

At the request of **Lindström & Nilsson AB, Nylännesgatan 8, 512 53 Svenljunga, Sweden** laboratory tests have been performed and issued:

TEST REPORT

No.: 459-1/19

Client code: 061/19

Work order: 173-1/19

GENERAL DATA

Date of receipt: 15.03.2019

Date of test end: 02.04.2019

Sample type: FOOTWEAR

Data provided by a customer: Safety footwear with resistance to chain saw cutting
Article: SKOOGA

Sampling: On delivered samples

Sample description: Green / yellow colour, sizes 39, 42 and 48

Laboratory mark of sample: 486-1/19

TEST RESULTS

TEST PARAMETER Test method	Requirements acc. to HRN EN ISO 20345:2012 ²⁾ HRN EN ISO 17249:2013 ³⁾	RESULT
1. WHOLE FOOTWEAR, code II ¹⁾		
1.1 Upper height – design D, (mm) HRN EN ISO 20344:2012, c.6.2	size 39: min. 270 size 42: min. 280 size 48: min. 300	335 340 375
1.2 Seat region HRN EN ISO 20345:2012, c.5.2.3 [#]	shall be closed for design B, C, D and E	closed seat region
1.3 Specific ergonomic features HRN EN ISO 20344:2012, c.5.1	- Is the inside surface of the footwear free from rough, sharp or hard areas that caused you irritation or injury - Is the footwear free of features that you consider make wearing the footwear hazardous? - Can the following activities be performed without problems: walking, climbing stairs, kneeling/crouching down	- Inside surface of the footwear is free from rough, sharp or hard areas - Footwear is free of features that can make wearing the footwear hazardous - Following activities can be performed without problems: walking, climbing stairs, kneeling / crouching down

TEST PARAMETER <i>Test method</i>	<i>Requirements acc. to</i> HRN EN ISO 20345:2012 ²⁾ HRN EN ISO 17249:2013 ³⁾	RESULT		
1.4 Leakproofness <i>HRN EN ISO 20344:2012, c.5.7</i>	no leakage of air	size 39: no leakage of air size 48: no leakage of air		
1.5 Toe protection, general <i>HRN EN ISO 20345:2012, c.5.3.2.1[#]</i>	- shall not be removed without damaging the whole footwear - overlapping with lining thickness > 1 mm - protected toecap end > 5 mm under the toecap > 10 mm and outside the toecaps	- can not be removed without damaging the whole footwear - overlapping with lining thickness > 1 mm - protected toecap end > 5 mm under the toecap > 10 mm and outside the toecaps - metallic toecap		
1.6 Internal length of toecap, (mm) <i>HRN EN ISO 20344:2012, c.5.3</i>	size 39: min. 38 size 42: min. 39 size 48: min. 42	left 40,0 45,0 49,0	right 40,0 45,0 49,0	
1.7 Impact resistance at 200 J (clearance under toecap), (mm) <i>HRN EN ISO 20344:2012, c.5.4</i>	size 39: min. 13,5 size 42: min. 14,0 size 48: min. 15,0	left 16,5 17,0 20,0	right 16,5 17,0 20,0	
1.8 Compression resistance at 15 kN (clearance under toecap), (mm) <i>HRN EN ISO 20344:2012, c.5.5</i>	size 39: min. 13,5 size 42: min. 14,0 size 48: min. 15,0	left 15,5 18,0 18,5	right 15,5 18,0 18,5	
1.9 Corrosion resistance of metallic toecap (corrosion area), (mm²) <i>HRN EN ISO 20344:2012, c.5.6</i>	≤ 3 areas max. 2 mm in any direction	size 39: 0 size 42: 0		
1.10 Slip resistance (on ceramic floor (Eurotile 2) with (NaLS lubricant), (coefficient of friction) ⁴⁾ <i>HRN EN ISO 20344:2012, c.5.11;</i> <i>HRN EN ISO 13287:2012</i>	SRA cond. A min. 0,28 cond. B min. 0,32	size 39: 0,43 0,35	size 42: 0,41 0,35	size 48: 0,39 0,36
1.11 Design and construction: <i>HRN EN ISO 17249:2013, c.6.2 and c.6.3</i>	- the minimum height of the protective area: 172 (size 39), 178 (size 42) and 192 (size 48) - No point of the top of the upper shall be lower than the minimum height, of the protective area - Safety footwear with resistance to chain saw cutting shall have a continuous protective area, tongue and toe area	250 (size 39) 250 (size 42) 255 (size 48) pass pass		

