No. U.II-98 (Spec.)/2013-14-Prov (D/Boot)
भारत सरकार/Government of India
गृह मंत्रालय/Ministry of Home Affairs
पुलिस आधुनिकीकरण प्रभाग /Police Modernization Division
संभरण-I डेस्क /Prov.I Desk

26, Man Singh Road, Jaisalmer House
New Delhi, the 21 November, 2014

To,

DsG: AR (through LOAR), BSF, CISF, CRPF, ITBP, SSB, NSG & BPR&D.

Subject: QRs and Trial Directives of Desert Boot.

The QRs and Trial Directives in respect of Desert Boot as per Annex-I and Annex-II respectively have been accepted by the Competent Authority in MHA.

2. Henceforth, all the CAPFs should procure the above item required by them strictly as per the laid down QRs.

3. Concerned CAPF would be responsible for correctness of QRs/TDs.

Yours faithfully,

(P. K. Srivastava)
Under Secretary to the Govt. of India
Tel: 23381278

Encl: As above.

Copy forwarded to SO (IT), MHA, with the request to host the QRs and Trial Directives of Desert Boot on the website of MHA (under the page Organizational Set up-Police Modernization Division-Qualitative Requirements), soft copy is being sent through email.

(R K Soni)
Section Officer (Prov.I)

Copy to: DDG (Procurement), MHA.

APPENDIX – 'A'

QRs/SPECIFICATION FOR "DESERT BOOT FOR BSF PERSONNEL DEPLOYED UNDER RAJASTHAN AND GUJARAT FRONTIER"

1. Scope

1.1 This QRs/Specification covers the requirements of Desert Boot type. These are meant for use by BSF Personnel deployed under Rajasthan and Gujarat Frontiers.

1.2 The boots ankle described in this QRs should be manufactured from Chromium Tanned Suede 2.0 – 2.2 mm thickness. The upper mesh should be manufactured from minimum 1175 upto 1250 denier nylon 6 mesh laminated to maximum 6mm Ethylene Vinyl Acetate (EVA) foam with a minimum 115gm² Cambrelle fabric backing.

General	
1.	The Boot Ankle described in this QR's should be manufactured from Chromium Tanned Suede. The upper mesh should be manufactured from denier nylon mesh laminated to Ethylene Vinyl Acetate (EVA) foam with a Cambrelle fabric backing.
2.	The boot should be manufactured and tested to IS Standard or equivalent International Standard and marked accordingly.
3.	A booklet containing care instructions should be supplied with each pair of boots.
4.	The boots should be available in the following size range; MALE : 6 – 12 (UK).

2. Materials

A. Upper Leather

1	Vamp & Quarter	Chromium Tanned Suede 2.0 – 2.2 mm thickness.
2	TOE & TOE PUFF	The reinforced toe box should be minimum 1.7mm, die cut thermoplastic, semi lunar shaped, inserted between the upper part and the lining.
3	Counter	The heel counter should be maximum 2.0mm, die cut thermoplastic inserted between upper & lining.
4	Vamp Lining & Material	The lining consists of a Polyester mesh laminated to maximum 5mm open cell foam with 25 gm² to 28gm² Tricot fabric backing. This combination of fabrics is designed, along with the other boot components and materials, to provide optimum wick ability and breathability for the wearer.

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B. Closing Material

1	Thread	The thread used for the general stitching should be 3 to 5 ply bonded black/ Desert Tan nylon maximum 6 anti-fray thread with minimum 3kg tensile strength and 70-100% elongation.
2	Eyelet	The fastening system should comprise 4 pairs of eyelets made from corrosion resistant metal painted to complement the upper.
3	D-Ring	The fastening system should comprise 4 pairs of D-Ring made from Brass with corrosion resistant complement the upper.
4	Hook	The fastening system should comprise 1 pairs of Hook made from Brass with corrosion resistant to complement the upper.

