

2 MATERIALS RELATED TO THE ANALYSIS OF FOOD AND FEEDING STUFF

2.1 PURE MATERIALS AND SYNTHETIC MIXTURES

BCR-123 Ethanol						
Parameter	Ethanol H		Ethanol M		Ethanol L	
(D/H) _I	109.65 × 10 ⁻⁶	± 0.20 × 10 ⁻⁶	101.69 × 10 ⁻⁶	± 0.17 × 10 ⁻⁶	90.30 × 10 ⁻⁶	± 0.18 × 10 ⁻⁶
(D/H) _{II}	119.76 × 10 ⁻⁶	± 0.25 × 10 ⁻⁶	130.94 × 10 ⁻⁶	± 0.21 × 10 ⁻⁶	122.20 × 10 ⁻⁶	± 0.4 × 10 ⁻⁶
R	2.184	± 0.005	2.575	± 0.006	2.708	± 0.009

Availability: Units of 3 sealed NMR tubes containing respectively H-, M-, and L-ethanols, to which the tetramethylurea internal standard and the C₆F₆ lock substance are added. 10 mm (BCR-123A) or 15 mm (BCR-123B) O.D. NRM tubes can be supplied.

Parameter	Unit	BCR-656 (96% ethanol)	
(D/H) _I by ² H-NMR	ppm	102.84	± 0.20
(D/H) _{II} by ² H-NMR	ppm	132.07	± 0.30
R by ² H-NMR		2.570	± 0.005
δ ¹³ C _{VPDB} by IRMS	‰	-26.91	± 0.07
Alcoholic grade t _D	w/w %	(94)	

Value in brackets is not certified.

Availability: BCR-656: Units of 25 mL of 96 % vol. neutral ethanol from wine in glass bottle.

Parameter	Unit	BCR-657 (Sugar)	BCR-660 (Ethanol in water)
(D/H) _I by ² H-NMR	ppm		102.90 ± 0.16
(D/H) _{II} by ² H-NMR	ppm		131.95 ± 0.23
R by ² H-NMR			2.567 ± 0.005
δ ¹³ C _{VPDB} by IRMS	‰	-10.76 ± 0.04	-26.72 ± 0.09
(D/H) _w of water (IRMS)	ppm		148.68 ± 0.14
Alcoholic grade t _D	w/w %		11.96 ± 0.06 ¹⁾

1) in v/v %

Availability: BCR-657: Units of approx. 1 g of dry glucose in a sealed amber vial;

BCR-660: Units of 370 mL of aqueous ethanol solution in glass bottle.

Tetramethylurea (STA-003m)

Tetramethylurea (TMU) which is used as Internal Standard in routine SNIF-NMR analysis is available in 500 mL quantities. The D/H nominal value of tetramethylurea batches is determined by multiple calibration at 61.45/400 MHz, 61.4/400 MHz and 45.05/400 MHz for deuterium and given in an accompanying analytical report.

Substance	BCR-423 (RM) Aflatoxin M ₁ in chloroform (µg/mL)
Aflatoxin M ₁	(9.93)

Value in brackets is not certified.

Availability: Sealed ampoules containing about 2.5 mL.

Compound	ERM-AC626 Arsenobetaine in water
Arsenobetaine	Mass fraction (mg/kg) 250.0 ± 2.5

Availability: ERM-AC626 is available in ampoules containing 1 mL.

Compound	BCR-663 Saxitoxin in acetic acid		
	<u>Mass fraction</u> (mg/kg)		
Saxitoxin·2HCl	9.8	±	1.2

Availability: BCR-663 is available in ampoules containing 1 mL.

Substance	ERM-AC699 Zearalenone in acetonitrile		
	<u>Mass concentration</u> (µg/mL)		
ZON	9.95	±	0.30

Availability: ERM-AC699 is supplied in ampoules filled and sealed under nitrogen in amounts of 4 mL.

Substance	ERM-AC057 Aflatoxin B1 in acetonitrile			
	<u>Mass fraction</u> (µg/g)		<u>Mass concentration at 20 °C</u> (µg/mL)	
Aflatoxin B1	3.79	±	0.11	(2.97 ± 0.09)

Values in brackets are not certified.

Availability: ERM-AC057 is supplied in amber glass ampoules filled with 4 mL.

Substance	ERM-AC058 Aflatoxin B2 in acetonitrile			
	<u>Mass fraction</u> (µg/g)		<u>Mass concentration at 20 °C</u> (µg/mL)	
Aflatoxin B2	3.80	±	0.08	(2.98 ± 0.06)

Values in brackets are not certified.

Availability: ERM-AC058 is supplied in amber glass ampoules filled with 4 mL.

Substance	ERM-AC059 Aflatoxin G1 in acetonitrile			
	<u>Mass fraction</u> (µg/g)		<u>Mass concentration at 20 °C</u> (µg/mL)	
Aflatoxin G1	3.78	±	0.13	(2.96 ± 0.10)

Values in brackets are not certified.

Availability: ERM-AC059 is supplied in amber glass ampoules filled with 4 mL.

Substance	ERM-AC060 Aflatoxin G2 in acetonitrile			
	<u>Mass fraction</u> (µg/g)		<u>Mass concentration at 20 °C</u> (µg/mL)	
Aflatoxin G2	3.80	±	0.07	(2.98 ± 0.06)

Values in brackets are not certified.

Availability: ERM-AC060 is supplied in amber glass ampoules filled with 4 mL.

Substance	IRMM-315 4-Deoxynivalenol in acetonitrile	
	Mass fraction (µg/g)	Mass concentration (µg/mL)
4-Deoxynivalenol	25.1 ± 1.2	(19.7 ± 0.9)

Values in brackets are not certified.

Availability: IRMM-315 is supplied in amber glass ampoules filled with 4 mL.

Substance	IRMM-316 Nivalenol in acetonitrile	
	Mass fraction (µg/g)	Mass concentration (µg/mL)
Nivalenol	24.0 ± 1.1	(18.8 ± 0.9)

Values in brackets are not certified.

Availability: IRMM-316 is supplied in amber glass ampoules filled with 4 mL.

2.2 MATRIX MATERIALS

2.2.1 CERTIFIED FOR GMO CONTENT

The materials were prepared by quantitative mixing of non-genetically modified powder and genetically modified powder, produced from ground seed with the help of a dry-mixing technique, and are intended for the calibration of methods for the detection of genetically modified food.

CRMs for genetically modified GTS 40-3-2 soya beans (ERM-BF410p)

Five CRMs of dried soya bean powder with different mass fractions of genetically modified (GTS 40-3-2) soya beans were produced.

	Certified value GTS 40-3-2 mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF410ap	< 0.09	-
ERM-BF410bp	> 985	-
ERM-BF410cp	1.00	0.10
ERM-BF410dp	10.0	0.6
ERM-BF410ep	100	5

Availability: Vials containing about 1 g of soya bean powder.

CRMs for genetically modified Bt-176 maize (ERM-BF411)

Six CRMs of dried maize powder with different mass fractions of genetically modified (Bt-176) maize were produced.

	Certified value Bt-176 mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF411a	< 0.14	-
ERM-BF411b	1.00	0.29
ERM-BF411c	5.0	0.6
ERM-BF411d	10.0	0.8
ERM-BF411e	20.0	1.1
ERM-BF411f	50.0	1.8

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified Bt-11 maize (ERM-BF412k)

Five CRMs of dried maize powder with different mass fractions of genetically modified (Bt-11) maize were produced.

	Certified value Bt-11 mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF412ak	< 0.12	-
ERM-BF412bk	> 970	-
ERM-BF412ck	0.99	0.13
ERM-BF412dk	9.9	0.7
ERM-BF412ek	99	4

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified MON 810 maize (ERM-BF413k)

Four CRMs of dried maize powder with different mass fractions of genetically modified (MON 810) maize were produced.

	Certified value MON 810 mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF413ak	< 0.9	-
ERM-BF413ck	4.9	1.0
ERM-BF413ek *	19.8	1.5
ERM-BF413gk	99	5

Availability: Vials containing about 1 g of maize powder.

* ERM-BF413ek is also certified for the DNA copy number ratio.

	Certified value MON 810 DNA copy number ratio (%)	Uncertainty (%)
ERM-BF413ek	0.77	0.08

	ERM-AD413 DNA fragments per plasmid	
	<u>Number</u>	
Fragment of 5' <i>plant-P35S</i> junction DNA/plasmid	1	(negligible uncertainty)
Fragment of <i>hmg</i> DNA/plasmid	1	(negligible uncertainty)
	<u>Number ratio</u>	
Ratio between the number of 5' <i>plant-P35S</i> junction and <i>hmg</i> fragments in the plasmid by duplex rt-PCR ⁽¹⁾ and simplex rt-PCR ⁽²⁾	(1.00 ¹	± 0.06)
	(1.04 ²	± 0.06)

Values in brackets are not certified. Availability: ERM-AD413 is available in vials.

