Last Updated 12/14/2024

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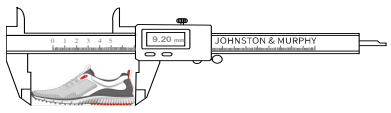

Footwear Lab Test Protocol

	TEST NUMBER	TEST TYPE	DESCRIPTION	FREQUENCY
Full Shoe	JM-101	FULL SHOE	peel strength of shoe bottom	2 4 5
	JM-102	FULL SHOE	water proof footwear testing	3 4 5 8
	JM-103	FULL SHOE	static temperature test	3
	JM-104	FULL SHOE	dynamic temperature test	3
	JM-105	FULL SHOE	whole shoe flex	4 7
	JM-106	FULL SHOE	friction slip resistance	4 5
	JM-110	FULL SHOE	outsole bond peeling strength	2 4 5
Leather	JM-201	LEATHER	crocking dry and wet color fastness	3 7
	JM-202	LEATHER	bally flex endurance	3 7
	JM-203	LEATHER	water proof absorption	3 4 5 7
	JM-204	LEATHER	water wicking	3 7
	JM-205	LEATHER	mullen bursting	3 7
	JM-206	LEATHER	tear strength	3 7
	JM-207	LEATHER	tensile strength	3 7
	JM-208	LEATHER	enlongation	3 7
	JM-209	LEATHER	cromium VI content	3 7
	JM-210	LEATHER	extratable heavy metal	3 7
	JM-211	LEATHER	color fastness to circular rubbing	3 7
	JM-212	LEATHER	lacquer adhesion	3 7
Materials	JM-301	MATERIALS	eyelet lace hole standard	3 5 6 7
	JM-302	MATERIALS	crocking dry and wet color fastness	3 5 6 7
	JM-303	MATERIALS	tear strength	3 5 6 7
	JM-304	MATERIALS	tear strength trouser leg method	3 5 6 7
	JM-305	MATERIALS	upper mesh abrasion method	3 5 6 7
	JM-306	MATERIALS	fabric materials stoll abrasion test	3 5 6 7
	JM-307	MATERIALS	tensile strength	3 5 6 7
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	JM-309	MATERIALS	standard light colors - light fastness	3 5 6 7
	JM-310	MATERIALS	upper eyelets & hooks finishing tests	3 5
	JM-311	MATERIALS	laminar peel strength	3 5 6 7
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Midsole and Outsole	JM-406	MIDSOLE AND OUTSOLE	tensile strength	3 5 6 7
	JM-407	MIDSOLE AND OUTSOLE	enlongation	3 5 6 7
	JM-417	MIDSOLE AND OUTSOLE	heel attachment strength	3 5
	JM-401	MIDSOLE AND OUTSOLE	tear strength test	3 4 5 7
	JM-402	MIDSOLE AND OUTSOLE	outsole midsole abrasion test	3 4 5 7
	JM-403	MIDSOLE AND OUTSOLE	heel top lift abrasion test	3 4 5 7
	JM-413	MIDSOLE AND OUTSOLE	leather outsole abrasion test	3 4 5 7
	JM-404	MIDSOLE AND OUTSOLE	PU & EVA midsole material split tear test	3 4 5 7
	JM-405	MIDSOLE AND OUTSOLE	outsole aging	3 7
	JM-408	MIDSOLE AND OUTSOLE	outsole ross flex test	3 4 5 6
	JM-409	MIDSOLE AND OUTSOLE	midsole ross flex test	3 4 5 6
	JM-410	MIDSOLE AND OUTSOLE	uv light color fastness test	3 4 5 6
	JM-411	MIDSOLE AND OUTSOLE	heat resistance	3 4 5 6
	JM-412	MIDSOLE AND OUTSOLE	outsole friction slip resistance	3 4
	JM-414	MIDSOLE AND OUTSOLE	eva compression set test	3 4 7
	JM-415	MIDSOLE AND OUTSOLE	eva resilience test	3 4 7
	JM-416	MIDSOLE AND OUTSOLE	tear strength test	3 4 7
	JM-418	MIDSOLE AND OUTSOLE	outsole midsole hardness test	3 4 5 7
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Knit Liner	JM-501	KNITTED UPPER	crocking dry and wet color fastness	3 4 5 7
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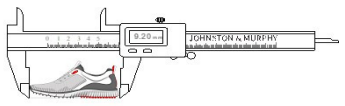
	JM-504	KNITTED UPPER	martindale abrasion	3 4 5 7
	JM-505	KNITTED UPPER	mullen bursting test	3 4 5 7
	JM-506	KNITTED UPPER	heel counter test	3 4 5 7

Test frequency :

1. Production - Daily
2. Production - Twice a Day
3. Development Phase
4. Commercialization Phase by Fit Approval
5. Initial Production by First Case
6. Every New SKU in Production
7. Every New Materials Batch
8. Every PO



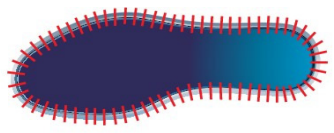
JOHNSTON & MURPHY

BACK

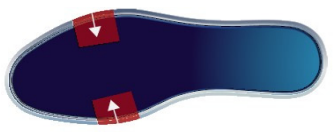
Footwear Lab Test Protocol

FULL SHOE

2 4 5 JM-101	Peel Strength of Bottom Constructions in Complete Footwear Test	Test Parameter	Test Method	Sample	Construction Type	Reporting Results Details
		The force required to separate the upper from the outsole around the whole lasted margin of complete footwear	SATRA TM 281	Whole Shoe 01 Pair after 48 hours	Rubber Outsole with EVA Midsole to Fabric, Synthetic or Leather Upper	2.5 Kg Per Cm
				Upper completely separated from the Outsole	Leather Outsole to Leather Upper	3.0 Kg Per Cm