C. Soling

1	Upper Pattern	The leather used in the manufacture of the boot shall not be burnt, rotten or have warble or similar damage. It should not have been damaged by heat, fire or have scars resulting from scratches or cuts. It should not be mouldy, wet, dirty or deformed.
		The upper should be manufactured from Chromium Tanned Suede 2.0 – 2.2 mm thickness.
		The upper mesh should be manufactured from minimum 1175 upto 1250 denier nylon 6 mesh laminated to maximum 5mm Ethylene Vinyl Acetate (EVA) foam with a 120gm² (+/- 10%) Cambrelle fabric backing. The Cambrelle should be treated with an Agion anti-microbial finish.
2	Outsole Material	The outsole should be compression moulded with Nitrile Butadiene Rubber (NBR).
		The outsole should have a minimum cleat depth of 4mm and sharp leading edges that are fully open to the edge. The heel breast depth should be a minimum of 5mm and at an angle of 90° +/- 10°.
		The sole unit should be in a same colour to match the colour of the upper.
		The outsole should be tested to and meet all the requirements of IS Standards or equivalent International Standards in terms of energy absorption, abrasion resistance and slip resistance.
		The outsole assembly should be attached to the lasted upper by utilising the cementing method. An epoxy based adhesive should be applied to the outsole and then cured using both heat and pressure repeatedly until the required bond has been achieved.
3	In Sole Material	The insole board should be 2mm +/- 10% anatomically pre-shaped (in accordance to human feet) extruded polyethylene (PE) polymer board. Hardness: 60 +/- 3 Shore D.
4	Type	High Ankle Boot.
5	Style	Desert Type Boot.
6	Sole Hardness	Hardness 65° - 70°. Shore A.

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D. Tongue

1.	The tongue should be ¾ bellows (manufactured in a manner which allows air to pass and should be pre-shaped in accordance with a human feet) and should be padded to ensure wearer comfort.
2.	The tongue should be manufactured from minimum 1175 upto 1250 denier nylon 6 mesh laminated to 1mm to 3mm Ethylene Vinyl Acetate (EVA) foam with a 120gm² +/- 10% Cambrelle fabric backing. The Cambrelle should be treated with an Agion anti-microbial finish.
3.	A nylon webbing tape should run the length of the tongue. This should incorporate a lace loop to ensure the tongue is held centrally in place when being worn.

E. Footbed (Insock)

1.	The footbed should be manufactured from a base layer of EVA at 25 – 35° Shore C and with a thickness of minimum 3mm in the forefoot, rising to maximum 5mm at the heel. The forepart area should include a memory foam insert. The base of the footbed should contain two shock absorbing pads of 2mm +/- 10% thickness.

F. Finishing

1	Lace Material	The laces should be manufactured from woven polyester minimum 5mm diameter, round in shape. The lace ends should be finished with plastic non-removable aglets, 17 mm to 20mm long.
2	Lace Length	185cm to 190 cm
3	Height For Shoe – Size	The back height of a size 8 UK boot when measured from the inside back of boot, on top of the foot bed should be 178mm. The height may increase or decrease 2mm as per shoe size increase or decrease.
4	Weight For Shoe – Size	Maximum weight of one pair Size 8 weight should be 1350 ± 50 grams. The weight of shoe may increase/decrease by 50 gm as per shoe size increase or decrease.
5	Colour	Black/Desert Tan

3. Height & Thickness

1.	Height of Upper	Should be minimum 123mm.
2.	Seat Region	Seat region should be closed.
3.	Insole Thickness	The thickness of the insole shall not be less than 2.0mm.

4. Design

The boot shall be of Derby type as pre sketch attached for guideline.

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5. **Marking & Packing**

The finished boot shall be legibly stamped with the manufacturers name or his recognized trademark and size.	
Each pair of boots shall be placed heed and toe alternatively i.e upright position wrapped with tissue paper. A label with following markings shall be placed outside the box which shall be clearly readable.	Nomenclature
	Manufacturer's name or trade mark
	Month and Year of manufacture
	Size.

