow (E110) ..... 19.6 mg/L Tartrazine (E102) ..... 29.9 mg/L	60 mL
New	ERM-BD011	Orange juice This certified reference material is intended for use in the development, validation or quality control of analytical methods for the determination of degrees Brix or Refractive Index of sugar solutions and food extracts. Certified values Degrees Brix ..... 1.26 Refractive index 1.3348	3 mL
New	ERM-BD012	Orange juice This certified reference material is intended for use in the development, validation or quality control of analytical methods for the determination of degrees Brix or Refractive Index of sugar solutions and food extracts. Certified values Degrees Brix ..... 12.72 Refractive index 1.3521	3 mL
New	ERM-BD013	Orange juice This certified reference material is intended for use in the development, validation or quality control of analytical methods for the determination of degrees Brix or Refractive Index of sugar solutions and food extracts. Certified values Degrees Brix ..... 22.07 Refractive index 1.3673	3 mL
New	ERM-BD014	Orange juice This certified reference material is intended for use in the development, validation or quality control of analytical methods for the determination of degrees Brix or Refractive Index of sugar solutions and food extracts. Certified values Degrees Brix ..... 55.55 Refractive index 1.4320	3 mL
New	ERM-BD015	Orange juice This certified reference material is intended for use in the development, validation or quality control of analytical methods for the determination of degrees Brix or Refractive Index of sugar solutions and food extracts. Certified values Degrees Brix ..... 64.73 Refractive index 1.4529	3 mL
		For refractive index standards see the listing of physical standards later in this catalogue.	
		LGC provides proficiency testing schemes for the soft drinks industry – see introduction "About proficiency testing (PT)" of this catalogue for further details.	

Alcoholic beverage

ERM-BA006	Brandy - Alcohol European Reference Material ERM-BA006 is a commercial brandy available in 50mL portions contained in amber glass vials fitted with 20mm bromo-butyl stoppers and crimp caps. Certified values Apparent alcoholic strength ..... 37.83 % alcohol by volume, ABV Actual alcoholic strength ..... 40.12 % alcohol by volume, ABV Apparent density in air of the obscured spirit ..... 950.38 kg/m^3	50 mL
LGC5100	Whisky - Congeners Whisky sourced from a commercial source is available in 10mL unit in amber glass vials using sealed septa with crimped caps. Certified values Methanol ..... 8.2 g/100 L Propan-1-ol ..... 67.4 g/100 L 2-Methylpropan-1-ol ..... 64.9 g/100 L 2-Methylbutan-1-ol ..... 19.6 g/100 L 3-Methylbutan-1-ol ..... 51.4 g/100 L 2+3-Methylbutan-1-ol ..... 70.1g/100 L Indicative values for acetaldehyde, butan-1-ol, furfural, ethyl acetate	10 mL

