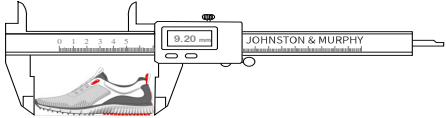




JOHNSTON & MURPHY



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
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	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
	JM-111	FULL SHOE	Discoloration to Yellowing of Pure White Footwear - Light Fastness	3
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
	JM-213	LEATHER	Leather Foil Adhesion	3 7
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	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
	JM-308	MATERIALS	enlongation	3 5 6 7
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	JM-310	MATERIALS	upper eyelets & hooks finishing tests	3 5
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	JM-407	MIDSOLE AND OUTSOLE	enlongation	3 5 6 7
	JM-417	MIDSOLE AND OUTSOLE	heel attachment strength	3 5
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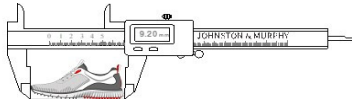
Test frequency :

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- Production - Daily
- Production - Twice a Day
- Development Phase
- Commercialization Phase by Fit Approval
- Initial Production by First Case
- Every New SKU in Production
- Every New Materials Batch
- Every P0



Footwear Lab Test Protocol

- 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



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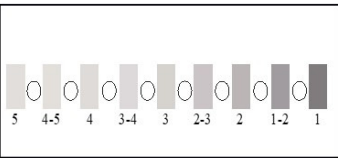
Footwear Lab Test Protocol

LEATHER

3 7

JM-201

Croaking Dry & Wet Color Fastness	Test Parameter	Test Method		Reporting Details	Reporting Results Details
	The measurement of a leather or fabric's performance when it is exposed to specific sources of ignition.	AATCC 8-2001	Grade 1 - High Degree of Color Transfer.	Full grain Leather	Dry: 3.0 - Wet: 2.5 (minimum)
		ISO 105 X 12		Analine & Oiled Leathers	Dry: 2.0 - Wet: 1.5 (minimum)
	Croaking means the transfer of color from one fabric to another by rubbing.	SATRA 167	Grade 5 - No color transfer	DarkNubuck	Dry: 2.0 - Wet: 1.5 (minimum)
		ASTM D5053		Dark Suede	Dry: 2.0 - Wet: 1.5 (minimum)
				Dyed Textiles and Synthetic Leather:	Dry: 4.0 - Wet: 3.0 (minimum)
	Knit uppers see JM-501				



3 7

JM-202

	Test Parameter	Test Method		Material	Cycles	Reporting Results Details
Bally Flex Endurance	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.	Satra TM 55 or equivalent equipment		45 x 70 mm	100,000 Cycles	The Bally leather flexing test is conducted till the piece of leather cracks.
				Angle: 22.5°		



3 4 5 7

JM-203

	Test Parameter	Test Method		Material	Reporting Results Details
Leather Water Proof Absorption	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.	ASTM D2099 SATRA TM 34		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.	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

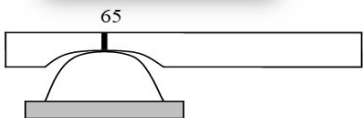
	Test Parameter	Test Method		Material	Cycles	Reporting Results Details
Leather Water Wicking	This method is intended to determine the change in appearance of a material when wetted, and the rate at which water is absorbed by the material by wicking. This method is applicable to all water absorbent materials.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



3 7

JM-205

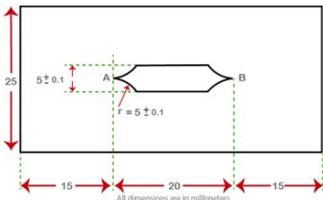
	Test Parameter	Test Method		Material	Cycles	Reporting Results Details
Leather Mullen Bursting	The test method is designed to measure the force required to crack the grain of leather by steady hydraulic pressure on a diaphragm of definite diameter applied to the flesh side of the specimen to form a sphere.	SATRA TM 24		Leather Synthetic Leather	Constant rate until the test specimen fails. Time of 30 ± 10 seconds	Leather : less than 1.2mm : 14 Kg/Cm² 1.2 - 1.6mm : 17 Kg/Cm² 1.6mm or greater : 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	Standard	Sample	Reporting Results Details	
		SATRA TM 162	Baumann Tear	Upper Material Leather	Less than 1.2mm	Minimum of 4 Kgf/Cm²
					1.2-1.6mm	Minimum of 7 Kgf/Cm²
					1.6mm or greater	Minimum of 10 Kgf/Cm²