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DIAGRAM 1 – LATERAL VIEW

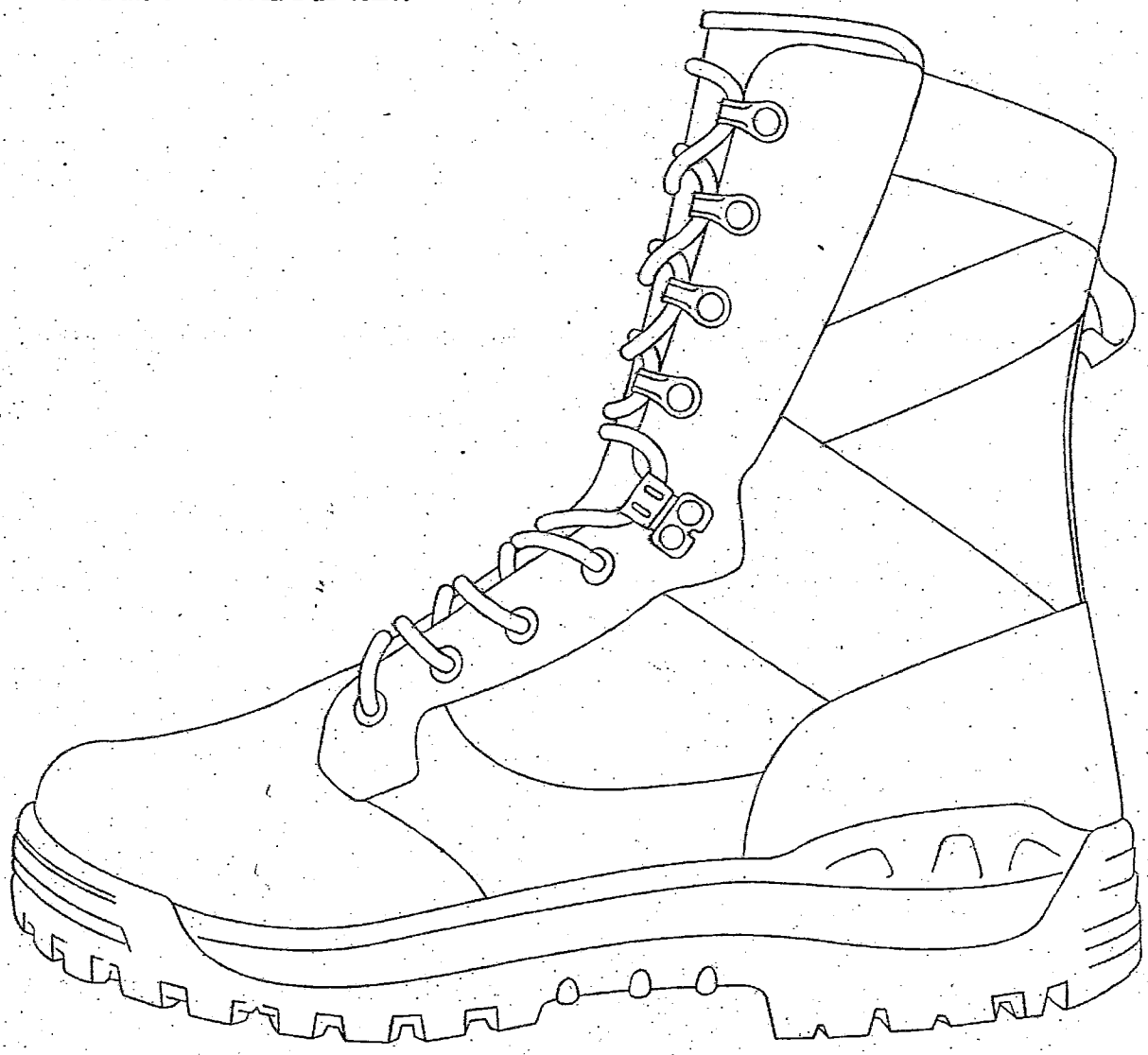

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DIAGRAM 2 – MEDIAL VIEW

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APPENDIX — 'B'

Trial Directive for QRs/SPECIFICATION FOR "DESERT BOOT FOR BSF PERSONNEL DEPLOYED UNDER RAJASTHAN AND GUJARAT FRONTIER"

Scope	1.1	This QRs/Specification covers the requirements of Desert Boot type. These are meant for use by BSF Personnel deployed under Rajasthan and Gujarat Frontiers.	
	1.2	The boots ankle described in this QRs should be manufactured from Chromium Tanned Suede 2.0 – 2.2 mm thickness. The upper mesh should be manufactured from minimum 1175 upto 1250 denier nylon 6 mesh laminated to maximum 6mm Ethylene Vinyl Acetate (EVA) foam with a minimum 115gm² Cambrelle fabric backing.	The Trial Board to check Lab report

General		
1.	The Boot Ankle described in this QR's should be manufactured from Chromium Tanned Suede. The upper mesh should be manufactured from denier nylon mesh laminated to Ethylene Vinyl Acetate (EVA) foam with a Cambrelle fabric backing.	The Trial Board to check Lab report
2.	The boot should be manufactured and tested to IS Standard or equivalent International Standard and marked accordingly.	The Trial Board to check Lab report
3.	A booklet containing care instructions should be supplied with each pair of boots.	The Trial Board to physically check the booklet.
4.	The boots should be available in the following size range: - MALE : 6 – 12 (UK).	The Trial Board to physically check

1. Materials

A. Upper Leather

1	Vamp & Quarter	Chromium Tanned Suede 2.0 – 2.2 mm thickness.	The Trial Board to physically check using a Vernier Caliper and as per Lab report.
2	TOE & TOE PUFF	The reinforced toe box should be minimum 1.7mm, die cut thermoplastic, semi lunar shaped, inserted between the upper part and the lining.	The Trial Board to check physically OEM Certificate since this is inserted between upper and lining and is not visible.
3	Counter	The heel counter should be maximum 2.0mm, die cut thermoplastic inserted between upper & lining.	The Trial Board to check physically and OEM Certificate since this is inserted between upper and lining and is not visible.

