

Director General CRPF
Block No. 1 CGO Complex, New Delhi-110003
(Govt. of India/Ministry of Home Affairs)
(Phone / Fax- 011-24360155)
(E-Mail- digprov@crpf.gov.in)

No.U.II-98(Spec)/2020-21-Prov-(L/W Sleeping Bag)-14 Dated, the 28 January 2021

To

The DsG: AR, BSF, CISF, ITBP, NSG, SSB and BPRD


Subject: Revised QRs/Specification of "Light Weight Sleeping Bag (Improved)" for CAPFs.

I am directed to refer on the subject mentioned above and to say that the revised QRs/Specification in respect of "**Light Weight Sleeping Bag (Improved)**" as per **Appendix-A** which has been recommended by CAPFs Sub-Group has been approved by the competent authority.

2. Henceforth, all the CAPFs may procure the above item required by them, strictly as per the laid down revised QRs/Specification. The earlier revised QRs/Specification & TDs of Light Weight Sleeping Bag approved vide MHA letter No. U.II-23/2010-11-Prov(CoBRA)/9534 dated 5/11/2014 is rescinded.

3. This has the approval of DG, CRPF on 25/01/2021 (empowered vide MHA letter F. No. 11012/02/2009-Fin-I-17 dated 02/01/2018).

Encl: As above.


(D.N. Lal)
DIG(Prov)

No.U.II-98(Spec)/2020-21-Prov-(L/W Sleeping Bag)-14 Dated, the 28 January 2021
Copy forwarded to:-

1. SO (IT), North Block-with request to upload the approved revised QRs/Specification of "Light Weight Sleeping Bag (Improved)" for CAPFs on MHA Website (e-mail ID soit@nic.in).
2. DIG (IT), Dte Genl., CRPF-with request to upload this approved revised QRs/Specification of "Light Weight Sleeping Bag (Improved)" for CAPFs on CRPF Portal and Selo Module.
3. All Zones/Sectors/GCs/Units HQr for information and necessary action.


(D.N. Lal)
DIG(Prov)

BOARD PROCEEDINGS

Proceedings of : Sub-Group of CAPFs
Constituted vide : GOI/MHA F.No. 11012/02/2009-Fin-I/Prov-17 dated 02/01/2018.
Assembled at : Directorate CRPF, Block No. 01, CGO, Complex Lodhi Road, New Delhi
Assembled on : 11/01/2021 (at 1100 hrs)
Purpose : Framing of revised QRs/Specification of "**Light Weight Sleeping Bag (Improved)**".

Composition of Board

1. Sh. Ajay Kumar Yadav, IPS, IG(Prov), CRPF
2. Sh. D.N. Lal, DIG(Prov), CRPF
3. Lt. Col Ashwani Kumar, VSM (c) BPR&D
4. Sh. R.K. Jha, 2I/C(Prov), CRPF
5. Sh. Vasudevan Pothi R. 2-I/C, Assam Rifle
6. Sh. Prem Vishwas, 2-I/C, NSG
7. Sh. Satish Chandra, D/C, BSF
8. Sh. Lalit Kumar, A/C, SSB
9. Sh. Kamlesh Kumar Sharma, A/C, ITBP
10. Sh. K. Alias, Sr. Adm Officer, CISF

2. In pursuance to GOI/MHA OM F.No. 11012/02/2009-Fin-I/Prov-17 dated 02/01/2018, the sub group of CAPFs has assembled at Directorate General, CRPF, to revise the QRs/Specification of **Light Weight Sleeping Bag** which was approved vide MHA letter F.No. U-II-23/2010-11-Prov(CoBRA)/9534 dated 05/11/2014 in the light of suggestion given by NITRA. NITRA has observed following discrepancies in this existing QRs/Specification:-

- i) Marked Dimensions and Diagram of the sleeping bag needs clarity.
- ii) Quality Requirements have scope of ambiguity and need to be clearly specified.
- iii) Test method to be followed for testing are not mentioned for any of the parameters.

Handwritten signature and initials in blue ink.

Handwritten signature and initials in blue ink.

Handwritten signature and initials in blue ink.

Handwritten signature in blue ink.

Handwritten signature and initials in blue ink.

Handwritten signature and initials in blue ink.

- iv) Tolerances for acceptance (Pass/Fail criteria) of the quality parameters are not mentioned.
- v) Guidelines on stitching for quilting are not mentioned.

3. A Draft QRs/Specification of Light Weight Sleeping Bag was framed in consultation with NITRA and hosted to MHA and CRPF website for 15 days to obtain expression of interest (EOI) from interested vendors/parties. In turn, no EOI submitted from any vendor/party. CAPFs Sub-Group meeting was held on 19/11/2020 with representative from NITRA and OEM firms to discuss the draft QRs/Specification. Following points were received from CAPFs and firms:-

- i) Life Span of Light Weight Sleeping Bag as per proposed revision in the QRs/Specification.
- ii) Colour Value (Δ value) was suggested to be changed to achieve Olive Green Colour as current colour value leads to very dark colour.
- iii) Female Specific design may be considered during revision of QRs/Specification of items.
- iv) Double Zippers was suggested.
- v) Size of Bag for Sleeping Bag required revisiting.
- vi) Size chart with tolerance is required.
- vii) Nylon multifilament yarn shall be used in place of Polyester multifilament yarn.