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	Standard	Sample	Reporting Results Details	
		SATRA TM43 ASTM D-2015 Tensile Strength of Leather	4 mm thick	Fabric Synthetic Leather Leather Webbing		Leather :
			1 x 6 inches		Less than 1.2mm	Minimum of 60 Kgf / Cm²
			1 x 6 inches		1.2-1.6mm	Minimum of 80 Kgf / Cm²
			1½ x 6 ¾ inches		1.6mm or greater	Minimum of 100 Kgf / Cm²
		19.7 inches		All other materials	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.	ASTM D-2016	39.4 inches	Laces	Minimum of 30 %
	Material in Length and Width.	JM	39.4 inches	Threads	
			1.0 x 4.5 inches	Plastic	
			1.0 x 4.5 inches	Rubber	
			1.0 x 4.5 inches	Elastomers	
		4 mm thick			

3 7

JM-209

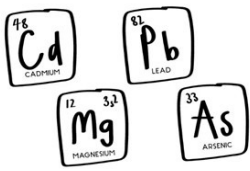
	Chromium VI Content	Test Method	Standard	Sample	Reporting Results Details
Chromium Content		EN ISO 17075-1	Reporting Limit mg/ kg	Leather Material aging process at 80°C. Controlle Humidity at 20%. Time: 24 hours in climatic chamber	3 < RL



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	Chemical	Material	Reporting Limit
		ISO 17072-1	ARSENIC AS	Leather	1 mg / kg
			ANTIMONY SB		10 mg / kg
			SELENIUM SE		500 mg / kg
			NICKEL		1 mg / kg
			BARIUM BA		1000 mg / kg



3 7

JM-211

	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	Standard	Material	Reporting
Color Fastness Circular Rubbing		TM 8	A specimen of the material is rubbed by a rotating dry or wet circular wool felt pad under a constant contact force.	Leather	Discoloration - Visual

3 7

JM-212

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



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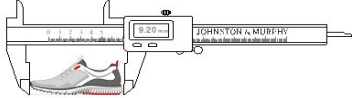
JM-213

	This method is intended to qualitatively determine the adhesion of a lacquer to a test material.	Test Method	Standard	Material	Reporting
Foil applied leathers tape test		N/A	A piece of selfchhesive tape is stuck to and quickly peeled from the specimen.	Foil covered Leather	The level of adhesion is qualitatively determined by the amount of foil which is removed.



Test frequency :

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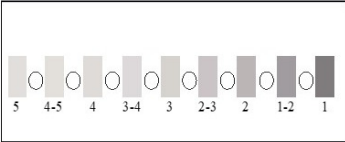
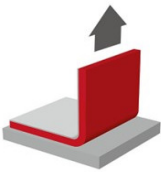
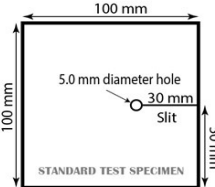
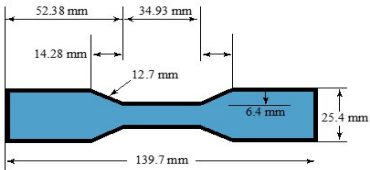
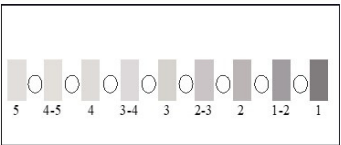
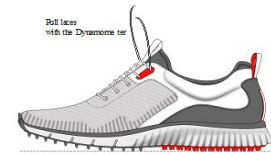


