

# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

 <p style="text-align: center;"><b>UKAS TESTING</b> 4563</p> <p style="text-align: center;">Accredited to <b>ISO/IEC 17025:2005</b></p>	<b>Exova Co Ltd (Saudi Arabia)</b>	
	Issue No: 004	Issue date: 02 November 2011
<p>PO Box 31775 Al Khobar Kingdom of Saudi Arabia</p>	<p>Contact: Mr W McCallum Tel: +966 3 8127750 Fax: +966 3 8121837 E-Mail: middle.east@exova.com Website: www.exova.com</p>	
Testing performed by the Organisation at the locations specified below		

**Exova Co Ltd (Saudi Arabia) is accredited for a flexible scope that enables them to establish site laboratories to conduct the activities detailed below under Construction Materials Testing and Site Sampling, in accordance with their documented in-house procedure: SLP 4.16**

**Current locations covered by the scope of accreditation:**

Location details	Activity	Location code
<p><b>Address</b> Exova Co Ltd (Saudi Arabia) Qussim Street / 133 Road II Industrial City Dammam Kingdom of Saudi Arabia</p> <p><b>Postal Address</b> Exova Co Ltd (Saudi Arabia) PO Box 31775 Al Khobar Kingdom of Saudi Arabia</p>	<p><b>Local contact</b> Mr W McCallum  Tel: +966 3 8127750 Fax: +966 3 8121837 E-Mail: middle.east@exova.com</p> <p>Aggregates - Physical &amp; Mechanical tests Concrete - Physical &amp; Mechanical tests Soils - Physical &amp; Mechanical tests Environmental Samples - Chemical tests Metals &amp; Weldments - Mechanical tests Metals &amp; Weldments - Metallurgical tests Metals &amp; Weldments - Chemical tests Metals &amp; Weldments - Corrosion tests</p>	A

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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
<b>Analytical Chemical Testing</b>			
LEACHATES WATERS - raw and potable WATERS - effluent, leachate and groundwater WASTE WATERS - untreated and treated domestic and industrial waste water SALINE WATERS	Determination of "total" metals including: Aluminium Antimony Arsenic Barium Beryllium Boron Cadmium Calcium Cobalt Copper Chromium Iron Lead Lithium Magnesium Manganese Molybdenum Nickel Phosphorus Potassium Selenium Silicon Sodium Silver Strontium Thallium Tin Titanium Vanadium Zinc	USEPA 3030 and 3120B Documented In-house method CHEM 1030 AKB, 1031 AKB and 1032 AKB using ICP-OES and ICP-MS techniques	A



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
Potable and Saline waters and Soils	Determination of Anions: Fluoride Chloride Bromide Nitrate Nitrite Sulphate Ortho-phosphate	Documented In-house method Chem 3022B AKB by ion chromatography	A
Potable water	Determination of Bromate	Documented In-house method 3020B AKB by ion chromatography	A
Waters and Soils	Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOC's) including: Chloromethane Chloroform Chloroethane Chloroethene (Vinyl Chloride) Dichloromethane (Methylene Chloride) 1,1-Dichloroethane 1,2-Dichloroethane cis-1,2-Dichloroethene trans-1,2-Dichloroethene 1,2-Dichloropropane 1,3-Dichloropropane 1,1-Dichloropropene cis-1,3-Dichloropropene trans-1,3-Dichloropropene Trichloroethane	EPA 502.2/624 & 8260B Documented In-house method Chem 4051 AKB by GC-MS	A



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Waters and Soils	Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOC's) including: 1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,2,3-Trichloroethane Carbon Tetrachloride 1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane Tetrachloroethane Chloromethane Chloroform Chloroethane Chloroethene (Vinyl Chloride) Dichloromethane (Methylene Chloride) 1,1-Dichloroethane 1,2-Dichloroethane cis-1,2-Dichloroethene trans-1,2-Dichloroethene 1,2-Dichloropropane 1,3-Dichloropropane 1,1-Dichloropene cis-1,3-Dichloropropene trans-1,3-Dichloropropene Trichloroethane 1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,2,3-Trichloroethane Carbon Tetrachloride 1,1,1,2-Tetrachloroethane 1,1,2,2-Tetrachloroethane Tetrachloroethane 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2,3-Trichlorobenzene 1,2,4-Trichlorobenzene Chlorobenzene 2-Chlorotoluene Dichlorofluoromethane Dichlorofluoromethane Bromomethane Bromochloromethane	EPA 502.2/624 & 8260B Documented In-house method Chem 4051 AKB by GC-MS	A



