Schedule of Accreditation

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Smithers Pira
(part of Smithers Rapra and Smithers Pira Ltd)

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Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Physical Tests	
PAPER and BOARD	Air Permeance	BS ISO 5636-3:2013 (Bendtsen Method) BS ISO 5636-5:2013 (Gurley Method)
	Brightness / Reflectance	BS ISO 2470-1:2009 (C/2° indoor daylight conditions) BS ISO 2470-2:2008 (D65/10° outdoor daylight conditions)
	Burst Strength	BS EN ISO 2758:2014 BS EN ISO 2759:2014
	Coefficient of Friction	ASTM D4917-07
	Colour	BS ISO 5631-1:2009 (C/2° indoor daylight conditions) BS ISO 5631-2:2014 (D65/10° outdoor daylight conditions)
	Compressive strength (short span)	BS ISO 9895:2008 TAPPI T826 pm-92
	Edge Crush	BS EN ISO 3037:2013
	Flat Crush	BS EN ISO 3035:2011
	Grammage	BS EN ISO 536:2012
	Grammage of Components	BS ISO 3039:2010

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Physical Tests (cont'd)	
PAPER and BOARD (cont'd)	Methylene Blue Penetration	BS 6254:1989 (1994) BS 6255:1989 (1994) BS 6256:1989 (1994)
	Moisture Content	BS EN ISO 287:2009
	Opacity	BS EN ISO 2471:2008
	Ring Crush	TAPPI T818 om-87 TAPPI T822 om-93
	Roughness - Bendtsen	BS ISO 8791-2:2013
	Stiffness (Static)	BS ISO 2493-1:2010 BS ISO 2493-2:2011 TAPPI T451 cm-84
	Tear Strength (Internal)	BS EN ISO 1974:2012
	Tensile Strength and Stretch, and Tensile Energy Absorption (TEA)	ASTM D828-97(2002) BS EN ISO 1924-2:2008 ISO 1924-2:2008
	Thickness and Bulk	BS EN ISO 534:2011
	Water Absorption (Cobb method)	BS EN ISO 535:2014
	Wet Strength	BS 2922:Part 1:1985(1995) BS ISO 3781:2011 ISO 3689:1983
TISSUE	Whiteness (CIE, D65 Outdoor light)	BS ISO 11475:2007
	Thickness	BS EN ISO 12625-3:2014
	Tensile strength, stretch and TEA	BS EN ISO 12625-4:2005
	Tensile strength wet (Finch Method)	BS EN ISO 12625-5:2005
	Grammage	BS EN ISO 12625-6:2005
	Water Absorbency (time & capacity)	BS EN ISO 12625-8:2010