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Footwear Lab Test Protocol

MATERIALS

3567		Lab Test	Test Method		Reporting Results Details				
JM-301	Eyelet Lace Hole Standard Test	Satra TM149	Pull laces through the eyelets or laces holes and measure in the dynamometer.		≥ 20 Kg				
35	Shoe Laces Standard Tests	Test Parameter	Test Method		Units	Conditions	Minimum Requirements		
JM-312		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		
3567	Crocking Dry & Wet Color Fastness	Test Parameter	Test Method		Reporting Details		Reporting Results Details		
JM-302		The measurement of a leather or fabric's performance when it is exposed to specific sources of ignition.	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)		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°		
		Crocking means the transfer of color from one fabric to another by rubbing.			Print Textiles, Denim, Velvet Textiles Dry: 3.0 - Wet: 3.0 (minimum)				
3567	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	Standard	Sample	Reporting Results Details			
JM-303			SATRA TM 162	Baumann Tear	Upper Material	Minimum of 10 Kg			
3567	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.	Thin Upper Material Linings	Minimum of 3.6 Kg			
JM-304				23 ± 2C° 48 hours					
3567	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		
JM-305							Slight Color Contrast		
3567	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		
JM-306							Minimum of 120 Cycles		
3567	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 39.4 inches	Fabric Synthetic Leather Webbing Laces Threads Plastic Rubber Elastomers		Minimum of 100 Kg / Cm²		
JM-307									
3567	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	1.0 x 4.5 inches 1.0 x 4.5 inches 1.0 x 4.5 inches 4 mm thick			Minimum of 30%		
JM-308							Minimum of 7% on Linings Minimum of 15% on Laces		
3567	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 material 12 Cm x 7.5 Cm Samples of Textiles, Suedes and Nubuck Leathers	Test Cycle Time: 24 hours	Rating 5 No Change in Appearance		
JM-309				Rating 4 Slight Change in Appearance					
35	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	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.		
JM-310			Sulfite Corrosion Resistance				Visual evaluation for stain formation and / or superficial darkening.		
3567	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 Test	WTM 401	Stitched Leather Upper with Laminated RF Welding Material	Test Cycle Time: 24 Hours after Welding	2.0 Kg Per Cm		
JM-311									
3567	Metal hardware and ornament corrosion	Test Parameter neutral salt spray (NSS), acetic acid salt spray (AASS) and copper-accelerated acetic acid salt spray (CASS) tests for assessment of the corrosion resistance of metallic materials	Test Method Salt spray on item	Standard ISO 9227	Sample Metal hardware or zippers	Cycles	Reporting Results Details No change		
JM-31									



KNITTED UPPERS

3567

JM-501

Crocking Dry & Wet Color Fastness	Test Parameter	Test Method		Reporting Details	Reporting Results Details
	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°

3567

JM-502

Whole Shoe Flex Vamp Test	Test Parameter	Test Method		Material	Cycles	Reporting Results Details
	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

3567

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.	Test Method	Standard	Sample	Reporting Results Details	
		SATRA TM 30	Six square test specimens of 500 x 100 mm. 23 ± 2C° 48 hours	Knitted Upper	Minimum of 3.6 Kg	

3567

JM-504

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

3567

JM-505

Mullen Bursting Test	Test Parameter	Test Method		Material	Cycles	Reporting Results Details
	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

3567

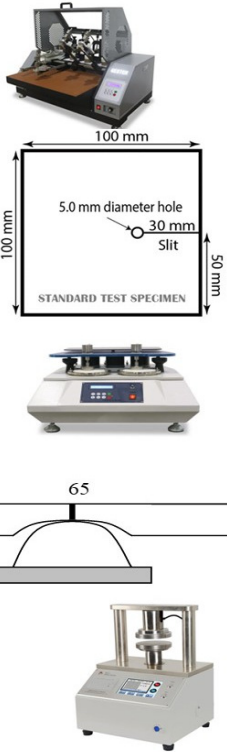
JM-506

Knitted Heel Counter Test	Test Parameter	Test Method		Material	Cycles	Reporting Results Details
	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

3567

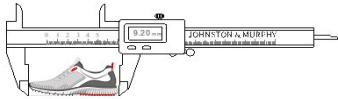
JM-507

Color Evaluation	Test Parameter	Test Method		Material	Cycles	Reporting Results Details
	The test method is designed to confirm color consistency in different light conditions the product may be displayed, sold and used in	Review textiels under D65, TL-83/U30, TL-84 F CWF and UV light sources		All textiles & knits	N/A	Color consistency under listed light sources without more than dyelot deviation



Test frequency :

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- 5 Initial Production by First Case
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- 7 Every New Materials Batch
- 8 Every P0



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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
SATRA TM43
Tensile Strength of Leather
4 mm thick
1 x 6 inches
1 x 6 inches
1 ¼ x 6 ¾ inches

Standard
19.7 inches
39.4 inches

Sample
EVA Midsole
ETPU Midsole
Rubber Outsole
TPR Outsole

Reporting Results Details
Minimum of 17 Kg / Cm²
Minimum of 15 Kg / Cm²
Minimum of 90 Kg / Cm²
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.