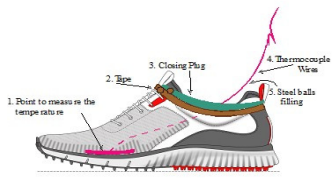


2 4 5 JM-110	Outsole Bond Peeling Strength Test	Test Parameter	Test Method	Sample	Construction Type	Reporting Results Details
		The force required to separate the upper from the outsole or to separate adjacent layers of the outsole or to cause tear failure of the upper or the sole is measured	ISO 20344 5.2 BS 5131 5.4 **SATRA TM 411** ISO 17708 GB/T 21396	Whole Shoe 01 Pair after 48 hours	Rubber Outsole with EVA Midsole to Fabric, Synthetic or Leather Upper	2.5 Kg Per Cm
				Upper pull from the Outsole in specific place	Leather Outsole to Leather Upper	3.0 Kg Per Cm

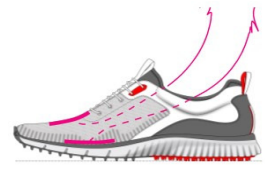


3 4 5 8 JM-102	Water Proof Footwear Testing	Test Parameter	Test Method	Applicable Details	Sample	Cycles	Reporting Results Details
		Water Penetration Footwear Flex Tester	SATRA TM 77	Footwear size between 6 & 12 Adults	1 Pair	15,000 Cycles	Visual assessment of Water Penetration and total area of water penetration mm2.
		Water Resistance Dynamic Footwear Tester	SATRA TM 230	Footwear size between 1 and 14 Adults	1 Pair	5,000 Cycles	Visual assessment of Water Penetration and total area of water penetration mm2.

3 JM-103	Static Temperature Test	Lab Test	Test Method		Cycle	Reporting Results Details
		TUV China	ISO 20344 5.13	Insert the shoe on a box with a temperature down to -17 C°. A thermal sensor is stick to the material inside the shoe to measure temperature variation for 30 minutes. The shoe is filled with steel balls.	30 minutes	Temperature variation is no more than 10°C



3 jm-104	Dynamic Temperature Test	Lab Test	Test Method		Cycle	Reporting Results Details
		IBTeC Brazil	NBR ABNT 14837 Internal Temperature	Thermocople inside the shoe and attached to a device that measures the temperature during a period of time while walking or running. Two thermocouples: Instep and Plantar	30 minutes	Measure the temperature variation during the period of test and report on a graphic
		TUV China	Non official Method Internal Temperature			



4 7 jm-105	Whole Shoe Flex	Test Parameter	Test Method	Material	Cycles	Reporting Results Details
		Leather Upper	SATRA TM 92	Swing metal plate at a rate of 140 cycles per minute with two artificial foot.	Temperature of 23 ±2 C° Bending angle: 35° to 45° Time: 48 hours	Visual Inspection of the Upper and Outsole 500.000 Flex 100.000 Flex

4 5 JM-106	Footwear Friction Slip Resistance	Test Parameter	Test Method	Method	Floor	Reporting Results Details
		Test for the slip resistance of Footwear outsole.	SATRA TM144 Satra STM 603 Slip Resistance Machine ISO 13287 Software Program	Coeficient of Friction	DRY	> 0.6
			Machine Test Coeficient of Friction Satra STM 603 Calibrate Floor		WET	> 0.3

Coeficient of Friction = Force to Move One Surfact over the other (FH) / Force Pressing the two surfaces together (FV)

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5. Initial Production by First Case
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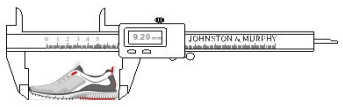
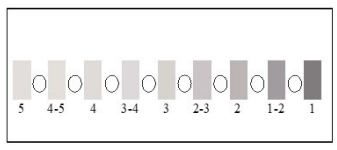


BACK

Footwear Lab Test Protocol

LEATHER

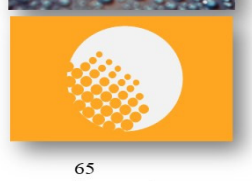
3 7 JM-201	Crocking Dry & Wet Color Fastness	Test Parameter: The measurement of a leather or fabric's performance when it is exposed to specific sources of ignition. Crocking means the transfer of color from one fabric to another by rubbing.	Test Method: AATCC 8-2001, ISO 105 X 12, SATRA 167, ASTM D5053	Grade 1 - High Degree of Color Transfer. Grade 5 - No color transfer	Reporting Details: Genuine or Suede Leather Dry: 3.0 - Wet: 2.5 (minimum); Dyed Textiles and Synthetic Leather: Dry: 4.0 - Wet: 3.0 (minimum); Knit uppers see JM-501	Reporting Results Details: Test from the American Association of Textile Chemists and Colorists. This method uses a standard white cotton fabric that is rubbed against the surface of the test material. To test for wet crocking the standard fabric is wet before rubbing against the material. Maximum Temperature of 60C°



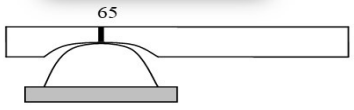
3 7 JM-202	Bally Flex Endurance	Test Parameter: Flexing endurance test is a simple folding of the leather specimen several times with the grain side out with help of a machine. Any change due to folding indicates poor flexing endurance.	Test Method: Satra TM 55 or equivalent equipment	Material: 45 x 70 mm, Angle: 22.5°	Cycles: 100,000 Cycles	Reporting Results Details: The Bally leather flexing test is conducted till the piece of leather cracks.

