


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>	Smithers Rapra Ltd	
	Issue No: 022 Issue date: 02 March 2009	
Shawbury Shrewsbury Shropshire SY4 4NR	Contact: Stephen Vinter/Charlotte Statham Tel: +44 (0)1939 250383 Fax: +44 (0)1939 251118 E-Mail: svinter@rapra.net/cstatham@rapra.net Website: www.rapra.net	
Testing performed by the Organisation at the locations specified below		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
<p>Address Shawbury Shrewsbury Shropshire SY4 4NR</p> <p>Contact Mr S Vinter/Ms C Statham Tel: +44 (0)1939 250383 Fax: +44 (0)1939 251118 Email: svinter@rapra.net / cstatham@rapra.net</p>	<p>Mechanical, Physical, Chemical and Electrical Tests, Thermal Properties, Dimensional Properties: - Plastics - Plastic products - Raw and Vulcanised Rubber - Rubber Products Food Contact Tests</p>	S
<p>Address 18 Belasis Court Belasis Hall Technology Park Billingham TS23 4AZ</p> <p>Contact Mr A Hamilton Tel: +44 (0)1939 2503831642 370406 Fax: +44 (0)1939 2511181642 564551 Email: ahamilton@rapra.net</p>	<p>Mechanical, Physical, Chemical and Electrical Tests, Thermal Properties: Plastics Glass Reinforced Plastic Raw and Vulcanised Rubber Automotive Components</p>	B



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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
RAW AND VULCANISED RUBBER AND PRODUCTS	<u>Mechanical and Physical Tests</u>		
	Density	BS 903:Part A1:1996 (Withdrawn) ISO 2781:2008	B S B S
	Tensile and compressive properties in temperature range -60° to 200°	BS ISO 37:2005 BS ISO 7743:2008 BS 903:Part A6:1992 (withdrawn) ISO 815:1991	B S B S S S
	Compression set		
	Rebound resilience, Lupke in temperature range -40 °C to 100 °C	BS 903:Part A8:1990(1995)	S
	Indentation hardness	BS ISO 7619-1: 2004 BS ISO 7619-2: 2004	B S S
	Abrasion resistance	BS 903:Part A9:1988(1995) BS ISO 4649:2002	S S
	Ply adhesion	BS ISO 36:2005	S
	Stiffness	BS 903:Part A13:1990(1995) ISO 1432:1988	S S
	Modulus in shear	BS 903:Part A14:1992 (withdrawn) ISO 1827:2007	S S
	Tear strength	BS 903:Part A3:1995 (excluding angle) (withdrawn) BS ISO 34-1:2004	B S
	Dynamic moduli	BS ISO 4664-1:2005	B
	Effect of liquids	BS ISO 1817:2005	B S
	Heat resistance	BS 903:Part A19:1998 BS ISO 188:2007 ISO 188: 2007 excluding oxygen bomb)	B S S B



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RAW AND VULCANISED RUBBER AND PRODUCTS (cont'd)	<u>Mechanical and Physical Tests</u> (cont'd)		
	Resistance to weathering	BS ISO 4665:1998 (excluding Fresnel Mirrors and Carbon Arc)	B
	Rubber to metal bond strength	BS 903:Part A21.2:1997 Method B:1997 ISO 814:1996	S S
	Impact brittleness	BS 903:Part A25:1992 ISO 812:1991	S S
	Hardness	BS 903:Part A26:1995 (withdrawn) ISO 48:2007	B S B S
	Permeability	BS 903:Part A30:1996 (withdrawn) ISO 2782:2006	S S
	Dimensions	BS ISO 23529:2004	S
	<u>Physical Tests</u>		
	Stress relaxation in temperature range -55°C to 250°C	BS 903:Part A42:1992(1999) Method B BS ISO 3384:2005	S S
	Resistance to ozone cracking (static)/Dynamic ozone	BS ISO 1431-1:2004 BS 6469:Section 99.1:1992:Cl 13	S S
	Crystallization effects	BS 903:Part A63:1995 ISO 3387:1994	S S
	<u>Electrical Tests</u>		
	Surface resistivity	BS 903:Part C1:1991(1996) BS 2782:Method 231A:1991	S S
	Volume resistivity	BS 903:Part C2:1982(1995) BS 2782:Method 230 A:1982	S S
	Electric strength	BS EN 60243-1:1998	S
	Insulation resistance	BS 903:Part C5:1992 IEC 60167:1964	S S