CRMs for genetically modified GA21 maize (ERM-BF414)

Six CRMs of dried maize powder with different mass fractions of genetically modified (GA21) maize were produced.

	Certified value GA21 mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF414a	< 0.8	-
ERM-BF414b	1.0	0.8
ERM-BF414c	4.9	1.0
ERM-BF414d	9.9	1.1
ERM-BF414e	17.2	1.2
ERM-BF414f	42.9	1.7

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified NK603 maize (ERM-BF415)

Six CRMs of dried maize powder with different mass fractions of genetically modified (NK603) maize were produced.

	Certified value NK603 mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF415a	< 0.4	-
ERM-BF415b	1.0	0.4
ERM-BF415c	4.9	0.5
ERM-BF415d	9.8	0.7
ERM-BF415e *	19.6	0.9
ERM-BF415f	49.1	1.3

Availability: Vials containing about 1 g of maize powder.

* ERM-BF415e is also certified for the DNA copy number ratio.

	Certified value NK603 maize DNA copy number ratio (%)	Uncertainty (%)
ERM-BF415e	0.95	0.11

	ERM-AD415 DNA fragments per plasmid	
	<u>Number</u>	
Fragment of 3' insertion-specific DNA / pIRMM-0086	1	(negligible uncertainty)
Fragment of <i>hmg</i> DNA / pIRMM-0086	1	(negligible uncertainty)

Availability: ERM-AD415 is available in vials.

CRMs for genetically modified MON 863 maize (ERM-BF416)

Four CRMs of dried maize powder with different mass fractions of genetically modified (MON 863) maize were produced.

	Certified value MON 863 mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF416a	< 1.0	-
ERM-BF416b	1.0	- 0.3 ; + 1.0
ERM-BF416c	9.8	- 0.7 ; + 1.2
ERM-BF416d	98.5	- 2.2 ; + 2.5

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified MON 863 x MON 810 maize (ERM-BF417)

Four CRMs of dried maize powder with different mass fractions of genetically modified (MON 863 x MON 810) maize were produced.

	Certified value MON 863 x MON 810 mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF417a	< 1.0	-
ERM-BF417b	1.0	- 0.2 ; + 1.0
ERM-BF417c	9.8	- 0.7 ; + 1.2
ERM-BF417d	98.5	- 2.0 ; + 2.4

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified 1507 maize (ERM-BF418)

Four CRMs of dried maize powder with different mass fractions of genetically modified (1507) maize were produced.

	Certified value 1507 maize mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF418a	< 0.5	-
ERM-BF418b	1.0	- 0.2 ; + 0.6
ERM-BF418c	9.9	- 0.6 ; + 0.8
ERM-BF418d	98.6	- 1.7 ; + 2.0

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified H7-1 sugar beet (ERM-BF419)

Two CRMs of dried sugar beet powder with different mass fractions of genetically modified (H7-1) sugar beet were produced.

	Certified value H7-1 sugar beet mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF419a	0	0
ERM-BF419b	1000	0

Availability: Vials containing about 1 g of sugar beet powder.

CRMs for genetically modified 3272 maize (ERM-BF420)

Three CRMs of dried maize powder with different mass fractions of genetically modified (3272) maize were produced.

	Certified value 3272 maize mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF420a	< 1.3	-
ERM-BF420b	9.8	1.2
ERM-BF420c	98	8

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified EH92-527-1 potato (ERM-BF421)

Two CRMs of dried potato powder with different mass fractions of genetically modified (EH92-527-1) potato were produced.

	Certified value Number fraction of EH92-527-1 potato / total number of potatoes [%]	Certified property Identity	Uncertainty
ERM-BF421a	0	potato without the EH92-527-1 event	Not applicable
ERM-BF421b	100	EH92-527-1 potato	

Availability: ERM-BF421a: vials containing about 1 g of potato powder, ERM-BF421b: vials containing about 0.5 g of potato powder.

CRMs for genetically modified 281-24-236 x 3006-210-23 cotton seed (ERM-BF422)

Four CRMs of dried cotton seed powder with different mass fractions of genetically modified (281-24-236 x 3006-210-23) cotton seed were produced.

	Certified value 281-24-236 x 3006-210-23 cotton seed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF422a	< 0.5	-
ERM-BF422b	> 979	-
ERM-BF422c	10.0	1.7
ERM-BF422d	100	16

Availability: Vials containing about 1 g of cotton seed powder.

CRMs for genetically modified MIR604 maize (ERM-BF423)

Four CRMs of dried maize powder with different mass fractions of genetically modified (MIR604) maize were produced.

	Certified value MIR604 maize mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF423a	< 0.9	-
ERM-BF423b	1.0	- 0.3 ; + 1.0
ERM-BF423c	9.8	- 0.9 ; + 1.3
ERM-BF423d	98.5	- 2.6 ; + 2.9

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified 59122 maize (ERM-BF424)

Four CRMs of dried maize powder with different mass fractions of genetically modified (59122) maize were produced.

	Certified value 59122 maize mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF424a	< 1.2	-
ERM-BF424b	1.0	- 0.2 ; + 1.2
ERM-BF424c	9.9	- 0.8 ; + 1.4
ERM-BF424d	98.7	- 5.8 ; + 5.9

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified 356043 soya seed (ERM-BF425)

Four CRMs of dried soya seed powder with different mass fractions of genetically modified soya seed were produced.

	Certified value 356043 soya seed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF425a	< 0.5	-
ERM-BF425b	1.0	0.4
ERM-BF425c *	10.0	1.1
ERM-BF425d	100	9

Availability: Vials containing about 1 g of soya seed powder.

* ERM-BF425c is also certified for the DNA copy number ratio.

	Certified value 356043 soya DNA copy number ratio (%)	Uncertainty (%)
ERM-BF425c	0.85	0.11

Substance	ERM-AD425 DNA fragments per plasmid	
	Number	
Fragment of 5' insert-to-plant junction DNA / pIRMM-0073	1	(negligible uncertainty)
Fragment of <i>le1</i> DNA / pIRMM-0073	1	(negligible uncertainty)

Availability: ERM-AD425 is available in vials.

CRMs for genetically modified 305423 soya seed (ERM-BF426)

Four CRMs of dried soya seed powder with different mass fractions of genetically modified soya seed were produced.

	Certified value 305423 soya seed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF426a	< 0.8	-
ERM-BF426b	5.0	0.8
ERM-BF426c	10.0	1.0
ERM-BF426d	100	7

Availability: Vials containing about 1 g of soya seed powder.

CRMs for genetically modified 98140 maize (ERM-BF427)

Four CRMs of dried maize seed powder with different mass fractions of genetically modified (98140) maize were produced.

	Certified value 98140 maize seed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF427a	< 0.4	-
ERM-BF427b	5.0	0.6
ERM-BF427c *	20.0	0.8
ERM-BF427d	100	4

Availability: Vials containing about 1 g of maize seed powder.

* ERM-BF427c is also certified for the DNA copy number ratio.

	Certified value 98140 maize DNA copy number ratio (%)	Uncertainty (%)
ERM-BF427c	1.75	0.13

	ERM-AD427 DNA fragments per plasmid	
	<u>Number</u>	
Fragment of 5' insert-to-plant junction DNA / pIRMM-0090	1	(negligible uncertainty)
Fragment of <i>hmg</i> DNA / pIRMM-0090	1	(negligible uncertainty)

Availability: ERM-AD427 is available in vials.

CRMs for genetically modified GHB119 cotton (ERM-BF428)

Three CRMs of dried cotton seed powder with different mass fractions of genetically modified (GHB119) cotton were produced.

	Certified value GHB119 cotton seed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF428a	< 0.2	-
ERM-BF428b	10	4
ERM-BF428c	100	11

Availability: Vials containing about 1 g of cotton seed powder.

CRMs for genetically modified T304-40 cotton (ERM-BF429)

Three CRMs of dried cotton seed powder with different mass fractions of genetically modified (T304-40) cotton were produced.

	Certified value T304-40 cotton seed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF429a	< 0.4	-
ERM-BF429b	10	1.3
ERM-BF429c	100	11

Availability: Vials containing about 1 g of cotton seed powder.

CRMs for genetically modified AM04-1020 potato (ERM-BF430)

Two CRMs for the detection of genetically modified AM04-1020 potato were produced.

	Certified value AM04-1020 potato mass fraction (g/kg)
ERM-BF430a	0

	Certified identity
ERM-BF430b	Positive for event AM04-1020

Availability: Vials containing about 1 g of potato powder.

