FOOD & BEVERAGE

Reference Materials
Catalogue 2026

Food & Beverage

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Food & Beverage

Alcohol Solutions

LGC5404	Reference spirit - 5 % ABV
LGC5405	Reference spirit - 15% ABV
LGC5406	Reference spirit - 40 % ABV
LGC5412	Reference spirit - 40 % ABV
LGC5407	Reference spirit - 70 % ABV
ERM-BA001	Wine - nominal 5 % ABV
ERM-BA002	Wine - nominal 10 % ABV
ERM-BA003	Wine - nominal 15 % ABV
LGC5000	Brandy - 40 % ABV
LGC5005	Lager - 5 % ABV
LGC5014	Beer - 3.7% ABV
LGC5100	Whisky - congeners

Drink Products

ERM-BD011	Orange juice – 1 °Brix
LGC7113	Fruit squash – total SO_2

Food & Beverage Purity Materials

ERM-AC301	Butylated hydroxyanisole
ERM-AC303	Leucomalachite green
LGC1110	*pp'*-DDE
LGC1205	Malathion
LGC7300	Butylated hydroxytoluene
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LGC7305	Potassium sorbate
LGC7330	Selenomethionine

Food & Beverage

Fruit and Vegetable Products

LGC7114	Kale powder - nitrate
LGC7161	Tomato paste - metals
LGC7162	Strawberry leaves

Animal Feeding Stuffs

LGC7173	Poultry feed – proximates and elements

Processed Food Products

ERM-BC210	Wheat flour - selenium and selenomethionine
ERM-BD016	Sugar confectionery - sugars
ERM-BD213	Yeast – total chromium and Cr(III)
LGC7016	Chocolate confectionery
LGC7103	Sweet digestive biscuit
LGCQC101-KT	Chocolate mousse dessert - peanut protein
LGCQC1020	Peanut flour
LGC7155	Processed meat - proximates, chloride, hydroxyproline & metals
LGC7421	Allergen reference material - skimmed milk powder
LGC7422	Allergen reference material - egg white powder
LGC7424	Allergen reference material - almond powder
LGC7425	Allergen reference material - hazelnut powder – partially defatted
LGC7426	Allergen reference material - walnut powder – partially defatted
LGC746-KT	Allergen kit – milk, egg, almond, hazelnut and walnut

Miscellaneous Products

ERM-DZ002	Electronic cigarette liquid - nicotine & water

Food & Beverage

Alcohol Solutions

Reference spirit – 5 % ABV LGC5404

Batch: 022
Unit size: 25 mL

A suitable supply of ethanol was obtained, checked for purity and diluted volumetrically with water to produce a solution with a nominal ethanol concentration of 5 % ABV.

The primary use of this reference material is for checking the calibration of automatic density meters commonly used in industry to determine alcoholic strength, and for checking analyst and method performance.

UKAS REFERENCE MATERIALS
4005

Certified values:	
Alcoholic strength	4.97 ± 0.03 % ABV
Density (in air)	990.04 ± 0.04 kg/m^3

Reference spirit – 15 % ABV LGC5405

Batch: 012
Unit size: 25 mL

A suitable supply of ethanol was obtained, checked for purity and diluted volumetrically with water to produce a solution with a nominal ethanol concentration of 15% ABV.

The primary use of this reference material is for checking the calibration of automatic density meters commonly used in industry to determine alcoholic strength, and for checking analyst and method performance.

UKAS REFERENCE MATERIALS
4005

Certified values:	
Alcoholic strength	14.99 ± 0.04 % ABV
Density (in air)	977.93 ± 0.05 kg/m^3

Reference spirit – 40 % ABV LGC5406

Batch: 020
Unit size: 25 mL

A suitable supply of ethanol was obtained, checked for purity and diluted volumetrically with water to produce a solution with a nominal ethanol concentration of 40 % ABV.

The primary use of this reference material is for checking the calibration of automatic density meters commonly used in industry to determine alcoholic strength, and for checking analyst and method performance.

UKAS REFERENCE MATERIALS
4005

Certified values:	
Alcoholic strength	40.05 ± 0.04 % ABV
Density (in air)	946.91 ± 0.06 kg/m^3

Reference spirit – 40% ABV
LGC5412

Batch: 003
Unit size: 50 mL

A suitable supply of ethanol was obtained, checked for purity and diluted volumetrically with water to produce a solution with a nominal ethanol concentration of 40 % ABV.

The primary use of this reference material is for checking the calibration of automatic density meters commonly used in industry to determine alcoholic strength, and for checking analyst and method performance.