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4	Vamp Lining & Material	The lining consists of a Polyester mesh laminated to maximum 5mm open cell foam with 25 gm² to 28gm² Tricot fabric backing. This combination of fabrics is designed, along with the other boot components and materials, to provide optimum wick ability and breathability for the wearer.	The Trial Board to check Lab report

B. Closing Material

1	Thread	The thread used for the general stitching should be 3 to 5 ply bonded black nylon maximum 6 anti-fray thread with minimum 3kg tensile strength and 70-100% elongation.	The Trial Board to check Lab report
2	Eyelet	The fastening system should comprise 4 pairs of eyelets made from corrosion resistant metal painted to complement the upper	The Trial Board to check Lab report and physically check number of eyelets and paint.
3	D-Ring	The fastening system should comprise 4 pairs of D-Ring made from Brass with corrosion resistant complement the upper.	The Trial Board to check Lab report and physically check number of D-Ring.
4	Hook	The fastening system should comprise 1 pairs of Hook made from Brass with corrosion resistant to complement the upper.	The Trial Board to check Lab report and physically check number of Hook.

C. Soling

1	Upper Pattern	The leather used in the manufacture of the boot shall not be burnt, rotten or have warble or similar damage. It should not have been damaged by heat, fire or have scars resulting from scratches or cuts. It should not be mouldy, wet, dirty or deformed.	The Trial Board to check OEM Certificate for confirmation.
		The upper should be manufactured from Chromium Tanned Suede 2.0 – 2.2 mm thickness.	The Trial Board to check Lab report
		The upper mesh should be manufactured from minimum 1175 upto 1250 denier nylon 6 mesh laminated to maximum 5mm Ethylene Vinyl Acetate (EVA) foam with a 120gm² (+/- 10%) Cambrelle fabric backing. The Cambrelle should be treated with an Agion anti-microbial finish.	The Trial Board to check Lab report
2	Outsole Material	The outsole should be compression moulded with Nitrile Butadiene Rubber (NBR).	The Trial Board to check Lab report

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		The outsole should have a minimum cleat depth of 4mm and sharp leading edges that are fully open to the edge. The heel breast depth should be a minimum of 5mm and at an angle of 90° +/- 10°.	The Trial Board to check Lab report
		The sole unit should be in a same colour to match the colour of the upper.	The Trial Board to physically check the colour tone matching of upper and sole or check OEM certificate.
		The outsole should be tested to and meet all the requirements of IS Standards or equivalent International Standards in terms of energy absorption, abrasion resistance and slip resistance.	The Trial Board to check Lab report
		The outsole assembly should be attached to the lasted upper by utilising the cementing method. An epoxy based adhesive should be applied to the outsole and then cured using both heat and pressure repeatedly until the required bond has been achieved.	The Trial Board to check Lab report
3	In Sole Material	The insole board should be 2mm +/- 10% anatomically pre-shaped (in accordance to human feet) extruded polyethylene (PE) polymer board. Hardness: 60 +/- 3 Shore D.	The Trial Board to physically check.
4	Type	High Ankle Boot	The Trial Board to physically check.
5	Style	Desert Type Boot	The Trial Board to physically check.
6	Sole Hardness	Hardness 65° - 70°. Shore A.	The Trial Board to check Lab report

D. Tongue

1.	The tongue should be ¾ bellows (manufactured in a manner which allows air to pass and should be pre-shaped in accordance with a human feet) and should be padded to ensure wearer comfort.	The Trial Board to check physically.
2.	The tongue should be manufactured from minimum 1175 upto 1250 denier nylon 6 mesh laminated to 1mm to 3mm Ethylene Vinyl Acetate (EVA) foam with a 120gm² +/- 10% Cambrelle fabric backing. The Cambrelle should be treated with an Agion anti-microbial finish.	The Trial Board to check Lab report
3.	A nylon webbing tape should run the length of the tongue. This should incorporate a lace loop to ensure the tongue is held centrally in place when being worn.	The Trial Board to physically check.

