


# Schedule of Accreditation

issued by  
**United Kingdom Accreditation Service**  
21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 <b>Accredited to ISO/IEC 17025:2005</b>	<b>Sandberg LLP</b>	
	Issue No: 041	Issue date: 01 August 2009
	<b>40 Grosvenor Gardens</b> London SW1W 0EB	<b>Contact: Mr P Tate</b> <b>Tel: +44 (0)20 7565 7000</b> <b>Fax: +44 (0)20 7565 7101</b> <b>E-Mail: tate@sandberg.co.uk</b> <b>Website: www.sandberg.co.uk</b>
<b>Testing performed by the Organisation at the locations specified below</b>		

### Locations covered by the organisation and their relevant activities

#### Laboratory locations:

Location details	Activity	Location code
5 Carpenters Place Clapham High Street London SW4 7TD  Contact: Mr P Tate Tel: +44 (0)20 7565 7000 Fax: +44 (0)20 7565 7101 E-Mail: tate@sandberg.co.uk	Testing of aggregates, bricks and blocks, concrete, construction materials, cement, mortar, paints, rock, roofing slate, building stone and natural stone	A
40 Grosvenor Gardens London SW1W 0EB  Contact: Mr P Tate Tel: +44 (0)20 7565 7000 Fax: +44 (0)20 7565 7101 E-Mail: tate@sandberg.co.uk	Testing of Metals, Alloys, Metal Products, Weldments, Reinforcing Steels, Steel Couplers, Nuts and Bolts	C

#### Site activities performed away from the locations listed above:

Location details	Activity	Location code
All sites suitable for the activities listed	Sampling and testing of concrete structures, floors and other paved surfaces. Sampling of aggregates,	D



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DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
AGGREGATES	Water-soluble chloride salt content	BS EN 1744-1:1998	A
	Sulphate content of a 2:1 water/aggregate extract	BS EN 1744-1:1998	A
	Total sulfur content	BS EN 1744-1:1998	A
	Total sulphate content by acid extraction	BS EN 1744-1:1998	A
	Acid soluble sulfides	BS EN 1744-1:1998	A
	Acid-soluble material content	BS 812:Part 119:1985	A
	Potential reactivity (chemical method)	ASTM C289-01	A
	Petrographic examination of aggregates for concrete	ASTM C295-03	A
	Qualitative and quantitative petrographic description of aggregates	BS 812:Part 104:1994	A
	Petrographic description	BS EN 932-3:1997	A
	Identification of type and variety, mineralogical composition, particle characterization, weathering and alteration, potential alkali-silica and alkali-carbonate reactive ingredients	Documented In-House Method No TP/G1/3 using optical microscopy and polarized light techniques	A
	Aggregate crushing value - particle size 10mm and greater	BS 812:Part 110:1990	A
	Aggregate crushing value - particle size smaller than 10mm	BS 812:Part 110:1990	A
Ten per cent fines value - dry - particle size 10mm and greater	BS 812:Part 111:1990	A	



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AGGREGATES (cont'd)	Ten per cent fines value - soaked - particle size 10mm and greater	BS 812:Part 111:1990	A
	Ten per cent fines value - dry - particle size smaller than 10mm	BS 812:Part 111:1990	A
	Ten per cent fines value - soaked - particle size smaller than 10mm	BS 812:Part 111:1990	A
	Particle density and water absorption for aggregate all larger than 10mm	BS EN 1097-6:2000 BS 812:Part 2:1995	A
	Particle density and water absorption for aggregate between 40mm and 5mm	BS EN 1097-6:2000 BS 812:Part 2:1995	A
	Particle density and water absorption for aggregate between 10mm nominal size and smaller	BS EN 1097-6:2000 BS 812:Part 2:1995	A
	Particle size distribution - washing and sieving	BS EN 933-1:1997 BS 812:Part 103 Section 103.1:1985	A, A
	Particle size distribution - dry sieving	BS 812:Part 103 Section 103.1:1985	A
	Flakiness index	BS EN 933-3:1997 BS 812:Part 105 Section 105.1:1989	A, A
	Shell content	BS EN 933-7:1998 BS 812:Part 106:1985	A
Moisture content/water content - oven drying method	BS EN 1097-5:1999 BS 812:Part 109:1990	A A	



