

**INVITATION OF VENDOR COMMENTS ON QR/ TDs OF NON SKID
TACTICAL/COMBAT/ADVANCE HIGH ANKLE BOOT**

1. It is intimated that firms/ vendors' comments are invited on the QR/ TDs of Non skid tactical/combat/advance high ankle boot. All firms are requested to offer their comments on e-mail address scord@nsg.gov.in or gcproc@nsg.gov.in in under mention format.

QRs	TDs	Comments by the firm
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2. You are requested to offer comments within 15 days from the date of uploading on the website. The QR/ TDs of above mentioned equipment/ weapon are being considered by sub group committee meeting for finalization.

Dated : 05 May 2022


(Sonu Rai)
Lt Col
SC (Ord)

REVISED QUALITATIVE REQUIREMENT AND TRIAL DIRECTIVES OF NON SKID TACTICAL/ COMBAT / ADVANCE HIGH ANKLE BOOT

S/N	Parameters	Specifications	Trial Directives
1	DESCRIPTION		
A		The boots ankle described in this QRs are to be made from chrome tanned leather. The boots are to be manufactured with cleated rubber outsole with anti-slip design.	A Board of officer (BOO) from the department may be detailed to check the material of the boot along with the lab report provided by the supplier.
B		The boots shall be made with or without zipper fastening system with 32 round D Ring/ Hooks in one pair of boot to facilitate excellent FAST fastening system.	The Board of officer (BOO) so detailed will check.
B		The boot shall be made by using broad toe last with minimum "G" fitting.	
C		The boot must be black in colour.	
D		The boot must have a shelf life of 3 year tested as per 10 D.	The Board of officer (BOO) so detailed will check and confirm the lab report provided by the supplier for the shelf life of boot.
2	ESSENTIAL FEATURES	<u>BREATHABILITY</u> – Upper leather & Linings must be breathable for all day long comfort.	The Board of officer (BOO) so detailed will check physically.
A			
B		<u>ERGONOMICALLY FIT ASSESSMENTS</u> – Boots can be put on & taken off quickly without discomfort, It must be fitted correctly to be secure on the foot at all times. All normal daily activities i.e; climbing stair, driving etc. Can be easily carried out.	The Board of officer (BOO) so detailed will check physically as well as lab report provided by the supplier.
C		<u>SLIPS, OIL & HEAT RESISTANCE</u> – Sole physical testing- The sole must be designed for 'long term' slip resistance & should pass SRC test, Sole should not break down in FOL (Fuel, Oil , Lubricant), should resist 1 minute contact at 300 Deg C. Must be tested for flexing, tear, Abrasion.	
D		<u>SHOCK ABSORPTION</u> – Should have adequate shock absorption property and must absorb 30 joules of impact force at heel area – Protects knees & Joints from impact injury.	

S/N	Parameters	Specifications	Trial Directives
3.	QUALITY REQUIREMENT OF UPPER LEATHER		
A	Thickness	2mm+/- 0.2 mm min.	5.4.2 EN ISO 20345 : 2011
B	Tear Strenght	120 N min.	5.4.3 EN ISO 20345 : 2011
C	Tensile strength	15 N/mm min	5.4.4EN ISO 20345 : 2011
D	Upper- outsole Bond Strength	4.0 N/mm min	5.3.1.2 EN ISO 20345 : 2011
E	Water vapour permeability	0.8mg/(cm ² h) min.	5.4.6 EN ISO 20345 : 2011
F	Water vapour coefficient	15 mg/cm ² min.	5.4.6 EN ISO 20345 : 2011
G	pH value	3.2 min.	5.4.7 EN ISO 20345 : 2011
H	Chromium VI content	3.0 mg/kg max.	5.4.9 EN ISO 20345 : 2011
I	Water penetration and absorption	0.2 g max and 30% max.	6.3 N ISO 20345 : 2011

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4.	<u>QUALITY REQUIREMENT OF SOLE :</u>		
		Sole is to be composite in nature. The mid-sole is to be of multi-density moulded EVA whereas outsole is to be slip-resistant injection rubber. Insole either non Woven Antistatic Insole Board or penetration resistant fabric with removable or non- removable Insock	The Board of officer (BOO) so detailed will check physically as well as lab report provided by the supplier.
i)	<u>OUTSOLE</u>		
A	Density	1.05± 0.1	SATR TM 134
B	Tear Strength	8 KN/m min.	5.8.2 EN ISO 20345 : 2011
C	Abrasion resistance (Volume loss)	150 mm ³ max.	5.8.3 EN ISO 20345 : 2011
D	Interlayer Bond Strength tasted after 3 weeks of conditioning as per Annx E ISO 5423:1992	Not less than 4.0 N/mm	5.8.6 EN ISO 20345 : 2011
E	Resistance to fuel oil	Increase in Vol. Not more than 12%	6.4.2 EN ISO 20345 : 2011
F	Resistance to Hot contact at 300°C.	No crack/ melting	6.4.1 EN ISO 20345 : 2011
G	Cleated Area of Outsole	Slip resistance requirement as per EN ISO 20345:2011-5.3.5	5.8.1.2 EN ISO 20345 : 2011
H	Thickness of Cleated outsole	4.0 mm min.	5.8.1.1 EN ISO 20345 : 2011
J	Cleat Height	2.5 mm min.	5.8.1.3 EN ISO 20345 : 2011
K	Abrasion resistance bio chemical method	4mm max. After 50,000 flex cycles	5.8.4 EN ISO 20345: 2011
ii)	<u>MID SOLE</u>		
A	Hardness	50+-3 Shore A	SATRA 205
B	Density	0.40-0.55 gm/cc	SATRA TM 134