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E. Footbed (Insock)

1.	The footbed should be manufactured from a base layer of EVA at 25 – 35° Shore C and with a thickness of minimum 3mm in the forefoot, rising to maximum 5mm at the heel. The forepart area should include a memory foam insert. The base of the footbed should contain two shock absorbing pads of 2mm +/- 10% thickness.	The Trial Board to physically check thickness of footbed at forefoot and heel & check Lab report

F. Finishing

1	Lace Material	The laces should be manufactured from woven polyester minimum 5mm diameter, round in shape. The lace ends should be finished with plastic non-removable aglets, 17 mm to 20mm long.	The Trial Board to check physically.
2	Lace Length	185cm to 190 cm	The Trial Board to physically measure the length.
3	Height For Shoe – Size	The back height of a size 8 UK boot when measured from the inside back of boot, on top of the foot bed should be 178mm. The height may increase or decrease 2mm as per shoe size increase or decrease.	The Trial Board to physically measure.
4	Weight For Shoe – Size	Maximum weight of one pair Size 8 weight should be 1350 ± 50 grams. The weight of shoe may increase/decrease by 50 gm as per shoe size increase or decrease.	The Trial Board to physically measure the weight.
5	Colour	Black/Desert Tan	The Trial Board to physically check the colour.

2. Height & Thickness

1.	Height of Upper	Should be minimum 123mm.	The Trial Board to physically measure or see OEM Certificate.
2.	Seat Region	Seat region should be closed.	The Trial Board to physically measure or see OEM Certificate.
3.	Insole Thickness	The thickness of the insole shall not be less than 2.0mm.	The Trial Board to physically measure or see OEM Certificate.

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3. Design

The boot shall be of Derby type as pre sketch attached for guideline.	The Trial Board to physically check the type using the sketch Lab report

4. Marking & Packing

The finished boot shall be legibly stamped with the manufacturers name or his recognized trademark and size.		The Trial Board to physically check.
Each pair of boots shall be placed heel and toe alternatively i.e. upright position wrapped with tissue paper. A label with following markings shall be placed outside the box which shall be clearly readable.	Nomenclature	The Trial Board to physically check.
	Manufacturer's name or trade mark	The Trial Board to physically check.
	Month and year of manufacture	The Trial Board to physically check.
	Size	The Trial Board to physically check.

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TESTING OF MATERIAL USED			
DESIGN			
1.	Upper/Outsole Bond Strength	IS-15298 partI:2011	Minimum 4.0N/mm.
2.	Energy Absorption of Seat Region	IS-15298 partI:2011	The energy absorption of the seat region shall be not less than 20J.
3.	Slip Resistance Requirement (SRA)	ISO 20344 parI:2011	Condition A (forward heel slip)-0.28(min) Condition B (forward flat slip)-0.32(min)
4.	Oil Swelling	IS-15298 partI:2011	The increase in volume should not be greater than 12%
Upper Leather			
1.	Tear Strength.	IS-15298 partI:2011	Minimum Requirement 120N.
2.	Tensile Strength.	IS-15298 partI:2011	Minimum Requirement 15N/mm².
3.	Water Vapour Permeability and Coefficient.	IS-15298 partI:2011	Permeability minimum 0.8mg/ (cm²·h). Coefficient minimum 15.0mg/cm².
4.	pH Value.	IS-15298 partI:2011	3.5(min) The Trial Board to check Lab report
5.	Chrome VI content.	IS-15298 partI:2011	The Hexavalent Chromium Content should be determined by UV-Visible Spectrophotometry.
6.	Azo Dye Stuffs (PPE Directive) - LEATHER METHOD.	ISO 17234	Testing should be by Gas Chromatographic – Mass Spectrometric (GC-MS) For Qualitative Analysis and High Performance Liquid Chromatographic (HPLC) for Quantitative Analysis. Detection Limit 5 ppm. Result for range of 22 chemicals should be Not Detected (Less than 20 ppm).
7.	PCP (PPE Directive).	ISO 17070	Result should be less than 0.5 ppm.
Upper Mesh			
1.	Tear Strength.	IS-15298 partI:2011	Minimum Requirement 60.0N.
2.	Water Vapour Permeability and Coefficient.	IS-15298 partI:2011	Permeability minimum 2.0 mg/ (cm2 h). Coefficient minimum 20.0mg/cm2.
3.	Azo Dye Stuffs (PPE Directive) - LEATHER METHOD.	ISO 14362	Analysis should be carried out by Gas Chromatographic- Mass Spectrometric (GC-MS) for Qualitative Analysis and High Performance Liquid Chromatographic (HPLC) for Quantitative Analysis. Detection Limit 5 ppm. Result for range of 22 chemicals should be Not Detected (Less than 20 ppm).
4.	PCP (PPE Directive).	ISO 17070	Result should be less than 0.5 ppm.

