

FOOD & BEVERAGE

Reference Materials Catalogue 2024



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
LGC5100	Whisky - congeners

Drink Products

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LGC7113	Fruit squash – total SO ₂

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Food & Beverage

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Miscellaneous Products

ERM-DZ002	Electronic cigarette liquid - nicotine & water
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Food & Beverage

Alcohol Solutions

Reference spirit – 5 % ABV LGC5404

Batch: 021
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.



4005

Certified values:	
Alcohol strength	5.02 ± 0.04 % ABV
Density	989.98 ± 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.



4005

Certified values:	
Alcohol strength	14.99 ± 0.04 % ABV
Density	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.



4005

Certified values:	
Alcohol strength	40.05 ± 0.04 % ABV
Density	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:	
Alcohol strength	40.03 ± 0.04 % ABV
Density	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:	
Alcohol strength	70.07 ± 0.03 % ABV
Density	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:	
Alcohol 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:	
Alcohol 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:	
Alcohol strength	14.47 ± 0.10 % (at 20 °C)

**Brandy - 40 % ABV
LGC5000**

Batch: 004
Unit size: 50 mL

Approximately 50 litres of commercial brandy was obtained, mixed in a 50 L capacity container and dispensed in 50 mL portions into amber glass vials fitted with 20 mm fluoro-tec stoppers and crimp caps.

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	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 using 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:	
Alcohol strength	4.83 ± 0.06 %

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.



4005

Certified values:	
Methanol	5.20 ± 0.32 g/100 L
Propanol	57.0 ± 2.4 g/100 L
2-Methyl propanol	58.8 ± 3.1 g/100 L
2-Methyl butanol	21.38 ± 0.70 g/100 L
3-Methyl butanol	58.2 ± 2.1 g/100 L
Butanol	0.48 ± 0.11 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 SO₂ 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 SO₂ 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 SO₂ 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 P₂O₅ 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 %
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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 %
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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 %
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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 %
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**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.



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.



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 P₂O₅ 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 ⁷⁶Se
LGC7330**

Batch: 001
Unit size: 0.01 g

A quantity of ⁷⁶Se-enriched selenomethionine was prepared from ⁷⁶Se-enriched selenium obtained from a commercial supplier. The purity was determined by HPLC-UV.

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.

Certified value:

Purity 99.8 +0.2 / -3.1 mass %

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 in 30 mL amber glass bottles with tamper-evident screw-cap tops. 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.



4005

Assessed value:	
Nitrate as (NO ₃)	3198 ± 79 mg/kg

Tomato paste - metals LGC7161

Batch: 002
Unit size: 50 g

The material was produced at LGC, Teddington by spiking a commercial tomato paste 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 into 60 mL amber glass bottles with tamper evident screw caps. The filled bottles were irradiated at a dose of 14.0 to 18.7 kGy, and then stored frozen at (- 20 ± 10) °C.

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.



4005

Certified values:	
Cadmium	0.1113 ± 0.0030 mg/kg
Iron	40.63 ± 0.67 mg/kg
Lead	0.3224 ± 0.0089 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 ⁶⁰Co 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.



4005

Assessed values:	
Moisture	10.70 ± 0.36 g/100 g
Nitrogen	2.559 ± 0.062 g/100 g
Oil	4.95 ± 0.23 g/100 g
Ash	7.224 ± 0.091 g/100 g
Crude Fibre	3.75 ± 0.38 g/100 g

Assessed values:	
Calcium	17800 ± 1200 mg/kg
Copper	14.0 ± 4.0 mg/kg
Iron	148 ± 27 mg/kg
Magnesium	2037 ± 81 mg/kg
Manganese	90 ± 13 mg/kg
Phosphorus	6590 ± 370 mg/kg
Potassium	7480 ± 310 mg/kg
Sodium	1180 ± 130 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 primary use of this certified reference material is for the validation of methods for the determination of selenium and selenomethionine in food materials and dietary supplements. The material may also be applicable to other similar matrices where more closely matched reference materials are not available.



4005

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

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
Fructose	2.89 ± 0.30 g/100 g
Sucrose	44.8 ± 1.4 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.



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.



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

**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.



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

Assessed values:

Sodium	5010 ± 400 mg/kg	Phosphorus	900 ± 140 mg/kg
Potassium	1580 ± 170 mg/kg	Manganese	254 ± 59 mg/kg
Magnesium	254 ± 59 mg/kg	Zinc	6.41 ± 0.99 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)

**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
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**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.



4005

Certified values:	
Moisture	55.13 ± 0.43 g/100 g
Nitrogen	2.202 ± 0.046 g/100 g
Total fat	24.23 ± 0.59 g/100 g
Ash	3.229 ± 0.059 g/100 g
Chloride	1.377 ± 0.072 g/100 g
Hydroxyproline	0.359 ± 0.025 g/100 g

Certified values:	
Magnesium	11.02 ± 0.73 mg/100 g
Phosphorus	236 ± 13 mg/100 g
Potassium	187.4 ± 8.3 mg/100 g
Sodium	1110 ± 63 mg/100 g

Indicative values:	
Calcium	8 mg/100g
Iron	0.6 mg/100g
Nitrate (as NO ₃)	0.6 to 25.1 mg/kg

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.

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



4005

**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.

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



4005

**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.



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.



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.

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



4005

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.



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 allergen protein
		Egg white protein	<0.05 mg/kg allergen protein
		Hazelnut protein	<0.04 mg/kg allergen protein
LGC7462	Chocolate paste with added allergenic ingredients	Milk protein	10.0 ± 1.8 mg/kg allergen protein
		Egg white protein	10.0 ± 1.5 mg/kg allergen protein

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

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. Each ampoule contains 1.2 mL of material.

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
Nicotine	18.39 ± 0.52 mg/mL
Water	10.76 ± 0.91 g/100 g



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