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CNAS L0220

TEST REPORT

Number: GZHT91201706

Applicant: TIANJIN LONGLAST PLASTIC CO., LTD.
HUANGHUADIAN INDUSTRIAL AREA,
WUQING TIANJIN
CHINA
Attn: NANCY HAN

Date: Jul 24, 2023

Sample Description:

Sixteen (16) pairs of submitted samples said to be Injection safety boots in Black.

Standard	:	EN ISO 20345:2022
Size	:	EUR 35, 42, 46, 47
Ref. No.	:	LL-2
Insert Plate	:	STEEL MIDSOLE
Toe Cap	:	STEEL TOE CAP
Sole	:	PVC + NITRILE
Upper	:	PVC + NITRILE
Vamp Lining	:	--
Quarter Lining	:	--
Tongue	:	--
Collar	:	--
Insole	:	--
Insock	:	--
Previous Report Number	:	--
Date Received/Date Test Started:		Jul 06, 2023
Date Final Information Confirmed/ Date Payment Received:		Jul 24, 2023/Jul 24, 2023

Test Result Please Refer To Attached Page(S).

Should you have any query on this report, you may contact at gzfootwear@intertek.com

Authorized By:
For Intertek Testing Services Shenzhen Ltd.
Guangzhou Branch

Guiliang Dong
Senior Lab Manager

EC / clairexiao

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Tests Conducted (As Requested By The Applicant)

1 Height Of Upper (Design) (EN ISO 20344:2021, 6.2)

Sample	Size	Results		Design D Requirement	Pass/Fail
-	35	Left	335 mm	⩾ 255 mm	Pass
		Right	336 mm		Pass
	42	Left	354 mm	⩾ 280 mm	Pass
		Right	355 mm		Pass
	47	Left	372 mm	⩾ 300 mm	Pass
		Right	371 mm		Pass

Expanded Uncertainty: 0.79 mm, With k= 2.19 At 95% Confidence Level.

2 Heel Area (Design) (EN ISO 20345:2022, 5.2.3)

Sample	Size	Assessment	Requirement	Pass/Fail
-	35	The Heel Area Was Closed. This Area Of The Upper, Did Not Contain Any Holes Other Than To Form Seams.	*	Pass
	42	The Heel Area Was Closed. This Area Of The Upper, Did Not Contain Any Holes Other Than To Form Seams.	*	Pass
	47	The Heel Area Was Closed. This Area Of The Upper, Did Not Contain Any Holes Other Than To Form Seams.	*	Pass

Remark: * = For All Class Ⅰ And Ⅱ Footwear Other Than Design A And Marked With The Category Of Protection "SB", The Heel Area Defined By The Real (10±2)% Of The Total Length Of The Footwear Shall Be Closed. This Heel Area Of The Upper, Which Is Below Minimum Height Given In Below Table, Shall Not Contain Any Holes Other Than To Form Seams.

Size 35	44 mm
Size 42	50 mm
Size 47	53 mm

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3 General (Toe Protection) (EN ISO 20345:2022, 5.3.2.1)

Sample	Size	Assessment	Requirement	Pass/Fail
-	35	The Toecap Cannot Be Removed Without Damaging The Footwear. Edge Covering Beneath Toecap: Not Applicable Edge Covering Behind Toecap: Not Applicable Finishing: Metallic Toecaps Are Finished And There Are No Surface Marks Or Defects, No Burrs And Sharp Edges	*	Pass
	42	The Toecap Cannot Be Removed Without Damaging The Footwear. Edge Covering Beneath Toecap: Not Applicable Edge Covering Behind Toecap: Not Applicable Finishing: Metallic Toecaps Are Finished And There Are No Surface Marks Or Defects, No Burrs And Sharp Edges	*	Pass
	47	The Toecap Cannot Be Removed Without Damaging The Footwear. Edge Covering Beneath Toecap: Not Applicable Edge Covering Behind Toecap: Not Applicable Finishing: Metallic Toecaps Are Finished And There Are No Surface Marks Or Defects, No Burrs And Sharp Edges	*	Pass