4. After a detailed discussion by CAPFs Sub-Group in consultation with NITRA and OEM firms, a draft QRs/Specification of **Light Weight Sleeping Bag (Improved)** was framed by NITRA and same was hosted to MHA and CRPF website for 15 days w.e.f. 02/12/2020 to 18/12/2020 to obtain EOI from interested vendor/parties. In turn, no firm/vendor submitted any EOI.

5. CAPFs Sub-Group members deliberated on the draft QRs/Specification of **Light Weight Sleeping Bag** and it was unanimously decided that the draft QRs/Specification of **Light Weight Sleeping Bag(Improved)** so framed in consultation with NITRA and OEM firms will sort out all ambiguities/discrepancies in the existing QRs/Specification which are as under:-

- i) Clear marked dimensions and diagram
- ii) Clear quality requirements
- iii) Added test methods for testing
- iv) Added tolerances of quality parameters
- v) Added guidelines on stitching for quilting

17/12/20
17/12/20

(SSB)

17/12/20

17/12/20


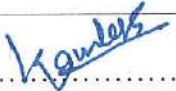


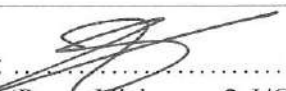
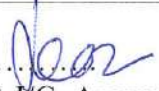
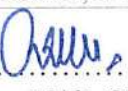
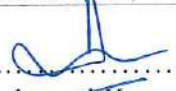

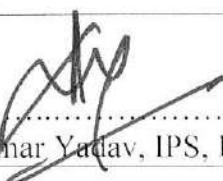
17/12/20

17/12/20

- vi) Life Span will be as per existing authorisation
- vii) Colour Value (Δ value) in draft QRs/Specification is of Olive Green Colour
- viii) 2 ways zipper is provided in the draft QRs/Specification.
- ix) Draft Specification will be comfortable both for male and female.
- x) Thermal value was added.
- xi) The dimensions of Packing Bag is also in higher side.
- xii) Weight of Sleeping Bag is kept 1100 grms after considering all quality aspect.

6. Having gone through carefully the draft QRs/Specifications of "Light Weight Sleeping Bag" and after due deliberation by the CAPFs Sub-Group came to the conclusion that the draft QRs/ Specification of the item are acceptable and generic in nature and will promote fair and wider participation.

7. Accordingly, the CAPFs Sub Group recommends for submitting the QRs/ Specifications of "**Light Weight Sleeping Bag(Improved)**" to DG, CRPF for approval.

Member:  (K. Alias, Sr. Adm Officer, CISF)	Member:  (Kamlesh Kumar Sharma, A/C, ITBP)
Member:  (Lalit Kumar, A/C, SSB)	Member:  (Satish Chandra, D/C, BSF)
Member:  (Prem Vishwas, 2-I/C, NSG)	Member:  (Vasudevan Pothis R., 2-I/C, Assam Rifle)
Member:  (R.K. Jha, 2I/C, CRPF)	Member:  (Lt. Col Ashwani Kumar, VSM (c) BPR&D)
Member:  D.N. Lal, DIG(Prov), CRPF Dte	
P.O :  Ajay Kumar Yadav, IPS, IG(Prov) HQR, CRPF	

QRS/SPECIFICATION OF "LIGHT WEIGHT SLEEPING BAG (IMPROVED)"

0.0 FORWARD

- 0.1. This specification has been prepared by Office of the Directorate General of Police, CRPF on the authority of The Director General of Police, CRPF.
- 0.2. This specification is for use by the CRPF.
- 0.3. This specification would be used for manufacture, quality assurance and procurement of the item.
- 0.4. Quality assurance authority for the item covered in this specification is Office of the Directorate General of Police, CRPF, New Delhi. All enquiries regarding this specification, including those relating to any contractual conditions contained therein shall be addressed to the Quality Assurance authority at the following address:

Office of the Directorate General of Police,
CRPF, Ministry of Home Block No-1, CGO Complex, Lodhi Road,
New Delhi-03

- 0.5. Copies of the specification can be obtained from:

Office of the Directorate General of Police,
CRPF, Ministry of Home Block No-1, CGO Complex, Lodhi Road,
New Delhi-03

- 0.6. This specification holds good only for the supply order for which it is issued.
- 0.7. The Quality Assurance Authority reserves the right to amend or modify this specification as and when required.
- 0.8. The Quality Assurance Authority is the competent authority to grant concessions, if any, in respect of any clause contained in this specification.
- 0.9. 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.

