

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 <p>UKAS TESTING 0357</p> <p>Accredited to ISO/IEC 17025:2005</p>	<h3>British Board of Agreement</h3> <p>Issue No: 027 Issue date: 02 April 2012</p>	
	<p>Bucknalls Lane Garston Watford Hertfordshire WD25 9BA</p>	<p>Contact: Mr S Sadler Tel: +44 (0)1923-665350 Fax: +44 (0)1923-665452 E-Mail: testing@bba.star.co.uk Website: www.bbacersts.co.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
<p>ALL VERTICAL TEST ELEMENTS</p> <p>Maximum test area 1.9 m high by 2.4 m wide</p>	<p>All Measurements:</p> <p>Cold air temperature - 0 °C to 10 °C Hot air temperature - max 25 °C</p>	<p>BBA Guarded Hot Box No 2 designed and operated to BS EN ISO 8990:1996 Documented In-House Methods agreed with the Client based on BS EN ISO 8990:1996 or BS EN ISO 12567-1:2010 or BS EN ISO 12567-2:2005</p>
<p>Homogeneous panels</p>	<p>U-value - 0.1 to 10 (W/m²K) Best measurement uncertainty: - +/- 5%</p>	
<p>Heterogeneous panels</p>	<p>U-value - 0.1 to 10 (W/m²K) Best measurement uncertainty will depend on the performance of the element tested</p>	
<p>Test elements smaller than the test area (maximum size 1.7 m high by 2.2 m wide)</p>	<p>U-value - 0.1 to 10 (W/m²K) Best measurement uncertainty: - +/- 5.5%</p>	
<p>Whole window systems (maximum size 1.7 m high by 2.2 m wide)</p>	<p>U-value - 0.1 to 10 (W/m²K) Best measurement uncertainty: - +/- 5.5%</p>	
		<p>BS EN ISO 12567-1:2010 and BS EN ISO 12567-2:2005</p>



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<p>ALL VERTICAL, SLOPING AND HORIZONTAL TEST ELEMENTS (excluding masonry walls) (upward heat flow only)</p> <p>Maximum test area 2.5 m high x 3.0 m wide</p> <p>Homogeneous panels</p> <p>Heterogeneous panels</p> <p>Test elements smaller than the test area (maximum size 2.3 m high by 2.8 m wide)</p> <p>Whole window systems (maximum size 2.3 m high by 2.8 m wide)</p> <p>HOMOGENEOUS and INHOMOGENEOUS MATERIALS</p>	<p>All Measurements:</p> <p>Cold air temperature: - 0 °C to 10 °C</p> <p>Hot air temperature: - max 25 °C</p> <p>U-value: - 0.1 to 10 (W/m²K) Best measurement uncertainty: - +/- 5%</p> <p>U-value: - 0.1 to 10 (W/m²K) Best measurement uncertainty will depend on the performance of the element tested</p> <p>U-value: - 0.1 to 10 (W/m²K) Best measurement uncertainty: - +/- 5.5%</p> <p>U-value: - 0.1 to 10 (W/m²K) Best measurement uncertainty: - +/- 5.5%</p> <p>All measurements:</p> <p>Specimen thickness - 10-300 mm</p> <p>Mean temperature range - 273K to 298K</p> <p>Thermal conductivity measurement: - 0.01 to 0.10 W/(m·K)</p> <p>Thermal resistance measurement: - 17 to 0.5 m²·K/W</p> <p>Best measurement uncertainty - +/- 1.5%</p>	<p>BBA Guarded Hot Box No 1 designed and operated to BS EN ISO 8990:1996 Documented In-House Methods agreed with the Client based on BS EN ISO 8990:1996 or BS EN ISO 12567-1:2010</p> <p>BS EN ISO 12567-1:2010</p> <p>BS ISO 8301, BS EN 12667:2001, BS EN 12939:2001 and ASTM C518-04 using a 762 mm square heat flow meter facility</p>



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PLASTICS	<u>Mechanical Tests</u>	
Films and sheets up to 1.0 mm thickness	Tensile properties (loads from 1 to 100 kN)	BS EN ISO 527-3:2003 BS 2782:Part 3 Method 326E
Films and sheets from 1.0 to 3.0 mm thickness	Tensile properties (loads from 1 to 100 kN)	Documented In-House Method based on BS EN ISO 527-3:2003
Rigid plastics	Flexural properties	BS 2782:Part 3:Method 335A ISO 178
Film and sheeting	Tear strength - by trouser tear method for material thickness 0.25 to 1.00 mm - by trouser tear method	BS 2782:Part 3:Method 360B BS EN ISO 6383-1:2004 Documented In-House Method based on BS 2782:Part 3: Method 360B
Rigid cellular materials	Compressive strength (loads up to 100 kN)	BS 4370:Part 1:1988:Method 3 and BS ISO 844:2004
Vulcanised or thermoplastic rubber	Tear strength (loads up to 100 kN)	BS 903-A3:1994: Methods A & C BS ISO 34-1:1994
Adhesives	Bond strength (T Peel) (loads up to 100 kN)	BS EN ISO 11339:2010
Geotextiles and geotextile-related products	Static puncture (loads up to 25 kN)	BS EN ISO 12236:2006
Vulcanised or thermoplastic rubber	Hardness	BS 903:Part A26:1994 Methods N, H and L BS ISO 48:1994
Solid vulcanised or thermoplastic rubber	Dimensions	BS 903:Part 38:1991 Methods A to C ISO 4648:1991 BS ISO 23529:2010
Bitumen, plastic and rubber flexible sheets for waterproofing	Water Tightness Water Pressure Water Penetration > 60 kPa	BS EN 1928:2000; Method A Network Rail NR/L3/CIV/041: Issue 3 BD 47/99