Remark: * = The Toecap Cannot Be Removed Without Damaging The Footwear, Class Ⅰ Footwear Shall Have A Vamp Lining Or An Element Of The Upper That Serves As A Lining, In Addition,
Edge Covering Beneath Toecap: Min. 5 mm
Edge Covering Behind Toecap: Min. 10 mm

Finishing:
--Metallic Toecaps Shall Be Finished So As To Be Free From Surface Marks Or Defects And Shall Be Free From Burrs And Sharp Edges.
--Non-Metallic Toecaps Shall Be Finished So As To Be Free From Surface Marks Or Defects And Shall Be Free From Burrs And Sharp Edges And Defects Of Splitting Or Delaminating Between Material Layers.

Expanded Uncertainty:
Edge Covering Beneath Toecap: 0.29 mm, With k= 1.96 At 95% Confidence Level.
Edge Covering Behind Toecap: 0.45 mm, With k= 2.1 At 95% Confidence Level.

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4 Internal Length Of Toecap (Toe Protection) (EN ISO 20344:2021, 5.3.2.1)

Sample	Size	Results		Requirement	Pass/Fail
-	35	Left	43 mm	Min. 34 mm	Pass
		Right	43 mm	Min. 34 mm	Pass
	42	Left	46 mm	Min. 39 mm	Pass
		Right	46 mm	Min. 39 mm	Pass
	47	Left	48 mm	Min. 42 mm	Pass
		Right	48 mm	Min. 42 mm	Pass

Expanded Uncertainty: 0.89 mm, With k = 2.22 At 95% Confidence Level.

5 Width Of Toecap Flange (Toe Protection) (EN ISO 20344:2021, 5.3.2.2)

Sample	Size	Results		Requirement	Pass/Fail
-	35	Left	7 mm	*	Pass
		Right	7 mm	*	Pass
	42	Left	7 mm	*	Pass
		Right	7 mm	*	Pass
	47	Left	7 mm	*	Pass
		Right	7 mm	*	Pass

Remark: * = The Width Of The Flange Of Metallic Toecaps Shall Not Be Greater Than 12 mm.

Expanded Uncertainty:
Width Of Toecap Flange: 0.45 mm, With k= 2.1 At 95% Confidence Level.

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6 Corrosion Resistance (Toe Protection) (EN ISO 20344:2021, 5.6.2 & EN ISO 22568-1:2019, 5.6.2.1)

Test Condition:	
Footwear Type	Class Ⅱ
Solution	1% (Mass Fraction) Aqueous Solution Of Sodium Chloride
Temperature	(23±2)℃
Relative Humidity	(50±5)%
Period	7 Days

Sample	Size	Results		Requirement	Pass/Fail
-	35	Left	No Corrosion	*	Pass
	42	Left	No Corrosion	*	Pass

Remark: * = Metallic Toecaps Shall Not Exhibit More Than Three Areas Of Corrosion, None Of Which Shall Measure More Than 2 mm In Any Direction.

7 Impact Resistance (Whole Footwear) (EN ISO 20344:2021, 5.4)

Test Condition:	
Mass Of Striker	(20±0.2) kg
Impact Energy	(200±4) J

Sample	Size	Results		Requirement	Pass/Fail
-	35	Left	17.0 mm	Min. 12.5 mm (#)	Pass
		Right	17.0 mm	Min. 12.5 mm (#)	Pass
	42	Left	17.0 mm	Min. 14.0 mm (#)	Pass
		Right	17.5 mm	Min. 14.0 mm (#)	Pass
	47	Left	17.0 mm	Min. 15.0 mm (#)	Pass
		Right	18.0 mm	Min. 15.0 mm (#)	Pass

Remark: # = In Addition, The Toecap Shall Not Develop Delamination Or Any Cracks, Which Go Through The Material, i.e. Through Which Light Can Be Seen.

Expanded Uncertainty: 0.36(Urel), With k=1.96 At 95% Confidence Level.

