

Reference Material and Inter-laboratory Quality Control Materials Product Summary

September 2023

Version: 2

Assigned Values: Values provided have been generated from Inter-Laboratory Proficiency Programmes (ILPP) or from data provided by laboratories for the purpose of characterisation. The reference material values provided in this summary are the mean of the results after the exclusion of statistical outliers. The Assigned Range provided for the Inter-laboratory QC Materials is the range of test values available for purchase. Each Reference and QC Material comes with a Data Summary Sheet.

Missing Values and Available Tests: For Reference Materials where property values do not meet the statistical criteria, the summary values have not been provided. For this reason, not all tests will be available for every Reference Material of the same matrix. However, if there are 3 or more data points available, an Assigned Value will be provided with the corresponding QC material.

Sample Sizes: Available sample sizes are shown for reference materials.

Note: When ordering QC materials, please quote both the Product ID AND the process run

QC Material: Anhydrous Milk Fat - Anhydrous Milk Fat

Matrix: Anhydrous Milk Fat	Product ID	13758-QC	14791-QC	15014-QC
	Process Run	PR10755	PR10755	PR11024
	Expiry Date	29 Oct 23	15 Dec 23	10 Jan 24
	Sample Size	100mL	100mL	100mL
	Alkalinity (mg/kg)	4	3	5
	Carotene (mg/kg)	9.1	7.9	7.7
	Free Fatty Acids (%)	0.13	0.14	0.14
	Moisture KF (%)	0.06	0.07	0.06
	Peroxide Value (meq O ₂ /kg)	0.03	0.04	0.05

QC Material: Milk Powders for Bulk Density - Instant SMP (100 taps)

Matrix: Milk Powders for Bulk Density	Product ID	13665-QC	13664-QC
	Process Run	PR11024	PR10755
	Expiry Date	22 Feb 24	3 Nov 23
	Sample Size	120g	120g
	Bulk Density 100 Taps (g/ml)	0.72	0.76

QC Material: Milk Powders for Bulk Density - Instant WMP (100 taps)

Matrix: Milk Powders for Bulk Density	Product ID	13666-QC
	Process Run	PR11024
	Expiry Date	22 Feb 24
	Sample Size	120g
	Bulk Density 100 Taps (g/ml)	0.55

QC Material: Milk Powders for Bulk Density - Whole Milk Powder (100 taps)

Matrix: Milk Powders for Bulk Density	Product ID	12986-QC
	Process Run	PR10755
	Expiry Date	3 Nov 23
	Sample Size	120g
	Bulk Density 100 Taps (g/ml)	0.58

Reference Material: Butter - Salted Butter

Matrix: Butter	Product ID	833-C-1
	Expiry Date	28 Dec 23
	Sample Size	55g
	Fat by Difference (%)	81.61
	Moisture Oven/Hot Plate (%)	15.61
	Salt (%)	1.77
	SNF (%)	2.78

QC Material: Butter - Salted Butter

Matrix: Butter	Product ID	14630-QC
	Process Run	PR10923
	Expiry Date	28 Dec 23
	Sample Size	55g
	Fat by Difference (%)	81.61
	Moisture Oven/Hot Plate (%)	15.59
	Salt (%)	1.76
	SNF (%)	2.76

Reference Material: Butter - Unsalted Butter

Matrix: Butter	Product ID	772-C-2
	Expiry Date	3 Nov 23
	Sample Size	55g
	Fat by Difference (%)	82.96
	Moisture Oven/Hot Plate (%)	15.65
	SNF (%)	1.37

QC Material: Butter - Unsalted Butter

Matrix: Butter	Product ID	13657-QC
	Process Run	PR10755
	Expiry Date	3 Nov 23
	Sample Size	55g
	Fat by Difference (%)	83.00
	Moisture Oven/Hot Plate (%)	15.65
	SNF (%)	1.39

QC Material: Butter for pH testing - Lactic Butter

Matrix: Butter for pH testing	Product ID	13659-QC
	Process Run	PR11024
	Expiry Date	22 Feb 24
	Sample Size	110g
	pH (pH units)	4.72

Reference Material: Casein - Lactic Acid Casein (30 Mesh)