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Physical Tests (cont'd)	
FILMS & LAMINATES, and BOTTLES & CONTAINERS	Moisture Vapour Transmission Rates	ASTM F1249-13
	Oxygen Transmission Rates	ASTM D3985-05 (2010) ASTM F1927-14 ASTM F1307-14
FLEXIBLE SHEET MATERIAL USED FOR PACKAGING	Water Vapour Transmission Rate	BS 3177:1959 (1995)
CONTAINERS & PACKAGINGS	Burst/Seal (via air inflation)	ASTM F1140-13
	Compression Resistance	Documented In-House Method (67b Issue No 1) based on BS EN 22872:1993
PLASTIC FILMS & SHEETING	Coefficient of Friction	EN ISO 8295:2004 ASTM D1894-14
	Density	BS EN ISO 1183-1:2012 (Method A) ASTM D792-13
	Dimension (Length/Width)	BS 2782:Part 6:Method 632A:1993 ISO 4592:1992
	Falling Dart Impact Resistance	BS 2782:Part 3:Method 352E:1996 (Method A) ASTM D1709-15 (Method A) BS EN ISO 7765-1:2004
	Gravimetric thickness	BS 2782-6:Method 631A:1993 ISO 4591:1992
	Puncture resistance	ASTM F1306-90:(reapproved 2008)
	Tear Resistance	BS 2782:Part 3:Method 360A:1991 (1996) BS EN ISO 6383-2:2004
	Thickness by Mechanical Scanning	BS 2782:Part 6:Method 630A:1994 ISO 4593:1993
	Tensile Strength, Elongation and Elastic Modulus (Sheet)	BS 2782:Part 3:Method 320A:1976 (1996)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Physical Tests (cont'd)	
PLASTIC FILMS & SHEETING (cont'd)	Tensile Strength, Elongation and Elastic Modulus (Films)	ASTM D882-12 BS EN ISO 527-1:2012 (General Principles) BS EN ISO 527-3:1995 BS 2782-3:1977 Methods 326A, 326B, and 326C
PACKAGING AND PACKAGING SYSTEMS	Seal Strength Tests of Flexible Barrier Materials	ASTM F88/F88M-15
	Seal Integrity (porous materials)	ASTM F1929-15 (Method A)
	Seal Integrity (non-porous materials)	ASTM F3039-13
	Seal Strength for peelable lids (45° method)	ASTM F2824-10 (2015)
	Pack integrity (external pressure bubble emission test)	ASTM D3078-02 (2013) Using an automated vacuum system.
	Pack Integrity (internal pressure bubble emissions test)	ASTM F2096-11
	Pack Integrity (leak test)	Documented in-house gas detection method (WI182, issue 3).
	Container Closure Seal Integrity	BS EN ISO 8871-5:2014 (Annex D) ISO 8871-5:2005
	Dye solution tightness	BS ISO 11040-4:2015 (Annex H) ISO 11040-4:2015(E)
	General techniques of Ultraviolet-visible quantitative analysis	ASTM E169-04 (reapproved 2014)
	Operation Force (break loose and glide)	BS EN ISO 7886-1:1997 (Annex G) ISO 7886-1:1993
	Dose accuracy	BS EN ISO 11608-1:2015 ISO 11608-1:2014(E)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Physical Tests (cont'd)	
PACKAGING AND PACKAGING MATERIALS FOR TERMINALLY STERILIZED MEDICAL DEVICES	Requirements for materials, sterile barrier systems, and packaging systems	BS EN ISO 11607-1:2009 + A1:2014 Using test specifications listed elsewhere in this Schedule, as appropriate
	General Requirements and Test Methods	BS EN 868:Part 1:Annex C1, C3, Annex D (BS 6256), Annex F
	Sterilization wrap - Requirements and Test Methods	BS EN 868:Part 2:2009: paras 4.2.1.1-7, 4.2.2.1, 4.2.2.2, 4.2.2.3-4, 4.2.2.3.6-7
	Paper used for paper bags, reels and pouches as specified in EN 868-4 and EN 868-5 - Requirements and Test Methods	BS EN 868:Part 3:2009: paras 4.2.2-16
	Paper bags - Requirements and Test Methods	BS EN 868:Part 4:2009: paras 4.2.1.1-3, 4.2.2, 4.2.3.1-3, 4.4.1-3, 4.5..1-4, 4.6.1-2
	Sealable pouches and reels of porous materials and plastic film construction - Requirements and Test Methods	BS EN 868:Part 5:2009: paras 4.2.2.1, 4.2.2.2-5, 4.3.1-4, 4.5.1-3, 4.6.1.1-3, 4.6.2
	Paper for low temperature sterilization processes - Requirements and Test Methods	BS EN 868:Part 6:2009: paras 4.2.2-16
	Adhesive coated paper for low temperature sterilization processes - Requirements and Test Methods	BS EN 868:Part 7:2009: paras 4.3.2-19, 4.4
	Uncoated non-woven materials of polyolefines - Requirements and Test Methods	BS EN 868:Part 9:2009: paras 4.3.1-7, 4.4
	Adhesive coated non-woven materials of polyolefines - Requirements and Test Methods	BS EN 868:Part 10:2009: paras 4.3.1-7, 4.3.9-11, 4.4

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
PACKAGING MATERIAL and PACKAGINGS (PAPER, BOARD, PLASTICS etc)	<u>Environmental Tests</u> High/Low Temperature Range: - 20 °C to + 60 °C Max chamber size: 2 m x 2 m x 2 m Range: - 20 °C to + 100 °C Max chamber size: 0.66 m x 0.74 m x 0.62 m Range: - 40 °C to + 100 °C Max chamber size: 0.56 m x 0.55 m x 0.53 m Thermal Shock (Auto transfer) Temp Range: - 35 °C to + 80 °C Chamber size: 0.45 m x 0.40 m x 0.60 m Humidity Range: 20 %RH to 95 %RH (Between 20 °C and 55 °C)	BS EN 60068-2-1:2007 BS EN 60068-2-2:2007 BS EN 60068-2-14:2009 BS EN 60068-2-30:2005 BS EN 60068-2-38:2009 BS EN 60068-2-78:2013