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8 Compression Resistance (Whole Footwear) (EN ISO 20344:2021, 5.5)

Test Condition:	
Compression Speed	(5±2) mm/min
Load	(15±0.1) kN

Sample	Size	Results		Requirement	Pass/Fail
-	35	Left	19.5 mm	Min. 12.5 mm (#)	Pass
		Right	19.0 mm	Min. 12.5 mm (#)	Pass
	42	Left	21.5 mm	Min. 14.0 mm (#)	Pass
		Right	22.0 mm	Min. 14.0 mm (#)	Pass
	47	Left	19.0 mm	Min. 15.0 mm (#)	Pass
		Right	20.0 mm	Min. 15.0 mm (#)	Pass

Remark: # = In Addition, The Toecap Shall Not Develop Delamination Or Any Cracks, Which Go Through The Material, i.e. Through Which Light Can Be Seen.

Expended Uncertainty: 0.13 mm, With k= 1.96 At 95% Confidence Level.

9 Leak Proofness (Whole Footwear) (EN ISO 20344:2021, 5.7)

Test Condition:	
Temperature	(23±2) ℃
Air Pressure	(30±5) kPa
Period	30±5 seconds

Sample	Size	Results		Requirement	Pass/Fail
-	35	Left	No Leakage	*	Pass
	42	Right	No Leakage	*	Pass

Remark: * = There Shall Be No Leakage Of Air. (It Is Not Applicable For Design A Of Class Ⅱ Footwear With Open Heel Area And / Or Perforations)

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10 Specific Ergonomic Features (Whole Footwear) (EN ISO 20344:2021, 5.1)

Sample	Size	Assessment		Requirement	Pass/Fail
-	35	Left	All The Answers Are Positive.	*	Pass
		Right	All The Answers Are Positive.	*	Pass
	42	Left	All The Answers Are Positive.	*	Pass
		Right	All The Answers Are Positive.	*	Pass
	46	Left	All The Answers Are Positive.	*	Pass
		Right	All The Answers Are Positive.	*	Pass

Remark: * = All The Answers Are Positive In The Questionnaire As Below:
Question 1: Is The Inside Surface Of The Footwear Free From Rough, Sharp Or Hard Areas That Caused You Irritation Or Injury (Checked By Hand) ?
Question 2: Is The Footwear Free Of Features That You Consider To Make Wearing The Footwear Hazardous (e.g. Buckle, Straps Or Other Features That May Present A Risk Of Trapping Or Tripping) ?
Question 3: Where Fastening Are Present, Can The Fastening Be Adequately Adjusted (If Necessary) ?
Question 4: Can The Following Activities Be Performed Without Problems ?
4.1 Walking
4.2 Climbing Stairs
4.3 Kneeling/ Crouching Down (It Is Not Applicable If The Footwear Is Rigid In Accordance With ISO 20344:2021, 8.5)

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11 Slip Resistance (Whole Footwear) (EN ISO 20344:2021, 5.14 & ISO 13287:2019)

Test Conditions:	
Temperature	(23±2) ℃
Test Floor	Ceramic Tile

Sample	Size	Lubricant	Test Conditions	Results		Requirement	Pass/Fail
				Left	Right		
-	35	Sodium Lauryl Sulphate	**Conditions A** Forward Heel Slip (#)	0.43	0.42	≥ 0.31	Pass
			Conditions B Backward Forepart Slip (#)	0.40	0.39	≥ 0.36	Pass
	42	Sodium Lauryl Sulphate	**Conditions A** Forward Heel Slip (#)	0.41	0.41	≥ 0.31	Pass
			Conditions B Backward Forepart Slip (#)	0.40	0.39	≥ 0.36	Pass
	47	Sodium Lauryl Sulphate	**Conditions A** Forward Heel Slip (#)	0.40	0.42	≥ 0.31	Pass
			Conditions B Backward Forepart Slip (#)	0.39	0.40	≥ 0.36	Pass

Note:
It Must Be Noted That The Slip Resistance Test Carried Out In This Report Denotes An Indication Of Slip Of This Particular Footwear/Component On The Surface Mentioned In The Test Item. It Is Important To Note That Footwear Is Subjected To Many Different Conditions Encountered In Everyday Use And That It Is Impossible To Make Footwear Resistant To Slip In All Conditions. Nevertheless, It Is Generally Accepted That Problems Are Minimized If The Guideline Coefficients Of Friction Are Achieved.