Code	Product	Unit
	LGC5001 and LGC5003 LGC5001 and LGC5003 are wine certified reference materials obtained from a commercial source supplied in 250mL units. They are certified for alcoholic strengths ranging from 5% - 15%. The alcoholic strength was determined from the density of the distillate by reference to the laboratory alcohol tables issued by United Kingdom HM Customs and Excise (ref. RDC80/267).	
LGC5001	Wine - Alcohol (5%) Certified value Alcohol ..... 5.04 mL/100 mL (at 20°C)	250 mL
LGC5003	Wine - Alcohol (15 %) Certified value Alcohol ..... 14.66 % (at 20°C)	250 mL
LGC5004	Lager shandy - Alcohol This certified reference material for lager shandy is supplied in 150mL units and sealed in aluminium cans. Certified value Alcohol ..... 1.02 mL/100 mL (at 20°C)	330 mL
ERM-BA005	Lager - Alcohol Alcohol ..... 5.07 mL/100 mL (at 20°C)	330 mL
	LGC provides three proficiency testing schemes for the alcoholic beverage industry; BAPS (analysis of beer), MAPS (analysis of malted and unmalted barley) and DAPS (analysis of alcoholic beverages other than beer) – see section “About proficiency testing (PT)” of this catalogue for further details.	
BCR-651	Beer - Alcohol (low level) Certified value Ethanol..... 0.505 % (v/v)	10 mL
BCR-652	Beer - Alcohol (very low level) Certified value Ethanol..... 0.051 % (v/v)	10 mL
BCR-653	Wine - Alcohol (low level) Certified value Ethanol..... 0.539 % (v/v)	10 mL
	ERM-AC404 – ERM-AC407 European Reference Material ERM-AC404 – ERM-AC407 are Ethanol/ Water certified reference materials supplied in 50mL units in glass bottles and sealed with crimp cap. They are certified for alcoholic strength ranging from 5% - 70%.	
ERM-AC404	Ethanol/water - 5% Ethanol Certified value Ethanol..... 4.96 mL/100 mL at 20°C Density..... 990.05 kg/m^3 at 20°C	50 mL
ERM-AC405	Ethanol/water - 15% Ethanol Certified value Ethanol.....14.99 mL/100mL at 20^0C Density.....977.94 kg/m^3 at 20^0C	50 mL
ERM-AC406	Ethanol/water - 40% Ethanol Certified value Ethanol..... 40.04 mL/100 mL at 20°C Density..... 946.91 kg/m^3 at 20°C	50 mL
ERM-AC407	Ethanol/water - 70% Ethanol Certified value Ethanol.....69.98 mL/100mL at 20^0C Density.....884.55 kg/m^3 at 20^0C ABV:alcohol by volume	50 mL

Code	Product	Unit

Food supplements

IRMM-311 — Genomic DNA of *Bacillus licheniformis* DSM 5749 in agarose inserts for Pulsed Field Gel Electrophoresis (PFGE) — vial

The intended use of this material is the taxonomic identification of the authorised probiotic feed additive *Bacillus licheniformis* DSM 5749 by pulsed field gel electrophoresis (PFGE). The material is supplied in a vial containing one agarose insert of undigested genomic DNA of *Bacillus licheniformis* DSM 5749. Certified values and uncertainties are provided for SfiI digested DNA fragments in the size interval 50 kb - 90 kb and requires the use of a specified analytical procedure.

SfiI digested DNA fragments in the size interval 50 kb – 90 kb	Band no	Fragment length Certified value [kb]	Uncertainty [kb]
	1	89.6	4.7
	2	80.9	2.5
	3	75.3	2.7
	4	72.2	3.5
	5	66.9	1.9
	6	64.6	2.9
	7	60.3	1.3
	8	56.5	1.3
	9	53.9	1.3
	10	50.6	1.3

IRMM-312 — Genomic DNA of *Bacillus subtilis* DSM 5750 in agarose inserts for Pulsed Field Gel Electrophoresis (PFGE) — vial

The intended use of this material is the taxonomic identification of the authorised probiotic feed additive *Bacillus subtilis* DSM 5750 by pulsed field gel electrophoresis (PFGE). The material is supplied in a vial containing one agarose insert of undigested genomic DNA of *Bacillus subtilis* DSM 5750. Certified values and uncertainties are provided for SfiI digested DNA fragments in the size interval 15 kb - 97 kb and requires the use of a specified analytical procedure.

SfiI digested DNA fragments in the size interval 15 kb – 97 kb	Band no	Fragment length Certified value [kb]	Uncertainty [kb]
	1	89.2	0.9
	2	81.4	0.8
	3	77.7	0.6
	4	62.5	1.8
	5	59.5	2.1
	6	44.0	2.4
	7	29.2	2.0
	8	23.6	1.3
	9	18.6	1.3

NRCSELM-1 — Selenium enriched yeast — 8 g

Certified values

Total selenium	2059 ± 64 mg/kg	Methionine	5758 ± 277 mg/kg
Selenomethionine	3431 ± 157 mg/kg		

New **NIST-3280** — Multivitamin/Multielement tablets — 150 tablets

A unit of NIST-3280 consists of five bottles, each containing 30 tablets. Each tablet weighs approximately 1.5 g.