4005

Certified values:	
Alcoholic strength	40.03 ± 0.04 % ABV
Density (in air)	946.94 ± 0.06 kg/m^3

Reference spirit – 70 % ABV
LGC5407

Batch: 007
Unit size: 25 mL

A suitable supply of ethanol was obtained, checked for purity and diluted volumetrically with water to produce a solution with a nominal ethanol concentration of 70 % ABV.

The primary use of this reference material is for checking the calibration of automatic density meters commonly used in industry to determine alcoholic strength, and for checking analyst and method performance.

4005

Certified values:	
Alcoholic strength	70.07 ± 0.03 % ABV
Density (in air)	884.33 ± 0.07 kg/m^3

Wine - nominal 5 % ABV
ERM®-BA001

Batch: a
Unit size: 250 mL

A suitable supply of wine was obtained from a commercial source. The wine was stabilised with the addition of sodium metabisulfite and citric acid and thoroughly mixed.

This material is intended for use as a reference material for the validation and quality control of methods for the determination of alcohol content in alcoholic beverages.

4005

Certified value:	
Alcoholic strength	5.37 ± 0.05 % ABV (at 20 °C)

Wine - nominal 10 % ABV
ERM®- BA002

Batch: a
Unit size: 250 mL

A suitable supply of wine was obtained from a commercial source. The wine was stabilised with the addition of sodium metabisulfite and citric acid and thoroughly mixed.

This material is intended for use as a reference material for the validation and quality control of methods for the determination of alcohol content in alcoholic beverages.

4005

Certified value:	
Alcoholic strength	10.12 ± 0.04 % (at 20 °C)

Wine - nominal 15 % ABV ERM®- BA003

Batch: a
Unit size: 250 mL

A suitable supply of wine was obtained from a commercial source. The wine was stabilised with the addition of sodium metabisulfite and citric acid and thoroughly mixed.

This material is intended for use as a reference material for the validation and quality control of methods for the determination of alcohol content in alcoholic beverages.

4005

Certified value:	
Alcoholic strength	14.47 ± 0.10 % (at 20 °C)

Brandy - 40 % ABV LGC5000

Batch: 004
Unit size: 50 mL

A suitable supply of commercial brandy was obtained, mixed and dispensed in 50 mL portions.

This material is intended to be used for calibration of density meters and the validation of methods for the determination of alcoholic strength in obscured spirits by the UK statutory method of distillation and density measurement.

4005

Certified value:	
Apparent alcoholic strength	37.834 + 0.034 / - 0.035 % ABV
Actual alcoholic strength	40.075 + 0.070 / - 0.067% ABV
Apparent density (in air)	950.376 ± 0.056 kg/m^3

Lager - 5 % ABV LGC5005

Batch: 003
Unit size: 330 mL

Unfiltered 4.8 % ABV lager, packed in 330 mL plain white ring-pull aluminium cans, was purchased from a UK brewery. The material was treated sing a batch pasteuriser at 20 pasteurisation units by an external organisation.

The primary use of this reference material is in the development, validation or quality control of methods for the determination of alcohol in alcoholic beverages.

4005

Certified value:	
Alcoholic strength	4.83 ± 0.06 %

Beer – 3.7% ABV LGC5014

Batch: 001
Unit size: 440 mL

Unfiltered 3.4 % ABV pale ale, packed in 440 mL plain white ring-pull aluminium cans, was purchased from a UK brewery. The material was treated using a bath pasteuriser at 20 pasteurisation units by an external organisation.

The primary use of this reference material is in the development, validation or quality control of methods for the determination of alcohol in alcoholic beverages.

4005

Certified value:	
Alcoholic strength	3.69 ± 0.07 % ABV

Whisky - congeners
LGC5100

Batch: 002
Unit size: 10 mL

Approximately 20 litres of whisky was obtained from a commercial source. The whisky was mixed by shaking and sub-divided into nominally 10 mL aliquots in amber glass vials with fluro-tec stoppers and crimp caps.

This material is intended for use in development, validation or quality control of analytical methods for the determination of congeners in spirit samples.

UKAS REFERENCE MATERIALS
4005

Certified values:			
Methanol	5.20 ± 0.32 g/100 L	2-Methyl propanol	58.8 ± 3.1 g/100 L
Propanol	57.0 ± 2.4 g/100 L	2-Methyl butanol	21.38 ± 0.70 g/100 L
Butanol	0.48 ± 0.11 g/100 L	3-Methyl butanol	58.2 ± 2.1 g/100 L

Indicative values:			
Ethyl acetate	16 g/100 L of alcohol	Furfural	0.82 g/100 L of alcohol
Apparent alcohol content	40.06 % ABV		

Drink Products

Orange juice
ERM®- BD011

Batch: a
Unit size: 3 mL

Commercially obtained orange juice was diluted with water. The solution was thoroughly mixed and dispensed as nominal 3 mL units into crimp-topped amber glass vials.