CRMs for genetically modified AV43-6-G7 potato (ERM-BF431)

Two CRMs for the detection of genetically modified AV43-6-G7 potato were produced.

	Certified value AV43-6-G7 potato mass fraction (g/kg)
ERM-BF431a	0

	Certified identity
ERM-BF431b	Positive for event AV43-6-G7

Availability: Vials containing about 1 g of potato powder.

CRMs for genetically modified DAS-68416-4 soya seed (ERM-BF432)

Four CRMs of dried soya seed powder with different mass fractions of genetically modified soya seed DAS-68416-4 were produced.

	Certified value DAS-68416-4 soya seed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF432a	< 0.3	-
ERM-BF432b	5.0	0.6
ERM-BF432c	10.0	1.7
ERM-BF432d	100	13

Availability: Vials containing about 1 g of soya seed powder.

CRMs for genetically modified DAS-40278-9 maize (ERM-BF433)

Four CRMs of dried maize powder with different mass fractions of genetically modified DAS-40278-9 maize were produced.

	Certified value DAS-40278-9 maize mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF433a	< 0.3	-
ERM-BF433b	5.0	0.6
ERM-BF433c	10.0	0.9
ERM-BF433d	100	8

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified 73496 rapeseed (ERM-BF434)

Five CRMs of dried rapeseed powder with different mass fractions of genetically modified rapeseed 73496 were produced.

	Certified value 73496 rapeseed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF434a	< 0.04	-
ERM-BF434b	>988	-
ERM-BF434c	1.00	0.15
ERM-BF434d	10.0	1.4
ERM-BF434e	100	12

Availability: Vials containing about 1 g of rapeseed powder.

CRMs for genetically modified PH05-026-0048 potato (ERM-BF435)

Two CRMs for the detection of genetically modified PH05-026-0048 potato were produced.

	Certified value PH05-026-0048 potato mass fraction (g/kg)
ERM-BF435a	< 0.4

	Certified identity
ERM-BF435b	Positive for event PH05-026-0048

Availability: Vials containing about 1 g of potato powder

CRMs for genetically modified DAS-44406-6 soya seed (ERM-BF436)

Five CRMs of dried soya seed powder with different mass fractions of genetically modified soya seed DAS-44406-6 were produced.

	Certified value DAS-44406-6 soya seed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF436a	< 0.06	-
ERM-BF436b	>986	-
ERM-BF436c	1.00	0.14
ERM-BF436d	10.0	1.0
ERM-BF436e	100	9

Availability: Vials containing about 1 g of soya seed powder.

CRMs for genetically modified DAS-81419-2 soya seed (ERM-BF437)

Five CRMs of dried soya seed powder with different mass fractions of genetically modified soya seed DAS-81419-2 were produced.

	Certified value DAS-81419-2 soya seed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF437a	< 0.07	-
ERM-BF437b	>986	-
ERM-BF437c	0.99	0.12
ERM-BF437d	9.9	1.5
ERM-BF437e	100	9

Availability: Vials containing about 1 g of soya seed powder.

CRMs for genetically modified VCO-Ø1981-5 maize (ERM-BF438)

Five CRMs of dried maize powder with different mass fractions of genetically modified VCO-Ø1981-5 maize were produced.

	Certified value VCO-Ø1981-5 maize mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF438a	< 0.06	-
ERM-BF438b	>986	-
ERM-BF438c	1.00	0.13
ERM-BF438d	10.0	0.8
ERM-BF438e	100	5

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified DP-ØØ4114-3 maize (ERM-BF439)

Five CRMs of dried maize powder with different mass fractions of genetically modified DP-ØØ4114-3 maize were produced.

	Certified value DP-ØØ4114-3 maize mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF439a	< 0.06	-
ERM-BF439b	>986	-
ERM-BF439c	1.00	0.13
ERM-BF439d	10.0	0.8
ERM-BF439e	100	5

Availability: Vials containing about 1 g of maize powder.

CRMs for genetically modified DAS-81910-7 cotton (ERM-BF440)

Five CRMs of dried cotton seed powder with different mass fractions of genetically modified (DAS-81910-7) cotton were produced.

	Certified value DAS-81910-7 cotton seed mass fraction (g/kg)	Uncertainty (g/kg)
ERM-BF440a	< 0.07	-
ERM-BF440b	>986	-
ERM-BF440c	1.00	0.08
ERM-BF440d	10.0	0.8
ERM-BF440e	100	7

Availability: Vials containing about 1 g of cotton seed powder.

2.2.2 CERTIFIED FOR NATURAL TOXINS AND XENOBIOTICS

Substance	BCR-459 Coconut oil (µg/kg)
Pyrene	< 0.9
Chrysene	< 0.6
Benzo[k]fluoranthene	< 0.2
Benzo[a]pyrene	< 0.3
Benzo[ghi]perylene	< 0.2
Indeno[1,2,3-cd]pyrene	< 0.2

Availability: BCR-459 is provided in ampoules containing approximately 45 g.

Polychlorinated biphenyls (IUPAC No.)	BCR-450 Natural milk powder (µg/kg)	ERM-BB444 Natural pork fat (blank) (µg/kg)	ERM-BB445 Spiked pork fat (very low level) (µg/kg)	ERM-BB446 Spiked pork fat (low level) (µg/kg)
28		< 2	14.8 ± 1.3	29.6 ± 2.1
52	1.16 ± 0.17	< 2	12.9 ± 0.9	25.5 ± 1.8
101		< 2	12.5 ± 1.2	30 ± 4
118	3.3 ± 0.4	< 2	12.7 ± 1.3	30.2 ± 2.7
138		< 2	14.6 ± 1.6	32 ± 4
153	19.0 ± 0.7	< 2	13.1 ± 1.1	30.8 ± 2.4
156	1.62 ± 0.20			
170	4.8 ± 0.6			
180	11.0 ± 0.7	< 2	12.6 ± 0.9	29.8 ± 2.5
sum (28, 52, 101, 118, 138, 153, 180)		< 14	93 ± 7	207 ± 11
*PDBE 47		(3.7)	(3.9)	(6.1)
γ-HCH (lindane)		(5.7)	(5.6)	(4.6)

* 2,2',4,4'-Tetrabromo-diphenylether. / Values in brackets are not certified.

Availability: BCR-450 in brown glass bottles of about 20 g. ERM-BB444 to 446 in glass ampoules of about 5 g.

Polychlorinated biphenyls (IUPAC No.)	BCR-349 Cod liver oil (µg/kg)	ERM-BB350 Fish oil (ng/g)
28	68 ± 8	21.3 ± 1.1
52	149 ± 21	37.4 ± 2.2
74		23.0 ± 1.9
95		(38 ± 47)
99		62 ± 6
101	372 ± 18	111 ± 5
105		25.8 ± 2.1
110		54.1 ± 2.8
118	460 ± 40	84 ± 4
138		137 ± 10
149		88 ± 9
153	940 ± 40	220 ± 11
156		20.1 ± 1.3
163		(43 ± 73)
167		(17 ± 27)
177		25.8 ± 2.0
180	282 ± 23	67 ± 4
183		22.5 ± 1.8
187		67 ± 5
194		23.4 ± 1.5
196		41 ± 7

Values in brackets are not certified.

Availability: BCR-349 and ERM-BB350 are provided in sealed glass ampoules containing approximately 2 g fish oil.

Substance	BCR-598 Cod liver oil (µg/kg)
HCB	55.7 ± 2.0
α-HCH	42 ± 3
β-HCH	16 ± 3
γ-HCH	23 ± 4
γ-Chlordane	6.9 ± 1.6
α-Chlordane	24.4 ± 1.8
Oxychlordane	11.0 ± 1.8
Transnonachlor	39 ± 4
Dieldrin	59 ± 4
p,p',-DDE	0.61 × 10 ³ ± 0.04 × 10 ³
o,p'-DDD	30 ± 4
p,p'-DDD	0.40 × 10 ³ ± 0.03 × 10 ³
p,p'-DDT	0.179 × 10 ³ ± 0.018 × 10 ³

Availability: BCR-598 is provided in sealed glass ampoules containing approximately 5 g under dry argon.

Substance	ERM-BB430 Pork fat (mg/kg)		
HCB	0.193	±	0.017
α-HCH	0.25	±	0.04
β-HCH	0.109	±	0.010
γ-HCH	(1.87)	±	(0.31)
β-HEPO	0.213	±	0.016
Dieldrin	(0.21)	±	(0.05)
Endrin	(0.055)	±	(0.016)
p,p',-DDT	0.48	±	0.07
p,p',-DDD	0.222	±	0.022
p,p',-DDE	0.38	±	0.09

Values in brackets are not certified.

Availability: ERM-BB430 is provided in sealed amber glass ampoules containing approximately 5 g of material bottled under argon.

