

TECHNICAL SHEET



Article:	B0150 OPERA
Norm:	EN ISO 20345:2011
Safety Class:	S1 P SRC
Footwear height:	Mod. A, H 86 mm (< 113 mm, Rif. EN 20345-5.2.2)
Width:	11
Construction:	STROBEL; PU SOLE
Cleaning and maintenance:	Use only soft brushes and water. Do not use substances such as alcohol, thinners, gasoline, oil or any other chemicals. Keep the footwear, dry and clean, in a proper place at room temperature.
Suggested fields:	Mechanics, construction, light industry, logistics.

Entire footwear: protections				
Component	Description	Value	Norm Requirements	EN 20345
Steel	Impact resistance(200 J)			
Toe-cap	<ul style="list-style-type: none"> Free height after impact 	14,5 mm	≥ 14 mm	5.3.2.3
	<ul style="list-style-type: none"> Compression resistance (15 kN) Free height after compression 	15 mm	≥ 14 mm	5.3.2.4
Sole (SRC)	Slip resistance			
	<ul style="list-style-type: none"> SRA – Sole (entire sole) 	0,44	≥ 0,32	5.3.5.4
	<ul style="list-style-type: none"> SRA – Heel (Angle of 7°) 	0,42	≥ 0,28	5.3.5.4
	<ul style="list-style-type: none"> SRB – Sole (entire sole) 	0,20	≥ 0,18	5.3.5.4
	<ul style="list-style-type: none"> SRB – Heel (Angle of 7°) 	0,18	≥ 0,13	5.3.5.4
Fresh'n Flex (P)	Puncture resistance	No perforation	≥ 1100 N	6.2.1.1.2
Footbed (A)	Antistatic properties			
	<ul style="list-style-type: none"> Electrical resistance 	dry 10,0 x 10 ⁸ Ω	≥ 10 ⁵ Ω , ≤ 10 ⁹ Ω	6.2.2.2
		humid 9,80 x 10 ⁸ Ω	≥ 10 ⁵ Ω , ≤ 10 ⁹ Ω	6.2.2.2
Sole/Upper	Thermal insulation			
Heat (HI)	Insole temperature increase	N/A	≤ 22°C	6.2.3.1
Cold (CI)	Insole temperature decrease	N/A	≤ 10°C	6.2.3.2
Heel (E)	Shock-absorption in the heel region	26 J	≥ 20 J	6.2.4
(WR)	Water resistance (Water absorption)	N/A	≤ 3 cm ²	6.2.5
(M)	Metatarsal protection	N/A	≥ 40 mm	6.2.6

Upper				
Component	Description	Value	Norm Requirements	EN 20345
	Tear resistance	198 N	≥ 120 N	5.4.3
Suede	Traction resistance	21 N/mm ²	≥ 15 N/mm ²	5.4.4
leather	Water steam permeability	3,5 mg/cm ² h	≥ 0.8 mg/cm ² h	5.4.6
	pH value	4,05	≥ 3,2	5.4.7
	Chromium VI	Not detected	No detectable	5.4.9
	Water passed	N/A	≤ 0.2 g	6.3
	Water absorption	N/A	≤ 30%	6.3

Lining				
Component	Description	Value	Norm Requirements	EN 20345
	Tear resistance	30 N	≥ 15 N	5.5.1
	Abrasion resistance	<ul style="list-style-type: none"> Dry : the surface shows no holes 	No holes till 51.200 cycles	5.5.2
		<ul style="list-style-type: none"> humid: the surface shows no holes 	No holes till 25.600 cycles	5.5.2
3D Hi-Tech	Water steam release	7,2 mg/cm ² h	≥ 2,0 mg/cm ² h	5.5.3
Fabric	pH value	N/A	No detectable	5.5.4
	Chromium VI	N/A	No detectable	5.5.5

Insole				
Component	Description	Value	Norm Requirements	EN 20345
Fresh n' flex	Thickness	3,5 mm	≥ 2,0 mm	5.7.1
	pH value	N/A	No detectable	5.7.2
	Water absorption	109 mg/cm ²	≥ 70 mg/cm ²	5.7.3
	Water release	100 %	≥ 80 %	5.7.3
	Abrasion resistance (after 400 cycles)	No damage	Damage ≤ to norms reference	5.7.4.1
	Chromium VI	N/A	No detectable	5.7.5

Removable footbed				
Component	Description	Value	Norm Requirements	EN 20345
Anatomical, breathable, textile and expanded polymeric material	Thickness	3,5±0,5 mm	N/A	5.7.1
	pH value	N/A	No detectable	5.7.2
	Water absorption	Permeable	Permeable or ≥ 70mg/cm ²	5.7.3
	Water release	Permeable	Permeable or ≥ 80%	5.7.3
	Abrasion resistance	No damage	Dry No holes till 25.600 cycles Humid no holes till 12.800 cycles	5.7.4.2
	Chromium VI	N/A	No detectable	5.7.5

Sole				
Component	Description	Value	Norm Requirements	EN 20345
PU Monodensity Sole	Sole thickness without profiles	9 mm	≥ 4 mm	5.8.1.1
	Profiles height	4 mm	≥ 2,5 mm	5.8.1.3
	Tear resistance	5,7 kN/m	≥ 8 kN/m	5.8.2
	Abrasion resistance	164 mm ³	≤ 250 mm ³	5.8.3
	• relative volume loss			
	Flexion resistance	1,5 mm	≤ 4 mm	5.8.4
	• Notches increase after 30.000 cycles			
	Hydrolysis	2 mm	≤ 6 mm	5.8.5
	• Notches increase after 150.00 cycles			
	Outsole – insole detachment	N/A	≥ 4 N/mm; (*) ≥ 3 N/mm with sole ripping	5.8.6
(HRO) Contact heat resistance (300°C)	N/A	No damage (melting, breaking)	6.4.1	
(FO) Fuel resistance (volume changes)	0,1 %	≤ 12%	6.4.2	

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