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RAW AND VULCANISED RUBBER AND PRODUCTS (cont'd)	<u>Electrical Tests</u> (cont'd)		
	Determination of insulation resistance	BS 2782:Method 232:1992	S
RAW AND VULCANISED RUBBER	Resistivity	BS 7506:Part 2:1996	S
	<u>Chemical Tests</u>		
	Carbon black content	BS 7164:Part 14:1996 ISO 1408:1995	S S
	Determination of ash content	In-House procedure based on ISO 247:1978	B S
	Identification of hydrocarbon chloroprene, nitrile and chlorosulphonated polythene rubbers by infrared spectrometry	BS ISO 4650:2005	S
RUBBER PRODUCTS	Determination of solvent extract	BS 7164:Part 3:1992 ISO 1407:1992	S S
	<u>Physical Tests</u>		
Elastomeric seals for pipe joints	Physical properties	BS EN 681-1:1996 BS EN 681-2, -3 and -4:2000 BS EN 682:2002	S S S
	Mooney-Rivlin analysis	Documented In-House Procedure 84	S
Natural rubber compounds	Classification	BS 1154:2003	S
Natural rubber compounds for extrusion	Classification	BS 1155:2003	S
Ethylene propylene rubber compounds	Classification	BS 6014:2003	S



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RUBBER PRODUCTS (cont'd)	<u>Physical Tests</u> (cont'd)		
Layflat hose	Mass hydrostatic tests, flexibility, heat ageing, oil, resistance, leakage, adhesion, moisture absorption, heat resistance, abrasion resistance, ozone resistance, security of couplings Pressure tests up to 80 bar Dimensions, leakage	BS 6391:1983	S
Acrylonitrile butadiene rubber compounds	Classification	BS 2751:2001	S
Chloroprene rubber compounds	Classification	BS 2752:2003	S
Butyl rubber compounds	Classification	BS 3227:2003	S
Gloves	Mechanical and leakage	BS EN 374-1:2003	S
	Air leak and water leak	BS EN 374-2:2003	S
	Mechanical methods	BS EN 388:2003 BS EN 407:2004	S S
	General requirements (except leather gloves) Integrity, mechanical	BS EN 420:2003	S
	Permeability, size, ozone	BS EN 421:1994	S
Electricians gloves	Construction, mechanical and electrical tests	BS 697:1986 (obsolescent)	S
	Specification for gloves and mitts of insulating material for live working (ac option)	BS EN 60903:2003	S
Sleeves	Sleeves of insulating material for live working	BS EN 60984:1993	S



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RUBBER PRODUCTS (cont'd)	<u>Physical Tests</u> (cont'd)		
Footwear	Requirements and test methods for safety, protective and occupational footwear for professional use:	BS EN ISO 20344:2004	S
	Tear strength	Clause 6.3, 8.3	S
	Leakproofness	Clause 6.5	S
	Thickness	Clause 6.1	S
	Tensile properties	Clause 6.4	S
	Impact resistance	Clause 5.4	S
	Compression resistance	Clause 5.5	S
	Corrosion resistance	Clause 5.6	S
	Flexing resistance - outsole	Clause 8.6	S
	Resistance to fuel oil	Clause 8.6	S
	Flexing resistance (rubber uppers only)	Clause 8.4	S
	Safety footwear for professional use:	BS EN ISO 20345:2004	S
	Leakproofness	Clause 5.3.3	S
	Thickness	Clause 5.4.2	S
	Tear strength	Clause 5.4.3	S
	Tensile properties	Clause 5.4.4	S
	Flexing (rubber uppers only)	Clause 5.4.5	S
	Impact resistance	Clause 5.3.2.3	S
	Compression resistance	Clause 5.3.2.4	S
	Corrosion resistance	Clause 5.3.2.5	S



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RUBBER PRODUCTS FOOTWEAR(cont'd)	<u>Physical Tests</u> (cont'd)		
	Safety footwear for professional use: (cont'd)	BS EN ISO 20345:2004	S
	Flexing resistance - outsole	Clause 5.8.4	S
	Resistance to fuel oil	Clause 5.8.7	S
	Safety footwear for professional use:	BS EN ISO 20346:2004	S
	Tear strength	Clause 5.4.3	S
	Leakproofness	Clause 5.3.3	S
	Thickness	Clause 5.4.2	S
	Tensile properties	Clause 5.4.4	S
	Flexing resistance (rubber uppers only)	Clause 5.4.5	S
	Impact resistance	Clause 5.3.2.3	S
	Compression resistance	Clause 5.3.2.4	S
	Corrosion resistance	Clause 5.3.2.5	S
	Flexing resistance - outsole	Clause 5.8.4	S
	Occupational footwear for professional use:	BS EN ISO 20347:2004	S
	Tear strength	Clause 5.4.3	S
	Leakproofness	Clause 5.3.2	S
	Thickness	Clause 5.4.2	S
	Tensile properties	Clause 5.4.4	S
	Flexing resistance (rubber uppers only)	Clause 5.4.5	S
Flexing resistance - outsole	Clause 5.8.4	S	