This material is intended for use as a reference material 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. The material may also be applicable to other similar matrices where more closely matched reference materials are not available.

4005

Certified values:			
Degrees brix	1.26 ± 0.08	Refractive index	1.3348 ± 0.0002

Fruit squash – total SO_2
LGC7113

Batch: 001
Unit size: 55 mL

The material was prepared using a commercially sourced cranberry and raspberry squash containing a base level of total SO_2 at 120 mg/L. The contents of approximately 50 bottles were combined in a plastic carboy, thoroughly mixed and then the material was spiked with sodium metabisulfite to give a final concentration of approximately 240 mg/kg.

This material is intended for use in the development, validation or quality control of analytical methods for the determination of total SO_2 in beverages. The material may also be applicable to other similar matrices where more closely matched reference materials are not available.

4005

Certified value:	
Total Sulfur Dioxide	255 ± 41 mg/L

Food & Beverage Purity Materials

Butylated hydroxyanisole (BHA)
ERM®- AC301

Batch: a
Unit size: 0.5 g

A batch of butylated hydroxyanisole, obtained from a commercial supplier of chemical reagents, was ground to pass a 710 µm sieve, mixed, dried over P_2O_2 and dispensed as 0.5 g units into screw-capped amber glass vials. The purity was assessed by combining data from HPLC-UV, DSC and GC.

This material is primarily intended for use as a calibration standard in methods of analysis for BHA in foodstuffs and other similar matrices.

4005

Certified value:	
Purity	99.2 ± 0.6 mass %

Leucomalachite green
ERM®- AC303

Batch: a
Unit size: 0.1 g

A batch of leucomalachite green was obtained from a commercial supplier of chemical reagents and its purity was certified by LGC. The purity was determined by combining data from HPLC-UV and DSC.

The primary use of this reference material is for the calibration of methods for the determination of leucomalachite green in fish and other similar matrices.

4005

Certified value:	
Purity	98.8 ± 0.8 mass %

***p,p'*-DDE**
LGC1110

Batch: 001
Unit size: 0.25 g

A batch of *p,p'*-DDE with a nominal purity of 99 % was obtained from a commercial supplier, ground to pass a 710 µm sieve, and dried under vacuum. The purity was assessed by combining data from GC-FID, HPLC-UV and DSC.

This material is intended for use in the preparation of solutions for the calibration of analytical instruments used in pesticide residue and formulation analysis.

4005

Certified value:	
Purity	99.6 ± 0.4 mass %

Malathion
LGC1205

Batch: 001
Unit size: 0.25 g

A batch of malathion was dried at ambient temperature under vacuum. The purity was assessed by combining data from GC-FID and HPLC-UV.

This material is intended for use as a calibration standard in methods of analysis for malathion in food, environmental and other similar matrices.

Certified value:	
Purity	99.4 ± 0.6 mass %

Butylated hydroxytoluene (BHT)
LGC7300

Batch: 001
Unit size: 0.5 g

A batch of butylated hydroxytoluene, obtained from a commercial supplier of chemical reagents, was ground to pass a 710 µm sieve, mixed and dispensed. The purity was determined by combining data from HPLC-UV and DSC.

This material is intended for use as a calibration standard in methods of analysis for BHT in foodstuffs and other similar matrices.

UKAS REFERENCE MATERIALS
4005

Certified value:	
Purity	99.8 + 0.2 / - 1.4 mass %

Saccharin
LGC7302

Batch: 001
Unit size: 0.5 g

A batch of saccharin, obtained from a commercial supplier of chemical reagents, was ground to pass 710 µm sieve, mixed and dispensed. The purity was determined by combining data from HPLC-UV, DSC and volumetric titration with sodium hydroxide solution standardised against potassium hydrogen phthalate.

This material is intended for use as a calibration standard in methods of analysis for saccharin in foodstuffs, beverages and other similar matrices.

UKAS REFERENCE MATERIALS
4005

Certified value:	
Purity	99.6 + 0.4 / - 0.6 mass %

Potassium sorbate
LGC7305

Batch: 001
Unit size: 0.5 g

A batch of potassium sorbate, obtained from a commercial supplier of chemical reagents, was ground to pass 710 µm sieve, mixed, dried over P_2O_5 and dispensed. The purity was determined by combining data from HPLC-UV and DSC.

This material is intended for use as a calibration standard in methods of analysis for potassium sorbate in foodstuffs and other similar matrices.

Certified value:	
Purity	99.8 ± 1.6 mass %

Selenomethionine enriched with ^{76}Se
LGC7330

Batch: 001
Unit size: 0.01 g

A quantity of ^{76}Se-enriched selenomethionine was prepared from ^{76}Se - enriched selenium obtained from a commercial supplier. The isotopic abundance was determined by ICP-MS.