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Chemical Tests	
PLASTICS MATERIALS IN CONTACT WITH FOODSTUFFS	Overall migration into olive oil	BS EN 1186-2:2002 BS EN 1186-4:2002 BS EN 1186-6:2002 BS EN 1186-8:2002 BS EN 1186-13:2002 (Method A)
	Overall migration into aqueous simulants	BS EN 1186-3:2002 BS EN 1186-5:2002 BS EN 1186-7:2002 BS EN 1186-9:2002
	Overall migration into iso-octane and ethanol	BS EN 1186-14:2002 BS EN 1186-15:2002
	pH	BS 2924:Part 1:1983 (1993) BS ISO 6588-1:2012 BS ISO 6588-2:2012
	Chlorides and Sulphates	BS 2924:Parts 3 and 4:1990 (1995) ISO 9197/1:1989 ISO 9198:1989

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Performance Tests	
PACKAGING FOR THE TRANSPORT OF DANGEROUS GOODS		
UN Chapter 6.1 and Class 6.2 Packagings		For Class 6.1: Operational Instructions for UN Test Stations issued by VCA under the authority of DfT
Drums: Metals Wood Fibreboard Plastics	Drop tests (with preconditioning at - 18 °C (plastics), and 23 °C/50 %RH (fibreboard), as required)	For Class 6.2: UN Recommendations on the Transport of Dangerous Goods (18th Edition)
Jerricans: Metal Plastics	Stack tests (at ambient temperature, 40 °C (plastics), and 23 °C/50 %RH (fibreboard) as required)	
Boxes: Metal Wood Fibreboard Plastics	Leakproofness tests Internal pressure (hydraulic) tests Steel rod impact tests	
Bags: Plastics Textile Paper		
Composite packaging: Plastics receptacle Glass, porcelain or stone Receptacle		
UN Chapter 6.5 Packagings		Operational Instructions for UN Test Stations issued by VCA under the authority of DfT
Intermediate Bulk Containers (IBCs) Rigid Flexible	Drop tests Stack tests Leakproofness tests Internal pressure (hydraulic tests) Top lift tests Bottom lift tests Tear tests Topple tests Righting tests	

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Performance Tests (cont'd)	
PACKAGING FOR THE TRANSPORT OF DANGEROUS GOODS (cont'd)		
UN Chapter 6.6 Packagings		UN Recommendations on the Transport of Dangerous Goods (18^{th} Edition)
Large Packagings Rigid Flexible	Drop tests Stack tests Top lift tests Bottom lift tests	
	Conditioning for testing	
COMPLETE, FILLED TRANSPORT PACKAGES	Max temp: 60 °C Min temp: - 40 °C Humidity: 90 %rh @ 38 °C Max chamber size: 4.0 m x 2.5 m x 3.0 m (high) Laboratory conditions: 23 °C, 50 % RH	BS EN 22233:1993 ISO 2233:1986 BS EN 24180:1993 ISO 4180:1980 ASTM D4332-89 ASTM D4332-14
	Performance Tests	
COMPLETE, FILLED TRANSPORT PACKAGES	Stacking (static load) Max load: 5500 kg	BS EN 22234:1993 ISO 2234:1985 BS EN 24180:1993 ISO 4180:1980
	Vertical Impact (Drop test) Max height: 4.5 m Max mass: 2250 kg	BS EN 22248:1993 ISO 2248:1985 BS EN 24180:1993 ISO 4180:1980 ASTM D5276-92 ASTM D5265-09 ASTM D6344-09
	Horizontal Impact (Inclined plane) Max mass: 2000 kg Max impact velocity: 4.7 m/s	BS EN 22244:1993 ISO 2244:1985 BS EN 24180:1993 ISO 4180:1980 ASTM D880-86 (Methods A, B)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Performance Tests (cont'd)	
COMPLETE, FILLED TRANSPORT PACKAGES (cont'd)	Fixed Low Frequency Vibration Frequency range: 1 Hz to 6 Hz Max amplitude: 25.4 mm Max mass: 1000 kg	BS EN 22247:1993 ISO 2247:1985 BS EN 24180:1993 ISO 4180:1980 ASTM D999-91 (Method A2)
	Compression Max force: 22000 kgf	BS EN 22872:1993 ISO 2872:1985 BS EN 24180:1993 ISO 4180:1980 ASTM D642-15
	Rolling Max mass: 500 kg	BS EN 22876:1993 ISO 2876:1985 BS EN 24180:1993 ISO 4180:1980
	Water Immersion Tank size: 0.87 m x 0.87 m x 1.15 m	BS EN 28474:1993 ISO 8474:1986 BS EN 24180:1993 ISO 4180:1980
	Toppling Max mass: 500 kg	BS EN 28768:1993 ISO 8768:1986 BS EN 24180:1993 ISO 4180:1980
	Sequential Tests (based on above facilities) Vibration/drop/stack/compression/ etc	ISTA Procedures 1A:2014 1B: 2014 1C: 2014 1D: 2014 1E: 2014 1G: 2014 1H: 2014 2A:2011 2B:2011 2C:2011 3A:2008 3E:2009 3F:2008 3K 2011 4AB:2009 7D:2007

