

No. IV-21011/41/2009-Prov-I  
Government of India  
Ministry of Home Affairs

26, Man Singh Road, Jaisalmer House,  
New Delhi, 16.11.2009

To

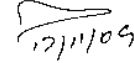
The DGs: Assam Rifles/BSF/CISF/CRPF/ITBP/NSG/SSB/BPR&D

Subject:- Up- gradation of specifications for the CTS items-regarding

The specifications, up-graded/framed by the DGS&D, for the following CTS items, have been accepted by the Competent Authority in MHA:-

- (1) Jersey Woolen 'V' Neck Dyed -Annex-'A'
- (2) Vest Full Sleeve -Annex-'B'
- (3) Ankle Boot Rubber Sole (Jungle Boot)- Annex-'C'
- (4) Boot High Ankle DVS (Improved version)- Annex-'D'

2. Henceforth, all the CPMFs should procure the above items required by them strictly as per the laid down up-graded specifications of the said CTS items.



(R.S.Sharma)  
Director (Prov)

Copy to:-

DD(Procurement),MHA

Copy for information to:-

PS to JS(PM),MHA



Specification

Annexure

ANKLE BOOTS FOR ARMY, BORDER SECURITY FORCE,  
CENTRAL RESERVE POLICE FORCE ETC.

1. SCOPE

This standard prescribes requirements and methods of sampling and test for Ankle boot required for use in jungle and hilly areas.

2. REFERENCES

The Indian Standards listed in Annexure A have reference in this text.

3. TERMINOLOGY

For the purpose of this standard, the definitions given in IS 2050: 1991 shall apply.

4. REQUIREMENTS

4.1 Design

Boots shall be made to design shown in figure 1 on last IS No 7129/74 or equivalent broad toe, FF fitting last.

5. MATERIAL

5.1 Upper

The upper shall consist of nylon fabric conforming to the requirements given in annexure as an overlayer and nylon cambrille (lining) conforming to the requirements given in ~~annexure as an inner layer or lining. The two fabrics shall be firmly adhered together~~ with flexible adhesive with flexible adhesive & polyurethane foam of 5mm thickness. The upper together with lining will be waterproof. The colour/shade of upper used shall be olive green or any other shade as agreed to between the purchaser and the supplier.

5.2 Toe Puff, Counter : For toe puffs and stiffeners well struck thermo plastic toe puff & stiffeners of thickness 1.5 mm & 2 mm shall be used.

5.4 Insole : Insole will be polyester woven fabric of 1.5 mm thick.

5.5 Sole : Shall be Polyurethane of polyether type sole having anti-slip design, similar to tread design at fig. 2 of standard quality, moulded by Reaction injection method. The comparison of sole to be as per directions of the supplier to meet physical requirements of sole.

Requirement of the sole :

5.5.1 Energy absorption of seat region

When footwear is tested in accordance with the method described in EN 344 the energy absorption of the seat shall be not less than 20J.

5.5.2 Flexing Resistance

When outsoles are tested in accordance with the method described in EN 344 the cut growth shall be not greater than 4 mm before 30 000 flex cycles.

5.5.3 Abrasion Resistance

When tested as per testing procedure EN 344, the weight loss should not be more than 700 mg

6. Leg Height

The total leg height of the boots shall be 160±2 mm, for size 8 with an increase or decrease of the nominal height by 2.0 mm for each bigger and smaller size, when measured on the inside of the back of the boot from insole to the top. The leg height of the pair shall be equal.

7. Mass

The mass of one pair of finished boots of size 8 shall not exceed 1000 g with an increase or decrease of 75 g for each bigger or smaller size respectively.

8. Finish

In appearance, general workmanship, finish and in all other respects not defined in this standard, the boots shall be equal to that of the approved and sealed sample, if held by the purchaser.

9. Sampling and criteria for conformity

The scale of sampling and criteria for conformity shall be as prescribed in IS 6168:1971 or as agreed to between the purchaser and the supplier.

10. Requirement for the Ankle boots:

i. Hydrolysis Test

The boots shall be placed in High Humidity (100%) at a temperature of 72°C for 5 days and then tested for whole shoe flexing for 100,000 cycles. No crack or damage to the sole is acceptable.

*Electrical Insulation*

When measured in accordance with the method described in EN 344 after conditioning in a dry and wet atmosphere, the electrical resistance shall be not less than 100 k $\Omega$  and not greater than 1000 M $\Omega$ .

iii. *Bond Strength - Upper to Sole*

After hydrolysis, when tested as per EN 344, the bond strength between the upper & sole should be minimum 3 kg/cm width.

iv. *Heat insulation of sole complex*

When footwear is tested in accordance with the method described in EN 344 the temperature increase on the upper surface of the insole shall be not greater than 22 C.

v. *Cold insulation of sole complex*

When footwear is tested in accordance with the method described in EN 344, the temperature decrease on the upper surface of the insole shall be not more than 16°C.