The primary use of this material is as a spike material for the determination of selenomethionine by species-specific isotope dilution with HPLC-ICP-MS, in combination with a standard of selenomethionine with natural isotopic composition.

Assessed value:	
^{76} Se Isotopic Abundance	99.8 +0.2 / -3.1 m/m %

Fruit and Vegetable Products

Kale powder - nitrate
LGC7114

Batch: 001
Unit size: 10 g

Dry, ground kale powder was sourced from a commercial supplier. The bulk material was combined, mixed and bottled in 10 g portions. The bottled material was irradiated using gamma irradiation at a dose of ~23 kGy.

This reference material is primarily intended for use in the development, validation or quality control of analytical methods for the determination of nitrate in green vegetables. The material may also be applicable to other similar matrices where more closely matched reference materials are not available.

UKAS REFERENCE MATERIALS
4005

Assessed value:	
Nitrate as (NO_3)	3198 ± 79 mg/kg

Tomato paste - metals
LGC7161

Batch: 002
Unit size: 50 g

A commercial tomato paste was spiked with appropriate quantities of cadmium, iron, lead, and tin, taking into account the base levels of the purchased material. The target concentrations of cadmium, lead and tin in the tomato paste were based on Commission Regulation (EC) No 1881/2006 and within the range of LGC's CMCs. The material was mixed thoroughly and dispensed in 50 – 55 g portions The filled bottles were irradiated at a dose of 14.0 to 18.7 kGy.

This material is intended for use in the development, validation or quality control of analytical methods for the determination of cadmium, iron, lead and tin in a fruit or vegetable-based material. It may also be applicable to other similar matrices where more closely matched reference materials are not available.

UKAS REFERENCE MATERIALS
4005

Certified values:			
Cadmium	0.1113 ± 0.0030 mg/kg	Lead	0.3224 ± 0.0089 mg/kg
Iron	40.63 ± 0.67 mg/kg	Tin	215.8 ± 1.8 mg/kg

Additional material information:	
Total solids	291 g/kg

Strawberry leaves
LGC7162

Batch: 001
Unit size: 20 g

The raw material was collected from a private strawberry farm in the Czech Republic. The leaves were cut and then jet milled to pass a 250 µm nylon sieve. The resulting powder was homogenised for 72 hours before bottling in 20 g portions in 60 mL bottles. The bottled material was radiation sterilised by ^{60}Co at a dose of 25 kGy.

This material is intended for use in the development, validation or quality control of analytical methods for the determination of elements in vegetation. The material may also be applicable to other similar matrices where more closely matched reference materials are not available.

Certified values:			
Calcium	1.53 ± 0.07 g/100 g	Phosphorus	0.260 ± 0.023 g/100 g
Magnesium	0.377 ± 0.017 g/100 g	Potassium	1.96 ± 0.10 g/100 g
Nitrogen	2.01 ± 0.06 g/100 g	Sulfur	0.174 ± 0.016 g/100 g

Certified values:			
Arsenic	0.28 ± 0.07 mg/kg	Manganese	171 ± 10 mg/kg
Barium	107 ± 10 mg/kg	Mercury	0.027 ± 0.006 mg/kg
Cadmium	0.17 ± 0.04 mg/kg	Molybdenum	0.32 ± 0.08 mg/kg
Cobalt	0.47 ± 0.11 mg/kg	Nickel	2.6 ± 0.7 mg/kg
Chromium	2.15 ± 0.34 mg/kg	Strontium	64 ± 6 mg/kg
Iron	818 ± 48 mg/kg	Zinc	24 ± 5 mg/kg
Lead	1.8 ± 0.4 mg/kg		

Indicative values:			
Total aluminium	0.1 g/100 g	Total sodium	210 mg/kg
Extractable aluminium	0.06 g/100 g	Extractable sodium	65 mg/kg
Copper	10 mg/kg	Selenium	0.04 mg/kg
Lithium	0.7 mg/kg	Vanadium	1.8 mg/kg

Animal Feeding Stuffs

Poultry feed
LGC7173

Batch: 004
Unit size: 50 g

A sample of poultry feed, purchased from a commercial animal feed manufacturer, was ground to pass a 1 mm sieve, thoroughly mixed and vacuum-sealed in sachets as 50 g portions.

This material is intended for use in the development, validation or quality control of analytical methods for the determination of proximates and elements in animal feeding stuffs. The material may also be applicable to other similar matrices where more closely matched reference materials are not available.