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WATERPROOFING MEMBRANES AND SYSTEMS FOR CONCRETE BRIDGE DECKS	<u>Mechanical Tests</u>	
	Tensile adhesion (loads up to 50 kN)	BD 47/99
	Impact	BD 47/99
WATERPROOFING SYSTEMS FOR UNDERLINE BRIDGE DECKS	<u>Physical Tests</u>	
	Chloride ion penetration Conditioning	Network Rail NR/L3/CIV/041: Issue 3
	Crack cycling Conditioning	Network Rail NR/L3/CIV/041: Issue 3
	Exposure to freeze/thaw cycles Conditioning	Network Rail NR/L3/CIV/041: Issue 3
	Accelerated ageing	Network Rail NR/L3/CIV/041: Issue 3 BS 903:1998:Part A19 BS ISO 188:1998
	Exposure to fuel oil Conditioning	Network Rail NR/L3/CIV/041: Issue 3
	Exposure to bitumen Conditioning	Network Rail NR/L3/CIV/041: Issue 3 BS 903:1998:Part A19 BS ISO 188:1998
THERMAL INSULATING PRODUCTS FOR BUILDING APPLICATIONS	Exposure to ultra violet light Conditioning	BS 3900 - F16:2007 BS EN ISO 11507:2007
	<u>Physical Tests</u>	
	Determination of thickness	BS EN 823:1995
	Determination of compression behaviour	BS EN 826:1996
	Determination of compressive creep	BS EN 1606:1997
Determination of short term water absorption by partial immersion	BS EN 1609:1997:Method A	



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THERMAL INSULATING PRODUCTS FOR BUILDING APPLICATIONS (cont'd)	<u>Physical Tests</u> (cont'd) Determination of long term water absorption by immersion Determination of long term water absorption by diffusion	BS EN 12087:1995:Methods 1A and 2A BS EN 12088:1997
THERMOPLASTIC PIPES up to 1000 mm diameter	<u>Mechanical and Physical Tests</u> Short-term stiffness Flexibility of a pipe ring	BS EN ISO 9969:2007 BS 2782:Part II:1995: Method 1114B BS EN 1446:1996 BS 2782:Part II:1995 Method 1114C
THERMOPLASTICS STRUCTURED WALL PIPES, JOINTS and COUPLERS WITH A SMOOTH BORE for GRAVITY SEWERS Pipes 150 mm to 375 nominal internal diameter	Resistance to combined temperature and external loading using a box loading test (BLT)	WIS No 4-35-01, Issue 1 Appendix A
EXTERNAL RIB-REINFORCED PVC-U-PIPES Pipes up to 250 mm nominal internal diameter	<u>Mechanical and Physical Tests</u> Short-term stiffness Flexibility of a pipe ring Resistance to combined temperature and external loading using a box loading test (BLT)	WIS No. 4-31-05 Issue 2 Appendix B WIS No. 4-31-05 Issue 2 Appendix E WIS No. 4-31-05, Issue 2 Appendix F