3 4 5 7 JM-203	Leather Water Proof Absorption	Test Parameter: This method is intended to determine the resistance of a material to water penetration on flexing. The method is mainly applicable to footwear upper outer materials but can be used with any flexible sheet material.	Test Method: ASTM D2099, SATRA TM 34	Material: A square test specimen is folded and secured in two V-Shaped clamps. The material is immersed in water and flexed until the first sign of water penetration through the test specimen.		Reporting Results Details: Minimum of 15,000 Cycles; For seam sealed construction 15.000 Cycles without water penetration. For booty construction 15.000 cycles <= 20% absorption.

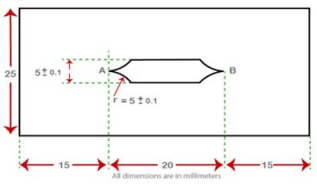
3 7 JM-204	Leather Water Wicking	Test Parameter: This method is intended to determine the change in appearance of a material when wetted, and the rate at which water is absorbed by the material by wicking. This method is is applicable to all water absorbent materials.	Test Method: SATRA TM 305	Material: A strip of material suspended vertically with the lower end immersed in a small quantitiy of water	Cycles: 1 Hour	Reporting Results Details: < 10 mm; Note effects such as staining, blistering, salt spue, discolouration and increase in thickness, especially in the region of the level that the water first reached.



3 7 JM-205	Leather Mullen Bursting	Test Parameter: The test method is designed to measure the force required to crack the grain of leather by steady hydraulic pressure on a diaphragm of definite diameter applied to the flesh side of the specimen to form a sphere.	Test Method: SATRA TM 24	Material: Leather, Synthetic Leather	Cycles: Constant rate until the test specimen fails. Time of 30 ± 10 seconds	Reporting Results Details: Leather: 20 Kg / Cm², Synthetic Leather: 26 Kg / Cm²



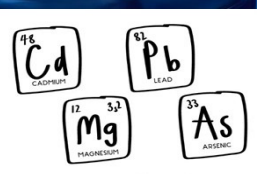
3 7 JM-206	Tear Strength Test	Tear strength conceptually the force per unit cross section of a material to extend a nick pre-cut on the specimen. The strain required to tear the material is measured only. Material in Length and Width.	Test Method: SATRA TM 162	Standard: Baumann Tear	Sample: Upper Material Leather	Reporting Results Details: Minimum of 10 Kgf/Cm



3 7 JM-207	Tensile Strength	Tensile strength is the force per unit area of cross section of a uniform piece of material. Is the measure of how much tensile stress the material can withstand. Material in Length and Width.	Test Method: SATRA TM43, ASTM D-2015, Tensile Strength of Leather	Standard: 4 mm thick; 1 x 6 inches; 1 x 6 inches; 1 ¼ x 6 ¾ inches	Sample: Fabric, Synthetic Leather, Leather	Reporting Results Details: Minimum of 100 Kgf / Cm²
3 7 JM-208	Elongation Tests	Elongation is a measure of the deformation of a material as determined by a tension test. It is the increase in the gauge-length of a test specimen after fracture divided by its original gauge-length. Material in Length and Width.	ASTM D-2016, JM	19.7 inches; 39.4 inches; 39.4 inches; 1.0 x 4.5 inches; 1.0 x 4.5 inches; 1.0 x 4.5 inches; 4 mm thick	Webbing, Laces, Threads, Plastic, Rubber, Elastomers	Minimum of 30 %

3 7 JM-209	Chromium Content	Chromium VI Content	Test Method: EN ISO 17075-1	Standard: Reporting Limit mg/ kg	Sample: Leather Material aging process at 80°C. Controle Humidity at 20%. Time: 24 hours in climatic chamber	Reporting Results Details: 3 < RL

3 7 JM-210	Extratable Heavy Metal	Determination of extractable metals in leather using extraction with an acid artificial-perspiration solution and subsequent determination with iductively couple plasma optical emission spectrometry.	Test Method: ISO 17072-1	Chemical: ARSENIC AS; ANTIMONY SB; SELENIUM SE; NICKEL; BARIUM BA	Material: Leather	Reporting Limit: 1 mg / kg; 10 mg / kg; 500 mg / kg; 1 mg / kg; 1000 mg / kg



3 7 JM-211	Color Fastness Circular Rubbing	This method is intended to assess the degree of damage - marring - and transfer of a material's surface colour during mild dry or wet abrasion.	Test Method: TM 8	Standard: A specimen of the material is rubbed by a rotating dry or wet circular wool felt pad under a constant contact force.	Material: Leather	Reporting: Discoloration - Visual

3 7 JM-212	Lacquer Adhesion Cross Hatch Test	This method is intended to qualitatively determine the adhesion of a lacquer to a test material.	Test Method: TM 406	Standard: . A piece of selfachesive tape is stuck to and quickly peeled from the specimen.	Material: Leather	Reporting: The level of adhesion is qualitatively determined by noting the amount of lacquer which is removed.