UKAS REFERENCE MATERIALS
4005

Assessed values:			
Moisture	10.70 ± 0.36 g/100 g	Iron	148 ± 27 mg/kg
Nitrogen	2.559 ± 0.062 g/100 g	Magnesium	2037 ± 81 mg/kg
Oil	4.95 ± 0.23 g/100 g	Manganese	90 ± 13 mg/kg
Ash	7.224 ± 0.091 g/100 g	Phosphorus	6590 ± 370 mg/kg
Crude Fibre	3.75 ± 0.38 g/100 g	Potassium	7480 ± 310 mg/kg
Calcium	17800 ± 1200 mg/kg	Sodium	1180 ± 130 mg/kg
Copper	14.0 ± 4.0 mg/kg	Zinc	78 ± 15 mg/kg

Indicative values:			
Starch	41 g/100 g	Chloride	0.23 g/100 g

Processed Food Products

Wheat flour selenium and selenomethionine
ERM®- BC210

Batch: a
Unit size: 15 g

Selenised wheat was obtained from a UK university. The grain was cleaned with water, milled at a temperature between 18 °C and 20 °C, and 60 % relative humidity, and sieved twice to a final particle size of 140 µm. The bulk was thoroughly homogenised, freeze dried to a moisture approximately 5 % (m/m) and sub-sampled in portions of 15g. The bottles material was irradiated at a dose of 25-40 kGy.

The primary use of this certified reference material is for the validation of methods for the determination of seleniumand selenomethionine in food materials and dietary supplements.The material may also be applicable to other similar matrices wheresuitable reference materials are not available.

4005

Certified values:			
Total selenium	17.23 ± 0.91 mg/kg	Selenomethionine	27.4 ± 2.6 mg/kg

Sugar confectionery - sugars
ERM®- BD016

Batch: a
Unit size: 14 g

A commercial supply of sugar confectionery was ground, thoroughly mixed and dispensed as 14 g units into 30 mL amber glass bottles with tamper evident caps.

This material is intended for use in development, validation or quality control of analytical methods for the determination of sugars in foodstuffs. The material may also be applicable to other similar matrices where more closely matched reference materials are not available.

4005

Certified values:			
Glucose	5.74 ± 0.48 g/100 g	Sucrose	44.8 ± 1.4 g/100 g
Fructose	2.89 ± 0.30 g/100 g	Maltose	17.7 ± 1.1 g/100 g

Yeast – total chromium and Cr(III)
ERM®- BD213

Batch: a
Unit size: 7 g

The powder form of a commercially-available food supplement of chromium-enriched yeast was donated by PharmaNord ApS (Vejle, Denmark) for the production of ERM-BD213a. The bulk was dispensed as 7 g units in 15 mL amber glass bottles sealed by means of tamper-proof polycone-lined polyethylene screw caps.

The primary intended use of this reference material is for the validation and performance monitoring of new and existing methods for the quantification of total chromium in yeast. The material can also be used for the performance monitoring of procedures for the quantification of chromium species in yeast. The material may also be applicable to other similar matrices where more closely matched reference materials are not available.

UKAS REFERENCE MATERIALS
4005

Certified value:	
Total chromium	305.5 ± 5.0 mg/kg

Indicative value:	
Cr(III)	302 ± 47 mg/kg

Chocolate confectionery
LGC7016

Batch: 003
Unit size: 15 g

Commercially obtained milk chocolate was ground to pass a 1 mm sieve, thoroughly mixed and sub-sampled in screw-capped amber bottles as 15 g units. The units were irradiated at a dose level of 5 - 15 kGy to prolong the shelf-life.

This material is intended for use in development, validation or quality control of analytical methods for the determination of constituents in chocolate.

UKAS REFERENCE MATERIALS
4005

Assessed values:			
Lactose	7.06 ± 0.96 g/100 g	Butyric acid in fat	0.677 ± 0.071 g/100 g
Sucrose	46.5 ± 2.3 g/100 g	Nitrogen	1.274 ± 0.024 g/100 g
Total fat	29.64 ± 0.35 g/100 g		

Indicative values:			
Fructose	0.2 g/100 g	Glucose	0.2 g/100 g

Calculated values:			
Milk fat in fat	19.6 g/100 g	Milk fat in sample	5.8 g/100 g

Additional information: *Fat content by*	
Acid digestion followed by solvent extraction	29.6 g/100 g
NMR	31.9 g/100 g
Soxhlet	29.6 g/100 g
Alkaline digestion followed by solvent extraction	28.9 g/100 g

Sweet digestive biscuit
LGC7103

Batch: 003
Unit size: 48 g

A commercial supply of wholemeal digestive biscuits was ground, thoroughly mixed and dispensed in 48 g units into foil pouches and vacuum sealed.

This material is intended for use in the development, validation or quality control of analytical methods for the determination of proximates, sugars and elements in food.