Certified Concentration Values for Vitamins and Carotenoids

Folic acid	394 ± 22 µg/g	Ascorbic acid	42.2 ± 3.7 mg/g
Biotin	23.4 ± 3.2 µg/g	Thiamine hydrochloride	1.06 ± 0.12 mg/g
Ergocalciferol	9.13 ± 0.71 µg/g	Riboflavin	1.32 ± 0.17 mg/g
Phylloquinone	22.8 ± 2.2 µg/g	Niacinamide	14.10 ± 0.23 mg/g
Trans-β-carotene	420 ± 100 µg/g	Pantothenic acid	7.30 ± 0.96 mg/g
Total β-carotene	514 ± 87 µg/g	Pyridoxine hydrochloride	1.81 ± 0.17 mg/g
α-Tocopherol	21.4 ± 3.5 mg/g	Certified Concentration Values for Selected Elements	

Certified Concentration Values for Selected Elements

B	0.141 ± 0.007 mg/g	I	0.1327 ± 0.0066 mg/g	P	75.7 ± 3.2 mg/g
Ca	110.7 ± 5.3 mg/g	Fe	12.35 ± 0.91 mg/g	K	53.1 ± 7.0 mg/g
Cl	53.0 ± 2.3 mg/g	Mg	67.8 ± 4.0 mg/g	Zn	10.15 ± 0.81 mg/g
Cr	0.0937 ± 0.0027 mg/g	Mn	1.44 ± 0.11 mg/g		
Cu	1.40 ± 0.17 mg/g	Mo	0.0707 ± 0.0045 mg/g		

Indicative values for elements, vitamins and carotenoids

NIST-3246 — Ginkgo biloba - Flavonoids, terpene , actones, elements — 5 x 3 g

Standard Reference Material NIST-3246 is intended primarily for use in validating analytical methods for the determination of flavonoids, terpene lactones, and toxic elements in Ginkgo biloba and similar matrices.

Certified values

Quercetin	2.69 ± 0.31 mg/g	Ginkgolide B	0.470 ± 0.090 mg/g
Kaempferol	3.02 ± 0.41 mg/g	Cd	20.8 ± 1.0 ng/g
Isorhamnetin	0.517 ± 0.099 mg/g	Pb	995 ± 30 ng/g
Total Aglycones	6.22 ± 0.77 mg/g	Hg	23.08 ± 0.17 ng/g

Indicative values for selected terpene, lactone

Code	Product	Unit
NIST-3247	Ginkgo biloba extract - Flavonoids, terpene , actones, elements	5 x 1 g

Standard Reference Material NIST-3247 is intended primarily for use in validating analytical methods for the determination of flavonoids, terpene lactones, and toxic elements in Ginkgo biloba extracts and similar matrices.

Certified values

Quercetin	45.1 ± 4.6 mg/g	Ginkgolide	12.4 ± 1.4 mg/g
Kaempferol	40.8 ± 3.0 mg/g	Ginkgolide	3.9 ± 1.5 mg/g
Isorhamnetin	10.8 ± 1.3 mg/g	Bilobalide	28.5 ± 2.1 mg/g
Total Aglycones	96.8 ± 8.3 mg/g	Total Terpene Lactones	62.4 ± 5.7 mg/g
Ginkgolide	11.6 ± 1.7 mg/g	Pb	4.273 ± 0.031 ng/g
Ginkgolide	5.92 ± 0.45 mg/g		

Indicative values for As and Cd

NIST-3248	Ginkgo-containing tablets - Flavonoids aglycones, terpene lactones		5 x 1 g

Standard Reference Material NIST-3248 is intended primarily for use in validating analytical methods for the determination of flavonoids, terpene lactones, and toxic elements in ginkgo-containing tablets and similar matrices.