Substance	BCR-115 Animal feed (mg/kg)		
HCB	0.019 4	±	0.001 4
β-HCH	0.023 4	±	0.002 6
γ-HCH	0.021 8	±	0.002 0
Heptachlor	0.019 0	±	0.001 5
γ-Chlordane	0.048	±	0.006
α-Endosulfan	0.046	±	0.004
Dieldrin	0.018 1	±	0.002 3
Endrin	0.046	±	0.006
p,p'-DDE	0.047	±	0.004

Availability: BCR-115 is provided in sealed hard glass ampoules containing approximately 30 g under dry N₂. The sample is a homogeneous animal feed obtained from commonly used ingredients and enriched with organochlorine pesticides.

Substance	BCR-187 Milk powder (µg/kg)	BCR-188 Milk powder (spiked) (µg/kg)
HCB	1.45 ± 0.21	37.4 ± 2.7
β-HCH		12.0 ± 1.2
γ-HCH	(> 3.6)	(> 25)
β-HEPO		32.0 ± 1.9
p,p'-DDE	6.6 ± 0.6	51 ± 4
Dieldrin		36.1 ± 2.5
Endrin		6.2 ± 0.9
p,p'-DDT		69 ± 5

Values in brackets are not certified.

Availability: The samples are provided in sealed hard glass ampoules containing about 20 g (under Argon).

Substance	BCR-607 Natural spray dried milk powder (ng/kg)		
2,3,7,8 - T ₄ CDD (D48)	0.25	±	0.03
1,2,3,7,8 - P ₅ CDD (D54)	0.79	±	0.04
1,2,3,4,7,8 - H ₆ CDD (D66)	0.42	±	0.07
1,2,3,6,7,8 - H ₆ CDD (D67)	0.98	±	0.11
1,2,3,7,8,9 - H ₆ CDD (D70)	0.34	±	0.05
2,3,7,8 - T ₄ CDF (F83)	0.05	±	0.03
1,2,3,7,8 - P ₅ CDF (F94)	0.054	±	0.013
2,3,4,7,8 - P ₅ CDF (F114)	1.81	±	0.13
1,2,3,4,7,8 - H ₆ CDF (F118)	0.94	±	0.04
1,2,3,6,7,8 - H ₆ CDF (F121)	1.01	±	0.09
2,3,4,6,7,8 - H ₆ CDF (F130)	1.07	±	0.05

Availability: Amber glass bottles containing approximately 100 g.

Substance	ERM-BC190 Rapeseed (colza)	ERM-BC366 Rapeseed (colza)	ERM-BC367 Rapeseed (colza)	
	<u>Certified values</u>		<u>Certified values</u>	
Total glucosinolate content	23 ± 4 mmol/kg	11.9 ± 1.3 mmol/kg	99 ± 9 mmol/kg	
Sulphur content	4.72 ± 0.22 g/kg	3.31 ± 0.17 g/kg	10.3 ± 0.5 g/kg	

Availability: 20 g whole seed in an aluminium plastic laminated sachet sealed under nitrogen.

Substance	BCR-262R Defatted peanut meal (blank)	BCR-263R Defatted peanut meal (medium level)	BCR-264 Defatted peanut meal (high level)	BCR-375 Compound feed (very low level blank)	ERM-BE375 Compound feed (very low level)	ERM-BE376 Compound feed (high level)
	<u>Mass fraction</u> (µg/kg)		<u>Mass fraction</u> (µg/kg)		<u>Mass fraction</u> (µg/kg)	
Aflatoxin B1	< 3	17.1 ± 2.4	206 ± 13	< 1	2.6 ± 0.4	12.9 ± 1.8
Aflatoxin B2		3.0 ± 0.4			0.20 ± 0.04	0.68 ± 0.10
Aflatoxin G1		3.0 ± 0.5			0.40 ± 0.10	5.2 ± 0.8
Aflatoxin G2		(0.62 ± 0.21)			< 0.2	
Sum of aflatoxin B1, B2, G1 and G2		(23.7 ± 2.5)				

Values in brackets are not certified.

Availability: Sachets sealed under vacuum containing about 100 g (BCR-263R) and about 150 g (BCR-264) of finely ground defatted peanut meal.

BCR-262R is available in 280 mL amber glass bottles containing about 100 g of the peanut meal, additionally sealed in foil-laminate sachet.

BCR-375 is supplied in units of about 50 g of a finely ground compound feed, ERM-BE375 and ERM-BE376 consist of 2 bottles filled with about 75 g of compound feedingstuff each.

Substance	BCR-401R Peanut butter (very low level)	BCR-385R Peanut butter (low level)	ERM-BD286 Paprika powder	
	<u>Mass fraction</u> (µg/kg)		<u>Mass fraction</u> (µg/kg)	
Aflatoxin B1	< 0.2	1.77 ± 0.30	3.72 ± 0.29	
Aflatoxin B2	< 0.2	0.48 ± 0.08		
Aflatoxin G1	< 0.2	0.9 ± 0.4	2.4 ± 0.6	
Aflatoxin G2	< 0.2	0.30 ± 0.12		
Total		3.5 ± 0.5		

Availability: The samples are supplied in units of about 100 g in aluminium cans

	Description	Aflatoxin M ₁ (µg/kg)	
ERM-BD282	Whole milk powder (zero level)	< 0.02	
ERM-BD283	Whole milk powder (low level)	0.111 ±	0.018
ERM-BD284	Whole milk powder (high level)	0.44 ±	0.06

Availability: The materials are provided in units of 30 g in amber glass bottles filled and sealed under nitrogen.

Substance	BCR-377 Maize Flour (very low level blank)	BCR-396 Wheat Flour (very low level blank)
	<u>Mass fraction</u> (mg/kg)	
DON	< 0.05	

Availability: Sachets sealed under vacuum containing about 150 g of sealed finely ground flour.

Substance	BCR-471 Wheat (blank)
Ochratoxin A	<u>Mass fraction</u> (µg/kg) < 0.6

Availability: Units of about 55 g in foil-laminate pouches sealed under vacuum.

Compound	BCR-543 Mussel
Saxitoxin·2HCl Saxitoxin·2HCl (if enriched with BCR-663) dc-saxitoxin	<u>Mass fraction</u> (mg/kg) < 0.07 0.48 ± 0.06 < 0.04

Availability: BCR-543 is available in heat-sealed laminate sachets containing about 15 g of material each. BCR-663 is available in ampoules containing 1 mL.

Substance	ERM-BC716 Maize	ERM-BC717 Maize
DON NIV ZON	<u>Mass fraction</u> (µg/kg) < 5	<u>Mass fraction</u> (µg/kg) 673 ± 87 53 ± 10 83 ± 9

Availability: ERM-BC716 and ERM-BC717 are supplied in sachets containing at least 60 g.

IRMM-359: Staphylococcus aureus enterotoxin A (SEA) in cheese

IRMM-359	Diagnostic specificity	
	Certified value [%]	One-sided lower confidence limit [%]
IRMM-359a	100	97.3
IRMM-359b	100	97.5
IRMM-359c	100	97.6

Availability: Provided in a set of IRMM-359a, IRMM-359b and IRMM-359c, in plastic sachets protected in an alumina pouch.

Compound	ERM-BC403 Cucumber
	<u>Mass fraction (mg/kg)</u>
Acetamiprid	0.064 ± 0.004
Azoxystrobin	0.639 ± 0.030
Carbendazim	0.074 ± 0.004
Chlorpyrifos	0.064 ± 0.005
Cypermethrin	0.045 ± 0.007
Diazinon	0.051 ± 0.004
α-Endosulfan	0.031 ± 0.006
Fenitrothion	0.054 ± 0.007
Imazalil	0.044 ± 0.004
Imidacloprid	0.627 ± 0.026
Iprodione	0.57 ± 0.05
Malathion	0.052 ± 0.007
Methomyl	0.059 ± 0.004
Tebuconazole	0.0611 ± 0.0026
Thiabendazole	0.056 ± 0.003

Availability: ERM-BC403 is available in sets of two glass vials containing each approximately 3.2 g of dried cucumber.

Compound	ERM-BC700 Soya bean		
	Mass fraction (mg/kg)		
Azoxystrobin	0.46	±	0.05
Carbendazim	0.197	±	0.019
Chlorpyrifos	0.067	±	0.006
Cypermethrin	0.052	±	0.010
Diazinon	0.068	±	0.006
Dieldrin	0.075	±	0.007
(α+β)-Endosulfan	0.49	±	0.05
Imidacloprid	0.075	±	0.009
Iprodione	0.104	±	0.015
Methomyl	0.046	±	0.006
Tebuconazole	0.048	±	0.005
α-Endosulfan	(0.08 – 0.15)		
β-Endosulfan	(0.28 – 0.47)		

Values in brackets are not certified.

