

## TECHNICAL SHEET



Article:  
 Norm:  
 Safety Class:  
 ESD protection for  
 electronic devices:

**B0871 BE-FRESH ESD**  
**UNI EN ISO 20345:2012**

**S1 P SRC ESD**

**CEI EN 61340-5-1:2008, CEI EN 61340-4-5:2006  
 and CEI EN 61340-4-3:2002**

Footwear height:

**Mod. A, H 95 mm (< 113 mm; Rif. EN 20345-5.2.2)**

Width:

**12**

Construction:

**STROBEL; DUAL DENSITY PU-TPU SKIN**

Cleaning and  
 maintenance:

Use only soft brushes and water. Do not use  
 substances like alcohol, thinners, gasoline, oil or any  
 other chemicals. Keep the footwear, dry and clean, in a  
 proper place at room temperature..

Suggested  
 environments:

**Electronic (EPA=Electrostatic protected areas ESD),  
 automotive, automated lines, light industry,  
 services.**



### ESD Protection (Electrostatic discharges) for electronic devices

Suitable for use in EPA areas (Electrostatic discharges protected area )



Environmental class 1 (Temperature = 23±2°C; Relative Humidity 12±3%)

Component	Description	Value	Norm Requirements	Norm
Entire footwear	Total resistance footwear/ground (footwear worn on a metal ground)	1,95 x 10 <sup>7</sup> Ω	< 3,5 x 10 <sup>7</sup> Ω	<b>CEI EN 61340-4-5</b>
	Sole electrical transversal resistance (footwear resistance)	8.85 x 10 <sup>7</sup> Ω	≥ 10 <sup>5</sup> Ω e ≤ 10 <sup>8</sup> Ω	<b>CEI EN 61340-4-3</b>

Entire footwear: components				
Component	Description	Value	Norm Requirements	EN 20345
Metal-free SLIMCAP toe-cap	Impact resistance(200 J) • Free height after impact	14 mm	≥ 14 mm	5.3.2.3
	Compression resistance (15 kN) • Free height after compression	15mm	≥ 14 mm	5.3.2.4
Sole (SRC)	Slip resistance • SRA – Sole (entire sole) • SRA – Heel (Angle of 7°) • SRB – Sole (entire sole) • SRB – Heel (Angle of 7°)	0,45 0,39 0,32 0,28	≥ 0,32 ≥ 0,28 ≥ 0,18 ≥ 0,13	5.3.5.4 5.3.5.4 5.3.5.4 5.3.5.4
Fresh'n Flex (P)	Puncture resistance	No perforation	≥ 1100 N	6.2.1.1.2
Footbed (A)	Antistatic properties • Electrical resistance	dry 5,7 x 10 <sup>8</sup> Ω humid 2,4 x 10 <sup>8</sup> Ω	≥ 10 <sup>5</sup> Ω , ≤ 10 <sup>9</sup> Ω ≥ 10 <sup>5</sup> Ω , ≤ 10 <sup>9</sup> Ω	6.2.2.2 6.2.2.2
Sole/Upper Heat (HI)	Thermal insulation 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	38 J	≥ 20 J	6.2.4
(WR)	Water resistance (Water absorption)	N/A	≤ 3 cm <sup>2</sup>	6.2.5
(M)	Metatarsal protection	N/A	≥ 40 mm	6.2.6

Upper				
Component	Description	Value	Norm Requirements	EN 20345
	Tear resistance	80 N	≥ 60 N	5.4.3
	Traction resistance	N/A	≥ 15 N/mm <sup>2</sup>	5.4.4
Suede	Water steam permeability	2,8 mg/cm <sup>2</sup> h	≥ 0.8 mg/cm <sup>2</sup> h	5.4.6
Microfibre	pH value	N/A	≥ 3,2	5.4.7
	Chromium VI	N/A	Not 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	• Dry : the surface shows no holes • humid: the surface shows no holes	No holes till 51.200 cycles No holes till 25.600 cycles	5.5.2 5.5.2
3D hi-tech Fabric	Water steam release	7,2 mg/cm <sup>2</sup> h	≥ 2,0 mg/cm <sup>2</sup> h	5.5.3
	pH value	N/A	Not detectable	5.5.4
	Chromium VI	N/A	Not detectable	5.5.5

Insole				
Component	Description	Value	Norm Requirements	EN 20345
Fresh'nFlex ESD	Thickness	3,5 mm	≥ 2,0 mm	5.7.1
	pH value	N/A	Not detectable	5.7.2
	Water absorption	107 mg/cm <sup>2</sup>	≥ 70 mg/cm <sup>2</sup>	5.7.3
	Water release	98 %	≥ 80 %	5.7.3
	Abrasion resistance (after 400 cycles)	No damage	Damage ≤ to norms reference	5.7.4.1
	Chromium VI	N/A	Non detectable	5.7.5

Removable footbed				
Component	Description	Value	Norm Requirements	EN 20345
Dry'n air	Thickness	3,5±0,5 mm	N/A	5.7.1
	pH value	N/A	Not detectable	5.7.2
	Water absorption	Permeable	Permeable or ≥ 70mg/cm <sup>2</sup>	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	Not detectable	5.7.5

Sole				
Component	Description	Value	Norm Requirements	EN 20345
PU Midsole	Sole thickness without profiles	7,1 mm	≥ 4 mm	5.8.1.1
	Profile height	4,1 mm	≥ 2,5mm	5.8.1.3
	Tear resistance	6,9 kN/m	≥ 5 kN/m	5.8.2
	Abrasion resistance • relative volume loss	72 mm <sup>3</sup>	≤ 250 mm <sup>3</sup>	5.8.3
Outsole TPU SKIN: (TPU high density)	Flexion resistance • Notches increase after 30.000 cycles	1,0 mm	≤ 4 mm	5.8.4
	Hydrolysis		≤ 6 mm	5.8.5
	Notches increase after 150.00 cycles	2,0 mm	≥ 4 N/mm; (* ) ≥ 3 N/mm with sole ripping	5.8.6
	Detachment outsole-insole	3,8 N/mm <sup>(*)</sup>	No damage (melting, breaking)	6.4.1
	(HRO) Contact heat resistance (300°C)	N/A		
(FO) Fuel resistance (volume changes)	0,8 %	≤ 12%	6.4.2	

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