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
	Performance Tests (cont'd)	
COMPLETE, FILLED TRANSPORT PACKAGES (cont'd)	Sequential Tests (based on above facilities) Vibration/drop/stack/compression/ etc (cont'd)	Documented In-House Method TM 001:Issue 3:September 2001 ASTM D4169-05 ASTM D4169-08 ASTM D4169-09 ASTM D4169-14 ASTM D4169-16 ASTM D7386-08 ASTM D7386-12 ASTM D7386-16
PACKAGING, PACKAGED ITEMS, GENERAL EQUIPMENT, ELECTRO-MECHANICAL ASSEMBLIES, NON-EXPLOSIVE STORES	Vibration - Sine, random, mixed mode - Ambient temperature - Vertical (Electro Magnetic) Frequency Range: 5 Hz to 2,000 Hz Max Sine Thrust: 21 kN Max Random Thrust:18 kN (Servo-hydraulic) Frequency range: 1.0 Hz to 300 Hz Max peak thrust: 10 kN Max payload: 1.5 tonne Max displacement: 100 mm pk-pk Frequency range: 1.0 Hz to 300 Hz Max peak thrust: 40 kN Max payload: 1.5 tonne Max displacement: 150 mm pk-pk Shock - Classical shock with half sine or trapezoidal pulse shapes - Ambient temperature - Vertical Max item mass: 1000 kg Max footprint: 1 m x 1 m Severity: up to 500 'g' Duration: 3 ms to 20 ms	BS EN 60068-2-6:2008 BS EN 60068-2-64:1995 ASTM D999-08 ASTM D3580-95 (reapproved 2010) ASTM D4169-05, -08, -09, -14, -16 ASTM D4728-06 ISTA Procs 1, 2, 3 Series, 5B, 7A-D BS EN 60068-2-27:1993 DEF STAN 00-35:1997:Test M3 MIL-STD 202:1995: Method 213 MIL-STD 810F:2001 Method 516.5 (Procs ii & iii)

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
MACHINE READABLE TRAVEL DOCUMENTS Machine Readable Passports	Physical / Mechanical Tests	International Civil Aviation Organization (ICAO), Durability of Machine Readable Passports, Version 3.2 30.8.2006:
	Stress Methods	
	Conditioning stress	Section 5.1
	Thermal cycling	Section 5.2
	Storage temperature	Section 5.3
	Operational temperature	Section 5.4
	Impact stress	Section 5.5
	Book bend stress (back pocket)	Section 5.6
	Dynamic bend stress	Section 5.7
	Torsion stress	Section 5.8
	Sheet turning stress	Section 5.9
	Sheet pull stress	Section 5.10
	Abrasion stress	Section 5.11
	Pen stress	Section 5.12
	Resistance to chemicals - evaluation method	Section 5.13
	Artificial daylight exposure stress	Section 5.14
	X-ray stress (subcontracted)	Section 5.15
	Evaluation Methods	
	Functional PIC evaluation	Section 6.1
	Physical damage evaluation	Section 6.2
	Peel Strength evaluation	Section 6.3
	Colour fastness evaluation	Section 6.4
	Datapage warpage evaluation	Section 6.5
	Book warpage evaluation	Section 6.6

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
MACHINE READABLE TRAVEL DOCUMENTS Machine Readable Passports (cont'd)	Physical / Mechanical Tests (cont'd)	International Civil Aviation Organization (ICAO), Durability of Machine Readable Passports, Version 3.2 30.8.2006
	Test Sequences	
	Sheet binding sequence	Section 7.3
	Storage climate sequence	Section 7.4
	Operational climate sequence	Section 7.5
	Impact sequence	Section 7.6
	Back pocket sequence	Section 7.7
	Torsion fatigue sequence	Section 7.8
	Delamination sequence	Section 7.9
	Bending fatigue sequence	Section 7.10
	Thermal cycling sequence	Section 7.11
	Colour fastness sequence	Section 7.12
	Resistance to chemicals sequence	Section 7.13
	Pen sequence	Section 7.14
	Data-page abrasion sequence	Section 7.15
	X-ray sequence (subcontracted)	Section 7.16
END		