

issued by

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK



**Accredited to
ISO 17034:2016**

Issue No: 023 Issue date: 19 May 2025

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Reference material production at the above address

| Matrix / Artefact | Property Value(s) / Identity / Characterisation Range | Characterisation Procedure / Technique | Type* (CRM / RM) |
|--------------------------------------|--|--|------------------|
| <u>Special Alloys</u> | | | |
| Auto Catalysts | Pt - trace to % levels Pd - trace to % levels Rh - trace to % levels | Measurement by a single, primary, definitive method at LGC (ICP-IDMS) | CRM and RM |
| <u>Pure Organic Compounds</u> | | | |
| Organic Chemicals | Purity (% m/m) | Measurement by two or more independent reference methods at LGC. Methods selected from DSC, HPLC, GC-FID, GC-MS, Titration, plus Karl Fischer (volumetric and Coulometric) and/or TGA or Measurement by one reference method at LGC (DSC, HPLC, GC-FID, GC-MS, Titration), with supporting evidence obtained using qNMR, plus Karl Fischer (volumetric and coulometric) and/or TGA. This approach to be used where the organic compound is amenable to only one of the listed reference methods. | CRM and RM |
| Organic chemicals and metals | Melting Point | Measurement by a single, primary, definitive method at an NMI laboratory (Thermometry) | CRM |
| Metals | Enthalpy of fusion | Measurement by a single, primary, definitive method at an NMI laboratory using a differential heat flux Calvet calorimeter | CRM |



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| <u>Pure Organic Compounds</u> (cont'd) | | | |
| Calibration Solutions | Polychlorinated Biphenyls | Measurement by a single, primary, definitive method at LGC (GC-IDMS) And/or Measurement by a network of qualified laboratories using a variety of methods of demonstrable accuracy | CRM and RM |
| Glycine and Glycine in solution | Absolute Isotope Ratio ¹² C and ¹³ C | Measurement by a single, primary, definitive method at LGC (Multi-collector –ICP-MS) | CRM and RM |
| <u>Foodstuffs</u> | | | |
| Alcoholic Beverages (wines, spirits, lagers) | Alcoholic Strength (%ABV) | Measurement by a single, primary, definitive method at LGC laboratory (pycnometry) and: Measurement by a network of qualified laboratories using a variety of methods of demonstrable accuracy | CRM and RM |
| | Congeners | Measurement by a network of qualified laboratories using a variety of methods of demonstrable accuracy | CRM and RM |
| Basic and Composite Foods Including: Meats and Meat Products Dairy Products Bread and Bakery Products Cereals and Cereal Products Confectionery Soft Drinks Dried Food Products Fruit and Vegetable Products Dry vegetation Animal Feeds Food Supplements | Elements, Selenium (Content and Speciation), Proximates, Additives, Contaminants and Preservatives including: Sugars Sulfur Dioxide Artificial Colours Antioxidants Sweeteners Degrees Brix Refractive Index Nitrates | Measurement by a single, primary, definitive method at LGC laboratory (ICP-IDMS) – Elements, Selenium (Content and Speciation), also Elements by Exact Single Matched (ESM) Standard by ICP-MS/SF-ICP-MS or ICP-OES Water by coulometric oven Karl-Fischer analysis only And/or Measurement by a network of qualified laboratories using a variety of methods of demonstrable accuracy | CRM and RM |



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| <u>Foodstuffs</u> (cont'd) | | | |
| Basic and Composite Foods Including: Meats and Meat Products Dairy Products Bread and Bakery Products Cereals and Cereal Products Confectionery Soft Drinks Dried Food Products Fruit and Vegetable Products Dry vegetation Animal Feeds Food Supplements | Allergen food protein as listed in Annex II of the EU Food Information for Consumers Regulation No.1169/2011 | Gravimetric preparation of matrix material and characterisation of nitrogen content of allergen food ingredients by DUMAS combustion followed by thermal conductivity detection | RM |
| Meats | Species Identification | Measurement in a single laboratory, using a variety of methods of demonstrable accuracy (DNA, Elisa and reputable source) | RM |
| <u>Petroleum Products</u> | | | |
| Diesel and Gasoline | Sulfur (Trace to % Levels) | Measurement by a single, primary, definitive method at LGC (ICP-IDMS) | CRM and RM |
| <u>Soils, Sludges and Sediments</u> | | | |
| Soils, Sludges, Sediments | Organics and inorganics (Trace to % Levels) | Measurement by a single, primary, definitive method at LGC (ICP-IDMS, GC IDMS, HPLC-IDMS), also Elements by Exact Single Matched (ESM) Standard by ICP-MS/SF-ICP-MS or ICP-OES And/or Measurement by a network of qualified laboratories using a variety of methods of demonstrable accuracy | CRM and RM |



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| <u>Soils, Sludges and Sediments</u> (cont'd) Gypsum material | Inorganics (Trace to % Levels) | Measurement by a single, primary, definitive method at LGC (ICP-IDMS, GC IDMS, HPLC-IDMS), also Elements by Exact Single Matched (ESM) Standard by ICP-MS/SF-ICP-MS or ICP-OES And/or Measurement by a network of qualified laboratories using a variety of methods of demonstrable accuracy | CRM and RM |
| <u>Ashes</u> Fuel Ash | Inorganics (Trace to % Levels) | Measurement by a single, primary, definitive method at LGC (ICP-IDMS), also Elements by Exact Single Matched (ESM) Standard by ICP-MS/SF-ICP-MS or ICP-OES And/or Measurement by a network of qualified laboratories using a variety of methods of demonstrable accuracy | CRM and RM |
| <u>Waters</u> Drinking Water, River Water, Estuarine Water, Rain Water, Leachates | Anions and Elements (Trace to % Levels) | Measurement by a single, primary, definitive method at LGC (ICP-IDMS) also Elements by Exact Single Matched (ESM) Standard by ICP-MS/SF-ICP-MS or ICP-OES And/or Measurement by a network of qualified laboratories using a variety of methods of demonstrable accuracy | CRM and RM |



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| <u>Clinical Laboratory Materials</u> | | | |
| Whole Blood and Serum | Organics and Elements, Selenium (Content and Speciation) | Measurement by a single, primary, definitive method at LGC (ICP-IDMS, GC-IDMS and LC-IDMS), also Elements by Exact Single Matched (ESM) Standard by ICP-MS/SF-ICP-MS or ICP-OES And/or Measurement by a network of qualified laboratories using a variety of methods of demonstrable accuracy | CRM and RM |
| <u>Ethanol Reference Standards</u> | | | |
| Forensic Ethanol Solutions | Ethanol (mg/100ml) | Measurement by a single, primary, definitive method at LGC (Potassium Dichromate Titration) | CRM |
| Ethanol/Water Reference Spirits | Density (kg/m ³) | Measurement by a single, primary, definitive method at LGC (Pycnometry) | CRM |
| | Alcoholic Strength (%ABV) | Taken to be the % alcohol by volume corresponding to that density from the Official Laboratory Alcohol Table (RDC80/267/04), Issued under the authority of the UK HM Customs & Excise | CRM |
| <u>Optical Properties</u> | | | |
| Small Organic Molecules or Inorganic Compounds in Solution | Wavelength and Absorbance | Measurement by a single, primary, definitive method in a single laboratory | CRM and RM |
| END | | | |

***Type**

CRM = Certified Reference Material(s)

RM = Reference Material(s)

Refer to ISO 17034 for full definitions