Test Method
ASTM D-2016
Test methods for Rubber, Thermoplastics and Elastomers
1.0 x 4.5 inches
1.0 x 4.5 inches
1.0 x 4.5 inches
4 mm thick

Standard
39.4 inches

Sample
EVA Midsole
ETPU Midsole
Rubber Outsole
TPR Outsole

Reporting Results Details
Minimum of 150 %
Minimum of 150 %
Minimum of 325 %
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
Footwear Construction with Heel attached to the Outsole

Standard
Full Pair of outsole or shoe construction
Test on Instron or Static Uniaxial Machine

Sample
Full Pair of outsole or shoe construction
Test on 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
Baumann Tear
23 ±2 C°

Standard
Rubber Outsole compression
EVA Midsole
Injected Phylon
TPR Outsole
ETPU Midsole

Sample
Rubber Outsole compression
EVA Midsole
Injected Phylon
TPR Outsole
ETPU Midsole

Reporting Results Details
Minimum of 35 Kg / Cm
Minimum of 8 Kg / Cm
Minimum of 12 Kg / Cm
Minimum of 6 Kg / Cm
Minimum of 15 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 cylinder 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 and ETPU 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 Instron
12 mm Slabs with 25 mm thickness

Temperature
23 ±2 C°

Reporting Results Details
Minimum 2.5 Kg per Cm

3 7

JM-405-A

Outsole Aging Oxidation

Test Parameter
Test designated to check oxidative and thermal ageing of Rubber

Test Method
ASTM D573

Sample
Dumbbell-Shaped Rubber Specimens

Cycles
5 consecutive days or 120 hours minimum
Temperature at 70°C

Reporting Results Details
Examine samples for tensile strength and elongation testing compared to un-aged sample.

3 7

JM-405-B

Outsole Aging Blooming

Test Parameter
Test designated to check bloom formation on polymeric materials

Test Method
SATRA TM361

Sample
Rubber pieces or parts

Cycles
Several cycles of varrying heat and humidity over 7 days

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

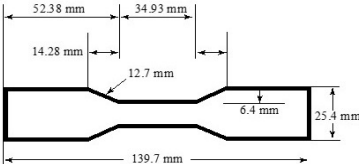
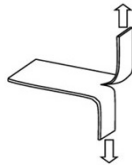
Test Parameter
Ross Flex tests how vulnerable the outsole material is to fatigue cracking due to the repeated flexing induced when walking

Test Method
ASTM D1052
SATRA TM60

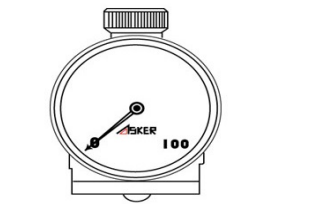
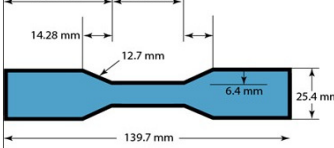
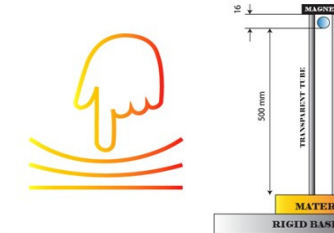
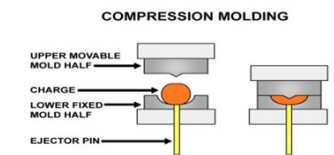
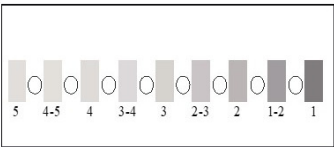
Units
Percentage Growth
%

