

## SPECIFICATION FOR “COOLING SCARF”

### RECORD OF AMENDMENTS

<b>Amendment No. and Date</b>	<b>Amendment pertains to Sl.No./Para No./Column No.</b>	<b>Authority</b>	<b>Amended by Name and Appointment (in block letter)</b>	<b>Signature and Date</b>

## PREAMBLE

The Office of the Commandant SS Bn, ITBP, has asked NITRA to prepare technical specifications for **Cooling Scarf**. The specification describes the fabric and other material used in the manufacture of “Cooling Scarf” and properties – Ends/inch, Picks/inch, weight, fibre composition, dimensions, pH etc. Bureau of Indian Standards (BIS) as well as AATCC test methods are considered to draw this specification.

This report contains 11 pages which describe the technical specifications of **Cooling Scarf** for ITBP.

This technical specification will enable the ITBP to prepare tender documents (technical details) at the time of placing orders for **Cooling Scarf** and final inspection as well.

## SPECIFICATION FOR “COOLING SCARF”

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# **INDO TIBETAN BORDER POLICE FORCE STANDARD**

## **SPECIFICATION FOR “COOLING SCARF”**



***Submitted to :***

**Office of the Commandant SS Bn, ITBP,  
Ministry of Home Affairs  
Saboli, Post Office, Nathupur,  
Dist. Sonipat, Haryana**

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## **0 FORWARD**

- 0.0 This specification has been prepared by Office of the Commandant SS Bn, ITBP on the authority of Commandant SS Bn, ITBP.
- 0.1 This specification is for use by the ITBP.
- 0.2 This specification would be used for manufacture, quality assurance and procurement of the item.
- 0.3 All enquiries regarding this specification, including those relating to any contractual conditions contained therein shall be addressed to the following address:

Office of the Commandant SS Bn, ITBP,  
Ministry of Home Affairs  
Saboli, Post Office, Nathupur,  
Dist. Sonipat, Haryana

- 0.4 Copies of the specification can be obtained from:

Office of the Commandant SS Bn, ITBP,  
Ministry of Home Affairs  
Saboli, Post Office, Nathupur,  
Dist. Sonipat, Haryana

- 0.5 This specification holds good only for the supply order for which it is issued.
- 0.6 For the purpose of deciding whether a particular requirement of this specification is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS:2-1960 (Reaffirmed 2006). The number of significant places retained in the rounded off value should be the same as that of the specified value in this specification.

## 1.0 SCOPE

- 1.1 The specification prescribes the requirement of “Cooling Scarf” herein referred as “Scarf”.
- 1.2 This specification does not specify the general appearance, lusture, feel of “Scarf”.

## 2.0 MATERIALS AND MANUFACTURE

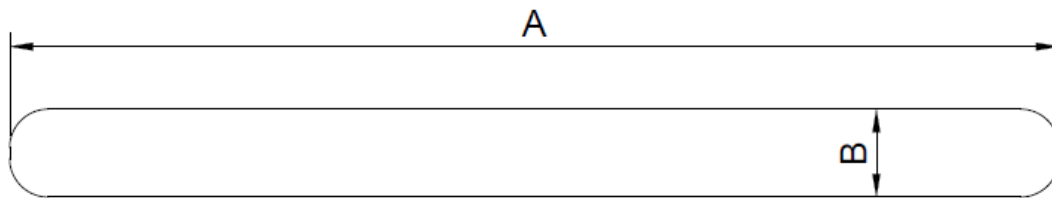
2.1 The dimensions and design of the “Scarf” shall be as shown in Fig 1 and Fig. 2.

Here, A = 94 cm (94 to 98 cm)

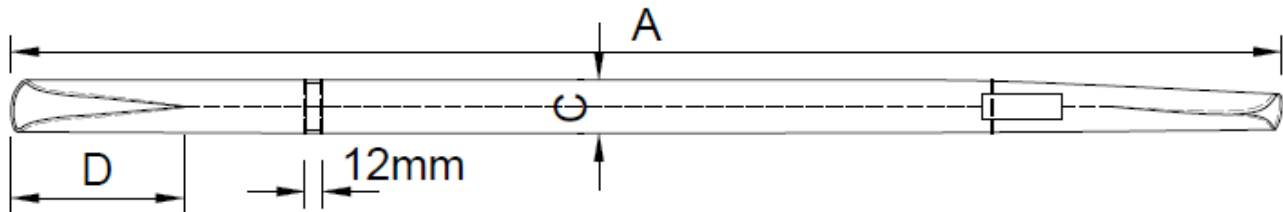
B = 11 cm ( $\pm 2$ cm)

C = 4.5 cm ( $\pm 0.5$  cm)

D = 13 cm ( $\pm 2$  cm)



**Fig.-1 Openable Cooling Scarf**



**Fig.-2 Cooling Scarf**

2.2 The fabric used in the manufacture of “Scarf” shall be polyester cotton blend. For manufacturer guidance, 40 Ne single yarns may be used in both warp and weft directions for the manufacture of fabric. The fabric shall be woven in plain weave.