Matrix: Casein	Product ID	776-C-1
	Expiry Date	20 Dec 23
	Sample Size	150g
	Ash (%)	1.77
	Fat SBR (%)	0.9
	Free Acidity (ml/g)	0.15
	Lactose (%)	0.12
	Moisture 102°C (%)	11.49
	pH (pH units)	4.2
	Protein Kjeldahl (%)	86.74

Reference Material: Casein - Mineral Acid Casein (30 Mesh)

Matrix: Casein	Product ID	775-C-1
	Expiry Date	30 Mar 24
	Sample Size	150g
	Ash (%)	1.70
	Fat SBR (%)	0.5
	Moisture 102°C (%)	9.27
	Protein Kjeldahl (%)	89.60

Reference Material: Caseinate - Calcium Caseinate

Matrix: Caseinate	Product ID	774-C-1
	Expiry Date	17 Mar 24
	Sample Size	80g
	Ash (%)	3.97
	Fat SBR (%)	0.6
	Moisture 102°C (%)	4.83
	pH 5% Solution (pH units)	7.06
	Protein Kjeldahl (%)	91.80

Reference Material: Caseinate - Sodium Caseinate

Matrix: Caseinate	Product ID	773-C-1
	Expiry Date	2 Aug 24
	Sample Size	80g
	Fat SBR (%)	0.6
	Moisture 102°C (%)	4.89
	pH 5% Solution (pH units)	6.69
	Protein Kjeldahl (%)	92.02

Reference Material: Cheese - Gouda Cheese

Matrix: Cheese	Product ID	859-C-1
	Expiry Date	16 May 24
	Sample Size	75g
	Calcium (mmol/kg)	198
	Moisture 105°C (%)	39.5
	pH (pH units)	5.33
	Protein (%)	25.28
	Salt (%)	2.00

QC Material: Cheese - Gouda Cheese

Matrix: Cheese	Product ID	14658-QC
	Process Run	PR11024
	Expiry Date	16 May 24
	Sample Size	75g
	Calcium (mmol/kg)	203
	Fat SBR (%)	29.82
	Moisture 105°C (%)	39.4
	pH (pH units)	5.35
	Protein (%)	25.24
	Salt (%)	2.01

Reference Material: Cheese - Mozzarella Cheese

Matrix: Cheese	Product ID	840-C-1
	Expiry Date	26 Oct 23
	Sample Size	75g
	Fat SBR (%)	22.73
	Moisture 105°C (%)	47.4
	pH (pH units)	5.78
	Salt (%)	1.63

QC Material: Cheese - Mozzarella Cheese

Matrix: Cheese	Product ID	13680-QC
	Process Run	PR10923
	Expiry Date	26 Oct 23
	Sample Size	75g
	Calcium (mmol/kg)	175
	Fat SBR (%)	22.77
	Moisture 105°C (%)	47.4
	pH (pH units)	5.78
	Protein (%)	25.20
	Salt (%)	1.62

QC Material: Functional Powders - Instant WMP

Matrix: Functional Powders	Product ID	14668-QC	14666-QC	14667-QC	14669-QC	14665-QC
	Process Run	PR11024	PR10755	PR10755	PR11024	PR10755
	Expiry Date	22 Feb 24	3 Nov 23	3 Nov 23	22 Feb 24	3 Nov 23
	Sample Size	120g	120g	120g	120g	120g
	Coffee Sediment (mL)	0.3	0.4	0.4	0.5	0.2
	Cold SDP 25°C (A-E)	C	C	C	C	C
	Dispersibility (1_7)	1	1	1	2	2
	Sediment 85°C (mL)	0.2	0.2	0.2	0.2	0.2
	Wettability 25°C (secs)	6	6	6	13	7

QC Material: Functional Powders - Instant WMP

Matrix: Functional Powders	Product ID	14670-QC
	Process Run	PR11024
	Expiry Date	22 Feb 24
	Sample Size	120g
	Coffee Sediment (mL)	0.5
	Cold SDP 25°C (A-E)	C
	Dispersibility (1_7)	2
	Sediment 85°C (mL)	0.2