Remark: # = Using Standard Shoemaking Last.

Expanded Uncertainty: 0.01, With k = 2.03 At 95% Confidence Level.

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12 Energy Absorption Of Seat Region (Whole Footwear) (EN ISO 20344:2021, 5.17, Speed: (10±3) mm/min, Maximum Compressive Force: (5000±50) N)

Sample	Size	Results		Requirement	Pass/Fail
-	35	Left	23 J	Min. 20 J	Pass
		Right	24 J	Min. 20 J	Pass
	42	Left	24 J	Min. 20 J	Pass
		Right	24 J	Min. 20 J	Pass
	47	Left	21 J	Min. 20 J	Pass
		Right	21 J	Min. 20 J	Pass

Expanded Uncertainty: 0.26 Joule, With k=2.11 At 95% Confidence Level.

13 Antistatic Footwear (Electrical Resistance) (EN ISO 20344:2021, 5.13)

Test Conditions:

Conditions	Dry	Wet
Temperature	(20±2) ℃	(20±2) ℃
Relative Humidity	(30±5) %	(85±5) %
Test Environment	(23±2) ℃	(50±5) %
Conditioning Period	7 Days	
Internal Electrode	Stainless Steel Balls Of 5 mm Diameter And Of Total Mass (4±0.1) kg	
Test Voltage	(100±2) V DC	
Test Period	1 Minute	

Sample	Conditions	Size	Results (Electrical Resistance)		Requirement	Pass/Fail
-	Dry	35	Left	47.8 MΩ	*	Pass
			Right	42.4 MΩ	*	Pass
		42	Left	31.8 MΩ	*	Pass
			Right	45.9 MΩ	*	Pass
		47	Left	41.0 MΩ	*	Pass
			Right	36.1 MΩ	*	Pass
	Wet	35	Left	83.2 MΩ	*	Pass
			Right	33.4 MΩ	*	Pass
		42	Left	14.7 MΩ	*	Pass
			Right	11.4 MΩ	*	Pass
		47	Left	15.8 MΩ	*	Pass
			Right	12.2 MΩ	*	Pass

Remark: * = Above 100 kΩ And Less Than Or Equal To 1000 MΩ

Expanded Uncertainty: 1.13 MΩ, With k= 2.06 At 95% Confidence Level.

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14 Construction (Whole Footwear With Penetration Resistant Insert) (EN ISO 20345:2022, 6.2.1.2)

Sample	Size	Assessment		Requirement	Pass/Fail
-	35	Left	Comply With Requirement.	*	Pass
		Right	Comply With Requirement.	*	Pass
	42	Left	Comply With Requirement.	*	Pass
		Right	Comply With Requirement.	*	Pass
	47	Left	Comply With Requirement.	*	Pass
		Right	Comply With Requirement.	*	Pass

Remark: * = The Penetration Resistance Insert Cannot Be Removed Without Damaging The Footwear. Metallic Perforation Resistant Inserts Shall Lie Beneath The Flange Of The Safety Toecaps And Shall Not Be Attached To Them.

Non-Metallic Inserts Incorporated As A Layer Into The Outsole Shall Not Be Skived At All.

Non-Metallic Inserts That Also Function As An Insole:
— May Lie Above The Flange Of The Safety Toecap;
— Shall Not Be Skived Apart From The Following Exception:
They May Be Skived Where They Are Covering The Toecap Flange, Maintaining A Minimum Thickness Of 2 mm In The Skived Area.