2.3 “Scarf” shall be manufactured using two layers of fabric. The manufacturing process for guidance is given below:

1. Cut one strip, 11cms (4”) in width and 94 cm (37”) in length. If you want to have a bow to tie use a 45” to 50” wide fabric.
2. Fold the fabric strip in half lengthwise (the piece should be 11cm by 47 cm). Mark the fold. This is the center back of the neck band. Open up the fabric and measure & mark 25 cm on each side of the center back (see Figure 3).

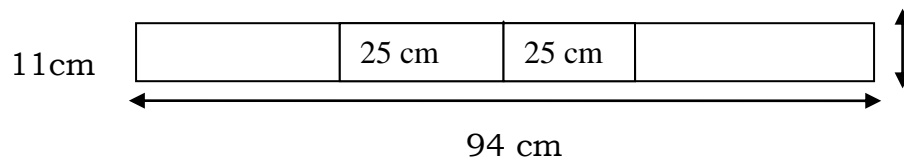


Fig. 3- Center Back

3. The tail ends may be rounded or slanted to give a more finished look. Finish the ends of the scarf with baby over lock (as shown in figure 4).

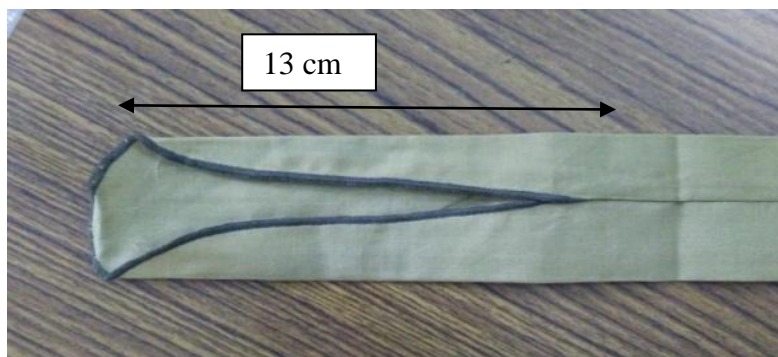


Fig.4 – Baby over locked the edges

4. Take the back side of the cut fabric for scarf and fold half width wise. The fabric should be 5.5 cm in width and 92 cm in length.
5. Leaving 13 cm from both the sides, mark 1 cm allowances on both the sides for stitching. First overlock the ends carefully and then stitch on 1 cm allowance to secure the overlock stitch.
6. Turn the stitched scarf inside out. After stitching the dimensions of the tube will be 92 cm length wise and 4.4 cm width wise.
7. Press the scarf and at one end of the tube, 22.5 cm from the end of the scarf, stitch to close and make pocket for crystals (polymer granules), then double stitch for strength. At this point you should have one end of the tube open.



8. Carefully pour the crystals into the tube (9 to 10 grams in dry state). Stitch the tube closed. Reinforce with another row of stitching.
9. Stitch care label at one end and loop at other end for the comfort and convince of the customer (as shown in figure 2).

#### 2.4 How to use cooling scarf:

To use the cooling scarf, soak it in to the water for 15-20 minutes. As the polymer granules soak up the water "mush" them around so the polymer spreads out equally along the tube. Tie around your neck for a "Cool Band."

#### 2.5 Polyacrylamide crystals

Polyacrylamide crystals / graduals are super absorbent polymer. They are available in different sizes varying from 2 to 4 mm (millimeter) and may hold water 400 times than their original weight.

### **3.0 STITCHING:**

- 3.1 Single needle lock stitch having 3 to 4 stitches per cm shall be employed wherever stitching has to be carried out. The stitching shall be done with even tension and all loose ends shall be securely fastened off.
- 3.2 Polyester sewing threads shall be used. The colour of the sewing thread shall be darker than the colour of fabric used in scarf.