QC Material: Lactose - Edible Lactose

Matrix: Lactose	Product ID	13698-QC
	Process Run	PR10495
	Expiry Date	8 Jun 25
	Sample Size	80g
	Moist LOD (%)	0.03
	pH 10% solution (pH units)	4.53
	Total Moisture KF (%)	5.00

QC Material: Lactose - Pharmaceutical Lactose

Matrix: Lactose	Product ID	13699-QC
	Process Run	PR10495
	Expiry Date	13 Jun 25
	Sample Size	80g
	Moist LOD (%)	0.05
	pH 10% solution (pH units)	4.32
	Total Moisture KF (%)	5.07

Reference Material: Powders for Micronutrients - WPC80 (Cheese)

Matrix: Powders for Micronutrients	Product ID	812-C-1
	Expiry Date	11 May 25
	Sample Size	30g
	Calcium (mg/100g)	305
	Chloride (mg/100g)	61
	Iron (mg/kg)	11.0
	Magnesium (mg/100g)	50.9
	Phosphorus (mg/100g)	438
	Potassium (mg/100g)	250
	Sodium (mg/100g)	1145

QC Material: Powders for Micronutrients - WPC80 (Cheese)

Matrix: Powders for Micronutrients	Product ID	13705-QC
	Process Run	PR10628
	Expiry Date	11 May 25
	Sample Size	30g
	Calcium (mg/100g)	314
	Chloride (mg/100g)	56
	Copper (mg/kg)	1.11
	Iodine (µg/100gm)	10
	Iron (mg/kg)	11.3
	Magnesium (mg/100g)	51.4
	Phosphorus (mg/100g)	447
	Potassium (mg/100g)	250
	Sodium (mg/100g)	1119
	Zinc (mg/kg)	3.4

Reference Material: Powders for Micronutrients - Instant WMP

Matrix: Powders for Micronutrients	Product ID	721-C-1	762-C-1	813-C-1
	Expiry Date	9 Apr 24	6 Nov 24	7 Apr 25
	Sample Size	30g	30g	30g
	Calcium (mg/100g)	895		765
	Chloride (mg/100g)	881		572
	Copper (mg/kg)	0.14	0.24	0.15
	Iron (mg/kg)	109.7	1.7	108.9
	Magnesium (mg/100g)		72.2	
	Manganese (µg/100g)	26	22	
	Phosphorus (mg/100g)		655	590
	Potassium (mg/100g)	1256	1044	806
	Sodium (mg/100g)	346	210	225

QC Material: Powders for Micronutrients - Instant WMP

Matrix: Powders for Micronutrients	Product ID	13703-QC	14682-QC
	Process Run	PR10628	PR10755
	Expiry Date	7 Apr 25	9 Oct 25
	Sample Size	30g	30g
	Calcium (mg/100g)	777	788
	Chloride (mg/100g)	571	577
	Copper (mg/kg)	0.15	0.24
	Iodine (µg/100gm)	42	
	Iron (mg/kg)	109.5	1.4
	Magnesium (mg/100g)	76.9	70.0
	Manganese (µg/100g)	29	22
	Phosphorus (mg/100g)	599	631
	Potassium (mg/100g)	806	999
	Sodium (mg/100g)	226	204
	Zinc (mg/kg)	51.0	24.7

Reference Material: Powders for Micronutrients - WPC80 (Mineral Acid)

Matrix: Powders for Micronutrients	Product ID	719-C-1	761-C-1
	Expiry Date	20 Mar 24	24 Nov 24
	Sample Size	30g	30g
	Calcium (mg/100g)	373	354
	Chloride (mg/100g)		105
	Copper (mg/kg)	0.38	0.51
	Iron (mg/kg)	4.2	3.3
	Magnesium (mg/100g)	27.8	22.8
	Manganese (µg/100g)	14	11
	Potassium (mg/100g)	1813	1926
	Sodium (mg/100g)	81	38
	Zinc (mg/kg)	19.5	15.8

QC Material: Powders for Micronutrients - WPC80 (Mineral Acid)

Matrix: Powders for Micronutrients	Product ID	14685-QC
	Process Run	PR10755
	Expiry Date	16 Sep 25
	Sample Size	30g
	Calcium (mg/100g)	353
	Chloride (mg/100g)	112
	Copper (mg/kg)	0.58
	Iron (mg/kg)	2.7
	Magnesium (mg/100g)	21.8
	Phosphorus (mg/100g)	312
	Potassium (mg/100g)	1685
	Sodium (mg/100g)	39
	Zinc (mg/kg)	15.9