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	<ul style="list-style-type: none"> - type of safety toecap; - the area immediately behind the toecap back edge bounded by two vertical lines at least 70 mm on either side of the footwear centre line and a line parallel to the feather line at a maximum distance of 10 mm above the feather line - For level 3 footwear there shall be no gap between the protective area and the feather line - there shall be no gap between the toecap and the protective material - all chain saw protective material shall be permanently attached to the footwear 	<p style="text-align: center;">- metallic toecap</p> <p style="text-align: center;">vertical lines: 90 mm parallel lines: 0 mm</p> <p style="text-align: center;">pass</p> <p style="text-align: center;">pass</p> <p style="text-align: center;">pass</p>						
1.12 Resistance to chain saw cutting, chain speed 28 m/s <i>HRN EN ISO 17249:2013, c.6.4;</i> <i>HRN EN 381-3:2001, c.6</i>	no cut through class 3	position 1: position 2: position 3:	left No cut through No cut through No cut through	right No cut through No cut through No cut through chain stopping mechanism: chain braking				
2. UPPER, rubber 2.1 Thickness, (mm) <i>HRN EN ISO 20344:2012, c.6.1</i>	min. 1,50	size 39:	size 42:	size 48:				
2.2 Tensile strength, (N) <i>HRN EN ISO 20344:2012, c.6.4</i>					≥ 180	3,5	3,7	3,9
2.3 Resistance to flexing of a rubber upper, (number of flex cycles without upper cracking) <i>HRN EN ISO 20344:2012, c.6.5.2</i>						no cracking before 125000 flex cycles	458,9	
3. OUTSOLE, rubber, black 3.1 Thickness (d₁), (mm) <i>HRN EN ISO 20344:2012, c.8.1.2</i>	≥ 3	size 39: 6,4	size 42: 6,9	size 48: 7,2				
3.2 Cleat height (d₂), (mm) <i>HRN EN ISO 20344:2012, c.8.1.2</i>		≥ 4	6,1	6,1	6,1			
3.3 Thickness (d₃), (mm) <i>HRN EN ISO 20344:2012, c.8.1.2</i>			≥ 6	7,1	7,7	8,1		

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		size 39:	size 42:	size 48:
3.4 Cleated area: HRN EN ISO 20344:2012, c.8.1.1	- front part 0,45 of total length - heel area 0,25 of total length - cleats are open to the side	0,51 0,27	0,51 0,27	0,52 0,27
3.5 Tear strength, (kN/m) HRN EN ISO 20344:2012, t.8.2 [#]	min. 8	27,3	17,9	16,5
3.6 Abrasion resistance, (relative volume loss, ΔV_{rel} , with sample density $\rho = 1,18 \text{ g/cm}^3$), (mm^3) HRN EN ISO 20344:2012, c.8.3; HRN EN 12770:2004	max. 250	134		
3.7 Flexing resistance (cut growth), (mm) HRN EN ISO 20344:2012, c.8.4	max. 4 after 30000 ciklusa savijanja	2,0	1,5	2,0
3.8 Resistance to fuel oil (increase in volume), (%) HRN EN ISO 20344:2012, c.8.6.1	FO max. 12	3,0	4,1	5,9

- 1) Class II – All-rubber (i.e. entirely vulcanised) or all-polymeric (i.e. entirely moulded) footwear
 2) Requirements acc. to HRN EN ISO 20345:2012 Personal protective equipment – Safety footwear
 3) Requirements acc. to: HRN EN ISO 17249:2013 Safety footwear with resistance to chain saw cutting
 4) Condition A – forward heel slip, condition B – forward flat slip

Note: The test results refer only to the delivered sample. Individual test values of each test parameter and additional information can be given on request. The test report shall not be reproduced except in full. Samples are kept for two years and records for five years. Accredited test methods are in flexible accreditation scope. Methods marked with # are not in the scope of accreditation. We can't be held responsible for the translation of this document.

Zagreb, 02.04.2019

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