UKAS REFERENCE MATERIALS
4005

Assessed values:			
Moisture	2.88 ± 0.76 g/100 g	Ash at 550°C	1.599 ± 0.077 g/100 g
Nitrogen	1.073 ± 0.032 g/100 g	Sucrose	13.89 ± 0.53 g/100 g
Total Fat	21.17 ± 0.45 g/100 g	Chloride	0.302 ± 0.018 g/100 g
Sodium	5010 ± 400 mg/kg	Phosphorus	900 ± 140 mg/kg
Potassium	1580 ± 170 mg/kg	Manganese	5.49 ± 0.60 mg/kg
Magnesium	254 ± 59 mg/kg	Zinc	6.41 ± 0.99 mg/kg

Indicative values:			
Glucose	0.23 g/100 g	Calcium	480 mg/kg
Fructose	0.25 g/100 g	Copper	1.5 mg/kg
Starch	48 g/100 g	Iron	18 mg/kg

Chocolate mousse dessert – peanut protein
LGCQC101-KT

Batch: 001
Unit size: 2 x 5 g

The materials were prepared by mixing commercial, dry food ingredients to make a paste. Peanut protein was added to LGCQC1012 using a commercial defatted peanut flour (57 g/100 g protein content). Each material was divided into foil sachets with low gas-permeability in 5 g portions, and nitrogen flushed before sealing.

The materials are intended for use as quality control materials for analytical methods used in the determination of peanut protein in foods. They are not suitable for establishing method bias.

Indicative values:	
LGCQC1011	<1 mg/kg (negative control)
LGCQC1012	10 mg/kg (positive control)

Additional Information:	
LGCQC1012 (peanut concentration)	13 mg/kg
LGCQC1012 (peanut protein content)	3 mg/kg

Peanut flour
LGCQC1020

Batch: 001
Unit size: 2 x 5 g

The material is a commercially light roasted, partially defatted, peanut flour. The flour was manufactured by the Golden Peanut Company (LLC, Alpharetta, USA) and was obtained from Byrd Mill (Ashland, USA).

This material is intended for use as a quality control material for analytical methods used in the investigation of food samples for peanut and peanut protein.As the material is assigned indicative values only, it is not suitable for establishing method bias.

Indicative values:			
Total nitrogen	9.1 g/100 g	Water	4.8 g/100 g

Calculated values:	
Protein	49.7 g/100 g

Processed meat - proximates, chloride, hydroxyproline & metals
LGC7155

Batch: 003
Unit size: 50 g

The material was prepared using a commercial pork-based processed meat. After thorough mincing and mixing, it was sealed in sachets in 50 g portions and irradiated to sterilise using a dose of 18 kGy.

The material is intended for use in the development, validation or quality control of analytical methods for the determination of major constituents and selected additional analytes in meat and meat products. The material may also be applicable to other similar matrices and procedures where more closely matched reference materials are not available.

UKAS REFERENCE MATERIALS
4005

Certified values:			
Moisture	55.13 ± 0.43 g/100 g	Hydroxyproline	0.359 ± 0.025 g/100 g
Nitrogen	2.202 ± 0.046 g/100 g	Magnesium	11.02 ± 0.73 mg/100 g
Total fat	24.23 ± 0.59 g/100 g	Phosphorus	236 ± 13 mg/100 g
Ash	3.229 ± 0.059 g/100 g	Potassium	187.4 ± 8.3 mg/100 g
Chloride	1.377 ± 0.072 g/100 g	Sodium	1110 ± 63 mg/100 g

Indicative values:			
Calcium	8 mg/100g	Nitrate (as NO_3)	0.6 to 25.1 mg/kg
Iron	0.6 mg/100g		

Calculated value:	
Salt (NaCl)	2.27 ± 0.12 g/100 g

Allergen reference material - skimmed milk powder
LGC7421

Batch: 001
Unit size: 1.1 ± 0.1 g

The raw material was sourced by the University of Manchester from a reputable supplier to minimise the risk of contamination, and was described as organic skimmed milk powder, produced in Austria from Austrian or EU pasteurised, skimmed milk. The skimmed milk powder was packaged as received without further processing by combining and mixing before weighing in (1.1 ± 0.1) g portions into amber glass vials. The vials were closed under argon with a rubber stopper and a crimp cap. Each unit was sealed inside a metallised sachet to minimise changes in water content.

The material is intended for use in (a) method development: e.g. in the generation of allergen kit calibrator extract solutions,(b) method validation: e.g. in the generation of external check calibrator extract solutions for allergen measurements, (c) recovery estimates: to spike food matrices either by way of an extract, but preferably by addition of the raw material itself to assess allergen recovery in real life situations for which no other RMs are available.

LGC7421 can also be used in the quality control of methods for the determination of nitrogen and water in food ingredients and processed food products.