Reference Material: Powders for Micronutrients - Skim Milk Powder

Matrix: Powders for Micronutrients	Product ID	722-C-1	814-C-1	763-C-1
	Expiry Date	16 Feb 24	16 Feb 24	26 Dec 24
	Sample Size	30g	30g	30g
	Calcium (mg/100g)	1394	1345	1189
	Chloride (mg/100g)	1190	1185	1183
	Copper (mg/kg)			0.23
	Iron (mg/kg)	2.3		1.5
	Magnesium (mg/100g)	126.0	124.3	118.0
	Manganese (µg/100g)	41	41	26
	Phosphorus (mg/100g)	1034	996	971
	Potassium (mg/100g)	1530	1504	1871
	Sodium (mg/100g)	448	438	385
	Zinc (mg/kg)	43.1	42.7	34.5

QC Material: Powders for Micronutrients - Skim Milk Powder

Matrix: Powders for Micronutrients	Product ID	13701-QC	14679-QC
	Process Run	PR10628	PR10755
	Expiry Date	16 Feb 24	13 Oct 25
	Sample Size	30g	30g
	Calcium (mg/100g)	1369	1200
	Chloride (mg/100g)	1185	1006
	Copper (mg/kg)	0.29	0.45
	Iodine (µg/100gm)	98	
	Iron (mg/kg)	2.5	1.5
	Magnesium (mg/100g)	124.4	112.6
	Manganese (µg/100g)	43	30
	Phosphorus (mg/100g)	1017	1018
	Potassium (mg/100g)	1501	1790
	Sodium (mg/100g)	440	346
	Zinc (mg/kg)	43.7	34.8

Reference Material: Milk Powder - Buttermilk Powder

Matrix: Milk Powder	Product ID	764-C-1
	Expiry Date	11 Sep 24
	Sample Size	80g
	Moisture 102°C (%)	3.15
	Protein Kjeldahl (%)	30.38

QC Material: Milk Powder - Buttermilk Powder

Matrix: Milk Powder	Product ID	13661-QC	13662-QC
	Process Run	PR10755	PR10755
	Expiry Date	5 Jan 24	17 Mar 24
	Sample Size	80g	80g
	Fat RG (%)	7.57	9.91
	Insolubility Index 24°C (mL)	0.10	0.09
	Moisture 102°C (%)	3.61	3.77
	Moisture Reference Dryer (%)	3.70	3.80
	Protein Kjeldahl (%)	30.49	37.15
	Titrateable Acidity (%)	0.111	0.100

Reference Material: Milk Powder - Skim Milk Powder

Matrix: Milk Powder	Product ID	811-C-1	782-C-1	837-C-1	858-C-1
	Expiry Date	28 Feb 25	28 Mar 25	26 Oct 25	18 Nov 25
	Sample Size	80g	80g	80g	80g
	Fat RG (%)	0.85	0.69	0.73	0.72
	Moisture 102°C (%)	3.79	3.87		3.68
	pH (pH units)	6.72	6.66	6.77	6.76
	Protein Kjeldahl (%)	32.54	32.73	32.68	32.82
	WPNI (mg/g)	6.5	3.6		3.6

QC Material: Milk Powder - Skim Milk Powder

Matrix: Milk Powder	Product ID	13731-QC	13732-QC	14691-QC
	Process Run	PR10628	PR10923	PR11024
	Expiry Date	28 Feb 25	26 Oct 25	18 Nov 25
	Sample Size	80g	80g	80g
	Fat RG (%)	0.88	0.72	0.70
	Insolubility Index 24°C (mL)	0.09	0.08	0.10
	Moisture 102°C (%)	3.78	3.80	3.67
	Moisture Reference Dryer (%)	3.93	3.84	3.67
	pH (pH units)	6.72	6.77	6.77
	Protein Kjeldahl (%)	32.54	32.72	32.89
	Titrateable Acidity (%)	0.098	0.099	0.096
	WPNI (mg/g)	6.5	3.8	3.7