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UNDERGROUND SEWER and DRAIN PIPES, FITTINGS and ACCESSORIES	<p><u>Physical Tests</u></p> <p>Box loading (0-100 kN) Thermal cycling (temperature from ambient to 371K and flow rates: - cold 6-44 litres/min - hot 6-50 litres/min)</p>	Documented In-House Method based on BS 4660:2000: Appendix D
UNPLASTICISED PVC SOIL and VENTILATING PIPES, FITTINGS and ACCESSORIES of 82.4 mm MINIMUM MEAN OUTSIDE DIAMETER	<p><u>Physical Tests</u></p> <p>Thermal cycling (temperature from ambient to 371 K and flow rates: - cold 6-44 litres/min - hot 6-50 litres/min)</p>	BS 4514:2001:Clause 6.6 and Documented In-House Methods based on BS 4514:2001
POLYPROPYLENE and PLASTICS WASTE PIPE and FITTINGS	<p><u>Physical Tests</u></p> <p>Thermal cycling (temperature from ambient to 371 K and flow rates: - cold 6-44 litres/min - hot 6-50 litres/min)</p>	BS 5254:1976:Appendix E BS 5255:1989:Appendix A and Documented In-House Methods based on BS 5254:1976 and BS 5255:1989
THERMOPLASTICS PIPES and ASSOCIATED FITTINGS for HOT and COLD WATER for DOMESTIC PURPOSES and HEATING INSTALLATIONS in BUILDINGS	<p><u>Physical Tests</u></p> <p>Thermal cycling (temperature from ambient to 390 K and pressure 0 to 25 bar)</p>	BS 7291:2010:Part 1:Appendix C ISO 10508:Appendix A and B BS EN 12293:2000 BS 2782-11:2000:Method 11237 Documented In-House Methods based on the above standards
UNPLASTICISED PVC UNDERGROUND DRAIN PIPES and FITTINGS	<p><u>Physical Tests</u></p> <p>Thermal cycling (temperature from ambient to 371 K and flow rates: - cold 6-44 litres/min - hot 6-50 litres/min)</p>	BS 4660:2000:Appendix E Documented In-House Methods agreed with the Client
PLASTICS INSPECTION CHAMBERS for DRAINS	<p><u>Physical Tests</u></p> <p>Thermal cycling (temperature from ambient to 371 K and flow rates: - cold 6-44 litres/min - hot 6-50 litres/min)</p>	BS 7158:2001 Annex E Documented In-House Methods agreed with the Client



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THERMOPLASTICS PIPING SYSTEMS FOR SOIL AND WASTE DISCHARGE INSIDE BUILDINGS	<u>Physical Tests</u> Thermal cycling (temperature from ambient to 371 K and flow rates: - cold 6-44 litres/min - hot 6-50 litres/min)	BS EN 1055:1996 BS 2782:Part 11:1996: Method 1111A
GULLIES FOR BUILDINGS	<u>Physical Tests</u> Thermal cycling (temperature from ambient to 371 K and flow rates: - cold 6-44 litres/min - hot 6-50 litres/min)	BS EN 1253-2:2003:Clause 9.1
CAST IRON SPIGOT DRAINPIPES and FITTINGS	<u>Physical Tests</u> Thermal cycling (temperature from ambient to 371 K and flow rates: - cold 6-44 litres/min - hot 6-50 litres/min)	BS EN 877:1999+A1:2006: Clause 5.7.2.7 Documented In-House Methods based on BS EN 877:1999 + A1:2006
CAVITY WALLS filled with thermal insulation materials	Water resistance	Water Resistance Detailed Operating Procedure
EXTERNAL THERMAL INSULATION COMPOSITE SYSTEMS with RENDERING	Hygrothermal behaviour	ETAG 004:March 2000
ELEMENTS OF CLADDING, CURTAIN WALLING, WINDOWS and DOORS	Elements up to 2.5 m high and 3.0 m wide (Maximum pressure \pm 3000 Pa) Air permeability Water tightness under static pressure Wind resistance (Maximum pressure \pm 3000 Pa) Air permeability Water tightness Wind resistance	BS 6375:2009:Part 1 and the specified tests. BS 5368:- Part 1 (EN42):1975 Part 2 (EN86):1980 Part 3 (EN77):1978 Part 4 (EN78):1977 BBA MOAT No. 1 Documented In-House Methods based on the above standards BS EN 12210:2000 and the specified tests BS EN 1026:2000 BS EN 1027:2000 BS EN 12211:2000



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WINDOWS and DOORS	Weathertightness Air permeability Watertightness Resistance to windload	BS 6375-1:2009 BS EN 1026:2000 BS EN 1027:2000 BS EN 12211:2000
DOOR ASSEMBLIES - external, single leaf	<u>Physical Tests</u> Abusive forces on handles Basic security test Closure against obstruction Cyclic operation test Operating forces Resistance to hard body impact Resistance to static torsion Resistance to soft and heavy body impact Resistance to vertical loads Slamming resistance Weathertightness Thermal Cyclic Test	PAS 23-1:1999
DOOR ASSEMBLIES - external, single and double leaf	<u>Physical Tests</u> Hard body impact Infill medium removal - manual Infill medium removal - mechanical Manual check test Manipulation test Mechanical loading test Soft body impact Manual cutting test Security Hardware and cylinder test Part 1 Part 2	PAS 24 : 2007 + A2:2011
WINDOWS - casement, tilt/turn, top swing and vertical sliding	<u>Physical Tests</u> (enhanced security performance) Glazing removal - manual Glazing removal - mechanical Manipulation Mechanical loading Manual check	BS 7950:1997 Documented In-House Methods based on BS 7950 and agreed with the customer



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LETTERPLATES	Security of fixings	BS EN 13724:2002
GENERAL	Corrosion tests in artificial atmospheres - NSS (neutral salt spray)	BS EN ISO 9227:2006
END		