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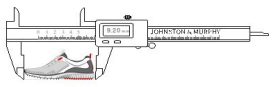


JOHNSTON & MURPHY

BACK

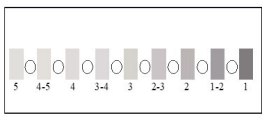
Footwear Lab Test Protocol

MATERIALS

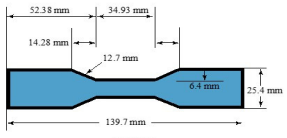
		Lab Test	Test Method	Reporting Results Details
3 5 6 7 JM-301	Eyelet Lace Hole Standard Test	Satra TM149	Pull laces through the eyelets or laces holes and measure in the dynamometer.	≥ 20 Kg

		Test Parameter	Test Method		Units	Conditions	Minimum Requirements
3 5 JM-312	Shoe Laces Standard Tests	Material Strength	Tensile	ASTM D2209 & D2211	Kg	23 ± 2C°	Casual = 40 / Dress = 50
			Tensile After Abrasion	SATRA TM 94	Kg		Casual = 32 / Dress = 40
			Knot Slip Resistance	SATRA TM 195	Kg		2.25
			Lace Tip Retention	SATRA TM 175	Percentage		150 N
		Abrasion	Lace Abrasion	SATRA TM 93	Cycles	Dry	15,000
		Color Fastness	Water	AATCC 107	AATCC Scale	38 ± 1°C / 6 hours	3.5
			Crocking	AATCC 8		Dry	4.0
			UV-Light	ASTM D 1148		1 Cycle / 2 Cycles	4.0
		Heat Resistance	Heat Aging	EN 12749		70°C / 72 hours	4.0
		Water Contact	Wicking	SATRA TM 305	mm	1 hour at ≤ 13 mm	≤ 13 mm

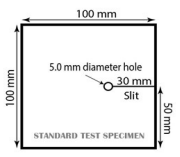
		Test Parameter	Test Method		Reporting Details	Reporting Results Details
3 5 6 7 JM-302	Crocking Dry & Wet Color Fastness	The measurement of a leather or fabric's performance when it is exposed to specific sources of ignition. Crocking means the transfer of color from one fabric to another by rubbing.	AATCC 8-2001 or ISO 105 X 12 or SATRA 167	Grade 1 - High Degree of Color Transfer. Grade 5 - No color transfer	Dyed Textiles and Synthetic Leather: Dry: 4.0 - Wet: 3.0 (minimum) / Print Textiles, Denim, Velvet Textiles Dry: 3.0 - Wet: 3.0 (minimum)	Test from the American Association of Textile Chemists and Colorists. This method uses a standard white cotton fabric that is rubbed against the surface of the test material. To test for wet crocking the standard fabric is wet before rubbing against the material. Maximum Temperature of 60C°



		Test Parameter	Test Method	Standard	Sample	Reporting Results Details
3 5 6 7 JM-303	Tear Strength Test	Tear strength conceptually the force per unit cross section of a material to extend a nick pre-cut on the specimen. The strain required to tear the material is measured only. Material in Length and Width.	SATRA TM 162	Baumann Tear	Upper Material	Minimum of 10 Kg



		Test Parameter	Test Method	Standard	Sample	Reporting Results Details
3 5 6 7 JM-304	Tear Strength Test Trouser Leg Method	A method intended to determine the force required to tear a material. Applicable to non-leather footwear upper and lining materials, but can be used with all types of thin flexible materials	SATRA TM 30	Six square test specimens of 500 x 100 mm. 23 ± 2C° 48 hours	Thin Upper Material Linings	Minimum of 3.6 Kg



		Test Parameter	Test Method	Standard	Sample	Cycles	Reporting Results Details
3 5 6 7 JM-305	Upper Mesh Abrasion Test Standard	Martindale Abrasion Test	EN13520:2001	No worse than slight wear / color contrast at 12800 cycles	1600 Cycles / 3200 Cycles / 6400 Cycles / 12800 Cycles / 25600 Cycles / 51600 Cycles	12800 Cycles	Satisfactory / Slight Color Contrast / Moderate Color Contrast

		Test Parameter	Test Method	Standard	Parts	Reporting Results Details
3 5 6 7 JM-306	Fabric Materials Stoll Abrasion Test	The resistance of textile materials to abrasion as measured on a testing machine in the laboratory is generally only one of several factors contributing to wear performance or durability as experienced in the actual use of the material	ASTM D3885	Cycles on the Stoll Abrasion Equipment	Textile Used Outside The Shoe / Textile Used Inside The Shoe / Collar Linings / Footbeds / Synthetics	Minimum of 50 Cycles / Minimum of 120 Cycles / Minimum of 300 Cycles / Minimum of 40 Cycles / Minimum of 200 Cycles

