



ARMOR[®]
Industrial Safety

BOTIN SEGURIDAD

STRONGER
ELECTRICAL HAZARD

KD 9113



*imagen referencial

Con STRONGER, eres IMPARABLE.

Descripción

Calzado dielectrico de alto rendimiento ideal para los trabajos más exigentes, fabricado con la más alta tecnología, proporcionando un confort y una resistencia excepcional, cumpliendo con los más altos estándares internacionales de protección, su suela antideslizante con diseño exclusivo posee amplias ranuras brindando un mayor agarre y expulsión de residuos, permite mayor tracción a todo tipo de superficie.

Con STRONGER, eres IMPARABLE.

Categoria EH

18 kv

Peso Ultra Ligero

515 g

Peso aproximado

Especificaciones Técnicas

Fabricación: Inyección directa al corte.
Aparado: Cuero crupón.
Color: Negro.
Forro: Completo en textil respirable.
Fuelle: Integrado al aparado.
Tobillera: Acolchada con espuma de alta densidad.
Costuras: Dobles con hilo Nylon T-20.
Contrafuerte: Termoformado.
Plantilla interior: Intercambiable.
Planta: Pu bidensidad.
Puntera: Composite con resistencia de hasta 200 Joules.
Resistencia dieléctrica: 18 KV.
Numeración: 35 al 45.

Mantenimiento

- ☒ - Elimine la suciedad con un trapo húmedo.
- ☒ - Aplique crema de cuero con regularidad a fin de mantener las propiedades originales del cuero.
- ☒ - En caso de humedad, retire la plantilla y dejar secar al aire libre.
- ☒ - No exponer a fuentes directas de calor.



ASTM F2413 (EH 18Kv)
ISO 20345 / NTP ISO 245

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INTERNATIONAL TESTING CENTRE

TEST CERTIFICATE

Customer Name : O.N.G.C. Ltd. New Delhi.

Test report No. : 2K2506154

(C/O) - Apex Safety Products)

Contact person : Mr. Manish Bhowmik

Date of Entry : 11.06.2025

Address : Tower B, 2nd floor, Deen Dayal Urja Bhawan, Vasant Kunj - Delhi.

Sample description: Electrical Safety Shoe (Black)

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(Size- 6, 7 & 8), Design - B COD:KD 9112, KD 9113, KD 9114, KD 9115

Ref. No. : Seal No. - 104, Dated- 05.06.2025

Specification : ONGC Technical Spec. (No. ONGC-CHSE-CORE PPE-04 R2)

Testing period : 13.06.2025 to 24.06.2025

Reporting date : 25.06.2025

Laboratory Environment

Temperature : 27 $\pm$ 2°C

Relative Humidity : 65 $\pm$ 5%

S.No.	Test Name	Clause	Value	Requirement	Conformity
1.Design (5.2)					
a.	Design	5.2.1	Design - B Ankle Boot	Design - B Ankle Boot	Conforms
b.	Height of upper	5.2.2	>113 mm	113 mm (min.) (Size-8)	Conforms
c.	Seat Region	5.2.3	Closed	Closed	Conforms
2.Test on Whole Footwear (5.3)					
a.	Construction	5.3.1.1	Yes	Insole can not be removed without damaging the footwear	Conforms
b.	Upper/Outsole bond	5.3.1.2	4.2 N/mm	4 N/mm (minimum)	Conforms
c.	Toe Protection (5.3.2) : General (Composite / non metallic Toe Cap)	5.3.2.1	Toe-cap has been incorporated in such a way that it can not be removed without damaging the shoe. The toecaps have a vamp lining.	Toe-cap shall be incorporated in such a way that it can not be removed without damaging the shoe. The toe-caps shall have a vamp lining.	Conforms
	Covering beneath the toe-cap		> 5.0 mm	> 5mm	Conforms
	Covering in opposite direction		>10.0 mm	> 10 mm	Conforms
d.	Internal Toe cap length	5.3.2.2	41.0 mm	39 mm (minimum) (Size - 7)	Conforms
e.	Impact resistance - 200 Joules	5.3.2.3	14.0 mm No crack observed	13.5 mm (min.) toecap should not cracks on the test axis. (Size - 6)	Conforms
f.	Compression resistance -15 kN	5.3.2.4	16.0 mm	14.0 mm (minimum) (Size - 8)	Conforms
g.	Specific ergonomic features	5.3.4			
i.	Is the inside surface of the footwear free from rough, sharp or hard areas that caused you irritation or injury?		Yes	Yes/No	Conforms
ii.	Is the footwear free of features that you consider to make wearing the footwear hazardous?		Yes	Yes/No	Conforms