QC Material: Milk Powder - Skim Milk Powder

Matrix: Milk Powder	Product ID	13785-QC
	Process Run	PR10454
	Expiry Date	4 Nov 23
	Sample Size	30g
	RDW WPNI Low Heat SMP (mg/g)	6.52

Reference Material: Milk Powder - Whole Milk Powder

Matrix: Milk Powder	Product ID	786-C-1	794-C-1	793-C-1	834-C-1	836-C-1	835-C-1
	Expiry Date	17 Jan 24	28 Jan 24	6 Mar 24	8 Mar 24	17 Mar 24	16 Oct 24
	Sample Size	80g	80g	80g	80g	80g	80g
	Ash (%)	5.81			4.34	4.24	5.85
	Fat RG (%)	26.39		28.49	28.14	28.20	26.40
	Free Fat - in powder (%)	1.32	1.00	1.05		0.77	0.77
	Moisture 102°C (%)	3.17	3.14				
	pH (pH units)				6.78	6.78	6.71
	Protein Kjeldahl (%)	24.16	23.54	23.42	23.29	23.37	24.35
	WPNI (mg/g SNF)	2.9		2.0		1.0	2.3

QC Material: Milk Powder - Whole Milk Powder

Matrix: Milk Powder	Product ID	13744-QC	13742-QC	13743-QC
	Process Run	PR10923	PR10923	PR10923
	Expiry Date	8 Mar 24	17 Mar 24	16 Oct 24
	Sample Size	80g	80g	80g
	Ash (%)	4.34	4.28	5.86
	Fat RG (%)	28.14	28.23	26.37
	Free Fat - in powder (%)	1.06	0.77	0.76
	Insolubility Index 24°C (mL)	0.11	0.13	0.29
	Moisture 102°C (%)	3.12	3.04	2.80
	Moisture KF (%)	3.41	3.30	3.02
	Moisture Reference Dryer (%)	3.23	3.11	2.86
	pH (pH units)	6.79	6.79	6.73
	Protein Kjeldahl (%)	23.27	23.38	24.35
	Titrateable Acidity (%)	0.076	0.075	0.102
	WPNI (mg/g SNF)	1.9	1.0	2.1

Reference Material: Milk Protein Concentrate - MPC56

Matrix: Milk Protein Concentrate	Product ID	791-C-1
	Expiry Date	4 Feb 24
	Sample Size	80g
	Fat RG (%)	0.90
	Moisture 102°C (%)	4.77
	Protein Kjeldahl (%)	56.52

QC Material: Milk Protein Concentrate - MPC56

Matrix: Milk Protein Concentrate	Product ID	13709-QC
	Process Run	PR10534
	Expiry Date	4 Feb 24
	Sample Size	80g
	Ash (%)	7.43
	Fat RG (%)	0.91
	Insolubility Index 40°C (mL)	0.09
	Moisture 102°C (%)	4.73
	pH 5% Solution (pH units)	7.03
	Protein Kjeldahl (%)	56.62
	Tit Acidity 5% Solution (%m/m)	1.101
	WPNI (mg/g)	10.3

QC Material: Milk Protein Concentrate - MPC70

Matrix: Milk Protein Concentrate	Product ID	13711-QC
	Process Run	PR10628
	Expiry Date	17 Oct 24
	Sample Size	80g
	Ash (%)	7.22
	Fat RG (%)	1.48
	Insolubility Index 40°C (mL)	0.47
	Moisture 102°C (%)	4.79
	pH 5% Solution (pH units)	7.02
	Protein Kjeldahl (%)	70.54
	Tit Acidity 5% Solution (%m/m)	1.104
	WPNI (mg/g)	14.8

Reference Material: Milk Protein Concentrate - MPC85

Matrix: Milk Protein Concentrate	Product ID	839-C-1
	Expiry Date	2 Aug 24
	Sample Size	80g
	Ash (%)	6.92
	Fat SBR (%)	1.26
	Lactose (%)	4.55
	Moisture 102°C (%)	5.52
	Protein Kjeldahl (%)	81.71