		Test Parameter	Test Method	Standard	Sample	Reporting Results Details
3 5 6 7 JM-307	Tensile Strength	Tensile strength is the force per unit area of cross section of a uniform piece of material. Is the measure of how much tensile stress the material can withstand. Material in Length and Width.	SATRA TM43 / ASTM D-2015 / Tensile Strength of Leather	4 mm thick / 1 x 6 inches / 1 x 6 inches / 1 ¼ x 6 ¾ inches / 19.7 inches	Fabric / Synthetic Leather / Webbing / Laces / Threads / Plastic / Rubber / Elastomers	Minimum of 100 Kg / Cm²
3 5 6 7 JM-308	Elongation Tests	Elongation is a measure of the deformation of a material as determined by a tension test. It is the increase in the gauge-length of a test specimen after fracture divided by its original gauge-length. Material in Length and Width.	ASTM D-2016 / Test methods for Rubber, Thermoplastics and Elastomers	39.4 inches / 39.4 inches / 1.0 x 4.5 inches / 1.0 x 4.5 inches / 1.0 x 4.5 inches / 4 mm thick		Minimum of 30% / Minimum of 7% on Linings / Minimum of 15% on Laces

		Test Parameter	Test Method	Standard	Sample	Cycles	Reporting Results Details
3 5 6 7 JM-309	Upper Mesh Test Standard Light Colors / Light Fastnes	UV - Light	SATRA TM160	Xenon Arc Lamp UV Lamp: UVA 340 Room Temperature: 23 ±2 C°	Die cut matterial 12 Cm x 7.5 Cm Samples of Textiles, Suedes and Nubuck Leathers	Test Cycle Time: 24 hours	Rating 5 No Change in Appearance / **Rating 4 Slight Change in Appearance** / Rating 3 Moderate Change in Appearance / Rating 2 Marked Change in Appearance / Rating 1 Very Marked Change in Appearance

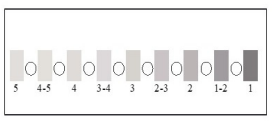
		Test Parameter	Test Method	Standard	Sample	Cycles	Reporting Results Details
3 5 JM-310	Upper Eyelets Testing	Consists in determine the degree of protection in final coating layers of finishing varnish applied in metal pieces and corrosion	Matting agent with formic acid / Sulfite Corrosion Resistance	SATRA TM 310 ISO 22775	Metal pieces representing 1 pair per batch	24 hours at 60°C	Visual analysis observing the lack of shine when comparing with similar pieces not use in the experiment. / Visual evaluation for stain formation and / or superficial darkening.

		Test Parameter	Test Method	Standard	Sample	Cycles	Reporting Results Details
3 5 6 7 JM-311	Leather Upper Laminar Peel Strength / Radio Frequency Welding	Determine the bonding strength of a laminated material through radio frequency welding on the leather upper.	Instron Pull Tast	WTM 401	Stitched Leather Upper with Laminated RF Welding Material	Test Cycle Time: 24 Hours after Welding	2.0 Kg Per Cm

BACK

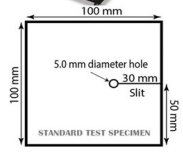
KNITTED UPPERS

		Test Parameter	Test Method		Reporting Details	Reporting Results Details
3 5 6 7 JM-501	Crocking Dry & Wet Color Fastness	The measurement of a leather or fabric's performance when it is exposed to specific sources of ignition. Crocking means the transfer of color from one fabric to another by rubbing.	AATCC 8-2001 or ISO 105 X 12 or SATRA 167	Grade 1 - High Degree of Color Transfer. Grade 5 - No color transfer	Knitted Uppers Dry or Wet: 3.0 (minimum)	Test from the American Association of Textile Chemists and Colorists. This method uses a standard white cotton fabric that is rubbed against the surface of the test material. To test for wet crocking the standard fabric is wet before rubbing against the material. Maximum Temperature of 60C°



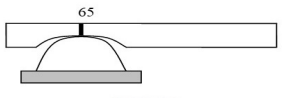
		Test Parameter	Test Method	Material	Cycles	Reporting Results Details
3 5 6 7 JM-502	Whole Shoe Flex Vamp Test	Knitted Upper	SATRA TM 92	Swing metal plate at a rate of 140 cycles per minute with two artificial foot.	Temperature of 23 ±2 C° Bending angle: 35° to 45° Time: 48 hours	Visual Inspection for slight damage/cracking / Dry Minimum: 500.000 Flex / Wet Minimum: 100.000 Flex

		Test Parameter	Test Method	Standard	Sample	Reporting Results Details
3 5 6 7 JM-503	Tear Strength Test Trouser Leg Method	A method intended to determine the force required to tear a material. Applicable to non-leather footwear upper and lining materials, but can be used with all types of thin flexible materials. In the specific case of Knitted uppers tear is done along and across.	SATRA TM 30	Six square test specimens of 500 x 100 mm. 23 ± 2C° 48 hours	Knitted Upper	Minimum of 3.6 Kg



		Test Parameter	Test Method	Standard	Sample	Cycles	Reporting Results Details
3 5 6 7 JM-504	Upper Mesh Abrasion Test Standard	Martindale Abrasion Test	EN13520:2001	No worse than slight wear / color contrast	DRY / WET	12800 Cycles / 25600 Cycles / 3200 Cycles / 6400 Cycles	Satisfactory / Slight Color Contrast / Satisfactory / Slight Color Contrast

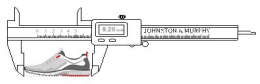
		Test Parameter	Test Method	Material	Cycles	Reporting Results Details
3 5 6 7 JM-505	Mullen Bursting Test	The test method is designed to measure the force required to crack the knitted upper material by steady hydraulic pressure on a diaphragm of definite diameter	SATRA TM 170 ASTM D3796	Knitted Upper	40 Kg / Cm²	Knitted Upper 14 Kg / Cm²



