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:

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 CPMBs should procure the above items strictly as per the laid down up-graded specifications of the said CTS items.

(R.S. Sharma)
Director (Proc)

Copy to:

DD(Procurement), MHA

Copy for information to:

PS to JS(PM), MHA
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 Appendix 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 ask IS No 7329/74 for operating boots. BS for fitting last.

5. MATERIAL

5.1 Upper

The upper shall consist of polyester fabric conforming to the requirements given in Appendix A as an outer layer in nylon canvas (lining) conforming to the requirements given in Appendix B. An inner layer of rubberized or neoprene shall be used. The upper shall be firmly retained with suitable adhesive with flexible adhesive & polyester tee form of 0.5 mm thickness. The upper together with lining will be waterproof. The outer surface of upper shall be other shade as agreed to between the purchaser and the supplier.

5.2 The Puff, Counter : For toe puff and puffers well struck thermoplastic top puff & stiffeners or 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 : Sole shall be polyester sheet of polyester type sole having anti-slip design, similar to tread design in Fig. 2 of standard quality, moulded by Reaction injection method. The composition of sole to be as per directions of the supplier to meet physical requirements of sole.
3.5.7 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 20 J.

3.5.2 Flexing Resistance

When outsoles are tested in accordance with the method described in EN 149, the outsole growth shall be not greater than 4 mm before 50,000 flex cycles.

3.5.3 Abrasion Resistance

When tested as per testing procedure EN 344, the weight loss should not be more than 10 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 big height of the pad 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 samples, held by the purchaser.

9. Sampling and criteria for conformity

The scale of sampling and criteria for conformity shall be as prescribed in BS 468:1971 or as agreed to between the purchaser and the supplier.

10. Requirement for the Ankle boots:

1. Hydralysis Test

The boots shall be placed in high humidity (100%) at a temperature of 22°C for 5 days and then tested for whole sole flexing for 100,000 cycles. No crack or damage to the sole is acceptable.
Electrical Insulation

When tested in accordance with the method described in EN 344 after conditioning in a dry and warm atmosphere, the electrical resistance shall be not less than 10^6 MΩ and not greater than 10^9 MΩ.

iii. Bond Strength - Upper to Sole

After hydrolysis, when tested as per EN 344, the bond strength between the upper & sole shall be maintained within limits.

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 not be 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 10°C.
MANUFACTURE

The boots shall be made by the Direct Reaction Injection process with base materials in dimensions of BS 1529-1966/1S. 7229.74 for equivalent 1T Strong felt.

2. All upper components shall be properly prepared by dying 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 by lock stitch machine. The eyelets shall be cut straight at the back and the back strap fitted under the counter.

5. The joining of quarters and vamp shall be done with two rows of stitches.

6. A new P U sole of size 7.5 mm collar diameter shall be fitted in each shoe. Each pair of boots shall be provided with a pair of P U soles.

7. Two straps 250 mm long, 28 x 18 mm wide shall be used to form the loops which shall be wide enough to permit the boots to be easily cleaned 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 fastened into a slit in the top band 65 mm 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. The pull & stiffer components shall be correctly moulded after attachment.

11. The upper shall be double stitched to a standard quality nubuck (thickness 1.5 mm).

12. The under shall be force lasted after moulding of the counter and stiffeners.

13. Direct Reaction Injection Process

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

14. Finishing:

i) The sole and heel bosses shall be neatly-trimmed smooth.

ii) All closing seams on the finishing boot and stitching 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. 240 per pair.
<table>
<thead>
<tr>
<th>Parameters</th>
<th>Norms</th>
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</thead>
<tbody>
<tr>
<td>Molded density (kg/m³)</td>
<td>500 to 600</td>
</tr>
<tr>
<td>Tensile strength (DIN 53504, Mpa)</td>
<td>5.5 to 6.5</td>
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<tr>
<td>Elongation at break (DIN 53504, %)</td>
<td>380 to 410</td>
</tr>
<tr>
<td>Tensile cut strength (DIN 53507, N/Nm)</td>
<td>12 to 14</td>
</tr>
<tr>
<td>Bend flex test (cut growth in mm/1,000 cycles)</td>
<td>0.091</td>
</tr>
<tr>
<td>At -5°C</td>
<td>0.94</td>
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<tr>
<td>Flaxing life test (DIN 53502)</td>
<td>30,000 cycles, maximum width of puncture, 6mm.</td>
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<tr>
<td>Abrasion test, (DIN 53516)</td>
<td>Maximum loss 300 mg.</td>
</tr>
<tr>
<td>Values of properties after hydrolysis (higher temperature/ humid test - DIN 53508, 168 hours at 82°C and 100% R. H.)</td>
<td>The value for tensile strength &amp; elongation at break must not drop below the 85% of values specified above.</td>
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<tr>
<td>Parameter</td>
<td>Upper Material</td>
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<tr>
<td>Gage</td>
<td>11 mm x 0.1 mm</td>
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<tr>
<td>Weight</td>
<td>140 g/m²</td>
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<tr>
<td>Tensile strength</td>
<td>70 kg/2.54 cm (mm)</td>
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<tr>
<td>Length</td>
<td>60 kg/2.54 cm (mm)</td>
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<tr>
<td>Width</td>
<td>15 kg (min)</td>
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<tr>
<td>Mullen burst</td>
<td>30 kg/cm²</td>
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<tr>
<td>Colour fastness</td>
<td>5.4 (min)</td>
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<tr>
<td>Light, Wash,</td>
<td></td>
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<tr>
<td>Crocking, (Wet &amp; dry)</td>
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<tr>
<td>Bond strength with sole</td>
<td>3.5 kg/cm² (min)</td>
</tr>
</tbody>
</table>

**Upholstery Material**
- **Upper Material**: 100% nylon woven fabric
- **Lower Material**: 100% nylon non-woven (cambrielle)