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PLASTICS	<u>Physical Tests</u>		
	Elmendorf tear test	BS EN ISO 6383-2:2004	S
	Trouser tear test	BS EN ISO 6383-1:2004	S
	Density	BS 2782:Part 6:Method 620A:1991 ISO 1183-1:2004	B S B S
	<u>Thermal Properties</u>		
	Vicat softening temperature	BS 2782:Part 1:1997 Methods 120A, B, D and E (withdrawn) BS EN ISO 306:2004	B S B S
	Temperature of deflection	BS EN ISO 75-1:2004 BS EN ISO 75-2:2004 BS EN ISO 75-3:2004	B S B S B S
	Stiffness in torsion	BS 2782:Part 1:1991 Method 153A (withdrawn)	S
	<u>Electrical Tests</u>		
	Electric strength	BS EN 60243-1:1998	S
	Volume resistivity	BS 2782:Part 2:1982 Method 230A BS 903:Part C2:1982 ASTM D257:1999	S S B
	Surface resistivity	BS 903:Part C1:1991 BS 2782:Part 2:1991 Method 231A ASTM D257:2007	S S B
	Insulation resistance	BS 2782:Part 2:1992 Method 232 IEC 60167:1964 BS 903:Part C5:1992	S S S



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PLASTICS (cont'd)	<u>Mechanical Tests</u>		
	Tensile and compressive properties (forces up to ± 200 kN) All tests other than stiffness, cohesion, falling weight Impact and tear strength in temperature range -60 °C to 200 °C		
	Tensile strength, elongation and elastic modulus	BS EN ISO 527-1:1996 BS EN ISO 527-2:1996 BS EN ISO 527-3:1996	B S B S B S
	Izod impact strength	BS EN ISO 180:2001	B S
	Charpy impact strength	BS EN ISO 179-1:2001	B S
	Flexural properties	BS EN ISO 178:2003	B S
	Falling weight impact resistance	BS 2782:Part 3:Method 352D: 1996 (withdrawn)	S
	Tensile impact strength	BS EN ISO 8256: 2004 Method A, except Type 5	S
	Tear strength	BS EN ISO 6383-1:2004 BS EN ISO 6383-2:2004	S S
	Indentation hardness	BS EN ISO 868:2003	B S
	<u>Chemical Tests</u>		
	Carbon black content	BS 2782:Part 4:Method 452B:1993	S
	Residual styrene monomer content - gas chromatography	Documented In House Method based on BS ISO 2561:2006	S
	Antioxidants in polyethylene	Documented In-House Procedures	S
	Determination of water content	BS EN 15512:2003	B
	Effect of liquid chemicals	BS 2782:Part 8:Method 830A:1999 BS EN ISO 175:2001	B S B S



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PLASTICS (cont'd)	<u>Chemical Tests</u> (cont'd)			
	Ash and sulphated ash	BS 2782:Part 4:Method 470A:1997 BS EN ISO 3451-1:1997 BS EN ISO 3451-1:1997 Method A BS EN ISO 3451-4: 2000 BS EN ISO 3451-5:2002	S S B S S	
	<u>Dimensional Properties</u>			
	Moulding materials	Thickness	BS 2782:Part 6:Method 630A:1994 ISO 4593:1993	S S
		Gravimetric thickness and yield	BS 2782:Part 6:Method 631A:1993 ISO 4591:1992	S S
		<u>Physical Tests</u>		
		Melt flow rate	BS EN ISO 1133:2005	B S
		Water vapour transmission	BS 2782:Part 8:1996 Method 820A ISO 2528:1995	S S
		Carbon black dispersion	BS 2782:Part 8:1978(1996) Methods 823A and 823B	S
		Pigment dispersion	BS ISO 18553:2002	S
GLASS REINFORCED PLASTIC	Barcol hardness	BS 2782:Part 10:1977(1994) Method 1001 EN 59:1977	S S	
	Loss on ignition	BS 2782:Part 10:1977(1996) Method 1002 EN 60:1977	S S	
	Tensile properties in temperature range -55 °C to 200°C (forces up to ±200 kN)	BS 2782:Part 10:1977(1996) Method 1003 EN 61:1977	B S B S	
	Standard atmospheres	BS 2782:Part 10:1977(1996) Method 1004 EN 62:1977	S S	