		Test Parameter	Test Method	Material	Cycles	Reporting Results Details
3 5 6 7 JM-506	Knitted Heel Counter Test	The test method is designed to measure the force required to crack the knitted heel material by steady hydraulic pressure on a diaphragm of definite diameter	Tear Strength / Crush Strength	Knitted Upper	Across / Along / ST-10	Knitted Material Min 40 Kg / Cm / Knitted Material Min 40 Kg / Cm / Knitted Material Min 90 Kg / Cm

Test frequency :

1. Production - Daily
2. Production - Twice a Day
3. Development Phase
4. Commercialization Phase by Fit Approval
5. Initial Production by First Case
6. Every New SKU in Production
7. Every New Materials Batch
8. Every PO



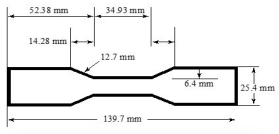
JOHNSTON & MURPHY

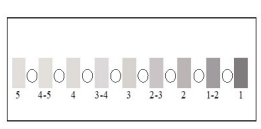
BACK

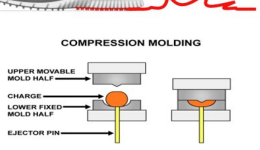
Footwear Lab Test Protocol

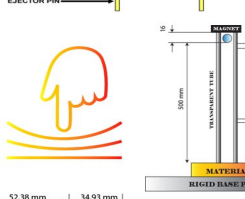
MIDSOLE & OUTSOLE

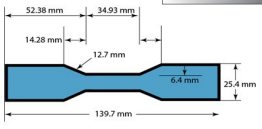
3 5 6 7 JM-406	Tensile Strength	Tensile strength is the force per unit area of cross section of a uniform piece of material. Is the measure of how much tensile stress the material can withstand. Material in Length and Width.	Test Method	Standard	Sample	Reporting Results Details
			SATRA TM43	4 mm thick 1 x 6 inches 1 x 6 inches	EVA Midsole Rubber Outsole	Minimum of 17 Kg / Cm² Minimum of 90 Kg / Cm²
			Tensile Strength of Leather	1 ¼ x 6 ¾ inches 19.7 inches 39.4 inches	TPR Outsole	Minimum of 60 Kg / Cm²
3 5 6 7 JM-407	Elongation Tests	Elongation is a measure of the deformation of a material as determined by a tension test. It is the increase in the gauge-length of a test specimen after fracture divided by its original gauge-length. Material in Length and Width.	ASTM D-2016 Test methods for Rubber, Thermoplastics and Elastomers	39.4 inches 1.0 x 4.5 inches 1.0 x 4.5 inches 1.0 x 4.5 inches 4 mm thick	Rubber Outsole EVA Midsole TPR Outsole	Minimum of 325 % Minimum of 150 % Minimum of 250 %
3 5 JM-417	Heel Attachment Strength	Method to determine the strength of heel attachment in completed footwear or outsole construction with separately attached heels. Tensile test at rate of 100 ± 10 mm/min up to 200 N.	Test Method SATRA TM 113 ASTM F694	Standard Footwear Construction with Heel attached to the Outsole	Sample Full Pair of outsole or shoe construction Test on the Instron or Static Uniaxial Machine	Reporting Results Details Heel Detachment after achieving 200 N which is 2 to 3 times the force applied to the heel during walking.
3 5 6 7 JM-401	Tear Strength Test	Tear strength conceptually the force per unit cross section of a material to extend a nick pre-cut on the specimen. The strain required to tear the material is measured only. Material in Length and Width.	Test Method ASTM D624	Standard Baumann Tear Temperature of 23 ±2 C°	Sample Rubber Outsole compression EVA Midsole Injected Phylon TPR Outsole	Minimum of 35 Kg / Cm Minimum of 8 Kg / Cm Minimum of 12 Kg / Cm Minimum of 6 Kg / Cm
3 4 5 7 JM-402	Outsole Midsole Abrasion Test	Test Parameter Outsole & Midsole Abrasion	Test Method DIN 53516 Abrasion Test SATRA TM 174	Material 10 x 10 Cm	Cycles Tested through 84 revolutions of the cylinder drum 40 RPM distance of 40 meters	Reporting Results Details Rubber Outsole Maximum of 150 mm³ XC4 Rubber Outsole Maximum of 100 mm³ Ground contact EVA Maximum of 150 mm³ TPR & Compact PU Maximum of 150 mm³
3 4 5 7 JM-403	Heel Top Lift Abrasion Test	Test Parameter Attached Masonite or Leather Heels Top Lift	Test Method DIN 53516 Abrasion Test SATRA TM 174	Units Full Heel Top Lift	Temperature Tested through 84 revolution of the cilinder drum 40 RPM distance of 40 meters	Reporting Results Details Maximum of 90 mm³
3 4 5 7 JM-413	Leather Outsole Abrasion Test	Test Parameter Leather Outsole Abrasion	Test Method DIN 53516 Abrasion Test SATRA WTM 174	Material 10 x 10 Cm	Cycles Tested through 84 revolutions of the cilinder drum 40 RPM distance of 40 meters	Reporting Results Details Maximum of 200 mm³
3 4 5 7 JM-404	PU & EVA Midsole Material Strength Split Tear Test	Test Parameter A mechanical test designed to evaluate the tear resistant properties of a foam.	Test Method ASTM D3574 SATRA TM65	Units Kg per Cm On the Instrom 12 mm Slabs with 25 mm thickness	Temperature 23 ±2 C°	Reporting Results Details 2.5 Kg per Cm