## MANUFACTURE

The boots shall be made by the Direct Reaction injection method on lasts conforming to dimensions of IS 5520-1969/ IS 7329/74 or equivalent "D" fitting last.

2. All upper components shall be properly prepared by skiving to ensure adequate shaping of the components.
3. All parts of upper & lining shall be correctly fitted.
4. The upper shall be machine closed/stitched on lock stitch machine. The counter shall be on straight at the back and the back strap fitted under the counter.
5. The joining of quarter and vamp shall be done with two rows of stitches.
6. 8 nos aluminium eyelets of size 7.5 mm collar diameter shall be fitted in each face. Each pair of boot shall be provided with a pair of lace 115 cm long.
7. Two straps 265 ± 1mm long, 28 ± 1mm wide shall be used to form the loops which shall be wide enough to permit the boots to be easily donned or pulled on & shall be fitted to each side of the leg. Each strap shall be laid on the outside of the leg, carried over the top of the leg and fitted into a slot in the top band 63.0mm down. Both ends of the strap shall then be stitched together through the leg.
8. The tongue shall be full bellows made from the upper material and stitched with vamp.
9. After closing all ends of the stitching threads shall be tied and all seams hammered down.
10. Toe puff and stiffener components shall be correctly moulded after attachment.
11. The upper shall be stroble stitched to a standard quality insock (thickness 1.5 mm).
12. The upper shall be force lasted after moulding of the counter and stiffeners.

### 13. Direct Reaction Injection Process

The PU sole shall be formed by direct reaction injection process by using PU adhesive on the lasted upper.

### 14. Finishing :

- i) The sole and heel flashes shall be neatly trimmed smooth.
- ii) All closing seams on the finishing boot and stitches on the flange upper shall be given a suitable coating of P.U. adhesive in order to ensure that all needless holes are completely filled.

Normally, boots if made with proper materials & proper workmanship, will last for about 2 years.

It is estimated that cost of Jungle Boot may be approximately Rs. 170/- pair.

POI, URETHANE SOLE

Parameters	Norms
Moulded density (kg/m <sup>3</sup> )	500 to 600
Tensile strength (DIN 53504, Mpa)	5.5 to 6.5
Elongation at break (DIN 53504, %)	380 to 410
Trouser tear strength (DIN 53507, kN/m)	12 to 14
Ross flex test (cut growth in mm/1,000 cycles) At -5°C At -18°C	0.001 nil
Flexing life test (DIN 53507)	30,000 flexes, maximum widening of puncture, 6mm.
Abrasion test, (DIN 53516)	Maximum loss 300 mg.
Values of properties after hydrolysis (higher temperature/humidity test - DIN 53508, 168 hours at 70°C and 100% R.H.)	The values for tensile strength & elongation at break must not drop below the 85% of values specified above.

UPPER MATERIAL - 100% nylon fabric woven		
Sl. No.	Parameter	Norms
1	Gauge	1.1 mm ± 0.1 mm
2	Weight	440 g/m <sup>2</sup>
3	Tensile strength	
	Length	70 kg/2.54 cm (min)
	Width	60 kg/2.54 cm (min)
4	Elongation	110% ± 30%
5	Tongue tear	
	Length	15 kg (min)
	Width	12 kg (min)
6	Mullen burst	30 kg/cm <sup>2</sup> ± 2 kg
7	Colour fastness Light, Washing, Crocking (Wet & dry)	3/4 (min.) gray scale rating
8	Bond strength with sole	3.5 kg/cm (min)
LINING MATERIAL - 100% Nylon non-woven (cambriffe)		
1	Gauge	0.7 mm ± 0.1 mm
2	Weight	150 g/m <sup>2</sup> ± 10
3	Tensile strength	
	Length	10 kg/2.54 cm ± 1 kg
	Breadth	12 kg/2.54 cm ± 1 kg
4	Elongation	
	Length	50% ± 10%
	Breadth	40% ± 10%
5	Tongue tear	
	Length	1.5 kg (min)
	Breadth	1.3 kg (min)
6	Mullen Burst	10 kg/cm <sup>2</sup> ± 1 kg
7	Abrasion stiff	200 cycles (min)
8	Colour Fastness Light, washing, crocking (wet & dry)	3/4 (min.) Gray scale rating