[Handwritten signature]
Kamlesh
ITRP

[Handwritten signature]
(CSSB)

[Handwritten signature]

[Handwritten signature]
11/01/2004
(BSF)

[Handwritten signature]
(NSG)

1.0 SCOPE

1.1 The specification prescribes the requirement of "Sleeping Bag" including packing bag.

1.2 This specification does not specify the general appearance, luster, feel, type of finish of "Sleeping Bag".

2.0 MATERIAL AND MANUFACTURE

2.1 The design and shape of the "Sleeping Bag" shall be as per Fig. 1 to 7. Wherever tolerance in dimensions is not given following tolerance shall be applicable:

i) Dimensions upto 50 cms : ± 1.00 cms

ii) Dimensions from 51 cms and above : ± 1.50 cms

2.2 Following are the components used in the manufacture of "Sleeping Bag":

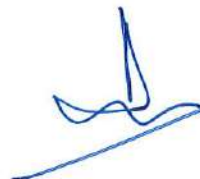
Component No.	Name of the component	Description
1 and 2	Outer shell fabric and Inner shell fabric	1. Nylon multifilament yarn shall be used. 2. For guidance i) warp count: 70 Denier, ii) weft count: 70 Denier 3. Weave: Rip Stop 4. The fabric shall be 'Heat set' and fully shrunk. 5. Olive green shade and finished with water repellent finish 6. Table-4 for component-1 and Table 6 for component-2
3	Nonwoven inner lining fabric	1. Polypropylene fibre shall be used. 2. For guidance 1.8 Denier fibre may be used. 3. Bursting strength(kg/cm ²), Min.: 1.2 4. Mass=15 \pm 2 g/m ² 5. White Colour
4	Fibre filling	1. Polyester hollow fibre shall be used. 2. For guidance 4 Denier hollow fibre may be used. 3. White colour

10	Hook and Loop Fastener	<p>Following tests shall be carried out as per IS 8156: 2014</p> <ol style="list-style-type: none"> 1. Identification of Material -Hook: Nylon 66 -Loop: Nylon 66 or Nylon 6 2. Width :25 mm \pm2mm 3. Peel strength: 200 gm/cm (Min) 4. Shear strength - Normal: 900 gm/cm² (Min) - After endurance: 675gm/cm² (Min) 5. Colour: Black
11	Elastic Draw Cord	<ol style="list-style-type: none"> 1. For guidance core cord made out of rubber strips in a core and polyester fibre in the sheath may be used. 2. Length of the cord =140 cm (Min) and diameter= 3mm 3. Black colour
12	Draw Cord lock	<ol style="list-style-type: none"> 1. Made out of Nylon, 2. For dimension refer Fig. 6A. 3. Black Colour
13	Nylon Cord	<ol style="list-style-type: none"> 1. For guidance Nylon filament yarn of 700 Denier (3 ply) may be used 2. Length of the cord =100 cm (Min) and diameter= 3mm 3. Black colour
14	Polypropylene Tape 25 \pm 1 mm wide (With packing bag)	<ol style="list-style-type: none"> 1. Polypropylene multifilament yarn shall be used. 2. For guidance i) Warp count: 600 Denier iii) Weft count 600 Denier 3. Total ends(full width): 96, Picks per inch: 32 4. Weave for guidance: Refer Fig. 7. Needle loom shall be used to manufacture 5. Black Colour
15	Side indicator label 10 \pm 1 mm wide	<ol style="list-style-type: none"> 1. Made out of Polyester fabric 2. Folded length 15\pm1 mm 3. Colour white 4. Designated "R" (right side)
16	Ladder lock	<ol style="list-style-type: none"> 1. Made out of Nylon, 2. For dimension refer Fig. 6C. 3. Black Colour
17	Sewing Thread	<ol style="list-style-type: none"> 1. Polyester sewing thread of 2/40s Ne (For guidance) 2. Green Colour

Jag Kandas
15/11/21

20

dea




11/11/21

Page 4 of 24

29



2.3 Sleeping bag shall be made of a thick layer of filling (Component-4) of polyester hollow and normal fibre (for insulation purpose) sandwiched between non-woven inner lining (Component-3) and outer shell fabric (Component-1). All the three layers are stitched together (No. of stitch per centimeter: 3) width wise at a distance (20 ± 2) cm from one seam to other to have quilting effect. Further the same stitching pattern shall be followed for all sides of sleeping bag. Finally an inner shell fabric (component 2) is attached with the above combination to give a finished look to inside of the sleeping bag. Figure- 1 (a) and 1(b) represent the assembly of "Sleeping bag". Figure-2 refers to the dimensions of sleeping bag.

The opening and closing of the Sleeping bag is carried out using Slide fastener (Component-5). Slide fastener is attached to the opening of the sleeping bag using lock-stitch. Further, non-woven backing material (Component-6, Refer Fig. 3) shall be provided below the tape of Component-5 to give extra strength to the stitching. A polypropylene tape (Component-8, Refer Fig. 3) shall be provided to one side of the Component-5, so that fabric shall not come in between the slide fastener teeth. Further on the same side of the polypropylene tape an insulating rectangular tube running alongside and beneath the Component-5 shall be provided to prevent heat loss through the teeth of Component-5. This tube shall be made by stuffing Component-4 between two layers of Component-2. A black colour cord piping (Component-9) is provided on the face side of Component-5, so that fabric shall not come in between the teeth of the slide fastener chain (Refer Fig. 3) when the slide fastener is either opened or closed.