Availability: ERM-BC700 is available in a glass vial containing 32 g of cryo-milled soya bean powder in an atmosphere of dry nitrogen.

2.2.3 CERTIFIED FOR THE TOTAL ELEMENT CONTENT

Substance	ERM-BD150 Skimmed milk powder			ERM-BD151 Skimmed milk powder		
	(g/kg)			(g/kg)		
Ca	13.9	±	0.8	13.9	±	0.7
Cl	9.7	±	2.0	9.8	±	1.2
K	17.0	±	0.7	17.0	±	0.8
Mg	1.26	±	0.10	1.26	±	0.07
Na	4.18	±	0.19	4.19	±	0.23
	(mg/kg)			(mg/kg)		
Cd	0.0114	±	0.029	0.106	±	0.013
Cu	1.08	±	0.06	5.00	±	0.23
Fe	4.6	±	0.5	53	±	4
Hg	0.060	±	0.007	0.52	±	0.04
I	1.73	±	0.14	1.78	±	0.17
Mn	0.289	±	0.018	0.29	±	0.03
Pb	0.019	±	0.004	0.207	±	0.014
Se	0.188	±	0.014	0.19	±	0.04
Zn	44.8	±	2.0	44.9	±	2.3

Availability: Glass bottles containing 20 g of skimmed milk powder.

Substance	ERM-BB184 Bovine muscle (mg/kg)	ERM-BB185 Bovine liver (mg/kg)	ERM-BB186 Pig kidney (mg/kg)	ERM-BB422 Fish muscle (mg/kg)	BCR-185R Bovine liver (mg/kg)
As	0.0234 ± 0.0026	0.0177 ± 0.0021	(0.008 ± 0.006)	12.7 ± 0.7	0.0330 ± 0.0029
Cd	0.0022 ± 0.0004	0.280 ± 0.014	1.09 ± 0.05	0.0075 ± 0.0018	0.544 ± 0.017
Cu	2.31 ± 0.09	598 ± 22	36.5 ± 1.8	1.67 ± 0.16	277 ± 5
Fe	75 ± 4	-	255 ± 13	9.4 ± 1.4	-
Hg	(0.0018 ± 0.0010)	-	(0.023 ± 0.011)	0.601 ± 0.030	-
I	-	-	-	1.4 ± 0.4	-
Mn	0.276 ± 0.013	13.1 ± 0.5	7.26 ± 0.25	0.368 ± 0.028	11.07 ± 0.29
Pb	-	0.0326 ± 0.0021	0.040 ± 0.005	-	0.172 ± 0.009
Se	0.45 ± 0.04	2.99 ± 0.18	10.3 ± 0.9	1.33 ± 0.13	1.68 ± 0.14
Zn	146 ± 7	143 ± 5	134 ± 5	16.0 ± 1.1	138.6 ± 2.1

Values in brackets are not certified.

Availability: BCR-185R is provided in units of 15 g as lyophilised powders, in screw-capped glass bottles.

ERM-BB184 is provided in units of 7 g as lyophilised powder, in brown-glass vials.

ERM-BB186 is provided in units of 10 g as lyophilised powders, in brown-glass vials.

ERM-BB186 and ERM-BB422 are provided in units of 10 g as lyophilised powders, in brown-glass vials.

Substance		BCR-191 Brown bread		
Cd	µg/kg	28.4	±	1.4
Cu	mg/kg	2.63	±	0.07
Fe	mg/kg	40.7	±	2.3
Mn	mg/kg	20.3	±	0.7
Pb	µg/kg	187	±	14
Zn	mg/kg	19.5	±	0.5

Availability: BCR-191 is provided in units of 25 g.

Substance		IRMM-804 Rice flour (mg/kg)		
As		0.049	±	0.004
Cd		1.61	±	0.07
Cu		2.74	±	0.24
Mn		34.2	±	2.3
Pb		0.42	±	0.07
Zn		23.1	±	1.9

Availability: Amber glass bottles containing about 15 g of powdered material.

Substance		BCR-273 Single cell protein (mg/g)			BCR-274 Single cell protein (µg/g)		
As					0.132	±	0.014
Ca		11.97	±	0.14			
Cd					0.030	±	0.002
Co					0.039	±	0.003
Cu					13.1	±	0.4
Fe		0.156	±	0.004			
K		2.22	±	0.05			
Mn					51.9	±	1.2
N		121.6	±	0.8			
P		26.8	±	0.4			
Pb					0.044	±	0.010
Se					1.03	±	0.05
Zn					42.7	±	1.0

Availability: BCR-273 and BCR-274 are provided in units of 10 g as a dry powder in sealed glass ampoules.

Substance		BCR-679 White cabbage		
B	mg/kg	(27.7	±	1.9)
Ba	mg/kg	(10.3	±	0.6)
Ca	mg/kg	(7768	±	655)
Cd	mg/kg	1.66	±	0.07
Cr	mg/kg	(0.6	±	0.1)
Cu	mg/kg	2.89	±	0.12
Fe	mg/kg	55.0	±	2.5
Hg	µg/kg	6.3	±	1.4
Mg	mg/kg	(1362	±	127)
Mn	mg/kg	13.3	±	0.5
Mo	mg/kg	14.8	±	0.5
Ni	mg/kg	27.0	±	0.8
P	mg/kg	(3307	±	241)
Sb	µg/kg	20.6	±	2.6
Sr	mg/kg	11.8	±	0.4
Tl	µg/kg	3.0	±	0.3
Zn	mg/kg	79.7	±	2.7

Values in brackets are not certified.

Availability: BCR-679 is provided in units of 15 g.

Substance	ERM-BC381 Rye Flour	ERM-BC382 Wheat Flour	BCR-383 Haricots Verts (Beans)	ERM-BB384 Lyophilised pork muscle
Major components (g / 100 g)				
Glucose			(12.4)	
Fructose			(4.6)	
Sucrose			(1.0)	
N (Kjeldahl)	1.562 ± 0.014	1.851 ± 0.017	1.05 ± 0.04	14.2 ± 0.4
Fat	1.36 ± 0.16	1.39 ± 0.17		8.99 ± 0.20
Starch ¹⁾	72.2 ± 1.9	81.2 ± 1.7		
Starch & Sugars ²⁾			(78.9)	
Dietary Fibre (Englyst)			(10.9)	
Dietary Fibre (AOAC 1985/1988) ³⁾			11.9 ± 0.6	
Ash at 550 °C	1.08 ± 0.11	0.60 ± 0.10	2.39 ± 0.10	4.51 ± 0.19
Essential elements (g/kg)				
Ca	0.32 ± 0.04	0.210 ± 0.018	2.85 ± 0.23	0.164 ± 0.021
K	3.35 ± 0.11	1.88 ± 0.08	7.8 ± 0.4	
Mg	0.567 ± 0.013	0.247 ± 0.010	(0.9)	1.03 ± 0.04
Na			0.075 ± 0.007	1.86 ± 0.15
P	2.01 ± 0.07	1.19 ± 0.07	(1.8)	8.7 ± 0.5

Values in brackets are not certified.

Availability: ERM-BC381 and ERM-BC382: 100 ml amber vial containing 37 g flour; ERM-BB384: 2 vials of 9 g lyophilised material; BCR-383: 100 g of powdered material in food grade laminated plastic/aluminium sachets sealed under nitrogen.

¹⁾ Mass fraction of polysaccharide in dry matter

²⁾ Mass fraction of monosaccharides in dry matter

³⁾ Prosky L. et al., J Assoc Off Anal Chem (1985) 68: 677-679, (1988) 71: 1017-1023

Substance	ERM-BD512 Dark chocolate (mg/kg)		
Cd mg/kg	0.302	±	0.013
Cu mg/kg	14.3	±	0.7
Mn mg/kg	15.7	±	0.6
Ni mg/kg	3.01	±	0.23

Availability: The sample consists of 6 chocolate pellets of about 0.5 g each packaged in individual brown glass vials within an aluminised sachet

Substance	ERM-CE101 Trout muscle (mg/kg)		
Hg	0.0219	±	0.0027
As	0.175	±	0.017
Fe	3.1	±	0.6
Mn	0.108	±	0.017
Ni	(0.051)	±	0.012)
Se	0.113	±	0.011
Zn	4.5	±	0.6

Values in brackets are not certified.

Availability: CRM consists of 40 g of homogenised, heat-treated fish muscle contained in a glass jar.