3 7 JM-405	Outsole Aging	Test Parameter Test designated to check blooming on the Rubber Outsole (Superficial Cilic)	Test Method Prepare 2 pairs of outsoles to be aged in the over after 24 hours after injection. ASTM D573	Sample 2 Pairs	Cycles 5 consecutive days or 120 hours minimum Temperature at 70°C	Reporting Results Details Examine samples for evidence of blooming, color migration and or cracking. Minimum of 4.0 in the Grey Scale
3 4 5 6 JM-408	Outsole Ross Flex Test	Test Parameter Ross Flex tests how vulnerable the outsole material is to fatigue cracking due to the repeated flexing induced when walking	Test Method ASTM D1052 SATRA TM60	Units Percentage Growth %	Cycles 23 ± 2C° / 100.000 - 15 C° / 100.000	Reporting Results Details 50% 100%
3 4 5 6 JM-409	Midsole Ross Flex Test	Test Parameter Ross Flex tests how vulnerable the midsole material is to fatigue cracking due to the repeated flexing induced when walking	Test Method ASTM D1052 SATRA TM60	Units Percentage Growth %	Cycles 23 ± 2C° / 100.000	Reporting Results Details 50%
3 4 5 7 JM-410	UV Light Color Fastness Test	Test Parameter Test method to cover techniques to evaluate the surface discoloration of white or light-colored vulcanized rubber outsoles and EVA midsoles that may occur when subjected to UV or UV/visible exposure.	Test Method ASTM D1148	Units AATCC Scale	Cycles 1 Cycle / 2 Cycles	Reporting Results Details 4.0
3 4 5 7 JM-411	Heat Resistance	Methods for testing sample sheets of PUR integral cellular materials.	Test Heat Aging Blooming Test Hydrolysis Test Shrinkage	Method EN 12749 DIN 53543 SATRA TM344 BS5131	Cycles 70 C° for 72 Hours 60 C° for 7 Days 95% RH 60 C° for 1 Hour	Reporting Results Details 4.0 No Blooming No Change on Physical Appearance 80% Retained of the Original Strength ≤2 %
3 4 JM-412	Outsole Friction Slip Resistance	Test Parameter Test for the slip resistance of Footwear Heel and Forepart Outsole	Test SATRA TM144 Satra STM 603 Slip Resistance Machine ISO 13287 Software Program Machine Test Coeficient of Friction - Satra STM 603 Calibrate Floor	Method Coeficient Of Friction	Floor DRY WET	Reporting Results Details > 0.6 > 0.3
3 4 7 JM-414	EVA Compression Set Test	Test Parameter Static Compression Set Test	Test Method ASTM 3574	Material EVA Slabs. Up to 380 X 380 mm. 7 days after production. TRU Foam TRU Foam + Plus	Cycles 45 C° for 6 Hours	Reporting Results Details ≤ 55 % ≤ 45 % ≤ 35 %
3 4 7 JM-415	EVA Resilience Test	Test Parameter Rebound Resilience Elasticity Test for EVA Midsoles and Outsole Resilience by Ball Rebound of flexible cellular polymeric materials	Test Method DIN 53512 ISO 8307:2018	Material EVA Slabs. Up to 380 X 380 mm. 7 days after production. TRU Foam TRU Foam + Plus	Cycles 23 ±2 C°	Reporting Results Details > 25 % ≥ 50 % > 65%
3 4 7 JM-416	Tear Strength Test	Tear strength conceptually the force per unit cross section of a material to extend a nick pre-cut on the specimen. The strain required to tear the material is measured only. Material in Length and Width.	Test Method ASTM D624	Standard Baumann Tear	Sample Upper Material Leather Midsole	Reporting Results Details Minimum of 10 Kg
3 4 5 7 JM-418	Outsole & Midsole Hardness Test	Component Hardness after pressing or injection ASTM D 2240 / SATRA TM205 ±2 Hardness is acceptable	Test Method Shore A Shore A Shore A Asker C Asker C	Standard Rubber Outsole Heel Top Lift TPR Outsole PU Midsole PU Outsole PHYLON Midsole PHYLON Outsole	Sample 01 Pair through the skrib markings on the mold to guide standard hardness testing placement	Reporting Results Details 80 - 85 on the Shore A Durometer 90 - 95 on the Shore A Durometer > 65 on the Shore A Durometer 55 - 65 on the Asker C Durometer 65 - 75 on the Asker C Durometer 45 - 60 on the Asker C Durometer 50 - 65 on the Asker C Durometer
3 4 5 7 JM-419	Outsole Midsole Standard Test	Test Parameter OutSole to MidSole Delamination	Test Method SATRA TM 411 DIN 53273	Sample Full Pair after 48 hours	Construction Type Rubber Outsole to PU or EVA Midsole	Reporting Results Details 2.5 Kg Per Cm With material delamination
3 4 5 7 JM-420	Outsole Non-Marking Test	Test Parameter No OutSole Marking after cleaning	Test Method SATRA TM 223	Sample Test specimen cut from the wearing surface of a complete unit sole	Construction Type Rubber or TPR Outsole (applied to dark color only)	Reporting Results Details The flooring material is examined and any marking produced by the impact is assessed, together with the ease with which any marking is removed.