A covering flap with hook fastener (Component-10) is attached to the right side of Component-5 to prevent heat loss. This flap shall be attached to the loop fastener (left side) stitch to the outer shell fabric (Component-1). For more clarification, Fig. 3 shall be referred. Also a triangular insulation(Fig-2) made of a thick layer of filling (Component-4) sandwiched in between outer shell fabric (Component-1) is provided below the slide fastener ending to prevent heat loss at this area.

The way all the components are attached is shown in Fig. 3.

2.4 Hood: It shall be made out of Components-1, 2, 3 and 4. The hood of the "Sleeping Bag" is shown in Figure 1 (a). The dimensions of the Hood of "Sleeping Bag" are given in Fig. 2. Hood shall be provided with an elastic draw card (Component-11) placed in a draw cord tunnel {Refer Fig. 1(a)}. The objective of the Component-11 shall be to open and close the hood effectively with the help of cord lock (Component-12). The draw cord tunnel shall be made out of Component-1 and Component-4.

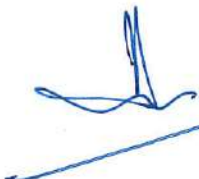
2.5 Pockets: "Sleeping Bag" shall have one pocket attached to inner side of the sleeping bag (left side) made out of Component-2. Opening and closing of the pocket shall be with the help of Component-10 (25mm x 38 mm). The pocket shall be 6.0 cm wide and 7.5 cm deep.

2.6 Hanging tab: The sleeping bag shall be provided with three hanging tabs for storage and drying purposes. The positioning and the way they are attached are shown in the Fig. 2.

2.7 Packing bag (Stuff sack): A stuff sack shall be provided to stuff the sleeping bag. It shall be made out of Components-1, 13, 14 and 16. Fig. 4 shows its assembly. Its dimensions are shown in Fig. 5. A side indicator label (Component-15, Refer Fig 4) shall be attached to the packing bag. The folded label shall be printed with an alphabet "R" on both sides, whose dimensions are 4 X 4 mm. 'R' indicates right side. The packing bag shall be provided with 4 ladder locks (Component-16) and equal number of polypropylene tapes (Component-14). A pulling handle made out of single fold polypropylene tape (Component-14) (stitched by lockstitch and bartack at the end for seam security against wear and tear) shall be provided at the other end. For exact location of pulling handle Fig.5 may be referred. The dimensions for packing bag are for guidance only. The sleeping bag shall be perfectly accommodated in this packing bag.

 Kamlesh
17/08/17

 dear









3.0 STITCHING:

3.1 Lock stitch shall be employed to assemble components of "Sleeping Bag". In the case of Lock stitch, three stitches per cm shall be employed. The stitching shall be done with even tension and all loose ends shall be securely fastened off.

3.2 The Packing bag of the "Sleeping bag" shall be assembled using overlock stitch further secured by lockstitch. Over-lock stitch is used to join the fabric and to secure the raw edges. In the case of Lock stitch, three stitches per cm shall be employed while in the case of over lock five stitches per cm shall be employed wherever stitching has to be carried out.

3.3 Polyester sewing threads of 2/40s Ne count (Component-17 of clause 2.2), matching with Component-1 may be used.

4. FREEDOM FROM DEFECTS:

The "Sleeping Bag" shall be visually examined. It shall be evenly stitched, free from missed stitches, holes, cuts, puckering and other defects. The colour of the sewing thread used for stitching shall not bleed or stains. The "Sleeping Bag" shall be free from dyeing defects.

The "Sleeping Bag" shall be free from any other defects which may significantly mark the appearance or serviceability.

5.0 REQUIREMENTS

5.1 For general requirement sleeping bag shall meet the requirement as given in the Table-3

5.2 The Component-1 used in the "Sleeping Bag" shall conform to the requirements as given in Table 4. Specification for colour used in Component-1 shall be as given in Table 5. (Also refer clause 2.2)

5.3 The Component-2 used in the "Sleeping Bag" shall comply with the requirement as mentioned in the Table 6. (Also refer clause 2.2)

5.4 The Component-3 used in the "Sleeping Bag" shall meet the requirements as given in Table 7. (Also refer clause 2.2)

5.5 The Component-4 used in the "Sleeping Bag" shall meet the requirements as given in Table 8. (Also refer clause 2.2)

5.6 The component-5 used in the "Sleeping Bag" shall meet other requirement as per IS 14181 (Also refer clause 2.2). Seller/vendor shall provide 10 numbers of extra Slide fastener (Component-5) for conforming IS 14181.

5.7 The component-6 used in the "Sleeping Bag" shall meet the requirement as given in the clause 2.2.

5.8 The Component-7 used in the "Sleeping Bag" shall meet the requirements as given in the clause 2.2.

5.9 The component-8 used in the "Sleeping Bag" shall meet the requirement as given in the clause 2.2.

5.10 The component-9 used in the "Sleeping Bag" shall meet the requirement as given in the clause 2.2.

5.11 The component-10 used in the "Sleeping Bag" shall meet the requirement as given in the clause 2.2. Seller/vendor shall provide 10 meter of extra Hook and Loop fastener (Component-10) for conforming IS 8156.