UKAS REFERENCE MATERIALS
4005

Assessed values:			
Nitrogen	5.40 ± 0.17 g/100 g	Water	4.22 ± 0.40 g/100 g

Allergen reference material - egg white powder
LGC7422

Batch: 001
Unit size: 1.1 ± 0.1 g

The raw material was sourced by the University of Manchester from a reputable supplier to minimise the risk of contamination, and was described as 'Origin: Austria'. The hens' egg white powder was packaged as received by combining and mixing before weighing in (1.1 ± 0.1) g portions into amber glass vials. The vials were closed under argon with a rubber stopper and a crimp cap. Each unit was sealed inside a metallised sachet to minimise changes in water content.

The material is intended for use in (a) method development: e.g. in the generation of allergen kit calibrator extract solutions, (b) method validation: e.g. in the generation of external check calibrator extract solutions for allergen measurements, (c) recovery estimates: to spike food matrices either by way of an extract, but preferably by addition of the raw material itself to assess allergen recovery in real life situations for which no other RMs are available.

LGC7422 can also be used in the quality control of methods for the determination of nitrogen and water in food ingredients and processed food products.

UKAS REFERENCE MATERIALS
4005

Assessed values:			
Nitrogen	13.49 ± 0.41 g/100 g	Water	6.01 ± 0.53 g/100 g

Allergen reference material - almond powder LGC7424

Batch: 001
Unit size: 1.1 ± 0.1 g

The raw material was sourced by the University of Manchester from a reputable supplier to minimise the risk of contamination, and was described as: 'Origin: California, USA. Blanched ground almonds. The almond powder was packaged as received by combining and mixing before weighing in (1.1 ± 0.1) g portions into amber glass vials. The vials were closed under argon with a rubber stopper and a crimp cap. Each unit was sealed inside a metallised sachet to minimise changes in water content.

UKAS REFERENCE MATERIALS
4005

The material is intended for use in (a) method development: e.g. in the generation of allergen kit calibrator extract solutions, (b) method validation: e.g. in the generation of external check calibrator extract solutions for allergen measurements, (c) recovery estimates: to spike food matrices either by way of an extract, but preferably by addition of the raw material itself to assess allergen recovery in real life situations for which no other RMs are available.

LGC7424 can also be used in the quality control of methods for the determination of nitrogen and water in food ingredients and processed food products.

Assessed values:			
Nitrogen	4.19 ± 0.13 g/100 g	Water	4.22 ± 0.45 g/100 g

Allergen reference material - hazelnut powder – partially defatted LGC7425

Batch: 001
Unit size: 1.1 ± 0.1 g

The raw material was sourced by the University of Manchester from a reputable supplier to minimise the risk of contamination, and was described as follows: 'Origin: South Island New Zealand *Corylus avellana*. Fine ground flour produced from the "cake" after the oil (fats) have been cold pressed out of raw hazelnut'. The hazelnut powder was packaged as received without further processing by combining and mixing before weighing in (1.1 ± 0.1) g portions into amber glass vials. The vials were closed under argon with a rubber stopper and a crimp cap. Each unit was sealed inside a metallised sachet to prevent changes in water content.

UKAS REFERENCE MATERIALS
4005

The material is intended for use in (a) method development: e.g. in the generation of allergen kit calibrator extract solutions, (b) method validation: e.g. in the generation of external check calibrator extract solutions for allergen measurements, (c) recovery estimates: to spike food matrices either by way of an extract, but preferably by addition of the raw material itself to assess allergen recovery in real life situations for which no other RMs are available.

LGC7425 can also be used in the quality control of methods for the determination of nitrogen and water in food ingredients and processed food products.

Assessed values:			
Nitrogen	4.99 ± 0.16 g/100 g	Water	8.6 ± 1.1 g/100 g

Allergen reference material - walnut powder – partially defatted LGC7426

Batch: 001
Unit size: 1.1 ± 0.1 g

The raw material was sourced by the University of Manchester from a reputable supplier to minimise the risk of contamination, and was described as 'Origin: Italy. *Juglans regia* cultivar Lara. Lipid content 27 g/100g'.

The walnut powder was prepared by grinding using a centrifugal mill to pass a 0.5 mm sieve. The sieved material was combined and mixed before weighing in (1.1 ± 0.1) g portions into amber glass vials. The vials were closed under argon with a rubber stopper and a crimp cap. Each unit was sealed inside a metallised sachet to minimise changes in water content.

The material is intended for use in (a) method development: e.g. in the generation of allergen kit calibrator extract solutions, (b) method validation: e.g. in the generation of external check calibrator extract solutions for allergen measurements, (c) recovery estimates: to spike food matrices either by way of an extract, but preferably by addition of the raw material itself to assess allergen recovery in real life situations for which no other RMs are available.

