


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 <p>Accredited to ISO/IEC 17025:2005</p>	<h3>Macaulay Institute</h3>	
	<p>Issue No: 016 Issue date: 24 February 2010</p>	<p>Contact: Dr A Midwood Tel: +44 (0)1224 498200 Fax: +44 (0)1224 498208 E-Mail: a.midwood@macaulay.ac.uk Website: www.macaulay.ac.uk</p>
<p>Testing performed at the above address only</p>		

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SEDIMENTS, SOILS, ANIMAL TISSUE, LEACHATES, WATERS, CHEMICAL PRODUCTS (Liquids and Solids)	<u>Chemical Tests</u> <u>Inorganic Elements</u>	Documented In-House Methods Inductively Coupled Plasma – Mass Spectrometry (ICP-MS) or Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) Methods Developed and Validated according to Methods BM015 or BM014 (flexible scope)
ANIMAL FEEDINGSTUFFS BOTANICAL MATERIAL CROPS	<u>Chemical Tests</u> Elements: Ca, Mg, K, P, Al Total C, N Total N Elements: Cd, Cr, Cu, Pb, Ni, Zn, Fe, Al, Mn Phospholipid fatty acids Moisture Content Loss of Material on Ignition Isotopes: Pb, ¹⁵ N, ¹³ C Inorganic elements	BM001 Kjeldahl Digestion and BM008 using (ICP-OES) DM001 using Elemental Analysis / Dumas Combustion BM003 using discrete analysis BM011 and BM012 using ICP-MS CM001 using Gas Chromatography (GC) DM007 using Gravimetry AM001 using Thermal Ionisation Mass Spectrometry (TIMS), AM002 using Continuous Flow Isotope Ratio Mass Spectrometry (CF-IRMS) BM014 using ICP-OES



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BIOLOGICAL MATERIALS, CROPS	<u>Chemical Tests</u> Elements: As, Cd, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Se, Zn	DM009 or DM010 using acid digestion and BM013 using ICP-MS
ANIMAL TISSUES	Qualitative identification of chemical components <u>Chemical Tests</u> Endocrine disrupting compounds (alkylphenols and phthalates)	FM001 using Fourier Transform - Infra Red Spectroscopy (FTIR)
CHEMICAL PRODUCTS, CHEMICALS: ORGANIC CHEMICALS: INORGANIC	Polychlorinated Biphenyls (PCB) Polybrominated Diphenyl Ethers (PDBE) <u>Chemical Tests</u>	CM004 using gas chromatography mass spectrometry (GC-MS) CM003 using GC-MS Documented In-House Methods
CLAY AND CLAY PRODUCTS	Qualitative identification Inorganic elements <u>Geological Tests</u> Quantitative estimation of mineralogical composition Qualitative mineralogical composition Semi-quantitative mineralogical composition Qualitative identification Particle size distribution	EM001 using Scanning Electron Microscopy (SEM) FM001 using FTIR BM014 using ICP-OES Documented In-House Methods GM002 and GM004 using X-ray Diffraction (XRD) GM001 and GM003 using XRD FM001 using FTIR EM001 using SEM EM002 using EDS and SEM GM005 using XRD EM001 using SEM FM001 using FTIR EM002 using EDS and SEM DM011 using laser diffraction particle size analyser



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FIBRE PRODUCTS - NATURAL/ARTIFICIAL	<u>Chemical Tests</u> Qualitative identification Qualitative composition	Documented In-House Methods EM001 using SEM FM001 using FT-IR EM002 using SEM and Energy Dispersing Spectroscopy (EDS)
ROCKS/GEOLOGICAL MATERIALS, SEDIMENTS AND SOILS	<u>Geological Tests</u> Quantitative estimation of mineralogical composition Qualitative mineralogical composition Semi-quantitative mineralogical composition Qualitative X-ray mapping	Documented In-House Methods: GM002 and GM004 using XRD GM001 and GM003 using XRD FM001 using FTIR EM001 using SEM EM002 using EDS and SEM GM005 using XRD EM003 using EDS and SEM
SEDIMENTS AND SOILS ONLY	<u>Chemical Tests</u> Inorganic elements Isotopes: Sr, Pb, Sm, Nd	BM014 using ICP-OES AM001, AM004 and AM005 using TIMS
	<u>Chemical Tests</u> Elements: Fe, Mn, Al, Cd, Cr, Cu, Pb, Ni, Zn, C, N Elements: Al, Cd, Cr, Cu, Fe, Pb, Mn, Ni, Zn Isotopes: ¹⁵ N, ¹³ C Elements: Cd, Cr, Cu, Pb, Ni, Zn, Fe, Al, Mn Elements: As, Cd, Cr, Cu, Hg, Mn, Mo, Ni, Pb, Se, Zn	Documented In-House Methods DM008 using Acid Digestion DM001 using Dumas Combustion DM009 using acid digestion and BM009 using ICP-MS BM010 using ICP-MS AM002 using CF-IRMS BM011 and BM012 using ICP-MS DM010 using acid digestion and BM013 using ICP-MS



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SEDIMENTS AND SOILS ONLY (cont'd)	<u>Chemical Tests</u> (cont'd)	
	Exchangeable acidity	DM002 using Titration
	Phosphorus	DM003 using a Discrete Analyser
	Ammonium, nitrate, nitrite	BM003 using a Discrete Analyser
	Exchangeable cations: Ca, Mg, Na, K, Fe, Al, Mn	DM004 Extraction Procedure BM006 using ICP-OES
	Nutrients: Ca, Mg, K, P	DM005 Extraction Procedure BM005 using ICP-OES
	pH	DM006 using Glass Electrode
	Characterisation	FM001 using FTIR EM001 using SEM EM002 using SEM and EDS
	Phospholipid fatty acids	CM001 using GC
	Inorganic and organic carbon	BM019 using Non-Dispersive Infra-Red Spectroscopy DM001 using Dumas Combustion
Particle size distribution	DM011 using laser diffraction particle size analysis	
PLASTICS AND PRODUCTS	<u>Chemical Tests</u>	Documented In-House Methods
	Identification	FM001 using FTIR
POWDERED MATERIALS	Optical Tests	Documented In-House Methods
	Colour	HM001 using spectral reflectance