5.12 The component-11 used in the "Sleeping Bag" shall meet the requirement as given in the clause 2.2.

5.13 The components-12 and 16 used in the packing bag of "Sleeping Bag" shall meet the requirement as given in the Table-9 (Also see clause 2.2)

5.14 The component-13 used in the packing bag of "Sleeping Bag" shall meet the requirement as given in clause 2.2.

5.14 The component-14 used in the packing bag of "Sleeping Bag" shall meet the requirement as given in clause 2.2.

5.15 The component-15 used in the packing bag of "Sleeping Bag" used in the "Sleeping Bag" shall meet the requirement as given in clause 2.2.

6.0 SEALED SAMPLE:

In order to illustrate or specify the indeterminable characteristics such as general appearance, luster and feel of the "Sleeping Bag", a sample has been agreed upon

Handwritten signature and initials: "Kamla" and "Tara".

Handwritten signature: "20 dea".

Handwritten signature: "Sudh".

Handwritten signature and date: "11/12/21".

Handwritten signature and page number: "Page 8 of 24".

Handwritten signature: "S d".

Handwritten signature: "Balu".

and sealed; the supply shall be conformity with the sample in such respects. The custody of the sealed sample shall be a matter of prior agreement between the buyer and seller.

7.0 MARKING

The "Sleeping Bag" shall be legibly and indelibly marked with the following information:

- i) Manufacturer's name, initials or trade-mark;
- ii) Instructions for storage and care;
- iii) Date of manufacture; and
- iv) Any other information required by the law in force and/or by the buyers.

8. PACKING

The "Sleeping Bag" shall be delivered in a clean and dry condition. One such bag shall be packed in a polyethylene bag. Four such "Sleeping Bag" shall be made into one unit pack by suitably placing in the cardboard box (Cases).

Unless otherwise agreed upon by the buyer and seller the "Sleeping Bag" shall be packed in cases in conformity with the procedure laid down in IS 1347: 1972 or IS: 1980.

Before dispatch each box, it shall be legibly marked by stencil showing the following information:

- i) Nomenclature and Category number of the store
- ii) Quantity packed in the box
- iii) Serial number of the box
- iv) Month & Year of packing
- v) Name/Trademark of the Manufacture
- vi) Gross weight of the box in Kg.
- vii) Name & Address of the consignee
- viii) Inspection note number and date

8.0 SAMPLING AND CRITERIA FOR CONFORMITY

8.1 The sampling procedure detailed in 8.2 to 8.3 shall give desired protection to the buyer and the seller, provided that the lot submitted for inspection is homogeneous. To achieve this, the manufacturer shall maintain a system of process control at all

[Handwritten signatures and marks at the bottom of the page]

20 Dec 11/11/21 Page 9 of 24

stages of manufacturing ensuring the "Sleeping Bag" tendering by him for inspection to comply with the requirements of this standard in all respects.

8.2 The manufacturer should offer the stores serially numbered and arranged in such a way that the entire lot is accessible to the inspecting officer. The conforming of a lot to the requirement of this specification shall be determined on the basis of the tests carried out on the samples selected from it. The number of samples shall be selected at random in accordance with Table 1.

8.3 The number of test samples and the criterion for conformity for various characteristics shall be as given in Table 2:

8.4 **Lot:** For the purpose of conformance inspection and test sampling, a lot is defined as all the completed "Sleeping Bag" of the same size and type, with same assemblies, produced in one facility, using the same production processes and materials, and being offered for delivery at one time to buyer against a dispatch note.

Table 1: "Sleeping Bag" to be selected from a lot and permissible number of non-conforming "Sleeping Bag"

Lot size (1)	Non – Destructive Testing		Destructive Testing	
	No. of "Sleeping Bag" to be selected (2)	Permissible number of non-conforming "Sleeping Bag" (3)	No. of "Sleeping Bag" to be selected (4)	Permissible number of non-conforming "Sleeping Bag" (5)
0 – 300	10	1	2	0
301 - 500	20	2	3	0
501 – 1000	30	3	5	0
1001 – 3000	50	5	8	0
3001 and above	80	5	13	1

Table 2: Criterion for conformity

Characteristics	Number of test samples	Criteria for conformity
Dimensions, Nos. of ends & picks, visual colour inspection and freedom from defects	All the "Sleeping Bag" selected according to the column 2 of table-1	Non-conforming "Sleeping Bag" not to exceed the corresponding number given in column 3 of table-1
Dimensional change, pH value, total mass, breaking strength, tear strength, abrasion resistance, water repellency, colour fastness to various agencies, Thermal insulation.	All the "Sleeping Bag" selected according to the column 4 of table-1	Non-conforming "Sleeping Bag" not to exceed the corresponding number given in column 5 of table-1

Note: Test methods may be taken as guidance wherever specimen size is not sufficient as per standard.