Certified values

Quercetin	7.56 ± 0.40	Ginkgolide B	1.12 ± 0.20
Kaempferol	7.19 ± 0.70	Ginkgolide C	2.36 ± 0.42
Isorhamnetin	1.90 ± 0.22	Total Terpene Lactones	11.8 ± 1.4
Total Aglycones	16.6 ± 1.2	Pb	0.7753 ± 0.0089 µg/g

Indicative values for delected terpene, lactones As, Cd and Hg

NIST-3249	Ginkgo dietary supplement suite - Flavonoids, terpene , actones, elements	2 each

Standard Reference Material NIST-3249 consists of two bottles each of three ginkgo-related SRMs®: NIST-3246 Ginkgo biloba (Leaves), NIST-3247 Ginkgo biloba extract, and NIST-3248 Ginkgo–containing tablets. These SRMs are intended primarily for use in validating analytical methods for the determination of flavonoids, terpene lactones, and toxic elements in Ginkgo-containing matrices. These SRMs® can also be used for quality assurance when assigning values to in-house control materials.

NIST-3258	Bitter Orange (Fruit) - Alkaloids	5 x 5 g

This Standard Reference Material (SRM®) is intended primarily for use in validating analytical methods for the determination of alkaloids in bitter orange-containing solid oral dosage forms and similar matrices. This SRM can also be used for quality assurance when assigning values to in-house control materials. A unit of NIST-3258 consists of five packets, each containing approximately 5 g of ground fruit.

Certified Concentration Values for Selected Alkaloids

	Mass Fraction (mg/g, dry-basis) (mg/g, dry-basis)		Mass Fraction
Synephrine	9.10 ± 0.15	Total Citrus Alkaloids	9.41 ± 0.17
N-Methyltyramine	0.178 ± 0.012		

Indicative values for Octopamine

NIST-3259	Bitter Orange Extract - Alkaloids	5 x 1.2 g

This Standard Reference Material (SRM®) is intended primarily for use in validating analytical methods for the determination of alkaloids in bitter orange-containing solid oral dosage forms and similar matrices. This SRM can also be used for quality assurance when assigning values to in-house control materials. A unit of NIST-3259 consists of five packets, each containing approximately 1.2 g of extract.

Certified Concentration Values for Selected Citrus Alkaloids

	Mass Fraction (mg/g, dry-basis) (mg/g, dry-basis)		Mass Fraction
Synephrine	71.9 ± 2.3	Tyramine	0.800 ± 0.067
N-methyltyramine	5.23 ± 0.66	Total Citrus Alkaloids	77.5 ± 1.3

Indicative values for Octopamine

NIST-3260	Bitter Orange Containing Solid Oral Dosage Form - Alkaloids	5 x 2.5 g

This Standard Reference Material (SRM®) is intended primarily for use in validating analytical methods for the determination of alkaloids in bitter orange-containing solid oral dosage forms and similar matrices. This SRM can also be used for quality assurance when assigning values to in-house control materials. A unit of NIST-3260 consists of five packets, each containing approximately 2.5 g of powdered material.

Certified Concentration Values for Selected Alkaloids

	Mass Fraction (mg/g, dry-basis) (mg/g, dry-basis)		Mass Fraction
Synephrine	18.19 ± 0.49	Total Citrus Alkaloids	19.57 ± 0.18
Tyramine	0.187 ± 0.022	Caffeine	64.3 ± 1.2

Indicative values for Octopamine and N-methyltyramine

NIST-3261	Bitter Orange Dietary Supplemental Suite - Alkaloids	set

This Standard Reference Material (SRM®) consists of two packets each of three bitter orange-related SRMs: NIST-3258 Bitter Orange (Fruit), NIST-3259 Bitter Orange Extract, and NIST-3260 Bitter Orange-Containing Solid Oral Dosage Form. These SRMs are intended primarily for use in validating analytical methods for the determination of citrus alkaloids in bitter orange-containing matrices. These SRMs can also be used for quality assurance when assigning values to in-house control materials. The materials in the suite of bitter orange dietary supplement SRMs have been developed to cover a range of natural matrices and analyte levels.