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GLASS REINFORCED PLASTIC (cont'd)	Flexural properties	BS 2782:Part 10:1977(1996) Method 1005 EN 63:1977	B S B S
	Volatile matter and resin content	BS 2782:Part 10:1978 (1995) Method 1006	S
POLYAMIDES	<u>Physical Tests</u>		
	Determination of viscosity number	BS EN ISO 307:2003 (excluding soluble matter correction) Documented In-House Method No 31, Issue 1:March 1996	B
Antistatic and conducting polymer products	Electrical resistance	BS 2050:1978(1996)	S
SOLID ELECTRICAL INSULATING MATERIALS	<u>Physical Tests</u>		
	Volume resistivity	BS 6233:1982 IEC 60093:1980	S S
IMPACT ABSORBING PLAYGROUND SURFACES	All physical tests	BS 7188:1998	S
	Critical fall height	BS EN 1177:1998	S
RUBBER and PVC HOT WATER BOTTLES	Dimensions, physical properties, pressure test	BS 1970:2006	S
LATEX CONDOMS	Dimensions, tensile properties accelerated ageing, freedom from holes	BS EN ISO 4074:2002	S
FLEXIBLE PVC FLOORING	All physical properties	BS EN 649:1997	S
MOULDING AND EXTRUSION MATERIALS	<u>Physical, Mechanical and Electrical Tests</u>		
	Polystyrene	Classification	BS EN ISO 2897-Parts 1:1999 and 2:2003
Acrylonitrile - butadiene - styrene	Classification	BS EN ISO 2580:Parts 1:2002 and 2:2003	S
Styrene - acrylonitrile	Classification	BS EN ISO 4894:1999 Parts 1 & 2	S



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FLOORING	<u>Physical Tests</u> Friction, ramp, and pendulum tests	DIN 51 097:1992 BS 7976:Part 2:2002	S S
INSULATING AND SHEATHING MATERIALS OF ELECTRICAL CABLES	<u>Mechanical and Physical Tests</u> Ozone resistance Hot set Oil immersion	BS 6469:Part 2:Section 2.1:1992 (withdrawn) BS EN 60811-2-1:1998 IEC 60811-2-1:1998	S S S
TYRES	Drum test	ECE Regulation 30 ECE Regulation 54 ECE Regulation 75	S S S
RETREAD CAR AND COMMERCIAL VEHICLE TYRES	Drum test	ECE Regulation 108 ECE Regulation 109	S S
FOOD CONTACT	<u>Analytical Tests</u>		
Plastic materials	Overall and specific migration-level of the constituents into foodstuffs	Documented In-House Methods for EC Directive 2002/72EEC and UK Statutory Instruments SI2006/1401 EN 1186, Parts 1-10 and EN 1186, Parts 12-15 EN 13130, Parts Parts 1-7, 9-10, 13-19 and 21-28	S S S S
Elastomeric material	Overall and specific migration of constituents into foodstuffs	FDA Regulations Chapter 21, Part 177.2600 Repeat use rubber articles	S
BATHS, ACRYLIC	<u>Physical Tests</u> Resistance to temperature change, domestic chemicals, stains, impact and deflection	BS 4305:Part 1:1989 EN 198:1988	S S
ACRYLIC SHOWER TRAYS	Resistance to temperature change, domestic chemicals and stains, impact resistance, deflection	BS 6340:Part 5:1983	S



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CAST ACRYLIC SHEET FOR BATHS AND SHOWER TRAYS	<u>Physical Tests</u> (cont'd)	BS EN 263:2002	S
	Viscosity, Vicat softening point water absorption, tensile strength, thermal stability, colour fastness, resistance to chemicals and stains, hot water		
PLASTICS	<u>Analytical Tests</u>	In-House procedures numbered: RT011.71.01 HTGPC of PEEK RT011.71.05 GPC with THF or Chloroform RT011.71.06 HTGPC of Polyolefins RT011.71.07 GPC with HFIP RT011.71/08 GPC with Aqueous Eluents RT011.71.09 HTGPC with Polar Solvents	S S S S S S
	Comparison of Molecular weight distribution by GPC		
	<u>Physical Tests</u>		
GENERAL MATERIALS	Fluid Contamination	MIL-STD-810F, Notice 3 Method 504 DEF STAN 00-35:Part 3/4: Chapter 4-04 Test CN4 BS 3G100:Part 2:Section 3:1991 Sub-section 3.12 RTCA/DO-160F:2007	S S S S
	Glass transition temperature (Tg)	BS ISO 11357-2:1999 BS ISO 11357-1:1997 BS ISO 11357-3:1999 BS ISO 11357-6:2002	S S S S
AUTOMOTIVE COMPONENTS	Pressure fatigue (coolant systems)	IHM -46:April 2006	B
	Operating durability	IHM -47:August 2005	B
END			