Table 3: General requirements of sleeping bag

Sl. No.	Characteristics	Requirements	Test Method
1	Total Mass including packing bag, g, Maximum	1100	Using weighing machine
2	Thermal Insulation (Single layer of sleeping bag), clo, Minimum	2.0	ISO 11092 (R _{cl})
3	Length of the sleeping bag, cm	207 to 215	Measuring tape
4	Width (W) of the sleeping bag	As mentioned in the Fig. 2 (W1 to W8)	Measuring tape (Tolerance as given in clause 2.1)

Table 4 : Requirements of "Sleeping Bag"– Component-1

Sl. No.	Characteristics	Requirements	Test Method
1	Nature of fibre/filament	Nylon	AATCC 20
2	Weave	Rip stop	Visual
3	End/dm, Minimum	450	IS 1963:1981
4	Picks/dm, Minimum	320	IS 1963:1981
5	Mass, g/m ²	70±5	IS 1964 : 1970
6	Breaking strength, Newton (Minimum) -Warp-wise -Weft-wise	625 385	IS: 1969: 1985 (5 X 20 cm specimen size)
7	Tearing Strength, Newton (Minimum) - Warp-wise - Weft-wise	190 140	IS 7016 Part-3, Method A-1
8	Abrasion Resistance (Martindale) -After 20,000 cycles	No thread breakage	IS: 12673 : 1989
9	Colour fastness to washing - Change in colour - Staining on adjacent fabric	4 or better 4 or better	IS 764 : 1979
10	Colour fastness to perspiration - Change in colour - Staining on adjacent fabric	4 or better 4 or better	IS 971:1983
11	Colour fastness to rubbing - Dry - Wet	4 or better 4 or better	IS 766:1988
12	Colour fastness to light	5 or better	IS 2454:1985
13	Dimensional Change due to relaxation, both directions, percentage, maximum	2.0	IS 2977: 1989
14	Water repellency (Face side) Initial	Spray rating Min. 80	IS 390: 1975
	After 20 washes (Washing as per IS 15370:2005 Type A machine, Procedure 5A)	Spray rating Min. 70	
15	pH value of aqueous extract	6.0-8.0	IS1390:1983 (Cold method)

Note: Latest version of test methods shall be taken

Table-5: Specification of colour of "Sleeping Bag"-Component-1
(AATCC Test method 173 : 2005 & AATCC Evaluation Procedure 7 : 2003)

Colour	:	Olive Green						
System	:	CIE LCH						
Illuminant Observer	:	D 65						
Standard Observer	:	10 Degree						
Tristimulus Values	:	<table border="1"> <tr> <th>X</th><th>Y</th><th>Z</th></tr> <tr> <td>15.783</td><td>17.262</td><td>6.533</td></tr> </table>	X	Y	Z	15.783	17.262	6.533
X	Y	Z						
15.783	17.262	6.533						
LCH	:	<table border="1"> <tr> <th>L</th><th>C</th><th>H</th></tr> <tr> <td>48.588</td><td>32.863</td><td>95.830</td></tr> </table>	L	C	H	48.588	32.863	95.830
L	C	H						
48.588	32.863	95.830						
CMC (l:c)	:	2:1						
Colour difference, ΔE_{cmc}	:	≤ 2.0						

Interpretation of Results :

- i) If ΔE_{cmc} is less than or equal to 2, then sample is acceptable.
- ii) If ΔE_{cmc} is greater than 2, 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.

Table 6 : Requirements of "Sleeping Bag"– Component-2

Sl. No.	Characteristics	Requirements	Test Method
1	Nature of fibre/filament	Nylon	AATCC 20
2	Weave	Rip stop	Visual
3	End/dm, Minimum	720	IS 1963:2004
4	Picks/dm, Minimum	400	IS 1963:2004
5	Mass, g/m ²	50±5	IS 1964 : 2001
6	Breaking strength, Newton (Minimum) -Warp-wise -Weft-wise	650 410	IS: 1969 Part-1:2011
7	Tearing Strength, Newton (Minimum) - Warp-wise - Weft-wise	150 100	IS 7016 Part-3, Method A-1
8	Abrasion Resistance (Martindale) -After 20,000 cycles	No thread breakage	IS: 12673 : 1989
9	Colour fastness to washing - Change in colour - Staining on adjacent fabric	4 or better 4 or better	IS 764 : 1979
10	Colour fastness to perspiration - Change in colour - Staining on adjacent fabric	4 or better 4 or better	IS 971:1983
11	Colour fastness to rubbing - Dry - Wet	4 or better 4 or better	IS 766:1988
12	Dimensional Change due to relaxation, both directions, percentage, maximum	2.0	IS 2977: 1989
13	Water repellency (Face side) Initial After 20 washes (Washing as per IS 15370: 2005 Type A machine, Procedure 5A)	Spray rating Min. 80 Spray rating Min. 70	IS 390: 1975
14	pH value of aqueous extract	6.0-8.0	IS1390:1983 (Cold method)
15	Colour	Match with Component-1	Visual