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Lining (Vamp)			
1.	Tear Strength.	IS-15298 part I: 2011	Minimum Requirement 15N.
2.	Abrasion Resistance.	IS-15298 part I: 2011	Minimum Requirement 25600 cycles dry. Minimum Requirement 12800 cycles wet.
3.	Water Vapour Permeability and Coefficient.	IS-15298 part I: 2011	Permeability minimum 2.0mg/ ($cm^2 \cdot h$). Coefficient minimum 20.0 mg/cm^2.
4.	PCP (PPE Directive)	ISO 17070	Result should be less than 0.5 ppm.
Lining (Quarter)			
1.	Tear Strength.	IS-15298 part I: 2011	Minimum Requirement 15N.
2.	Abrasion Resistance.	IS-15298 part I: 2011	Minimum Requirement 25600 cycles dry. Minimum Requirement 12800 cycles wet.
3.	Water Vapour Permeability and Coefficient.	IS-15298 part I: 2011	Permeability minimum 2.0mg/ ($cm^2 \cdot h$). Coefficient minimum 20.0 mg/cm^2.
4.	Azo Dye Stuffs.	ISO 17234/ ISO 14362	Analysis should be carried out by Gas Chromatographic- Mass Spectrometric (GC-MS) for Qualitative Analysis and High Performance Liquid Chromatographic (HPLC) for Quantitative Analysis. Detection Limit 5 ppm. Result for range of 22 chemicals should be Not Detected (Less than 20 ppm).
5.	PCP (PPE Directive)	ISO 17070	Result should be less than 0.5 ppm.
TONGUE			
1.	Tear Strength.		Minimum Requirement 18N.
2.	Azo Dye Stuffs (PPE Directive).	ISO 17234/ ISO 14362	Analysis should be carried out by Gas Chromatographic- Mass Spectrometric (GC-MS) for Qualitative Analysis and High Performance Liquid Chromatographic (HPLC) for Quantitative Analysis. Detection Limit 5 ppm. Result for range of 22 chemicals should be Not Detected (Less than 20 ppm).
3.	PCP (PPE Directive)	ISO 17070	Result should be less than 0.5 ppm.
Collar/Insert Materials			
1	Abrasion Resistance.	IS-15298 part I:2011	Minimum Requirement 25600 cycles dry. Minimum Requirement 12800 cycles wet.
2.	pH Value.	IS-15298 part I:2011	3.5 (min)
3.	Chrome VI content.	IS-15298 part I:2011	The Hexavalent Chromium Content should be determined by UV-Visible Spectrophotometry. Detection Limit 3 ppm. Result should be Not Detected.
4.	Azo Dye Stuffs (PPE Directive).	ISO 17234/ ISO 14362	Testing should be by Gas Chromatographic – Mass Spectrometric (GC-MS) For Qualitative Analysis and High Performance Liquid Chromatographic (HPLC) for Quantitative Analysis. Detection Limit 5 ppm. Result for range of 22 chemicals should be Not Detected (Less than 20 ppm).
5.	PCP (PPE Directive).	ISO 17070	Result should be less than 0.5 ppm.

	Insole		
	Water Absorption/ Desorption.	IS-15298 partI:2011	Absorption minimum 70mg/cm². Water Desorption minimum 80%.
	Abrasion Resistance.	IS-15298 partI:2011	Requirement – no more than severe damage before 400 cycles.
	Insock		
	Abrasion Resistance.	IS-15298 partI:2011	Minimum Requirement 25600 cycles dry. Minimum Requirement 12800 cycles wet.
	Outsole		
	Tear Strength.	IS-15298 partI:2011	Minimum 8.0kN/m.
	Abrasion Resistance.	IS-15298 partI:2011	The relative volume loss shall be not greater than 150mm³
	Flexing Resistance.	IS-15298 partI:2011	The cut growth shall be not greater than 4.0mm before 30,000 flex cycles.
	Heat Insulation	IS-15298 partI:2011	Temperature increase on the upper surface of the insole shall be not greater than 22° C

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