Food and drink products

	Code	Product	Unit
New	NIST-3281	Cranberry (Fruit) - Organic acids A unit of NIST-3281 consists of five packets, each containing approximately 6 g of freeze-dried, powdered fruit. Certified values (dry-mass basis) Citric acid ..... 79.2 ± 6.4 mg/g Malic acid ..... 40.6 ± 2.3 mg/g Quinic acid ..... 47.8 ± 6.8 mg/g Shikimic acid ..... 2.09 ± 0.72 mg/g	5 x 6 g
New	NIST-3282	Low-calorie cranberry juice cocktail - Organic acids, Trace elements A unit of NIST-3282 consists of five ampoules, each containing approximately 1.2 mL of liquid. Certified mass fraction values for organic acids Citric acid ..... 3.221 ± 0.053 mg/g Malic acid ..... 2.133 ± 0.042 mg/g Quinic acid ..... 2.672 ± 0.048 mg/g Certified mass fraction values for elements Calcium .....26.3 ± 1.6 mg/kg Copper .....0.23 ± 0.06 mg/kg Magnesium .....12.97 ± 0.84 mg/kg Manganese ..... 0.493 ± 0.016 mg/kg Potassium ..... 247 ± 12 mg/kg Sodium ..... 201 ± 20 mg/kg Indicative values for organic acids, anions, trace elements and sugars	5 x 1.2 mL
New	NIST-3283	Cranberry extract - Organic acids A unit of NIST-3283 consists of five packets, each containing approximately 2.5 g of cranberry extract. Certified mass fraction values for organic acids (dry-mass basis) Citric acid ..... 18.7 ± 2.3 mg/g Malic acid ..... 9.9 ± 1.2 mg/g Quinic acid ..... 16.6 ± 3.7 mg/g Indicative values for organic acids and anions	5 x 2.5 g
New	NIST-3284	Cranberry-containing solid oral dosage form - Organic acids A unit of NIST-3284 consists of five packets, each containing approximately 2.5 g of powdered material. Certified mass fraction values for organic acids (dry-mass basis) Citric acid ..... 34.7 ± 4.8 mg/g Malic acid ..... 19.9 ± 1.9 mg/g Quinic acid ..... 25.9 ± 3.5 mg/g Indicative values for organic acids and anions	5 x 2.5 g
New	NIST-3285	Mixed Berry-containing solid oral dosage form - Organic acids This Standard Reference Material (SRM) is intended primarily for use in validating analytical methods for the determination of organic acids in solid oral dosage forms containing bilberries, blueberries, and cranberries and in similar matrices. This SRM can also be used for quality assurance when assigning values to in-house control materials. A unit of NIST-3285 consists of five packets, each containing approximately 2.5 g of powdered material. Certified values (dry-mass basis) Malic acid ..... 22.83 ± 0.53 mg/g Quinic acid.....24.87 ± 0.42 mg/g Reference values for organic acids and anions	5 x 2.5 g
New	NIST-3287	Blueberry (Fruit) - Organic acids A unit of NIST-3287 consists of five packets, each containing approximately 5 g of freeze-dried, powdered fruit. Certified values mass fraction values for organic acids (dry-mass basis) Citric acid ..... 24.33 ± 0.63 mg/g Malic acid ..... 1.711 ± 0.060 mg/g Quinic acid ..... 25.53 ± 0.73 mg/g Certified mass fraction values for elements (dry-mass basis) Calcium (Ca).....323 ± 16 mg/kg Copper (Cu) .....2.22 ± 0.16 mg/kg Iron (Fe) .....12.20 ± 0.74 mg/kg Magnesium (Mg).....313.7 ± 7.2 mg/kg Manganese (Mn) ..... 8.47 ± 0.59 mg/kg Phosphorus (P) ..... 671 ± 21 mg/kg Potassium (K) ..... 4490 ± 220 mg/kg Zinc (Zn)..... 6.49 ± 0.61 mg/kg Indicative values for organic acids, anions, proximates, sugars, total dietary fiber, sodium, calories, vitamins and amino acids	5 x 5 g
New	NIST-3291	Bilberry extract - Organic acids A unit of NIST-3291 consists of five packets, each containing approximately 1 g of bilberry extract. Certified mass fraction values for organic acids (dry-mass basis) Citric acid ..... 22.9 ± 2.5 mg/g Malic acid ..... 5.9 ± 1.7 mg/g Quinic acid ..... 12.2 ± 2.2 mg/g Indicative values for organic acids and anions	5 x 1 g