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AGGREGATES (cont'd)	Aggregate abrasion value	BS 812:Part 113:1990 BS EN 1097-8:1999 Annex A	A
	Drying shrinkage	BS 812:Part 120:1989 BS EN 1367-4:1998	A
	Soundness	BS 812:Part 121:1989	A
	Magnesium sulphate soundness	BS EN 1367-2:1998	A
	Resistance to fragmentation by the Los Angeles method	BS EN 1097-2:1998	A
	Gel-pat test for the detection of opaline silica	BS 7943:1999 Annex B	A
	Methods for sampling	BS EN 932-1:1997	D
AGGREGATES for railway ballast	Modified Los Angeles method	BS EN 13450:2002	A
AIR-COOLED BLASTFURNACE SLAG AGGREGATE for use in construction	Stability - 'Falling' or 'dicalcium silicate' unsoundness	BS 1047:1983 Clause A.3.2	A
CLAY BRICKS	Soluble salt content	BS 3921:1985	A
	Petrographic examination	Documented In-House Method TP/G29 based on ASTM C856	A
	Compressive strength	BS 3921:1985	A
	Water absorption	BS 3921:1985	A
CEMENT	Loss on ignition	BS EN 196-2:2005	A
	Gravimetric determination of sulphate	BS EN 196-2:2005	A
	Residue insoluble in hydrochloric acid and sodium carbonate	BS EN 196-2:2005	A



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CEMENT (cont'd)	Chloride content	BS EN 196-2:2005	A
	Alkali content	BS EN 196-2:2005	A
	Chemical analysis of Portland cement	Documented In-House Method No. 11.1 based on BS 4550:Part 2:1970	A
	Compressive strength of concrete cubes	BS 4550:Part 3 Section 3.4L1978	A
	Compressive strength	BS EN 196-1:2005	A
	Standard consistence	BS 4550:Part 3 Section 3.5:1978	A
	Setting times	BS 4550:Part 3 Section 3.6:1978	A
	Soundness	BS 4550:Part 3 Section 3.7:1978	A
	Standard consistence	BS EN 196-3:2005	A
	Setting time	BS EN 196-3:2005	A
	Soundness	BS EN 196-3:2005	A
	Fineness - air permeability (Blaine) method	BS EN 196-6:1992	A
	Density	BS EN 196-6:1992 National Annex C	A
PULVERISED - FUEL ASH	Chloride	BS EN 196-2:2005	A
	Calcium oxide content	BS EN 196-2:2005	A
	Sulphuric anhydride	BS EN 196-2:2005	A
	Loss on ignition	BS EN 196-2:2005	A
	Initial setting time	BS EN 196-3:2005	A
	Soundness	BS EN 196-3:2005	A
	Particle density	BS EN 196-6:1992	A



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CONCRETE - hardened	Cement and aggregate content	BS 1881:Part 124:1988	A
	Chloride content	BS 1881:Part 124:1988 and Documented In-House Method 14.8.1 based on BS 1881:Part 124:1988	A
	Sulphate content	BS 1881:Part 124:1988	A
	Sodium oxide and potassium oxide	BS 1881:Part 124:1988	A
	Alumina and iron oxides	BS 1881:Part 124:1988 and Documented In-House Method 34.1	A
	Chemical analysis and aggregate content	Documented In-House Method 14.0	A
	Bulk chloride diffusion of concrete cores	Documented In-House Method No. TP/F/18	A
	Type of cement	BS 1881:Part 124:1988 Clause 8.3	A
	Air-void content - by modified point count method	ASTM C457-06	A
	Petrographic examination	ASTM C856-04	A
	Equivalent water/cement ratio by microporosity assessment	Documented In-House Method No. TP/G8 using optical microscopy with UV illumination and fluorescent dyes	A
	Depth and degree of carbonation	Documented In-House Method No. TP/G7/1 using chemical staining, optical microscopy and polarized light	A
Compressive strength of cubes - including curing		BS 1881:Part 116:1983 BS 1881:Part 111:1983	A
		BS EN 12390-1:2000 BS EN 12390-2:2000 BS EN 12390-3:2000	A



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CONCRETE - hardened (cont'd)	Compressive strength of cores	BS 1881:Part 120:1983 BS EN 12504-1:2000	A
	Compressive strength of cores	Documented In-House Method No. TP/F/17 (June 1996) based on BS 1881:Part 120:1983	A
	Compressive strength of cores	Documented In-House Method using Concrete Society Technical Report No. 11:1976 and addendum 1987	A
	Density	BS 1881:Part 114:1983 BS EN 12390-7:2000	A
	Water absorption	BS 1881:Part 122:1983	A
	Aggregate grading	BS 1881:Part 124:1988	A
	Thermal coefficient of linear expansion	Documented In-House Method No. TP/F/4	A
CONCRETE STRUCTURES	Carbonation	BRE Information Paper IP 6/81	D
	Surface hardness by rebound hammer	BS EN 12504-2:2001	D
	Coring	BS EN 12504-1:2000	D
	Sampling of concrete by dust drilling	Documented In-House Method No. TP/F/11	D
	Location of reinforcement	BS 1881:Part 204:1988	D
MORTAR for bricklaying, plastering and rendering	Half -cell potential of uncoated reinforcing steel in concrete	ASTM C876	D
	Chemical analysis	BS 4551:2005	A
	Mix proportions	Documented In-House Method No. 34.1	A