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Waters and Soils (cont'd)	Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Volatile Organic Compounds (VOC's) including (cont'd)  Bromodichloromethane Dibromomethane Chlorodibromomethane Bromoform Ethylene Dibromide Bromobenzene 1,2-Dibromo-3-chloropropane Benzene Toluene	EPA 502.2/624 & 8260B Documented In-house method Chem 4051 AKB by GC-MS	A
	Semi Volatile Organic Compounds (SVOC's) and Polycyclic Aromatic Hydrocarbon (PAH) including: Azobenzene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 1,2,4-Trichlorobenzene Hexachlorobenzene Nitrobenzene 2,4-Dinitrotoluene 2,6-Dinitrotoluene Phenol 2-Chlorophenol 2,4-Dichlorophenol 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol o-Cresol p-Cresol 2-Nitrophenol 2,4-Dimethylphenol 4-Chloro-3-methylphenol Dimethyl phthalate Diethyl phthalate Bis(2-ethylhexyl)phthalate Butyl benzylphthalate Di-n-butylphthalate Di-n-octylphthalate 4-Chlorodiphenylether 4-Bromophenyl phenylether	EPA 625 & 8270C Documented In-house method CHEM 4812 AKB by GC-MS	A



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Waters and Soils (cont'd)	Semi Volatile Organic Compounds (SVOC's) and Polycyclic Aromatic Hydrocarbon (PAH) including (cont'd)	EPA 625 & 8270C Documented In-house method CHEM 4812 AKB by GC-MS	A
	Dibenzofuran Isophorone Hexachloroethane n-nitrosodi-n-propylamine Bis(2-chloroisopropyl) ether Bis 92-chloroethyl)ether n-nitrosodimethylamine bis(2-chloroethoxy)metyhane 4-Chloroaniline 2-Nitroaniline Hexachlorobutadiene Hexachlorocyclopentadiene Naphthalene 2-Methylnaphthalene 2-Chloronaphthalene Naphthalene Acenaphthene Acenaphthylene Anthracene Carbazole Benzo(a)anthracene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(g,h,i)preylene Benzo(a)pyrene Chrysene Fluorene Fluoroanthene Dibenze(a,h)anthracene Ideno(1,2,3-c,d)Pyrene Phenathrene Pyrene		A
	Extractable Petroleum Hydrocarbons EPH and Total Petroleum Hydrocarbons (TPH)	Documented In-house method CHEM 4133 AKB by GC-FID	A
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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used	Location Code
<b>Construction Materials Testing</b>			
AGGREGATES	Particle density and water absorption for aggregate 10 mm nominal size and smaller	BS 812:Part 2:1995	A
	Particle density and water absorption for aggregate all larger than 10 mm	BS 812:Part 2:1995	A
	Particle density and water absorption for aggregate between 40 mm and 5 mm	BS 812:Part 2:1995	A
	Particle size distribution - washing and sieving	BS 812:Part 103 Section 103-1: 1985	A
	Particle size distribution - dry sieving	BS 812:Part 103 Section 103-1: 1985	A
	Flakiness index	BS 812:Part 105:Section 105.1: 1989	A
	Elongation index	BS 812:Part 105:Section 105.2: 1990	A
	Moisture content - oven dry method	BS 812:Part 109:1990	A
	Ten per cent fines value - dry - particle size 10 mm and greater <i>(Forces from 30 to 3000 kN)</i>	BS 812:Part 111:1990	A
	Aggregate impact value - dry	BS 812:Part 112:1990	A
	Materials finer than 75 µm (No 200) in mineral aggregates by washing	ASTM C117-04	A
	Specific gravity and absorption of coarse aggregates	ASTM C127-07	A