Food allergens

NIST-RM 8445	Spray-Dried Whole Egg for Allergen Detection This Reference Material (RM) is intended primarily for the use in evaluating test kits for determination of the presence of allergenic egg proteins. The material provides a common matrix to the allergen research community, who may wish to conduct studies using a single broadly available material.	5 g

Animal food products

	Code	Product	Unit
New	LGC7173	Poultry feed - Proximates and elements	45 g

Assessed values using Statutory Methods*

Moisture ..... 12.3 ± 0.3 g/100 g	Oil .....4.1 ± 0.7 g/100 g	Ash..... 6.4 ± 0.6 g/100 g

Assessed values using data derived from a variety of methods

Moisture ..... 12.0 ± 0.3 g/100 g	Ca.....1.44 ± 0.15 g/100 g	K ..... 0.74 ± 0.06 g/100 g
Nitrogen ..... 2.56 ± 0.19 g/100 g	Chloride.....0.28 ± 0.06 g/100 g	Fe..... 145 ± 31 mg/kg
Oil ..... 4.1 ± 0.7 g/100 g	Mg .....0.16 ± 0.02 g/100 g	Mn..... 131 ± 19 mg/kg
Ash..... 6.5 ± 0.6 g/100 g	P.....0.63 ± 0.03 g/100 g	Zn..... 91 ± 11 mg/kg
Crude fibre ..... 4.1 ± 0.7 g/100 g	Na.....0.17 ± 0.05 g/100 g	

*These values have been assigned using only data derived from laboratories reporting analysis according to "EEC method of analysis of the official control of feedingstuffs", as indicated into UK law in "The Feeding Stuffs (Sampling and Analysis) Regulations 1999".

New	ERM-BE376	Compound feedingstuff - Aflatoxins	2 x 75 g

ERM-BE376 is a compound feeding stuff mixed from contaminated copra, wheat, barley, soya, maize and a mineral / vitamin premix.

Certified values

Aflatoxin B1..... 12.9 ± 1.8 µg/kg	Aflatoxin B2 ....0.68 ± 0.10 µg/kg	Aflatoxin G1 ..... 5.2 ± 0.8 µg/kg

New	ERM-BE375	Compound feedingstuff - Aflatoxins (very low level)	2 x 75 g

ERM-BE376 is a compound feeding stuff mixed from contaminated copra, wheat, barley, soya, maize and a mineral / vitamin premix.

Certified values

Aflatoxin B1..... 2.6 ± 0.4 µg/kg	Aflatoxin G1.....0.4 ± 0.1 µg/kg
Aflatoxin B2.... 0.20 ± 0.04 µg/kg	Aflatoxin G2.....< 0.2 µg/kg

	BCR-115	Animal feed - Pesticides	30 g

Compound	Certified value mg/kg	Uncertainty mg/kg
HCB	0.0194	0.0014
beta-HCH	0.023	0.003
gamma-HCH	0.0218	0.0020
Heptachlor	0.019	0.0015
gamma-Chlordane	0.048	0.005
Dieldrin	0.018	0.003
alpha-Endosulfan	0.046	0.004
Endrin	0.046	0.006
2,4'-DDT	0.046	0.005
4,4'-DDE	0.047	0.004