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S.No.	Test Name	Clause	Value	Requirement	Conformity
iii.	Can the fastening be adequately adjusted (if necessary)?		Yes	Yes/No	Conforms
iv.	Can the following activities be performed without problem:				
	Walking		Yes	Yes/No	Conforms
	Climbing stairs		Yes	Yes/No	Conforms
	Kneeling/crouching down		Yes	Yes/No	Conforms
h.	Slip resistance – 5.3.5 (SRA)	5.3.5.2	0.30 0.38	Coefficient of friction for Condition A (Forward heel slip) -0.28 Condition B (Forward flat slip) - 0.32	Conforms
3. Test on Upper (5.4)					
a.	Tear strength	5.4.3	193 N	120 N (minimum)	Conforms
b.	Tensile strength	5.4.4	24.9 N/mm ²	15 N/mm ² (minimum)	Conforms
c.	Water vapour permeability	5.4.6	0.98 mg/cm ² h	0.8 mg/cm ² h (minimum)	Conforms
	Water vapour coefficient		16.5 mg/cm ²	15 mg/cm ² (minimum)	
4. Test on Vamp Lining (5.5)					
a.	Tear strength	5.5.1	46 N	15 N (minimum)	Conforms
b.	Martindale abrasion	5.5.2	No hole observed	DRY-No hole till 25,600 cycles WET-No hole till 12,800 cycles	Conforms
c.	Water vapour permeability	5.5.3	>2.0 mg/cm ² h	2.0 mg/cm ² h (minimum)	Conforms
	Water vapour coefficient		>20 mg/cm ²	20.0 mg/cm ² (minimum)	
5. Test on Quarter lining (5.5)					
a.	Tear strength	5.5.1	43 N	15 N (minimum)	Conforms
b.	Martindale abrasion	5.5.2	No hole observed	DRY-No hole till 25,600 cycles WET-No hole till 12,800 cycles	Conforms
c.	Water vapour permeability	5.5.3	>2.0 mg/cm ² h	2.0 mg/cm ² h (minimum)	Conforms
	Water vapour coefficient		>20 mg/cm ²	20.0 mg/cm ² (minimum)	
6. Test on Collar (5.5) – Synthetic					
a.	Tear strength	5.5.1	23 N	15 N (minimum)	Conforms
7. Test on Tongue (5.6) – Leather					
a.	Tear strength	5.6.1	110 N	36 N (minimum)	Conforms
8. Test on Insole & Insock -5.7 (full Insock removable & Water permeable)					
a.	Thickness (insole)	5.7.1	>2.0 mm	2 mm (minimum)	Conforms
b.	Water absorption & Desorption (insole)	5.7.3	>70 mg/cm ² 100 %	70 mg/cm ² (minimum) 80 % (minimum)	Conforms
c.	Water absorption & Desorption (insock)	5.7.3	Not applicable for water permeable in sock.		
d.	Abrasion resistance (insole)	5.7.4.1	No damage	400 cycles (minimum)	Conforms
e.	Martindale abrasion (In sock)	5.7.4.2	No hole observed	DRY-No hole till 25,600 cycles WET-No hole till 12,800 cycles	Conforms

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S.No.	Test Name	Clause	Value	Requirement	Conformity
9. Test on sole - 5.8					
a.	Design	5.8.1	Cleated Sole	Cleated or non-cleated	Conforms
b.	Thickness (Cleated Out sole)	5.8.1.1	>4.0 mm	$d_1 \geq 4.0$ mm	Conforms
c.	Cleated Area : at fore part at heel part	5.8.1.2	> 0.45 L > 0.25 L	0.45 x L (minimum) at fore part 0.25 x L (minimum) at heel part	Conforms
d.	Cleat height	5.8.1.3	>2.5 mm	$d_2 \geq 2.5$ mm	Conforms
e.	Tear strength	5.8.2	10.4 kN/m	8 kN/m (min.) density > 0.9 g/cm ³	Conforms
f.	Abrasion resistance	5.8.3	140 mm ³	150 mm ³ (max.) density > 0.9 g/cm ³	Conforms
g.	Flexing resistance (30,000 cycles)	5.8.4	No cut growth	4 mm (max) cut growth.	Conforms
h.	Hydrolysis Test (150,000 cycles)	5.8.5	No cut growth	6 mm (max) cut growth.	Conforms
i.	Interlayer bond strength	5.8.6	4.7 N/mm	4 N/mm (minimum)	Conforms