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AGGREGATES (cont'd)	Specific gravity and absorption of fine aggregates	ASTM C128-07	A
	Resistance to degradation of small-size coarse aggregate by abrasion and impact in the Los Angeles Machine	ASTM C131-06	A
	Sieve analysis of fine and coarse aggregates	ASTM C136-06	A
	Clay lumps and friable particles in aggregates	ASTM C142-97(04)	A
	Resistance to degradation of large-size coarse aggregate by abrasion and impact in the Los Angeles Machine	ASTM C535-03	A
	Total evaporable moisture content by drying	ASTM C566-97(04)	A
CONCRETE - hardened	Density	BS 1881:Part 114:1983	A
	Compressive strength of cubes - including curing (Forces from 30 to 3000 kN)	BS 1881:Part 116:1983 BS 1881:Part 111:1983	A
	Water absorption	BS 1881:Part 122:1983	A
	Depth of penetration of water under pressure	BS EN 12390-8: 2000	A
	Compressive strength of cylindrical specimens - including curing (Forces from 60 to 3000 kN)	ASTM C39-05	A
	Rapid chloride permeability	ASTM C1202- 05	A
	Water permeability	DIN 1048:Part 5:June 1991	A



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SOILS for civil engineering purposes	Moisture content - oven drying method	BS 1377:Part 2:1990	A
	Liquid limit - cone penetrometer	BS 1377:Part 2:1990	A
	Plastic limit	BS 1377:Part 2:1990	A
	Plasticity index and liquidity index	BS 1377:Part 2:1990	A
	Particle size distribution - wet sieving	BS 1377:Part 2:1990	A
	Particle size distribution - dry sieving	BS 1377:Part 2:1990	A
	Dry density/moisture content relationship (4.5 kg rammer)	BS 1377:Part 4:1990	A
	CBR (California Bearing Ratio) of laboratory-compacted soils (Forces from 2 to 40 kN)	BS 1377:Part 4:1990	A
	Laboratory compaction characteristics of soil using modified effort	ASTM D1557-07	A
	CBR (California Bearing Ratio) of laboratory-compacted soils (Forces from 2 to 40 kN)	ASTM D1883-07	A
Water (moisture) content	ASTM D2216-05	A	
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**Metallurgical, Mechanical & Associated Chemical Testing**

Plain carbon and low alloy steels	Elemental Analysis	Documented In-House Method Chem 1001 - AKB OES using Direct Reading Optical Emission Spectrometry techniques	A
Iron, steels and other ferrous metals	Vickers (HV5 and HV10)	BS EN ISO 6507-1:2005 ASTM E384-10	A
	Charpy impact (in the temperature range 77 K to ambient)	ASTM E23-07a	A
	Tensile at ambient temperature (forces up to 2000 kN)	BS EN ISO 6892-1:2009 ASTM E8/E8M-08 ASTM A370-10 API 5L 43 <sup>rd</sup> Edition 2004	A
Carbon steel bars for the reinforcement of concrete	Bend	BS 4449:1988 (withdrawn) ASTM A615/A615M-09b	A
	Rebend	BS 4449:1997 (withdrawn) BS 4449:2005	A
	Tensile	BS 4449:1997 (withdrawn) BS 4449:2005 ASTM A615/A615M-09b	A
	Metallurgical Tests		
	Grain size	ASTM E112-10	A
	Volume fraction	ASTM E562-08	A



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Weldments	Fillet weld fracture, Hardness, Impact, Nick-break, Tensile, Bend Macro- and Micro-examination in accordance with specific welding codes	BS EN 287: Part 1:2004 BS EN 875:1995 BS EN 895:1995 BS EN ISO 5173:2010 BS EN 1043-1:1996 BS EN 1320:1997 BS EN 1321:1997 BS EN ISO 9606-2:2004 BS EN ISO 15614-1:2004 BS EN ISO 15614-2 :2005 KS D1.1/D1.1M:2004 ASTM E407-07 API 1104-20 <sup>th</sup> edition. 2005 ASME IX-10 AWS D1.1-2006 BS 4515-1:2004 BS 4515-2:1999 BS 7448:Part 2:1997 Documented specifications and procedures technical equivalent to those above	A
Stainless steels	<u>Corrosion Tests</u>		
	Susceptibility to inter-granular corrosion	ASTM A262-10 Practices A, B and E	A
	Pitting and crevice corrosion	ASTM G48-03(2009) Method A	A
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**Site Sampling and Testing**

SOILS for civil engineering purposes	In-situ density - sand replacement method (large pouring cylinder)	BS 1377:Part 9:1990	A
	Density and unit weight of soil in place by the sand-cone method	ASTM D1556-07	A

END