	BCR-375	Compound feed - Aflatoxin B1 (blank)	50 g

Certified value

Aflatoxin B1..... <1 µg/kg

	BCR-708	Synthetic dairy feed - Proximates and elements	40 g

Property	Certified value	Uncertainty
Crude protein	240 g/kg	12 g/kg
Crude oils and fats	65 g/kg	8 g/kg
Crude fibre	93 g/kg	14 g/kg
Crude ash	50 g/kg	3 g/kg
Ca	4.8 g/kg	0.5 g/kg
Cu	37 mg/kg	4 mg/kg
Mg	1.47 g/kg	0.22 g/kg
P	4.7 g/kg	0.4 g/kg

	BCR-709	Synthetic feed for growing pigs feed - Proximates and elements	40 g

Property	Certified value	Uncertainty
Crude protein	199 g/kg	5 g/kg
Crude oils and fats	51 g/kg	14 g/kg
Crude fibre	56 g/kg	12 g/kg
Crude ash	42 g/kg	4 g/kg
Ca	1.05 g/kg	0.16 g/kg
Cu	173 mg/kg	25 mg/kg
Mg	1.89 g/kg	0.30 g/kg
P	5.4 g/kg	0.7 g/kg

Code	Product	Unit
IRMM-311	Genomic DNA of *Bacillus licheniformis* DSM 5749 in agarose inserts for Pulsed Field Gel Electrophoresis (PFGE) The intended use of this material is the taxonomic identification of the authorised probiotic feed additive *Bacillus licheniformis* DSM 5749 by pulsed field gel electrophoresis (PFGE). The material is supplied in a vial containing one agarose insert of undigested genomic DNA of *Bacillus licheniformis* DSM 5749. Certified values and uncertainties are provided for SfiI digested DNA fragments in the size interval 50 kb - 90 kb and requires the use of a specified analytical procedure.	vial

SfiI digested DNA fragments in the size interval 50 kb – 90 kb	Band no	Fragment length Certified value [kb]	Uncertainty [kb]
	1	89.6	4.7
	2	80.9	2.5
	3	75.3	2.7
	4	72.2	3.5
	5	66.9	1.9
	6	64.6	2.9
	7	60.3	1.3
	8	56.5	1.3
	9	53.9	1.3
	10	50.6	1.3

IRMM-312	Genomic DNA of *Bacillus subtilis* DSM 5750 in agarose inserts for Pulsed Field Gel Electrophoresis (PFGE) The intended use of this material is the taxonomic identification of the authorised probiotic feed additive *Bacillus subtilis* DSM 5750 by pulsed field gel electrophoresis (PFGE). The material is supplied in a vial containing one agarose insert of undigested genomic DNA of *Bacillus subtilis* DSM 5750. Certified values and uncertainties are provided for SfiI digested DNA fragments in the size interval 15 kb - 97 kb and requires the use of a specified analytical procedure.		vial

SfiI digested DNA fragments in the size interval 15 kb – 97 kb	Band no	Fragment length Certified value [kb]	Uncertainty [kb]
	1	89.2	0.9
	2	81.4	0.8
	3	77.7	0.6
	4	62.5	1.8
	5	59.5	2.1
	6	44.0	2.4
	7	29.2	2.0
	8	23.6	1.3
	9	18.6	1.3

New	BDS-BRM-01	Feedingstuff - DR CALUX® TEQ (Low) **DR CALUX® TEQ** Expected value[A] (n=16) DR CALUX® TEQ per gram product ..... 0.68 pg ***HRGC/MS PCDD/PCDF TEQ[C] (n=1)*** PCDD/PCDF TEQ per gram product..... 0.12 pg ***HRGC/MS PCB TEQ[C] (n=1)*** PCB TEQ per gram product ..... 0.25 pg ***HRGC/MS PCDD/PCDF/PCB TEQ[C] (n=1)*** PCDD/PCDF/PCB TEQ per gram ..... 0.37 pg [A] The average value is based in the robust mean as described in ISO 57328. [B] Uncertainty is based on the robust standard deviation as described in ISO 57328. [C] Based on quantified congeners and WHO-TEF's	100 g
New	BDS-BRM-02	Feedingstuff - DR CALUX® TEQ (Middle) **DR CALUX® TEQ** Expected value[A] (n=16) DR CALUX® TEQ per gram product ..... 0.90 pg ***HRGC/MS PCDD/PCDF TEQ[C] (n=1)*** PCDD/PCDF TEQ per gram product..... 0.31 pg ***HRGC/MS PCB TEQ[C] (n=1)*** PCB TEQ per gram product ..... 0.43 pg ***HRGC/MS PCDD/PCDF/PCB TEQ[C] (n=1)*** PCDD/PCDF/PCB TEQ per gram ..... 0.74 pg [A] The average value is based in the robust mean as described in ISO 57328. [B] Uncertainty is based on the robust standard deviation as described in ISO 57328. [C] Based on quantified congeners and WHO-TEF's	100 g