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15 Dimensions (Whole Footwear) (EN ISO 20344:2021, 5.8)

Sample	Size	Results		Requirement	Pass/Fail
-	35	Left	The Distance Between The Line Represented By The Feather Edge Of The Last And The Edge Of Insert: In The Area With Exception Of The Heel Area: 4.0 mm In The Heel Area: 5.0 mm Metallic Perforation-Resistant Insert Has No Holes.	*	Pass
		Right	The Distance Between The Line Represented By The Feather Edge Of The Last And The Edge Of Insert: In The Area With Exception Of The Heel Area: 4.0 mm In The Heel Area: 5.0 mm Metallic Perforation-Resistant Insert Has No Holes.	*	Pass
	42	Left	The Distance Between The Line Represented By The Feather Edge Of The Last And The Edge Of Insert: In The Area With Exception Of The Heel Area: 3.0 mm In The Heel Area: 4.0 mm Metallic Perforation-Resistant Insert Has No Holes.	*	Pass
		Right	The Distance Between The Line Represented By The Feather Edge Of The Last And The Edge Of Insert: In The Area With Exception Of The Heel Area: 3.0 mm In The Heel Area: 4.0 mm Metallic Perforation-Resistant Insert Has No Holes.	*	Pass
	47	Left	The Distance Between The Line Represented By The Feather Edge Of The Last And The Edge Of Insert: In The Area With Exception Of The Heel Area: 5.0 mm In The Heel Area: 6.0 mm Metallic Perforation-Resistant Insert Has No Holes.	*	Pass
		Right	The Distance Between The Line Represented By The Feather Edge Of The Last And The Edge Of Insert: In The Area With Exception Of The Heel Area: 5.0 mm In The Heel Area: 6.0 mm Metallic Perforation-Resistant Insert Has No Holes.	*	Pass

Remark: * = The Distance Between The Line Represented By The Feather Edge Of The Last And The Edge Of The Insert:
In The Area With Exception Of The Heel Area: Max. 6.5 mm
In The Heel Area: Max. 17 mm
Metallic Perforation-Resistant Inserts Shall Have Not More Than Three Holes With A Maximum Diameter Of 3.0 mm To Attach It To The Bottom Of The Footwear. The Holes Shall Not Lie In The Shaded Area 1 Specified.

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16 Corrosion Resistance Of Metallic Insert (EN ISO 20344:2021, 5.6.2.1)

Test Condition:	
Footwear Type	Class Ⅱ
Solution	1% Aqueous Solution Of Sodium Chloride
Temperature	(23±2)℃
Relative Humidity	(50±5)%
Period	7 Days

For Class Ⅱ

Sample	Size	Results		Requirement	Pass/Fail
-	35	Left	No Corrosion	*	Pass
	42	Right	No Corrosion	*	Pass

Remark: * = Class Ⅱ: Footwear And Hybrid Moulded Footwear Shall Exhibit More Than Three Areas Of Corrosion, None Of Which Shall measure More Than 2 mm.

17 Perforation Resistance Of Footwear With A Metallic Perforation-Resistant Insert (Type P) (EN ISO 20344:2021, 5.9, Diameter Of Test Nail: (4.50±0.05) mm, Speed: (10±3) mm/min)

Sample	Size	Results (The Lowest Value Of The 4 Tests)		Requirement	Pass/Fail
-	35	Left	1453 N	Min. 1100 N	Pass
		Right	1405 N	Min. 1100 N	Pass
	42	Left	1475 N	Min. 1100 N	Pass
		Right	1495 N	Min. 1100 N	Pass
	47	Left	1451 N	Min. 1100 N	Pass
		Right	1512 N	Min. 1100 N	Pass

Expanded Uncertainty: 16.99 N, With k=2.26 At 95% Confidence Level.

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18 Thickness (Upper) (Class Ⅱ Footwear) (EN ISO 20344:2021, 6.1, ISO 23529:2016, Method A, Pressure: (10±2) kPa, Flat Presser Foot Diameter: (10±0.1) mm)

Sample	Size	Results			Requirement	Pass/Fail
			Left	Right		
-	35	Median Value	1.5 mm	1.5 mm	Min. 1.0 mm	Pass
	42	Median Value	1.6 mm	1.6 mm	Min. 1.0 mm	Pass
	47	Median Value	1.6 mm	1.6 mm	Min. 1.0 mm	Pass

Expanded Uncertainty: 0.09 mm, With k= 2.22 At 95% Confidence Level.