LGC7426 can also be used in the quality control of methods for the determination of nitrogen and water in food ingredients and processed food products.

UKAS REFERENCE MATERIALS
4005

Assessed values:			
Nitrogen	6.15 ± 0.19 g/100 g	Water	6.11 ± 0.65 g/100 g

Allergen kit – milk, egg, almond, hazelnut and walnut
LGC746-KT

Batch: 001
Unit size: Kit

Each kit contains:
•One vial of each:
LGC7421 Skimmed milk powder
LGC7422 Egg white powder
LGC7424 Almond powder
LGC7425 Hazelnut powder – partially defatted
LGC7426 Walnut powder – partially defatted

•Five bottles of:
LGC7461 Chocolate paste – no added allergenic ingredients. LGC7462 Chocolate paste with added allergenic ingredients

The allergen food ingredients (LGC7421, LGC7422, LGC7424, LGC7425 and LGC7426) are intended for use in method development: e.g. allergen kit calibrator extract solutions, method validation: e.g. external check calibrator extract solutions, and recovery estimates e.g. by spiking food matrices for which no RMs are available. They can also be used in the quality control of methods for the determination of nitrogen and water in food ingredients and processed food products.
The blank matrix (LGC7461) is intended for use (a) as a 'no-template' control to provide assurance of absence of in-lab allergen cross contamination (either environmentally, from personnel, or in reagents) and (b) a material to assist method limit of detection calculation (as 3.3 times the standard deviation of a 'blank' dataset).

The incurred matrix (LGC7462) is intended for use (a) to optimise analytical recovery from a chocolate-type matrix, (b) inform risk assessors of the possible 'true' estimate of allergen in a questioned product, and (c) in checking in-house quality control materials.

UKAS REFERENCE MATERIALS
4005

Assessed values:			
LGC7421	Skimmed milk powder	Nitrogen	5.40 ± 0.17 g/100 g
		Water	4.22 ± 0.40 g/100 g
LGC7422	Egg white powder	Nitrogen	13.49 ± 0.41 g/100 g
		Water	6.01 ± 0.53 g/100 g
LGC7424	Almond powder	Nitrogen	4.19 ± 0.13 g/100 g
		Water	4.22 ± 0.45 g/100 g
LGC7425	Hazelnut powder- partially defatted	Nitrogen	4.99 ± 0.16 g/100 g
		Water	8.6 ± 1.1 g/100 g
LGC7426	Walnut powder- partially defatted	Nitrogen	6.15 ± 0.19 g/100 g
		Water	6.11 ± 0.65 g 100 g

Assessed values:			
LGC7461	Chocolate paste-no added allergenic ingredients	Milk protein	<0.05 mg/kg
		Egg white protein	<0.05 mg/kg
		Hazelnut protein	<0.04 mg/kg
LGC7462	Chocolate paste with added allergenic ingredients	Milk protein	10.0 ± 1.8 mg/kg
		Egg white protein	10.0 ± 1.5 mg/kg

Indicative values:			
LGC7462	Chocolate paste with added allergenic ingredients	Almond protein	9.7 ± 1.9 mg/kg
		Hazelnut protein	9.8 +10.5/-5.1 mg/kg
		Walnut protein	10.0 ± 2.3 mg/kg

Calculated values: *Protein content*	
LGC7421 Skimmed milk powder	34.4 ± 1.1 g/100g
LGC7422 Egg white powder	84.3 ± 2.6 g/100g
LGC7424 Almond powder	21.24 ± 0.68 g/100g
LGC7425 Hazelnut powder – partially defatted	26.45 ± 0.85 g/100g
LGC7426 Walnut powder – partially defatted	32.6 ± 1.0 g/100g

Miscellaneous Materials

Electronic cigarette liquid - nicotine & water ERM®-DZ002

Batch: a
Unit size: 1.2 mL

A suitable supply of electronic cigarette liquid was obtained from a commercial supplier. The liquid was bulked together, mixed thoroughly to ensure homogeneity, dispensed into amber glass ampoules under argon, and flame-sealed.

The primary intended use of this material is for validation and quality control of methods for the determination of nicotine and water in electronic cigarette liquids. It can also be used in the training and evaluation of staff.

Certified values:			
Nicotine	17.12 ± 0.47 mg/g	Water	10.76 ± 0.91 g/100 g
Nicotine	18.39 ± 0.52 mg/mL		

Additional information:	
Density	1.074280 g/mL

www.uknml.com/reference-materials
measurement@lgcgroup.com
+44 (0)1483974620 • The Priestley Centre, 10 Priestley Road
Surrey Research Park, Guildford, GU2 7XY, UK