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CONCRETE PAVING FLAGS	Dimensions	BS EN 1339:2003	A
	Transverse strength	BS EN 1339:2003	A
	Water absorption	BS EN 1339:2003	A
PAVED SURFACES, FLOORS and FLOOR COVERINGS	Slip resistance (pendulum tester)	BS EN 1341:2000 BS EN 1342:2001 BS EN 14231:2003	A, D
	Slip resistance value and coefficient of friction	BS 7976-2:2002	A, D
ROCK	Description and classification	BS 5930:1999 Section 44	A
	Petrographic description	ISRM Suggested Methods - Rock Characterization Testing and Monitoring, Ed. E T Brown-1981	A
	Microcrack dye testing of granite	Documented In-House Method TP/G27-01	A, D
ROOFING SLATES	Sulphuric acid immersion	BS 680:Part 2:1971 BS 5642-1:1978 (Appendix A)	A
	Water absorption	BS 680:Part 2:1971	A
	Wetting and drying	BS 680:Part 2:1971 BS 5642 -1:1978 (Appendix B)	A
	Modulus of rupture	ASTM C120-06	A
SLATE AND STONE PRODUCTS for discontinuous roofing and cladding	Petrographic examination (excluding X-ray diffraction)	BS EN 12326-2:2000:clause17	A
	Failure load in bending	BS EN 12326-2:2000:clause 10	A
	Length and width	BS EN 12326-2:2000:clause 5	A
	Edge deviation	BS EN 12326-2:2000:clause 6	A
	Rectangularity	BS EN 12326-2:2000:clause 7	A
	Thickness	BS EN 12326-2:2000:clause 8	A



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SLATE AND STONE PRODUCTS (cont'd)	Flatness deviation	BS EN 12326-2:2000:clause 9	A
	Freeze thaw resistance	BS EN 12326-2:2000:clause 12	A
	Thermal cycling	BS EN 12326-2:2000:clause 16	A
	Water absorption	BS EN 12326-2:2000:clause 11	A
	Carbonate content	BS EN 12326-2:2000:clause 14	A
BUILDING STONE	Sulfur dioxide exposure (CaCO <sub>3</sub> <= 20%)	BS EN 12326-2:2000:clause 15.1:	A
	Compressive strength	ASTM C170-90 (1999)	A
	Flexural strength	ASTM C880-06	A
	Modulus of rupture	ASTM C99-87 (2006)	A
	Acid immersion	Durability Tests for Building Stone (BRE Report BR141:1983)	A
	Crystallisation	Durability Tests for Building Stone (BRE Report BR141:1983)	A
	Saturation coefficient and porosity	Durability Tests for Building Stone (BRE Report BR141:1983)	A
	Absorption and bulk specific gravity	ASTM C97-02	A
	Abrasion resistance	ASTM C241-90 (2005 )	A
	Microporosity (water)	Documented In-House Method No. TP/G24/1 based on BRE Report - The Building Limestones of the British Isles:1983	A
NATURAL STONE (natural stone products for building purposes)	Dimensions	BS EN 1341:2001 BS EN 1342:2001 BS EN 1343:2001	A
	Petrographic description	BS EN 12407:2000	A
	Flexural strength under concentrated load (3 point loading method)	BS EN 12372:2006	A



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NATURAL STONE (cont'd)	Flexural strength under constant moment	BS EN 13161:2008	A
	Compressive strength	BS EN 1926:2006 BS EN 1342:2001	A
	Breaking load at dowel hole	BS EN 13364:2002	A
	Abrasion resistance	BS EN 1341:2001 Annex C BS EN 1342:2001 Annex B BS EN 14157:2004 Method A (wide wheel)	A
	Resistance to salt crystallisation	BS EN 12370:1999	A
	Water absorption coefficient by capillarity	BS EN 1925:1999	A
	Water absorption at atmospheric pressure	BS EN 13755:2008 BS EN 1341:2001 BS EN 1342:2001 BS EN 1343:2001	A
	Real density and total porosity	BS EN 1936:2006	A
	Apparent density and open porosity	BS EN 1936:2006	A
	Frost Resistance	BS EN 12371: 2001	A
	Frost resistance	DIN 52 104:1982 Method A	A
	Frost resistance	Documented In-House Method No. TP/G19/5 based on BS EN 12371:2001	A
	Resistance to ageing by thermal shock	BS EN 14066:2003	A
Unpolished slip resistance (pendulum tester)	BS EN 1341:2000 BS EN 1342:2001 BS EN 14231:2003	A, D	
Sound speed propagation	BS EN 14579:2004	A	