Note: Latest version of test methods shall be taken

Table 7: Requirements of "Sleeping Bag"– Component-3

Sl. No.	Characteristics	Requirements	Test Method
1	Nature of fibre/filament	Polypropylene	AATCC 20
2	Mass, g/m ²	15±2	IS 1964 : 1970
3	Breaking strength, Newton (Minimum) -Warp-wise -Weft-wise	8 15	IS: 1969; 1985 (5 X 20 cm specimen size)

Note: Latest version of test methods shall be taken

Table 8: Requirements of "Fibre fill– Component-4

Sl. No.	Characteristics	Requirements	Test Method
1	Nature of fibre	Polyester	AATCC 20
2.	Fibre hollowness % by volume (for hollow fibre), Minimum	14	Microscopic examination
3	Fibre length, mm, Minimum	65	IS 10014 (Pt 2) 1981
4	Colour	White	Visual

Note: Latest version of test methods shall be taken

Table 9: Requirements of "Sleeping Bag"– Component-12 and 16

Sl. No.	Characteristics	Requirements	Test Method
1	Nature of material	Nylon	-Nylon is Soluble in formic acid -Melting point of Nylon is 215°C to 220°C
2	Resistance to accelerated ageing	No apparent change of aged samples in comparison to the original sample in respect of softening, brittleness, colour, tackiness etc.	Keep sample in hot air circulating oven at 70±1°C for 24 hrs.
3	Resistance to low temperature	No apparent change of test samples in comparison to the original sample in respect of brittleness & crackness when bent at 180° and back.	Keep sample in deep freezer at (-)10°C for 24 hrs.
4	Colour fastness to light	4 or better	IS 2454:1985

Note: Latest version of test methods shall be taken

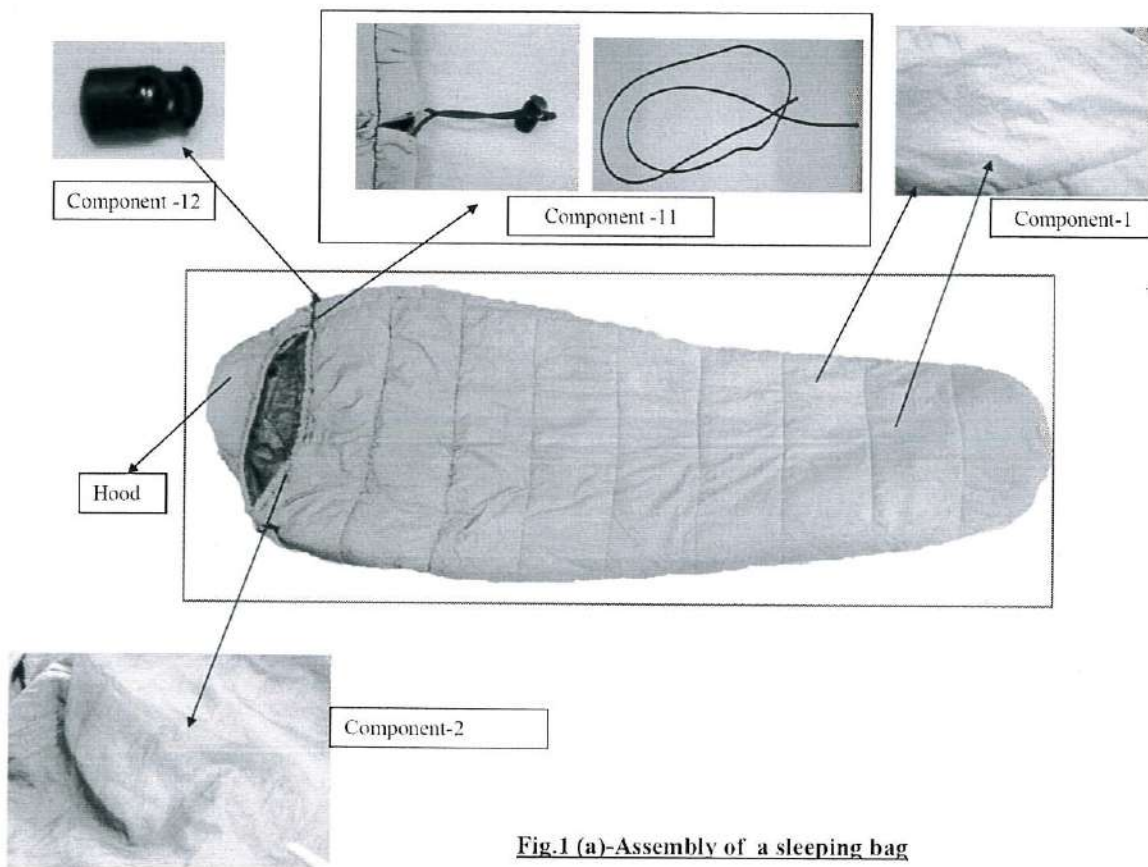
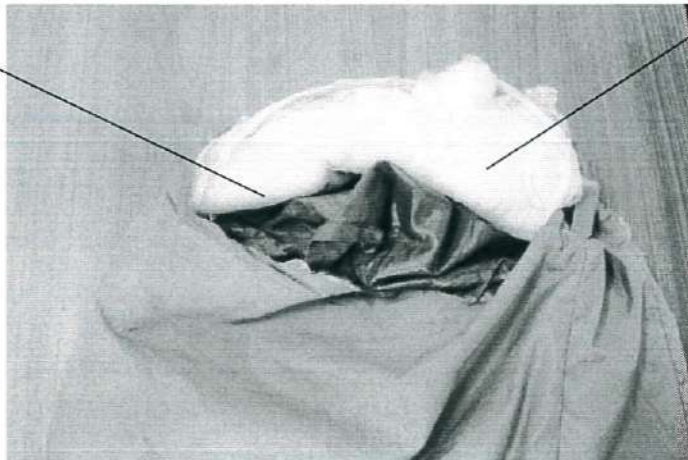