Cycles
23 + 2C° / 100.000
- 15 C° / 100.000

Reporting Results Details
Percentage growth ≤ 50%
Percentage growth ≤ 100%



3456	JM-409	Midsole Ross Flex Test	Test Parameter	Test Method		Units	Cycles	Reporting Results Details
Ross Flex tests how vulnerable the midsole material is to fatigue cracking due to the repeated flexing induced when walking			ASTM D1052 SATRA TM60		Percentage Growth %	23 ± 2C° / 100.000	Percentage growth ≤ 50%	
3457	JM-410	UV Light Color Fastness Test	Test Parameter	Test Method		Units	Cycles	Reporting Results Details
Test method to cover techniques to evaluate the surface discoloration of white or light-colored vulcanized rubber outsoles, EVA and ETPU midsoles that may occur when subjected to UV or UV/visible exposure.			ASTM D1148		AATCC Scale	1 Cycle / 2 Cycles	4.0	
3457	JM-411	Heat Resistance	Methods for testing sample sheets of PUR integral cellular materials.	Test	Method	Cycles	Reporting Results Details	
Heat Aging				EN 12749	70 C° for 72 Hours	4.0		
Blooming Test				DIN 53543 SATRA TM344	60 C° for 7 Days 95% RH	No Blooming		
Hydrolysis Test						No Change on Physical Appearance 80% Retained of the Original Strength		
Shrinkage				BS5131	60 C° for 1 Hour	≤2 %		
34	JM-412	Outsole Friction Slip Resistance	Test Parameter	Test	Method	Floor	Reporting Results Details	
Test for the slip resistance of Footwear Heel and Forepart Outsole			SATRA TM144 Satra STM 603 Slip Resistance Machine ISO 13287 Software Program Machine Test Coefficient of Friction – Satra STM 603 Calibrate Floor	Coefficient Of Friction	DRY	> 0.6		
					WET	> 0.3		
347	JM-414	EVA & ETPU Compression Set Test	Static Compression Set Test	ASTM 3574	EVA Slabs. Up to 380 X 380 mm. 7 days after production.	45 C° for 6 Hours	Reporting Results Details	
TRU Foam					≤ 55 %			
TRU Foam + Plus					≤ 45 %			
					≤ 35 %			
ETPU					≤ 65 %			
347	JM-415	EVA & ETPU Resilience Test	Rebound Resilience Elasticity Test for EVA Midsoles and Outsole	DIN 53512	EVA Slabs. Up to 380 X 380 mm. 7 days after production.	23 ±2 C°	Reporting Results Details	
Resilience by Ball Rebound of flexible cellular polymeric materials			ISO 8307:2018	TRU Foam TRU Foam + Plus ETPU	> 25 %			
					≥ 50 %			
					> 65%			
					> 70%			
347	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	Standard	Sample	Reporting Results Details	
ASTM D624				Baumann Tear	Upper Material Leather Midsole	Minimum of 10 Kg		
					ETPU	Minimum of 3.5 Kg		
3457	JM-418	Outsole & Midsole Hardness Test	Component Hardness after pressing or injection	Test Method	Standard	Sample	Reporting Results Details	
Shore A				Rubber Outsole	80 – 85 on the Shore A Durometer			
Shore A				Heel Top Lift	90 – 95 on the Shore A Durometer			
Shore A				TPR Outsole	> 65 on the Shore A Durometer			
3457			JM-419	Outsole Midsole Standard Test	ASTM D 2240 / SATRA TM205 ±2 Hardness is acceptable	Asker C	PU Midsole PU Outsole	01 Pair through the skrib markings on the mold to guide standard hardness testing placement
	Asker C	PHYLON Midsole PHYLON Outsole				65 – 75 on the Asker C Durometer 45 – 60 on the Asker C Durometer 50 – 65 on the Asker C Durometer		
3457	JM-420	Outsole Non-Marking Test	Test Parameter	Test Method	Sample	Construction Type	Reporting Results Details	
No OutSole Marking after cleaning			SATRA TM 223	Test specimen cut from the wearing surface of a complete unit sole	Rubber or TPR Outsole (applied to dark color only)	The flooring material is examined and any marking produced by the impact is assessed, together with the ease with which any marking is removed.		



Test frequency :

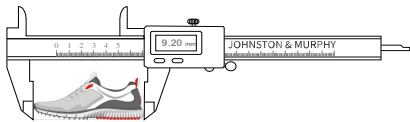
- 1 Production - Daily
- 2 Production - Twice a Day
- 3 Development Phase
- 4 Commercialization Phase by Fit Approval
- 5 Initial Production by First Case
- 6 Every New SKU in Production
- 7 Every New Materials Batch
- 8 Every P0

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




JOHNSTON & MURPHY



RESTRICTED SUBSTANCES IN FOOTWEAR COMPONENTS

AC	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, bioaccumulative 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

	Paper	Foam	Paints & Coatings	Adhesives	Rubber	Metal	Leather	Non PVC Plastic & Coating	PVC Plastic & Coating	Synthetic Textile	Cellulosic Textile	Animal Fibers
	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)		✓					✓				
	Perfluorooctanate sulphonate (PFOS) ²						✓			✓	✓	✓
	Per- and polyfluoroalkyl substances (PFAS)		✓				✓	✓	✓	✓	✓	✓
	Polycyclic Aromatic Hydrocarbons		✓				✓	✓		✓		
	Short Chain Chlorinated Phenols (SCCP) ³		✓	✓						✓	✓	

LABS

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