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PAINT and AIR FILTERS used in air monitoring	Lead content	Documented In-House Method No. 40.3 using atomic absorption spectrophotometry	A
SALT for spreading on highways for winter maintenance	Matter insoluble in water	BS 3247:1991	A
	Chloride content	BS 3247:1991	A
	Soluble sulphate compounds	BS 3247:1991	A
	Moisture content	BS 3247:1991	A
	Grading by sieve analysis	BS 3247:1991	A
WATER for making concrete	Suitability	BS EN 1008:2002	A
	Compressive strength of cubes	BS EN 1008:2002 BS 3148:1980	A
	Initial setting time	BS EN 1008:2002 BS 3148:1980	A
METALS, ALLOYS and METAL PRODUCTS	Tensile strength	BS EN 10002-1:2001	C
	Vickers hardness	BS EN ISO 6507-1:1998 (superseded)	C
	Charpy impact testing up to 300 joules at 77K and from 233K to ambient temperature	BS EN 10045-1:1990	C
	Methods for bend testing	BS EN ISO 7438:2005	C
	Micrographic determination of the grain size of steel	BS EN ISO 643:2003	C
	Micrographic determination of the morphology of graphite in cast iron	BS EN ISO 945:1994	C
	METALS & ALLOYS: ferrous and non-ferrous	Metallographic examination and identification of materials	Documented In-House Method MS/LG/TP M/26 using acid etching and light microscopy



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WELDMENTS	Tests designated in specified welding codes - as detailed below:-  Bend, Fracture, Hardness, Impact, Tensile, Visual-examination, Macro-examination, Micro-examination	BS EN 287:Part 1:2004 BS EN ISO 9606:Part 2:2004 BS EN ISO 15614:Part 1:2004 BS EN ISO 15614:Part 2:2005 BS EN 875:1995 BS EN 876:1995 BS EN 895:1995 BS EN 910:1996 BS EN 1043-1:1996 BS EN 1320:1997 BS EN 1321:1997 BS 5400:Part 6:1999 BS 7123:1989	C
METALS, ALLOYS, METAL PRODUCTS WELDMENTS and REINFORCING STEELS	Macroscopic examination by etching with strong mineral acid	BS 6533:1984 (2004)	C
REINFORCING STEELS	Tensile strength up to 32 mm diameter	BS 4449:2005	C
	Rebend up to 40 mm diameter	BS 4449:2005	C
	Tensile properties	BS 4482:2005 BS 4483:2005	C
	Weld test	BS 7123:1989	C
	Bond strength	BS 4449:1997 clause 9.3 (withdrawn)	C
	Macro-etch tests	BS 7123:1989 BS 6533:1984 (2004)	C
STEEL COUPLERS for use in working scaffolds and falsework	Slipping force (RA, SW, SF)	BS EN 74-1:2005 Clause 7.2.1	C
	Failure Force (RA, SW) Pull apart force (RA)	BS EN 74-1:2005 Clause 7.2.2 BS EN 74-1:2005 Clause 7.3	C
	Pull apart force (SW)	Documented in-house method MS/LG/TP/M/29	C



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NUTS and BOLTS black nuts and bolts, isometric nuts and bolts, high strength friction grip nuts and bolts, higher strength friction grip nuts and bolts.	Length: 0 to 50mm (0.01mm) 50 to 300mm (0.02mm) Diameter 0 to 50mm (0.01mm) 50 to 300mm (0.02mm)  Tensile strength  Proof loading  Vickers hardness  Charpy Impact testing up to 300 joules at 77K and from 233K to ambient temperature  Torque  Slip factor  Shank tension	BS 3643:Part 1:1981 (2004) BS 3643:Part 2:1981 (2004) BS 3692:2001 BS 4190:2001 BS 4395:Part 1:1969 (2004) BS 4395:Part 2:1969 (2004) BS 4604:Part 1:1970 BS 4604:Part 2:1970 BS 4827:1972 (2004) BS EN ISO 3506:Part1:1998 BS EN ISO 3506:Part2:1998	C
END			