Additional Tests for Special Applications

Test Name	Clause	Value / Observation	Requirement	Conformity
Whole Footwear 6.2				
Heat insulation (HI)	6.2.3.1	20°C	22°C (max)	Conforms
Energy Absorption (E)	6.2.4	32 J	20 J (min.)	Conforms
Water resistance (WR)	6.2.5	No water penetration observed.	Total wetted area - 3 cm ² (max.)	Conforms
Water Penetration and Absorption (WRU)	6.3	Absorption - 9.5 % Penetration - 0.01 g	Water absorption - ≤ 30 % Water penetration - ≤ 0.2 g	Conforms
Resistance to hot contact (at 300°C for 1 min.) (HRO)	6.4.1	No melt / damage observed	Outsole shall not melt & not cracks when bent around the mandrel.	Conforms
Resistance to fuel oil (FO)	6.4.2	4.5 %	12 % (max.)	Conforms

Additional details as per attached specification.

Material	Parameter tested	Observation / Value	Requirement	Conformity
Footwear	Construction	Strobel construction. Metal not used in shoe except D-ring.	Strobel construction. Metal should not used in shoe except D-ring.	Conforms
Upper	Visual	Full Grain Chrome tanned Semi-Aniline Finished Leather.	Full Grain Chrome tanned Semi-Aniline Finished Leather.	Conforms
	Thickness	2.0 mm	2.0 ± 0.1 mm	
Tongue	Visual	Full Grain Chrome tanned Semi-Aniline Finished Leather (Padded Bellow Type)	Full Grain Chrome tanned Semi-Aniline Finished Leather (Padded Bellow Type)	Conforms
	Thickness	1.1 mm	1.2 ± 0.1 mm	
Quarter & tongue lining	Visual	Mesh lining	Mesh lining	Conforms

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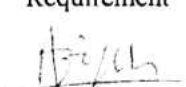
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Material	Parameter tested	Observation / Value	Requirement	Conformity
Vamp Lining	Visual	Non woven	Non woven	Conforms
Collar	Visual Foam Thickness	Padded Collar- PU Synthetic 15.0 mm	Padded Collar- PU Synthetic 14.0 mm (min.)	Conforms
Insock	Visual Thickness - toe Heel	Non woven + Moulded EVA with Arch support) 3.0 mm 6.0 mm	Non woven + Moulded EVA with Arch support) 3.0 mm (min.) 6.0 mm (min.)	Conforms
Insole	Visual	Non- woven	Non- woven	Conforms
Sole	Mid sole Out sole Sole thickness Heel Height Hardness- mid sole - out sole Out sole Sp. gravity	PU Nitrile Rubber >5.0 mm >20.0 mm 50 Shore A 67 Shore A 1.12	PU Nitrile Rubber 5.0 (min.) 20.0 (min.) 45± 5 shore A 65± 5 shore A 1.2 (max.)	Conforms
Lace	Type Dia Length	Complies 5.5 mm 110 cm	Z-twist, Nylon or polyester 5.5 ±0.5 mm 100 - 110 cm	Conforms
D Ring	Dia No. (per pair)	10.0 mm 20	10.0 mm (min.) 20	Conforms
Toe Cap	Material Thickness (padding)	Composite (Non metallic) >3.0 mm	Composite (Non metallic) 3.0 mm (min.)	Conforms
Shoes	Colour	Black	Brown / Black	Conforms

*High Voltage test up to 18 kV (As per ASTM F 2413)

Value
Requirement

No flashover/ breakdown observed after 1 minute.
No flashover/ breakdown at 18 kV for 1 minute.


Arjun Parsad
(Senior Technologist)
Authorized signatory

*** END OF TEST REPORT ***


Rajesh Mishra
(Senior Technologist)
Authorized signatory

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