### **4.0 WORKMANSHIP AND FINISH**

- 4.1 The *fabric* used in the manufacture of "Scarf" shall be free from defects such as yarn, fabric and dyeing defects.
- 4.2 The workmanship to stitch the "Scarf" should be free from defects due to stitching and handling.

## 5.0 REQUIREMENTS

- 5.1 The requirements of fabric used in the “Scarf” shall conform to Table 1.
- 5.2 The colour of fabric used in the “Scarf” shall conform to the requirement as given in Tables 2.

**Table-1: Requirements of “Scarf”**

S. No.	Parameters	Requirements	Method of Testing
1	Composition ,% - Polyester - Cotton	Polyester – (63±3)% Remainder Cotton	IS 3416 Part-1
2	Dimensional Change (due to relaxation), Lengthwise, percentage, Maximum	2.0	As per guidance of IS 2977
3	Ends/inch (minimum)	122	IS 1963
4	Picks/inch (minimum)	75	IS 1963
5	Weave	Plain	Visual
6	Weight in g/m <sup>2</sup>	97 ±10	IS 1964
7	Colour Fastness to : a). Light (on blue wool rating) b). Washing - Change in shade - Staining on cotton c). Perspiration - Change in shade - Staining on cotton d) Crocking - Dry - Wet	5 or better  4 or better 4 or better  4 or better 4 or better  4 or better 4 or better	IS 2454  IS/ISO 105, C10, A(1)  IS 971  IS 766
8	pH Value of aqueous extract	5.0 – 7.5	IS 1390:1983 (Cold method)
9	Colour specification (ΔE)	≤ 3.0	See Table 3

**Table -2: Specification of colour of Cooling Scarf**

(Guideline of AATCC Test method 173: 2009 & AATCC Evaluation Procedure 7:2009)

<b>Colour</b> :	<b>Khaki</b>		
<b>System</b> :	<b>CIE LCH</b>		
<b>Illuminant Observer</b> :	<b>D 65</b>		
<b>Standard Observer</b> :	<b>10 Degree</b>		
<b>Tristimulus Values</b> :	<b>X</b>	<b>Y</b>	<b>Z</b>
	<b>19.722</b>	<b>19.890</b>	<b>10.654</b>
<b>L C H</b> :	<b>L</b>	<b>C</b>	<b>H</b>
	<b>51.713</b>	<b>24.554</b>	<b>79.595</b>
<b>CMC (1:c)</b> :	<b>2:1</b>		
<b>Colour difference, <math>\Delta E_{cmc}</math></b> :	<b><math>\leq 3</math></b>		

**Interpretation of Results:**

- i) If  $\Delta E_{cmc}$  is less than or equal to 3, then sample is acceptable.
- ii) If  $\Delta E_{cmc}$  is greater than 3, then sample is unacceptable.

**Note-1:** Absorbance/reflectance/ transmittance are affected by surface characteristic features of the substrate. Therefore comparison should be made between samples of same type i.e., identical fabric construction parameters and filament/ fibre composition.

**Note-2:** Test should be carried out after proper conditioning as per AATCC 173 using Diffuse (sphere) geometry spectrophotometer.

## **6.0 SEALED SAMPLE**

For appearance, shape, general workmanship, finish and for other aspects, not defined in this specification, “Scarf” shall conform to the sealed sample held in the custody of the Indian navy headquarters. The custody of sealed sample shall be a matter of prior agreement between the buyer and the seller.

## **7.0 DIMENSIONS**

7.1 The “Scarf” shall conform to the dimensions given in the Figure 1 and 2. To measure dimensions of the “Scarf”, take the “Scarf” to be tested and lay it flat on a horizontal surface. Remove all creases and wrinkles without distorting it.

## **8.0 SAMPLING AND CRITERIA FOR CONFORMITY**

Manufacturers must satisfy themselves that the stores are in accordance with the requirements of the buyer and fully conform to the required specification by carrying out a through pre-inspection of each lot before actually tendering the same for inspection to the inspecting officer nominated by the ITBP. A declaration by the manufacturer that necessary pre-inspection has been carried out on the store tendered, will be submitted along with the *CHALLAN*. The declaration will also indicate the method followed in carrying out pre-inspection showing the feature checked/tested and will have the test certificate attached to the *challan*/declaration.