	Code	Product	Unit
New	BDS-BRM-03	Feedingstuff - DR CALUX® TEQ (High) **DR CALUX® TEQ** Expected value[A] (n=16) DR CALUX® TEQ per gram product.....1.4 pg ***HRGC/MS PCDD/PCDF TEQ[C] (n=1)*** PCDD/PCDF TEQ per gram product.....0.71 pg ***HRGC/MS PCB TEQ[C] (n=1)*** PCB TEQ per gram product .....0.83 pg ***HRGC/MS PCDD/PCDF/PCB TEQ[C] (n=1)*** PCDD/PCDF/PCB TEQ per gram .....1.5 pg [A] The average value is based in the robust mean as described in ISO 57328. [B] Uncertainty is based on the robust standard deviation as described in ISO 57328. [C] Based on quantified congeners and WHO-TEF's	100 g
New	BDS-BRM-01-03	Feedingstuff - DR CALUX® (Kit) Each kit consists of one unit of BDS-BRM-01.....Feedingstuff - CALUX® TEQ (Low) BDS-BRM-02.....Feedingstuff - CALUX® TEQ (Middle) BDS-BRM-03.....Feedingstuff - CALUX® TEQ (High)	kit

Purified genomic DNA (gDNA)

The stable genomic DNA (gDNA) standards (IRMM-447, 448, 449) have been developed for the verification and detection of food-borne pathogens by diagnostic polymerase chain reaction (PCR) within the European FOOD-PCR project. These standards support harmonisation and validation of different PCR methods by their use as taxonomic controls in PCR reactions.

	Code	Product	Unit
	IRMM-447	Genomic DNA of *Listeria monocytogenes* Freeze dried genomic DNA Certified identity: genomic DNA *Listeria monocytogenes* (strain 4B, NCTC 11994) Indicative value for the mass of genomic DNA per vial Dry ice shipment required	vial
	IRMM-448	Genomic DNA *Campylobacter jejuni* (NCTC 11351) Indicative value Mass of genomic DNA per vial .....71 ng Dry ice shipment required	vial
New	IRMM-449	Genomic DNA of *Escherichia coli* Freeze dried genomic DNA Certified identity: genomic DNA *Escherichia coli* O157, strain EDL 933 Indicative value for the mass of genomic DNA per vial Dry ice shipment required	vial
	IRMM-311	Genomic DNA of *Bacillus licheniformis* DSM 5749 in agarose inserts for Pulsed Field Gel Electrophoresis (PFGE) The intended use of this material is the taxonomic identification of the authorised probiotic feed additive *Bacillus licheniformis* DSM 5749 by pulsed field gel electrophoresis (PFGE). The material is supplied in a vial containing one agarose insert of undigested genomic DNA of *Bacillus licheniformis* DSM 5749. Certified values and uncertainties are provided for SfiI digested DNA fragments in the size interval 50 kb - 90 kb and requires the use of a specified analytical procedure.	vial

	Fragment length	
	Certified value [kb]	Uncertainty [kb]
SfiI digested DNA fragments in the size interval 50 kb – 90 kb Band no		
1	89.6	4.7
2	80.9	2.5
3	75.3	2.7
4	72.2	3.5
5	66.9	1.9
6	64.6	2.9
7	60.3	1.3
8	56.5	1.3
9	53.9	1.3
10	50.6	1.3