19 Tensile Properties (Upper) (EN ISO 20344:2021, 6.4, ISO 4643:1992 5.3)

Sample	Size	Results			Requirement	Pass/Fail
-	35	Modulus At 100% Elongation	Middle Value	3.0 N/mm^2	≥ 1.0 N/mm^2	Pass
	42		Middle Value	3.6 N/mm^2	≥ 1.0 N/mm^2	Pass
	47		Middle Value	3.3 N/mm^2	≥ 1.0 N/mm^2	Pass
	35	Elongation At Break	Middle Value	318%	Min. 250%	Pass
	42		Middle Value	391%	Min. 250%	Pass
	47		Middle Value	380%	Min. 250%	Pass

Expanded Uncertainty:
Polymeric: 0.67 N/mm^2, With k= 2.17 At 95% Confidence Level.

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20 Flexing Resistance (Upper) (Class Ⅱ Footwear) (EN ISO 20344:2021, 6.5 & ISO 4643:1992, Annex B)

Test Condition:
Material Type: Polymeric
Test Method: ISO 4643:1992, Annex B
Test Temperature: (-5±2)℃

Sample	Size	Results	Requirement	Pass/Fail
-	35	No Cracking Before 150 000 Flex Cycles	*	Pass
	42	No Cracking Before 150 000 Flex Cycles	*	Pass
	47	No Cracking Before 150 000 Flex Cycles	*	Pass

Remark: * =

Flexing Resistance
No Cracking Before 150 000 Flex Cycles

21 Thickness (Outsoles) (EN ISO 20344:2021, 8.2.3)

Sample	Size	Results (Class Ⅱ)			Requirement	Pass/Fail
		Type Of Outsole	Thickness			
-	35	Cleated	d_1	9.0 mm	Min. 3 mm	Pass
		Cleated	d_3	14.0 mm	Min. 6 mm	Pass
	42	Cleated	d_1	10.0 mm	Min. 3 mm	Pass
		Cleated	d_3	14.0 mm	Min. 6 mm	Pass
	47	Cleated	d_1	10.0 mm	Min. 3 mm	Pass
		Cleated	d_3	14.0 mm	Min. 6 mm	Pass

Expanded Uncertainty: 0.07 mm, With k= 1.96 At 95% Confidence Level.

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22 Thickness (Outsoles With Cavities) (EN ISO 20344:2021, 8.2.3)

Sample	Size	Results (Class Ⅱ)			Requirement	Pass/Fail
		Type Of Outsole	Thickness			
-	35	Cleated	d_4	Not Applicable	Min. 2.0 mm	-
	42	Cleated	d_4	Not Applicable	Min. 2.0 mm	-
	47	Cleated	d_4	Not Applicable	Min. 2.0 mm	-

Expanded Uncertainty: 0.07 mm, With k= 1.96 At 95% Confidence Level.

23 Cleated Area (Outsole) (EN ISO 20344:2021, 8.2.2)

Sample	Size	Results	Requirement	Pass/Fail
-	35	With Exception Of The Region Under The Flange Of The Toecap, The Specified Shaded Areas Have Cleats, Which Are Open To The Side. Front Cleats Area: 0.52 L Heel Cleats Area : 0.26 L	*	Pass
	42	With Exception Of The Region Under The Flange Of The Toecap, The Specified Shaded Areas Have Cleats, Which Are Open To The Side. Front Cleats Area: 0.50 L Heel Cleats Area : 0.26 L	*	Pass
	47	With Exception Of The Region Under The Flange Of The Toecap, The Specified Shaded Areas Have Cleats, Which Are Open To The Side. Front Cleats Area: 0.52 L Heel Cleats Area : 0.27 L	*	Pass

Remark: * = With Exception Of The Region Under The Flange Of The Toecap, Specified Shaded Areas Shall Have Cleats, Which Are Open To The Side.
Front Cleats Area: Min. 0.45 L.
Heel Cleats Area : Min. 0.25 L.

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24 Cleat Height (Outsole) (EN ISO 20344:2021, 8.2.3)

Sample	Size	Type Of Outsole	Results		Requirement	Pass/Fail
-	35	Cleated	d_2	5.0 mm	Min. 4.0 mm	Pass
	42	Cleated	d_2	5.0 mm	Min. 4.0 mm	Pass
	47	Cleated	d_2	5.0 mm	Min. 4.0 mm	Pass

Expanded Uncertainty: 0.13 mm, With k= 2.03 At 95% Confidence Level.