2.2.4 CERTIFIED FOR PROXIMATES AND CONVENTIONAL PROPERTIES

Substance		BCR-162R Soya-maize oil blend		
<u>Methyl ester of</u>		<u>Mass fraction fatty acid methyl ester / Total fatty acid methyl ester (g/100 g)</u>		
16:0	n-hexadecanoic acid	10.74	±	0.16
18:0	n-octadecanoic acid	2.82	±	0.04
18:1	n-octadecenoic acids		(26.5)	
18:2	n-octadecadienoic acids		(54.68)	
18:3	n-octadecatrienoic acids		(3.80)	
9c-18:1	n-octadecenoic acid	25.4	±	0.4
9c,12c-18:2	n-octadecadienoic acid	54.13	±	0.25
9c,12c,15c-18:3	n-octadecatrienoic acid	3.35	±	0.05

Values in brackets are not certified.

Availability: Each unit contains approximately 5.5 g soya-maize oil blend in 10 mL amber ampoule.

Substance		BCR-163 Beef-pork fat oil blend		
<u>Methyl ester of</u>		<u>Mass fraction fatty acid methyl ester / Total fatty acid methyl ester ¹⁾ (g/100 g)</u>		
14:0	n-tetradecanoic acids	2.29	±	0.04
16:0	n-hexadecanoic acids	25.96	±	0.30
16:1	n-hexadecenoic acids	2.58	±	0.16
18:0	n-octadecanoic acids	18.29	±	0.17
18:1	n-octadecenoic acids	38.3	±	0.4
18:2	n-octadecadienoic acids	7.05	±	0.17
18:3	n-octadecatrienoic acids	0.86	±	0.14
<u>Sterols</u>		<u>Mass fraction (mg/100 g) in fat</u>		
Cholesterol		134	±	5

Availability: In units of 2 × 5 mL in dark glass ampoules sealed under nitrogen.

1) Includes any geometric (i.e. cis/trans) and positional isomers, expressed as mass fraction of total fatty acid (methyl esters) derived from triglycerides.

2) These components are included in the Certified Value for this group of fatty acids.

The report gives additional indicative values: Fatty Acids and "Total" Sterol Mass Fraction.

Component	BCR-633 Tracers in anhydrous butter fat (mg/kg)		
β -Apo-8'-carotenic acid ethyl ester	26.5	±	1.4
β -Sitosterol	530	±	29
Stigmasterol	147	±	11
n-Heptanoic acid triglyceride	1.06×10^3	±	0.04×10^3

Availability: BCR-633 is supplied in units of about 5 g each in amber glass ampoules, which were filled under inert gas conditions (nitrogen).

Component	IRMM-801 Cocoa Butter (%)		
1,3-dipalmitoyl-2-oleyl-glycerol	18.14	±	0.26
1-palmitoyl-2-oleoyl-3-stearoyl-glycerol	44.68	±	0.30
1,2-dioleoyl-3-palmitoyl-glycerol	2.26	±	0.16
1,3-distearoyl-2-oleoyl-glycerol	31.63	±	0.29
1,2-dioleoyl-3-stearoyl-glycerol	3.29	±	0.17

Availability: IRMM-801 is supplied in units of 5 g in brown amber glass ampoules sealed under argon/helium.

	BCR-121 Wholemeal flour (mg/kg)	BCR-122 Margarine (mg/kg)	BCR-431 Brussels sprouts (mg/kg)	BCR-485 Mixed vegetables (mg/kg)	BCR-487 Pig's liver (mg/kg)	ERM-BD600 Whole milk powder (mg/kg)
B ₁ (thiamin)	4.63 ± 0.39			3.07 ± 0.34	8.6 ± 1.1	4.5 ± 0.6
B ₂ (riboflavin)					106.8 ± 5.6	16.7 ± 1.4
B ₆ (total pyridoxine)	4.10 ± 1.02			4.8 ± 0.8	19.3 ± 2.9	
B ₁₂ (cyanocobalamin)			4830 ± 240		1.12 ± 0.09	0.32 ± 0.07
C (total ascorbate)						74 ± 11
D ₃ (cholecalciferol)		0.125 ± 0.007				
E (tocopherol)		241 ± 12				86 ± 15
Folate (total)	0.50 ± 0.07			3.15 ± 0.28	13.3 ± 1.3	(0.55 ± 0.16)
Niacin			43 ± 3			(8.0 ± 2.8)
Trans- α -carotene				10.5 ± 0.6		
Trans- β -carotene				23.7 ± 1.5		
Total- α -carotene				9.8 ± 0.7		
Total- β -carotene				25.6 ± 1.2		
Lutein				12.5 ± 0.8		
Lutein + zeaxanthin				22.3 ± 1.3		
5-methyltetrahydro- folic acid (5-MTHF)				(2.14 ± 0.42)		

Values in brackets are not certified;

Availability: BCR-121: about 50 g unit size. - BCR-122: can filled with about 200 g.

BCR-431: about 20 g lyophilised and powdered material in food grade plastic/aluminium laminated sachets under nitrogen.

BCR-485: about 25 g unit size. - BCR-487: about 15 g unit size. - ERM-BD600: sachet with about 100 g.

	Description	Amylose mass fraction (g/100 g)
BCR-465	Rice flour (low level)	15.40 ± 0.30
BCR-466	Rice flour (medium level)	23.1 ± 0.5
BCR-467	Rice flour (high level)	27.7 ± 0.8

Availability: 10 g of ground rice flour in vacuum sealed laminated polyester/aluminium/polyethylene sachets.

Substance	BCR-644 Artificial foodstuff	BCR-645 Artificial foodstuff
<u>Mass fraction on dry mass basis (g / 100 g)</u>		
Fructose	16.2 ± 1.1	
Sucrose	10.81 ± 0.25	26.2 ± 0.8
Lactose	15.85 ± 0.29	27.8 ± 0.6
Starch / glucose	35.1 ± 1.2	25.2 ± 0.9

Availability: BCR-644 and BCR-645 are supplied in units of approximately 50 g in 125 mL amber glass bottles.

	BCR-651 Beer (% ethanol v/v)	BCR-652 Beer (% ethanol v/v)	BCR-653 Wine (% ethanol v/v)
Ethanol	0.505 ± 0.006	0.051 ± 0.002	0.539 ± 0.007

Availability: Amber glass ampoule, flushed with nitrogen, containing 10 mL of sample.

Substance	ERM-BC381 Rye Flour	ERM-BC382 Wheat Flour	BCR-383 Haricots Verts (Beans)	ERM-BB384 Lyophilised pork muscle
<u>Major components (g / 100 g)</u>				
Glucose			(12.4)	
Fructose			(4.6)	
Sucrose			(1.0)	
N (Kjeldahl)	1.562 ± 0.014	1.851 ± 0.017	1.05 ± 0.04	14.2 ± 0.4
Fat	1.36 ± 0.16	1.39 ± 0.17		8.99 ± 0.20
Starch ¹⁾	72.2 ± 1.9	81.2 ± 1.7		
Starch & Sugars ²⁾			(78.9)	
Dietary Fibre (Englyst)			(10.9)	
Dietary Fibre (AOAC 1985/1988) ³⁾			11.9 ± 0.6	
Ash at 550 °C	1.08 ± 0.11	0.60 ± 0.10	2.39 ± 0.10	4.51 ± 0.19
<u>Essential elements (g/kg)</u>				
Ca	0.32 ± 0.04	0.210 ± 0.018	2.85 ± 0.23	0.164 ± 0.021
K	3.35 ± 0.11	1.88 ± 0.08	7.8 ± 0.4	
Mg	0.567 ± 0.013	0.247 ± 0.010	(0.9)	1.03 ± 0.04
Na			0.075 ± 0.007	1.86 ± 0.15
P	2.01 ± 0.07	1.19 ± 0.07	(1.8)	8.7 ± 0.5

Values in brackets are not certified.

Availability: ERM-BC381 and ERM-BC382: 100 ml amber vial containing 37 g flour; ERM-BB384: 2 vials of 9 g lyophilised material; BCR-383: 100 g of powdered material in food grade laminated plastic/aluminium sachets sealed under nitrogen.

¹⁾ Mass fraction of polysaccharide in dry matter

²⁾ Mass fraction of monosaccharides in dry matter

³⁾ Prosky L. et al., J Assoc Off Anal Chem (1985) 68: 677-679, (1988) 71: 1017-1023

Substance	BCR-685 Skim milk powder (g / 100 g)		
<u>Mass fraction</u>			
Crude protein (Kjeldahl-N x 6.38)	38.2	±	0.4
Fat	0.96	±	0.12

Availability: BCR-685 is supplied in units of about 50 g, in amber glass bottles.

Substance	BCR-708 Dairy feed			
<u>Mass fraction</u>				
Crude protein	240	±	12	g/kg
Crude oils and fats	65	±	8	g/kg
Crude fibre	93	±	14	g/kg
Crude ash	50.0	±	3.0	g/kg
Ca	4.8	±	0.5	g/kg
Cu	37	±	4	mg/kg
Mg	1.47	±	0.22	g/kg
P	4.7	±	0.4	g/kg

Availability: 100 mL amber glass bottle containing about 40 g of material.

