



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

TEST REPORT**No.:** 221-1/19**Client code:** 061/19**Work order:** 87-1/19**GENERAL DATA****Date of receipt:** 06.02.2019**Date of test end:** 18.02.2019**Sample type:** FOOTWEAR**Data provided by a customer:** Safety footwear - Rubber boots

Article: BOXER

Sampling: On delivered samples**Sample description:** Red / black colour, sizes 39, 42 and 48**Laboratory mark of sample:** 262-1/19**TEST RESULTS**

TEST PARAMETER Test method	Requirements acc. to HRN EN ISO 20345:2012 ²⁾	RESULT
1. WHOLE FOOTWEAR, code II ¹⁾		
1.1 Upper height – design D, (cm) HRN EN ISO 20344:2012, t.6.2	size 39: min. 27,0 size 42: min. 28,0 size 48: min. 30,0	31,5 32,5 35,0
1.2 Seat region HRN EN ISO 20347:2012, t.5.2.3 ²⁾	shall be closed for design C and D	closed seat region
1.3 Specific ergonomic features HRN EN ISO 20344:2012, t.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 Test method	Requirements acc. to HRN EN ISO 20345:2012 ²⁾	RESULT	
1.4 Toe protection, general HRN EN ISO 20345:2012, t.5.3.2.1 ¹⁾	- 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	
1.5 Internal length of toecap, (mm) HRN EN ISO 20344:2012, t.5.3	size 39: min. 38 size 42: min. 39 size 48: min. 42	left 44,2 48,0 50,7	right 44,0 48,3 50,5
1.6 Impact resistance at 200 J (clearance under toecap), (mm) HRN EN ISO 20344:2012, t.5.4	size 39: min. 13,5 size 42: min. 14,0 size 48: min. 15,0	left 18,5 20,5 21,5	right 19,0 21,0 21,0
1.7 Compression resistance at 15 kN (clearance under toecap), (mm) HRN EN ISO 20344:2012, t.5.5	size 39: min. 13,5 size 42: min. 14,0 size 48: min. 15,0	left 19,0 19,5 20,0	right 19,0 20,0 19,5
1.8 Corrosion resistance of metallic toecap (corrosion area), (mm ²) HRN EN ISO 20344:2012, t.5.6	≤ 3 areas max. 2 mm in any direction	size 42: 0 size 48: 0	
1.9 Corrosion resistance of metallic insert (corrosion area), (mm ²) HRN EN ISO 20344:2012, t.5.6	≤ 3 areas max. 2 mm in any direction	size 42: 0 size 48: 0	
1.10 Leakproofness HRN EN ISO 20344:2012, t.5.7	no leakage of air	size 42: no leakage of air size 48: no leakage of air	
1.11 Penetration resistance, metallic Inserts, (N) HRN EN ISO 20344:2012, t.5.8.3	P > 1100 N	left size 39: 1216 size 42: 1215 size 48: 1442	right 1368 1408 1425
1.12 Construction and dimensions of metallic inserts HRN EN ISO 20344:2012, t.5.8.1	it can not be removed without damaging the whole footwear; dimensions: x max. 6,5; y max. 17,0	size 39: x = 4,5 mm y = 8,0 mm size 42: x = 5,5 mm y = 11,0 mm size 48: x = 5,0 mm y = 13,0 mm	right x = 4,0 mm y = 8,5 mm x = 5,5 mm y = 12,0 mm x = 5,5 mm y = 13,5 mm (it can not be removed without damaging the whole footwear)

TEST PARAMETER Test method	Requirements acc. to HRN EN ISO 20345:2012 ²⁾	RESULT		
1.13 Slip resistance (on ceramic floor (Eurotile 2) with (NaLS lubricant), (coefficient of friction) ³⁾ HRN EN ISO 20344:2012, c.5.11; HRN EN ISO 13287:2012	SRA cond. A min. 0,28 cond. B min. 0,32	size 39: 0,41 0,35	size 42: 0,38 0,34	size 48: 0,41 0,34
2. UPPER, rubber				
2.1 Thickness, (mm) HRN EN ISO 20344:2012, t.6.1	min. 1,50	1,5	1,5	1,5
2.2 Tear strength, (N) HRN EN ISO 20344:2012, t.6.4 ⁵	≥ 180	360,9		
2.3 Resistance to flexing of a rubber upper, (number of flex cycles without upper cracking) HRN EN ISO 20344:2012, t.6.5.2	no cracking before 125000 flex cycles	no cracking after 125000 flex cycles		
3. OUTSOLE, rubber, black				
3.1 Thickness (d ₁), (mm) HRN EN ISO 20344:2012, t.8.1.2	≥ 3	5,3	5,8	5,9
3.2 Cleat height (d ₂), (mm) HRN EN ISO 20344:2012, t.8.1.2	≥ 4	6,3	6,2	6,3
3.3 Thickness (d ₃), (mm): HRN EN ISO 20344:2012, t.8.1.2	≥ 6	14,4	14,5	14,9
3.4 Cleated area: HRN EN ISO 20344:2012, t.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 0,28	0,50 0,27	0,50 0,26
		cleats are open to the side		
3.5 Tear strength, (kN/m) HRN EN ISO 20344:2012, t.8.2 ⁷	min. 8	9,2	8,1	8,8
3.6 Abrasion resistance, (relative volume loss, ΔV_{rel} , with sample density $\rho = 1,41 \text{ g/cm}^3$, (mm ³) HRN EN ISO 20344:2012, t.8.3; HRN EN 12770:2004	max. 250	240		
3.7 Flexing resistance (cut growth), (mm) HRN EN ISO 20344:2012, t.8.4	max. 4 after 30000 ciklusa savijanja	n.a. ⁴⁾	n.a. ⁴⁾	n.a. ⁴⁾
3.8 Resistance to fuel oil (increase in volume), (%) HRN EN ISO 20344:2012, t.8.6.1	FO max. 12	4,2	4,6	4,3

- 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) Condition A – forward heel slip, condition B – forward flat slip
- 4) Not applicable, not tested because flexing angle is $< 45^\circ$

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, 18.02.2019

Composed by, Testing Technologist:

Revised by:

Approved by,
Head of Laboratory:



MIRTA-KONTROL
d.o.o.



Barbara Iskerka Pavlica, mag. ing.




Sanja Zorić, dipl. ing.