25 Tear Strength (Outsole) (EN ISO 20344:2021, 8.3, ISO 34-1:2015, Method A)

Sample	Size	Density	Results	Requirement	Pass/Fail
-	35	1.18 g/cm^3	9.5 kN/m	*	Pass
	42	1.13 g/cm^3	15.1 kN/m	*	Pass
	47	1.14 g/cm^3	11.0 kN/m	*	Pass

Remark: * = Density: > 0.9 g/cm^3, Min. 8 kN/m

Expanded Uncertainty: 0.32 kN/m, With k= 2.26 At 95% Confidence Level.

26 Abrasion Resistance (Outsole) (EN ISO 20344:2021, 8.4, ISO 4649:2017, Method A, Vertical Force: 10 N, Abrasion Distance: 40 m)

Sample	Size	Density	Results	Requirement	Pass/Fail
-	35	1.18 g/cm^3	Relative Volume Loss: 206.06 mm^3	Max. 250 mm^3	Pass
	42	1.13 g/cm^3	Relative Volume Loss: 216.23 mm^3	Max. 250 mm^3	Pass
	47	1.14 g/cm^3	Relative Volume Loss: 190.27 mm^3	Max. 250 mm^3	Pass

Expanded Uncertainty: 1.76 mm^3, With k= 1.96 At 95% Confidence Level.

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27 Footwear Rigidity Test (Outsole) (EN ISO 20344:2021, 8.5)

Sample	Size	Result
-	42	> 52°

Conclusion: There's Need To Be Performed The Flexing Resistance Of Outsole.

NOTE: Footwear Whose Flexion Angle At 30 N Is Lower Than 45° From The "Zero" Position Is Not Subjected To The Flexing Resistance Of Outsole.

28 Flexing Resistance (Outsole) (EN ISO 20344:2021, 8.6, (23±2)℃, 30,000 Flex Cycles)

Sample	Size	Results (Cut Growth)	Requirement	Pass/Fail
-	35	0.5 mm **(#)**	Max. 4 mm (*)	**Fail**
	42	0.5 mm **(#)**	Max. 4 mm (*)	**Fail**
	47	0.5 mm **(#)**	Max. 4 mm (*)	**Fail**

Remark: * = Spontaneous Cracks Are Acceptable, Unless One Of The Following Conditions Occurs:
-- Deeper Than 1.5 mm;
-- Longer Than 4 mm;
-- More Than Five In Number;
-- Any Damage Of The Metallic Insert, If Present.

\# = The Metallic Insert In The Bottom Of The Footwear Broke Into Two Halves.

Expanded Uncertainty: 0.06 mm, With k= 1.96 At 95% Confidence Level.

29 Resistance To Fuel Oil (Outsole) (EN ISO 20344:2021, 8.8.2.1(General Method), ISO 1817:2015, 8.3, ISO 868:2003, (23±2)℃ For (22±0.5) h)

Sample	Size	Results	Requirement	Pass/Fail
-	35	Change In Volume: +1.80%	Max. +12%(*)	Pass
	42	Change In Volume: +0.46%	Max. +12%(*)	Pass
	47	Change In Volume: +1.62%	Max. +12%(*)	Pass

Remark: * = If, After Testing, The Test Piece Shrinks By More Than 1% In Volume Or Increase In Hardness By More Than 10 Shore A Hardness Units, A Further Test Piece Shall Be Taken And Tested In Accordance With The Method Described In EN ISO 20344:2021, 8.8.2.2. (+) Means Increase In Volume And (-) Means Shrinkage In Volume.

Expended Uncertainty: 0.16%, With k= 2.13 At 95% Confidence Level.

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End Of Report

Remark:
1. As Requested by the Applicant, For Details Refer to Attached Page (s).
2. All the tested item are tested under the standard condition.
3. The report is valid with commission test only for the test samples in the case of delivering samples by clients.

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