Substance	ERM-BC514 Haricot beans (g/kg)	ERM-BC515 Carrot (g/kg)	ERM-BC516 Apple (g/kg)	ERM-BC517 Full fat soya flour (g/kg)	ERM-BD518 Bran breakfast cereal (g/kg)
<u>Dietary Fibres</u>					
Methods used:					
AOAC 1990	256 ± 5	311 ± 6	164 ± 4	126 ± 5	302 ± 8
Englyst (by gas chromatography)	198 ± 10	271 ± 6	137 ± 5	119 ± 7	241 ± 8
Uppsala	237 ± 15	298 ± 11	162 ± 8	128 ± 9	276 ± 18
AOAC 1992 MES-TRIS	259 ± 15	295 ± 4	149 ± 10	124 ± 21	305 ± 6
Englyst (by colorimetry)	201 ± 6	252 ± 12	134 ± 5	123 ± 8	250 ± 11

Availability: ERM-BC514 to BC517 and ERM-BD518 are supplied in units of approximately 25 g in food grade glass bottles sealed under vacuum.

	BCR-537 Plastic film A (mg/dm ²)	BCR-539 Plastic film C (mg/dm ²)
Overall migration by total immersion in olive oil 10 days at 40 °C	8.3 ± 1.0	6.1 ± 1.0
Overall migration by single sided cell in olive oil 10 days at 40 °C		
Overall migration by pouch in olive oil 10 days at 40 °C		

Availability: PET/foil/PE heat sealed pouches containing double thickness sheets of additive free linear low density polyethylene of (33 x 22.5) cm for BCR-537 and (45 x 25) cm for BCR-539.

2.2.5 CERTIFIED FOR MICROBIOLOGICAL PROPERTIES

BCR-528: Capsules filled with milk powder artificially contaminated by *Bacillus cereus* (ATCL 9139)

Procedure	Number of colony forming particles in one analytical portion ¹⁾	
	Certified value ²⁾	95 % confidence limits
MEYP (ISO 7932) after 24 h incubation	53.4	51.7 - 55.2
MEYP (ISO 7932) after 48 h incubation	53.7	52.1 - 55.4
PEMBA (L 00.00 – 25) ³⁾ after 24 h incubation	55.0	52.8 - 57.4
PEMBA (L 00.00 – 25) ³⁾ after 48 h incubation	55.8	53.6 - 58.0

Availability: BCR-528 is provided in containers holding 10 gelatine capsules filled with artificially contaminated milk powder.

1) Number of colony forming particles of *Bacillus cereus* determined in one analytical portion. Analytical portion: A volume of (0.100 ± 0.002) mL from 10 mL peptone saline solution in which one capsule has been reconstituted.

2) This value is the geometric mean of 11 accepted sets of data, independently obtained by 11 laboratories.

3) German Federal Food Law method number.

ERM-BD001: Milk powder certified for the somatic cell count (SCC)

	Somatic cell count (SCC) [cells/ml]	
	ISO13366-1	ISO13366-1 & ISO13366-2
ERM-DB001a	64000 ± 8000	62000 ± 6000
ERM-DB001b	1202000 ± 121000	1166000 ± 79000

Availability: ERM-BD001 is supplied in a set consisting of 1 bottle of ERM-BD001a and 1 bottle of ERM-BD001b. Each bottle contains 14 g of milk powder in an inert gas atmosphere.

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

SfiI digested DNA fragments in the size interval 50 kb – 90 kb		Fragment length (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

Availability: Each vial contains one agarose insert of undigested genomic DNA of *Bacillus licheniformis* DSM 5749 for PFGE.

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

SfiI digested DNA fragments in the size interval 50 kb – 90 kb		Fragment length (kb)	
Band no	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

Availability: Each vial contains one agarose insert of undigested genomic DNA of *Bacillus subtilis* DSM 5750 for PFGE.

IRMM-313: Genomic DNA (gDNA) of *Campylobacter coli* (CNET068) and *Campylobacter jejuni* (CNET112) in agarose inserts for Pulsed Field Gel Electrophoresis (PFGE)

SmaI digested DNA fragments		DNA fragment sizes (kb)		
Fragment no	2	458.8	±	2.0
	3	351.7	±	2.4
	4	303.0	±	2.3
	5	263.2	±	1.9
	6	188.2	±	1.2
	7	173.2	±	1.3
	8	131.1	±	1.5
	9	114.4	±	1.2
	10	95.5	±	1.4
	11	81.2	±	1.7
	12	54.9	±	2.2
	13	40.7	±	1.6
	14	(25.4	±	1.3)
	15	(17.6	±	0.3)
	16	(10.9	±	0.4)

Values in brackets are not certified.

Availability: Each vial contains one agarose plug for PFGE with undigested genomic DNA of *Campylobacter coli* CNET068 and *Campylobacter jejuni* CNET112 embedded.

ERM-AD624: Certification of the PFGE fragment sizes of *Listeria monocytogenes* (strain H2446) DNA in agarose plugs

<i>Listeria monocytogenes</i> Ascl-digested DNA fragments		Certified value (kb)		
Fragment no	1	1106	±	64
	2	462.5	±	2.4
	3	404.1	±	1.9
	4	392.2	±	2.1
	5	249.9	±	1.4
	6	221.5	±	1.4
	7	126.2	±	1.1
	8	109.1	±	1.1
	9	77.8	±	0.9
	10	50.2	±	1.7
	11	43.7	±	2.7

Availability: Each unit consists of one vial containing one agarose plug for PFGE with embedded undigested DNA of *Listeria monocytogenes*.

IRMM-351: *Escherichia coli* 0157 in material spheres

	Number of colony forming unit (cfu)		
cfu per material sphere on nutrient agar	4	±	2
cfu per material sphere on enterohemolysin agar	4	±	2

Availability: Each vial contains one material sphere of *Escherichia coli* 0157 (NCTC 12900).

IRMM-352: *Salmonella enteritidis* in material spheres

	Number of colony forming unit (cfu)		
cfu per material sphere on nutrient agar	5	±	2
cfu per material sphere on xylose lysine deoxycholate agar	4	±	2

Availability: Each vial contains one material sphere of *Salmonella enteritidis* (NCTC 12694).

IRMM-354: *Candida albicans* in material spheres

	Number of colony forming unit (cfu)		
cfu per material sphere on nutrient agar	917	±	168
cfu per material sphere on Oxytetracyclin-Glucose-Yeast Extract agar (OGYE)	912	±	173

Availability: Each vial contains one material sphere of *Candida albicans* (NCPF 3179).

IRMM-355: *Enterococcus faecalis* in material spheres

	Number of colony forming unit (cfu)		
cfu per material sphere on horse blood agar	890	±	135
cfu per material sphere on Slanetz and Bartley agar	823	±	126

Availability: Each vial contains one material sphere of *Enterococcus faecalis* (CIP 106877).

IRMM-447: Genomic DNA (gDNA) of *Listeria monocytogenes* (strain 4B, NCTC 11994) with certified identity

	Indicative value (µg)		
Mass of genomic DNA <i>Listeria monocytogenes</i> per vial	(1.1	±	0.7)

Values in brackets are not certified.

Availability: Vial containing approximately 1.1 µg genomic DNA in lyophilised form and closed under argon atmosphere.

IRMM-448: Genomic DNA (gDNA) of *Campylobacter Jejuni* (NCTC 11351) with certified identity

Property			
Identity	Confirmed by <i>ceuE</i> gene		
Mass of genomic DNA per vial (ng)	(71	±	39)

Values in brackets are not certified.

Availability: Vial containing approximately 71 ng genomic DNA in lyophilised form and closed under argon atmosphere.

IRMM-449: Genomic DNA (gDNA) of *Escherichia coli* O157 (strain EDL 933) with certified identity

	Indicative value (µg)		
Mass of genomic DNA <i>Escherichia coli</i> per vial	(1.3	±	0.7)

Values in brackets are not certified.

Availability: Vial containing approximately 1.3 µg genomic DNA in lyophilised form and closed under argon atmosphere.

2.2.6 CERTIFIED FOR VETERINARY DRUGS

	Description	Substance	Hormones in lyophilised bovine urine Mass concentration in reconstituted sample (µg/L)		
			Content	Relevant below the certified value	Relevant above the certified value
BCR-502	Bovine urine	Clenbuterol Salbutamol	< 0.1 < 0.2		
BCR-503	Bovine urine	Clenbuterol Salbutamol	2.5 2.3	0.4 0.6	0.4 0.9
BCR-504	Bovine urine	Clenbuterol Salbutamol	6.0 5.6	0.5 1.1	0.7 1.9

Value in brackets is not certified.