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8. Every PO

Tru Foam
Hardness: 40 +/- 3 Asker C
Resilience: ≥ 50 %
Compression (JM-414): ≤ 45 %
Ground contact abrasion: < 150

Tru Foam + Plus
Hardness: 40 +/- 3 Asker C
Resilience:; >60% (target 65%)
Compression (JM-414): ≤ 35 %
Ground contact abrasion: < 150

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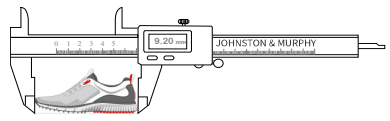

RESTRICTED SUBSTANCES IN FOOTWEAR COMPONENTS

BACK

SUBSTANCE	LEGISLATION	TEST METHOD	REASON FOR CONCERN
Azo Dyes and Azo Colourants	REACH 1907/2006 Annex XVII Entry 43	Textiles: EN 14362-1 & EN 14362-3 Leather - CEN ISO/TS 17234	The prohibited amines are carcinogenic
Nickel	REACH 1907/2006 Annex XVII Entry 27	EN 1811 + A1 Coated materials tested after EN 12472	Nickel can cause skin allergies
Lead and its compounds	REACH 1907/2006 Annex XVII Entry 63	EN 16711-1 & EN ISO 16711-2	Harmful to the environment Toxic for reproduction
Cadmium	REACH 1907/2006 Annex XVII Entry 23 EU Regulations 494/2011 & 835/2012	BS EN 1122 Method B	Carcinogenic. Harmful to the environment.
PFOS -Perfluorooctane Sulphonates	POP Directive 850/2004 as amended EU by Regulation 757/2010	Solvent extraction followed by LC-MS	Persistent in the environment, bioaccululative harmful to mammals
Phtalates	REACH 1907/2006 Annex XVII Entries 51 & 52	EN 14372 Textiles EN ISO 14389	Carcinogenic, endochine disruptors
Dimethyl Fumarate	REACH 1907/2006 Annex XVII Entry 61	Solvent extraction followed by GC-MS	Causes painful skin contact dermatitis, itching, irritation, redness and burns
Chromium VI	REACH 1907/2006 and Regulation 201/2014	ISO 17075	Carcinogenic
NPEO (Nonyl Phenyl Ethoxylate) & APEO (Alkyl Phenyl Ethoxylate)	REACH 1907/2006 Annex XVII Entry 46 as amended by Regulation 2016/26	AFIRM method - Textiles: EN ISO 18254-1 / Leather: EN ISO 18512-1 & EN ISO 18512-2	Bio-accumulative, toxic to the environment and to human health; reprotoxic
Flame Retardants	REACH 1907/2006 Annex XVII	Solvent extraction followed by GC-MS or LC-MS. EN ISO 17881-1/EN 17881-2	Persistent organic pollutant; carcinogen; reprotoxic; mutagen
SCCP Short Chain Chlorinated Paraffins	REACH 1907/2006 Annex XVII Entries 32 to 38. POP Regulation 850/2004 as amended by Regulation 2015/2030	Solvent Extration followed by NCI-GC-MS	Toxic to the Environment
Chlorinated Phenols (Pentachlorophenol)	REACH 1907/2006 Annex XVII Entry 22	DIN 53313 for Leather	Bio-accumulative; persistent in the environment, toxic to aquatic species; suspected carcinogen
Biocides	EU Biocidal Product Directive 98/9/EC	Solvent extraction followed by GC-MS or LC-MS.	Harmful to health and environment
Polycyclic Aromatic Hydrocarbons (PAH)	REACH 1907/2006 Annex XVII 50 as amended by Regulations 1272/2013 and 326/2015	AFPS GS 2014 - Footwear: ISO/TS 16190	Carcinogenic
Allergenic Diesperse Dyes	Eco-labelling schemes	DIN 54231 - Textiles	Irritant
Carcinogenic Disperse Dyes	Eco-labelling schemes	DIN 54231 - Textiles	Carcinogenic

	Animal Fibers	Cellulosic Textile	Synthetic Textile	PVC Plastic & Coating	Non PVC Plastic & Coating	Leather	Metal	Rubber	Adhesives	Paints & Coatings	Foam	Paper
Azo Dyes		√	√			√						
Allergenic / Carcinogenic Disperse Dyes			√									
Chromium VI						√	√			√		
Phthalates				√					√			
Flame Retardents HBCDD TRIS TEPA Deca-BDE	√	√	√	√	√						√	
Nickel (release)							√					
Diaminodiphenylmethane (MDA)					√			√	√	√		
Total Lead / Lead Compounds				√	√					√		
Soluble Heavy Metals				√	√	√				√		√
Formaldehyde	√	√	√			√			√		√	
Dimethylacetamide			√									
Organic Tin				√		√		√		√		
Alkyl/Nonyl Phenyl ethoxylates (APEO/NPEO)	√	√	√									√
Dimethyl Formamide (DMF)					√					√		
Perfuorooctanate sulphonate (PFOS)[2]	√	√	√			√						
Polycyclic Aromatic Hydrocarbons			√		√	√		√				
Short Chain Chlorinated Phenols (SCCP)[3]		√	√					√		√		