S/N	Parameters	Specifications	Trial Directives
iii)	<u>INSOLE & INSOC</u>		
A	Thickness of insole or insole with non-removable insock	Not less than 2 mm	5.7.1 EN ISO 20345 : 2011
B	Water absorption Water Desorption	70 mg/cm ² min. 80% min.	5.7.3 EN ISO 20345 : 2011
C	Insole abrasion resistance	No severe damage after 400 cycles	5.7.4.1 EN ISO 20345 : 2011
D	In-sock Abrasion resistance	Shall not develop any hole before 25600 dry cycles & 12800 wet cycles	5.7.4.2 EN ISO 20345 : 2011
5.	<u>QUALITY REQUIREMENT OF LINING MOISTURE:</u> Wicking, hydrophobic antimicrobial lining.		
A	Weight	150 gm/mt ² min.	IS 1964:2001, RA 2010
B	Tear Strength	15 N min.	5.5.1 FN ISO 20345 : 2011
C	Abrasion resistance	Shall not develop any hole before 25600 dry cycles & 12800 wet cycles for Vamp and Quarter lining and 51200 dry cycles & 25600 wet cycles for Seat Region lining	5.5.2 EN ISO 20345 : 2011
D	Water vapour permeability	2 mg/cm ^{2h} min.	5.5.3 EN ISO 20345 : 2011
6.	<u>QUALITY REQUIREMENT OF COUNTER STIFFENER</u>		
A	Material	Thermoplastic	IS 7554-2009 Rev No 1
B	Thickness	Min. 1.6 mm	
C	Shape Retention	After first collapse 18% (max.). After 5 th collapse-21% max. Recovery after two hours-21% max.	SATRA TM 186:2001
D	Peel strength (N/mm)	No severe damage after 400 cycles/ 5 Newton	IS 554:2009 Rev 1

S/N	Parameters	Specifications	Trial Directives
7.	<u>QUALITY REQUIREMENT OF FLAT ARAMID LACE & BONDED THREAD</u>		
A	Material	ARAMID	Best Quality
B	Breaking Strength	Min. 1000 Newton	IS 1969:2009
C	Abrasion resistance	Should withstand min. Of 5000 cycles	ISO 22774:2004
D	Breaking Load Aramid thread	Min. 1000 Newton	As per BS EN ISO 2062
8.	<u>QUALITY REQUIREMENT OF WHOLE FOOTWEAR</u>		
A	Height of upper from insole	Min. 20 Cm	5.2.2 EN ISO 20345 : 2011
B	Toe cap impact resistance	Not less than 14 mm for UK size 8	5.3.2.3 EN ISO 20345 : 2011 as per table 6
C	Slip resistance (SRC)	Meet table No.9	5.3.5.4 EN ISO 20345 : 2011
D	Specific Ergonomic Feature	As per EN ISO 20345	5.3.4 EN ISO 20345 : 2011
E	Penetration Resistance	As per EN ISO 20345	6.2.1 EN ISO 20345 : 2011
F	Energy Absorption of seat region	Min. 30 Joules	6.2.4 EN ISO 20345 : 2011
G	Electrical Resistance	Antistatic 100-1000 KO	6.2.2.2 EN ISO 20345 : 2011
H	Heat insulation of sole complex at 150°C	Temp increase on upper surface of the insole shall not be greater than 22°C after 30 minutes.	6.2.3.1 EN ISO 20345 : 2011
J	Cold insulation of sole complex	Temp decrease on upper surface of the insole shall not be greater than 10°C	6.2.3.2 EN ISO 20345 : 2011
K	Water resistance	Not more than 3 cm ²	6.2.7 EN ISO 20345 : 2011
L	Ankle protection	Mean value 10 KN max. and Single value 15 KN max.	6.2.7 EN ISO 20345 : 2011
M	Cut resistance	Cut-resistance index not less than 2.5	6.2.8 EN ISO 20345 : 2011

S/N	Parameters	Specifications	Trial Directives
9.	<u>MATERIAL FEATURES</u>		
A	Upper:-	Black combination of chrome tanned leather 2mm+/- 0.2mm thick leather and 1600 Denier based heavy duty ballistic grade nylon fabric for better flexibility in ankle/quarter region. The upper must be stitched with nylon anti-fraying stitching thread.	The Board of officer (BOO) so detailed will check physically along with the lab report provided by the supplier.
B	Tongue:-	Heavy duty ballistic grade nylon fabric. Below & padded with 3mm EVA foam. Lined by moisture wicking padded lining meeting IS 15298.	
C	Trims:-	Should be non-metallic.	The Board of officer (BOO) so detailed will check physically.
D	Thread:-	Waterproof thread, seam sealed on inside, No decorative stitching.	The Board of officer (BOO) so detailed will check physically as well as lab report provided by the supplier.
E	In-sock:-	Fully moulded Antistatic with heel cushion for impact	
F	TOE CAP:-	The boot shall be fitted with 200 J EN 12568- marked glass fibre resin Toe cap. It cannot be removed without damaging the footwear.	
G	Lace:-	Laces of adequate length with breaking load of minimum 1000 Newton.	
H	Marking:-	The boot shall have marking category of S3 (Table 13 of IS 15298 Part 2:2011) & as per IS 15298 Part 2:2011, 7.	