The sampling procedure given below shall give desired protection to the buyer and the seller provided the lot submitted for inspection is homogeneous. To achieve this, manufacturer shall maintain a system of process control at all stages of manufacture and shall ensure that the scarves tendered by him for inspection comply with the requirements of this standard in all respects.

In any consignment, all the “Scarf” of same size and colour delivered to a buyer against a dispatch note shall constitute a lot.

8.1 The conformity of the lot to the requirements of this specification shall be determined on the basis of the tests carried out on the samples selected from it.

Unless otherwise agreed to between the buyer and the seller, the number of “Scarf”, depending upon the size of the lot, shall be selected at random in accordance with the column 2 of Table 3 for non-destructive testing and column 4 of Table 3 for destructive testing.

**Table-3: Number of “Scarf” to be selected from a lot and permissible number of non-conforming “Scarf”**

<b>No. of caps in the lot</b>	<b>Non – Destructive Testing</b>		<b>Destructive Testing</b>	
	<b>No. of “Scarf” to be selected</b>	<b>Permissible number of non- conforming “Scarf”</b>	<b>No. of “Scarf” to be selected</b>	<b>Permissible number of non- conforming “Scarf”</b>
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
Up to 200	20	1	3	0
201 – 400	30	1	4	0
401-800	50	2	5	0
801 – 1500	70	3	8	0
1501 - 2500	100	4	12	1
2501 and above	150	5	16	2

8.2 The sample size and the criteria for conformity for various characteristics shall be as follows:

<b>Characteristics</b>	<b>Number of test samples</b>	<b>Criteria for conformity</b>
Dimensions and freedom from defects	All the “Scarf” selected according to the column 2 of Table 3	Non-conforming “Scarf” not to exceed the corresponding number given in column 3 of Table 3
Dimensional change, pH value, weight, colour fastness to various agencies except light	All the “Scarf” selected according to the column 4 of Table 3	Non-conforming “Scarf” not to exceed the corresponding number given in column 5 of Table 3
Colour fastness to light	One up to 500 “Scarf” and two above 500 “Scarf”	Each observed value satisfies the specified requirement.

## **9.0 MARKING**

A suitable cloth label marked with the following information shall be securely attached adjacent to the chin strap of each “Scarf”.

- a) Size;
- b) Manufacturer’s name or trade-mark, if any; and
- c) Year of manufacture, if required.
- d) Procedure to use and wash. (As mentioned in clause 2.4)

## **10.0 PACKAGING & PACKING**

10.1 The “Scarf” shall be packed in clean and dry condition.

10.2 Each “Scarf” shall be wrapped in a polythene bag of suitable size.

- 10.3 Ten “Scarf” of same size packed as mentioned in 10.2 and shall be arranged suitably and tied together with twine jute 3 ply (IS 1912:1984 RA 2007) to form a bundle.
- 10.4 The bundles shall be wrapped with layer of polyethylene film of minimum 40 microns thickness (See IS: 2508:1984, RA 2003). A suitable number of such bundles shall be packed in wooden cases lined with water proof packing paper (See IS 1398:1982, RA 2004) or polyethylene film of 40 microns.

## 11. REFERENCES

<b>Sl. No.</b>	<b>SPEC. /TEST METHOD No.</b>	<b>DESCRIPTION</b>
(a)	IS 3416 Part-1: 1988	Method for quantitative chemical analysis of binary mixtures of polyester fibre with cotton or regenerated cellulose
(b)	IS 971: 1983, RA 2004	Method for determination of colour fastness of textile material to perspiration
(c)	IS 1390: 1983, RA 2004	Methods of testing of pH value of aqueous extract
(d)	IS 2454: 1985, RA 2006	Methods for determining of colour fastness of textile materials to artificial light (xenon lamp)
(e)	IS 2500 (Part 2): 1965, RA 2006	Sampling inspection tables
(f)	IS/ISO 105 C10	Method for determination of colour fastness of textile material to washing
(g)	IS 4905: 1968, RA 2006	Method of random Sampling
(h)	IS 766: 1988 RA 2004	Method for determination of colour fastness of textile material to Rubbing (dry & wet)
(i)	IS : 2977: 1989	Fabrics (Other than Wool) - Method for. Determination of Dimensional Changes on Soaking in Water.
(j)	IS 6359:1971, RA 2004	Method for Conditioning of Textiles
(k)	AATCC Test method 173 : 2005	CMC: Calculation of small colour differences for acceptability
(l)	AATCC Evaluation Procedure 7 : 2003	Instrumental assessment of the change in colour of a test specimen