

## FIREFIGHTER 4000

81180 (W23324) Firefighter 4000 Knee  
81192 (W23552) Ladies Firefighter 4000 Knee  
81216 (W23326) Firefighter 4000 Wide Knee

## EN 15090:2006

Footwear for firefighters

## ISO 20345:2004

Personal protective equipment,  
safety footwear

## DIRECTIVE 89/686/EE

## EN 13287:2004

Slip resistance



### TECHNICAL DATA:

Style description:

black rubber upper and black rubber sole

Classification:

II, DesignD, Type2

Category:

F2I HI2

Construction:

vulcanized, hand built

Last:

5110 (81180, 81192), 5106 (81216)

Mould:

Hunter 4000 Series

Size range:

35-48 (81180,81216), 35-42 (81192)

Steel toecap:

200J Fleck steel 3700

Steel midsole:

ISCO 1620

Requirements	Reference	Symbol
Flame resistance	Shall neither flame for more than 2s (after-flame time) - nor glow more than 2s (after-glow time)	
Radiant heat	Radiant heat transfer index > 40s; Heat flux density – 20kW/m <sup>2</sup> ; No changes	
Insulation against heat	Level HI 2 - Inside temperature of footwear < 42°C after 10min / 250°C - Footwear degradation after 20min / 250°C – no changes	HI 2
Electrical insulation	Class 0 - Clearance (h) 40± 3 mm - Proof test voltage 5kV (leakage current for 3min) - Withstand test voltage 10kV (no puncture)	I
Slip resistance	Coefficient of friction - heel > 0.28; Flat > 0.32; - Ceramic tile floor with sodium lauryl sulphate	SRC
Impact resistance	Internal length – min. 40mm for N° 43; Impact energy – 200J Min. clearance – 14.5 mm for N°43 ; No cracks	SB
Compression resistance	Compression load – 15000N Min. clearance – 14.5mm for N° 43	
Penetration resistance	Test nail: diameter (4.50±0.05)mm, hardness-60HRC Speed nail (10 ± 3) mm/min, Force required to penetrate > 1100N	P
Resistance to hot contact	T=300°C , t=60s Shall not melt and shall not develop any cracks when bent around the mandrel	HRO
Resistance to fuel oil	Volume increases < 12% volume shrinks > 0,5% Changes in hardness > 10Sh-A Cut growth < 6mm before 150,000 flex cycles	
Abrasion resistance	Volume loss < 250mm <sup>3</sup>	
Flexing resistance	Upper – no cracking before 125,000 flex cycles Outsole – cut growth < 4.0mm before 30,000 flex cycles	
Leakproofness	Pressure (10 ± 1) kPa, time 30s, no leakage of air	
Specific ergonomic features	- Walk normally for 5 minutes at a speed of approx. 6km/h - Climb and descend (17±3) stairs for 1 minute - Kneel / crouch down After completion of tests all results relating to footwear comfort and functionality are positive.	