QC Material: Milk Protein Concentrate - MPC85

Matrix: Milk Protein Concentrate	Product ID	13714-QC
	Process Run	PR10923
	Expiry Date	2 Aug 24
	Sample Size	80g
	Ash (%)	6.95
	Fat SBR (%)	1.27
	Lactose (%)	4.50
Moisture 102°C (%)	5.63	
pH 5% Solution (pH units)	7.02	
Protein Kjeldahl (%)	82.04	

Reference Material: Milk Protein Concentrate - MPI

Matrix: Milk Protein Concentrate	Product ID	838-C-1
	Expiry Date	8 Aug 24
	Sample Size	80g
	Ash (%)	6.62
Fat SBR (%)	1.26	
pH 5% Solution (pH units)	7.05	
Protein Kjeldahl (%)	85.92	

QC Material: Milk Protein Concentrate - MPI

Matrix: Milk Protein Concentrate	Product ID	13716-QC
	Process Run	PR10923
	Expiry Date	8 Aug 24
	Sample Size	80g
	Ash (%)	6.63
	Fat SBR (%)	1.28
	Lactose (%)	1.07
Moisture 102°C (%)	5.78	
pH 5% Solution (pH units)	7.05	
Protein Kjeldahl (%)	86.14	

Reference Material: Vitamin Milk Powders - Instant SMP

Matrix: Vitamin Milk Powders	Product ID	821-C-1
	Expiry Date	3 May 24
	Sample Size	30g
	Vitamin C (mg/100g)	15.6

QC Material: Vitamin Milk Powders - Instant SMP

Matrix: Vitamin Milk Powders	Product ID	13736-QC
	Process Run	PR10755
	Expiry Date	3 May 24
	Sample Size	30g
	Vitamin C (mg/100g)	15.6

QC Material: Vitamin Milk Powders - Instant WMP

Matrix: Vitamin Milk Powders	Product ID	14700-QC
	Process Run	PR11024
	Expiry Date	22 Aug 24
	Sample Size	30g
	Vitamin A (µg/100gm)	875
	Vitamin C (mg/100g)	57.1
	Vitamin D (µg/100gm)	7.6

Reference Material: Whey Powder - Whey Powder

Matrix: Whey Powder	Product ID	818-C-1
	Expiry Date	7 Jun 25
	Sample Size	80g
	Fat RG (%)	0.98
	Protein Kjeldahl (%)	17.62

QC Material: Whey Powder - Whey Powder

Matrix: Whey Powder	Product ID	13741-QC
	Process Run	PR10693
	Expiry Date	7 Jun 25
	Sample Size	80g
	Ash (%)	8.43
	Fat RG (%)	0.95
	Insolubility Index 24°C (mL)	0.09
	Moisture 102°C (%)	1.75
	pH (pH units)	6.86
	Protein Kjeldahl (%)	17.62
	Salt (%)	2.52
	Titrateable Acidity (%)	0.057

Reference Material: Whey Protein Concentrate - WPC80 (Cheese)

Matrix: Whey Protein Concentrate	Product ID	788-C-1
	Expiry Date	22 Feb 24
	Sample Size	80g
	Ash (%)	3.15
	Fat SBR (%)	4.5
	Lactose (%)	5.3
	Moisture 102°C (%)	4.57
	Protein Kjeldahl (%)	80.26

QC Material: Whey Protein Concentrate - WPC80 (Cheese)

Matrix: Whey Protein Concentrate	Product ID	13745-QC
	Process Run	PR10495
	Expiry Date	22 Feb 24
	Sample Size	80g
	Ash (%)	3.10
	Fat SBR (%)	4.5
	Insolubility Index 24°C (mL)	0.13
	Lactose (%)	4.8
	Moisture 102°C (%)	4.58
	pH 5% Solution (pH units)	6.84
	Protein Kjeldahl (%)	80.34

QC Material: Whey Protein Concentrate - WPC80 (Lactic Acid)

Matrix: Whey Protein Concentrate	Product ID	13748-QC
	Process Run	PR10980
	Expiry Date	20 Sep 24
	Sample Size	80g
	Ash (%)	3.54
	Fat SBR (%)	2.7
	Insolubility Index 24°C (mL)	0.08
	Lactose (%)	6.0
Moisture 102°C (%)	5.24	
pH 5% Solution (pH units)	6.62	
Protein Kjeldahl (%)	79.13	