Availability: Units of lyophilised urine equivalent to about 5.0 mL in vials sealed under nitrogen.

	Description	Substance	Hormones in lyophilised bovine urine Mass concentration in reconstituted sample (µg/kg)		
ERM-BB386⁽¹⁾	Bovine urine	Diethylstilboestrol (DES)	< 0.6		
		Dienoestrol (DE)	< 0.6		
		Hexoestrol (HEX)	< 0.4		
ERM-BB389⁽²⁾	Bovine urine	Diethylstilboestrol (DES)	1.1	±	0.5
		Dienoestrol (DE)	5.5	±	1.4
		Hexoestrol (HEX)	6.1	±	0.9

Availability: ⁽¹⁾ Vial containing approximately 0.36 g lyophilised bovine urine corresponding to 5.20 g of fresh bovine urine.

⁽²⁾ Vial containing approximately 0.31 g lyophilised bovine urine corresponding to 5.18 g of fresh bovine urine.

	Description	Substance	Mass fraction in reconstituted sample (µg/kg)*		
BCR-648	Bovine liver	Clenbuterol	< 0.5		
BCR-649	Bovine liver	Clenbuterol	1.2	±	0.3
BCR-474	Bovine liver	17 α-trenbolone	< 0.5		
BCR-475	Bovine liver	17 α-trenbolone	7.6	±	2.2
BCR-412	Bovine muscle	Diethylstilbestrol	< 0.1		
BCR-673	Bovine eye	Clenbuterol	< 0.5		
BCR-674	Bovine eye	Clenbuterol	9.4	±	1.1

Availability: BCR-648 and -649 are provided in units of 10 g lyophilised bovine liver in vials sealed under argon. BCR-474 and -475 are sold as set and provided in brown glass vials in units of 2.8 g lyophilised liver corresponding to 10 g fresh liver. BCR-412 is provided in brown glass vials as lyophilised bovine muscle in units equivalent to about 5 g of fresh bovine tissue.

BCR-673 and BCR-674 are provided in brown glass vials containing about 0.1 g of material.

	BCR-444 Porcine muscle (blank) (µg/kg)	ERM-BB130 Pork muscle (µg/kg)
Chloramphenicol	< 0.2	0.230 ± 0.021

Availability: BCR-444 is provided in brown glass vials, ERM-BB130 in an amber glass bottle, each containing about 7 g of lyophilised pork muscle tissue.

	Description	Substance	Mass fraction in reconstituted sample (mg/kg)		
BCR-695	Pig liver	Chlortetracycline	< 0.004		
BCR-696	Pig liver	Chlortetracycline	0.58	±	0.11
BCR-697	Pig muscle	Chlortetracycline	< 0.006		
BCR-706	Pig kidney	Chlortetracycline	< 0.005		
BCR-707	Pig kidney	Chlortetracycline	1.30	±	0.20

Availability: These CRMs are provided in sealed glass vials containing lyophilised tissue equivalent to 5 g of fresh tissue.

	Description	Substance	(µg/kg)		
ERM-BB492	Milk powder	Sum of oxytetracycline and 4-epi-oxytetracycline	101	±	11
ERM-BB493	Milk powder	Sum of oxytetracycline and 4-epi-oxytetracycline	< 5		

Availability: ERM-BB492 and ERM-BB493: Units of approximately 5.5 g of spray-dried partially skimmed milk; sold as set of 1 unit ERM-BB492 and ERM-BB493 each.

	BCR-725 Salmon tissue (µg/kg)
Flumequine	1170 ± 210
Oxolinic acid	600 ± 100

Availability: BCR-725 is provided in amber glass vials containing 2.2 g of lyophilised salmon tissue material.

	ERM-BB125 Egg powder (mg/kg)
Fipronil sulfone	0.060 ± 0.005
Sum of fipronil and fipronil sulfone expressed as fipronil	0.058 ± 0.005

Availability: ERM-BB125 is provided in glass vials containing 5 g of egg powder in an atmosphere of dry argon..

	ERM-BB124 Pork muscle		
Nitroimidazoles in the reconstituted material	Mass fraction (µg/kg)		
Ronidazole (RNZ)	2.09	±	0.25
Metronidazole (MNZ)	1.93	±	0.15
2-hydroxymethyl-1-methyl-5-nitroimidazole (HMMNI)	0.69	±	0.09
Hydroxymetronidazole (MNZOH)	6.2	±	0.9
Hydroxyipronidazole (IPZOH)	1.67	±	0.12
Dimetridazole (DMZ)	< 0.25		

Availability: ERM-BB124 is provided in amber glass bottles containing 10 g of lyophilised pork muscle tissue.

2.2.7 CERTIFIED FOR IDENTITY

Ewes'/Goats' Curd (BCR-599)

BCR-599 consists of a set of two freeze dried curd materials made from a mixture of ewes' and goats' milk, intended to detect adulteration by cows' milk in cheeses made from ewes' milk, goats' milk and mixtures thereof, according to the reference method described in Commission Regulation (EC) No. 1081/96. The 0 % material is not adulterated, the 1 % material is adulterated milk 1 % of cows' milk.

Availability: BCR-599 is available as a set of two brown glass vials containing each about 15 g of lyophilised curd powder under Argon atmosphere.

Peanut Test Material Kit (IRMM-481)

The peanut test material is **not** a reference material, because it could not be tested for homogeneity and stability. The intention is to make a standard peanut matrix available to the research community who may wish to conduct wider studies on similar matrices pre-treated in different ways. At present only the nominal particle size and the pre-treatment applied to the peanuts before milling can be guaranteed as well as the tolerances of weighing of 1.000 ± 0.015 g of each variety in the peanut mixture provided in the kit.

	Peanut variety, origin	Peanut treatment	Nominal net weight of peanut powder	Colour code on cap
IRMM-481a	Runners, Argentina	blanched, strong air-roasting	2 g	blue
IRMM-481b	Common Natal, South-Africa	raw, mild air-roasting	2 g	green
IRMM-481c	Virginia, USA,	blanched, strong oil roasting	2 g	gold
IRMM-481d	Virginia, China	blanched, mild oil-roasting	2 g	red
IRMM-481e	Jumbo Runners, USA,	blanched only	2 g	brown
IRMM-481f	Mixture of 481a to 481e	all above	5 g (1 g of each variety 481a – 481e)	silver

Availability: IRMM-481 consists of a kit with six different vials containing non-salted peanut powders with a nominal particle size from 0.5 to 1.0 mm. Five of the vials are filled with approximately 2 g of each variety. The sixth vial contains a mixture of all five varieties provided in IRMM-481a to 481e. All vials have been filled with argon prior to capping to provide a protective atmosphere.

Calibration kit for the detection of ruminant material in feed by PCR

The calibration kit for ruminant detection by PCR is a certified reference material and should be used to construct calibration curves at low copy number concentration to determine a cut-off value.

	Copy number concentration of the plasmid [cp/µL]		
ERM-AD482a	123	±	30
ERM-AD482b	32	±	7
ERM-AD482c	8	±	3

Availability: ERM-AD482 consists of a kit of three plasmid solutions. Each of the three vials contains approximately 1000 µL of plasmid solution.

Calibration kit for the detection of porcine material in feed by PCR

The calibration kit for porcine detection by PCR is a certified reference material and should be used to construct calibration curves at low copy number concentration to determine a cut-off value.

	Copy number concentration of the plasmid [cp/μL]		
ERM-AD483a	126	±	30
ERM-AD483b	34	±	6
ERM-AD483c	9	±	3

Availability: ERM-AD483 consists of a kit of three plasmid solutions. Each of the three vials contains approximately 1000 μL of plasmid solution.

Identity of fish species

	Certified value – Taxon ¹
EURM-020	Hippoglossus hippoglossus (Atlantic halibut)

Availability: EURM-020 is available in glass vials containing at least 200 mg of dried Hippoglossus hippoglossus (Atlantic halibut) powder.

¹ Determined via genetic identification based upon the sequencing results of two specific regions of mitochondrial DNA (also called DNA barcodes): the cytochrome b gene (cytb) and the cytochrome c oxidase subunit I gene (COI).

2.2.8 OTHERS

Substance	ERM-BD273 Toasted bread		
	<u>Mass fraction</u> (ng/g)		
Acrylamide	425	±	29

Availability: ERM-BD273 is available in a brown glass vial containing about 30 g of toasted bread powder.

Radionuclide activity concentration at reference date 1 January 2009, 00h00 UTC	IRMM-426 Wild berries (Bq kg ⁻¹)		
¹³⁷ Cs	780	±	70
⁹⁰ Sr	153	±	29
⁴⁰ K	253	±	25

Availability: IRMM-426 is available in bottles containing about 100 g of material.