Fig.1 (a)-Assembly of a sleeping bag

Jap Kamber
 11/12/21
 20 Dec 21
 [Signature]
 [Signature]
 [Signature]



Component -3



Component -4

Fig.1 (b)-Assembly of a sleeping bag

20 Dec 2011
[Signature]
[Signature]
[Signature]
[Signature]
[Signature]

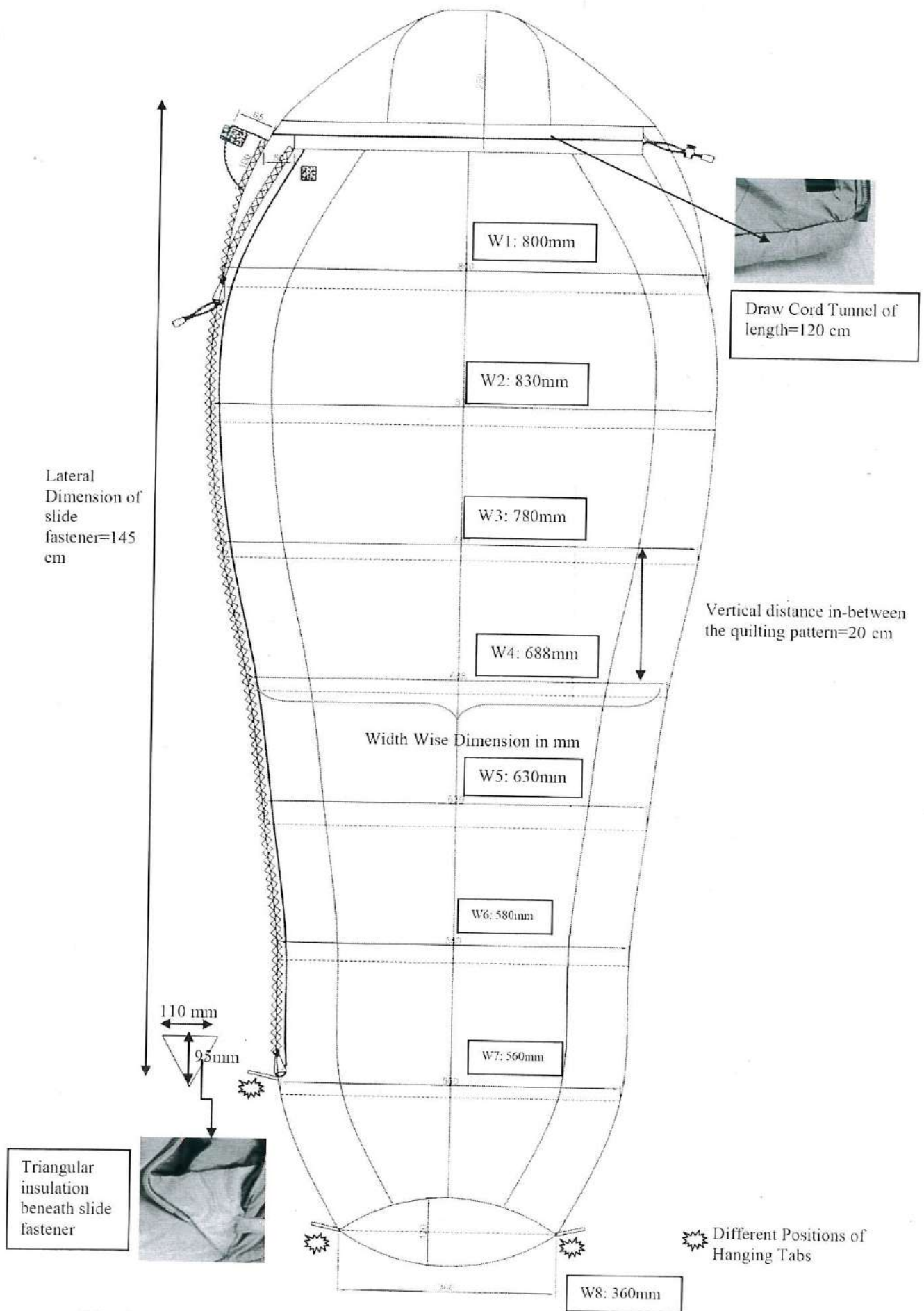


Fig.2-Dimension of a sleeping Bag (Dimensions are in mm and cm)

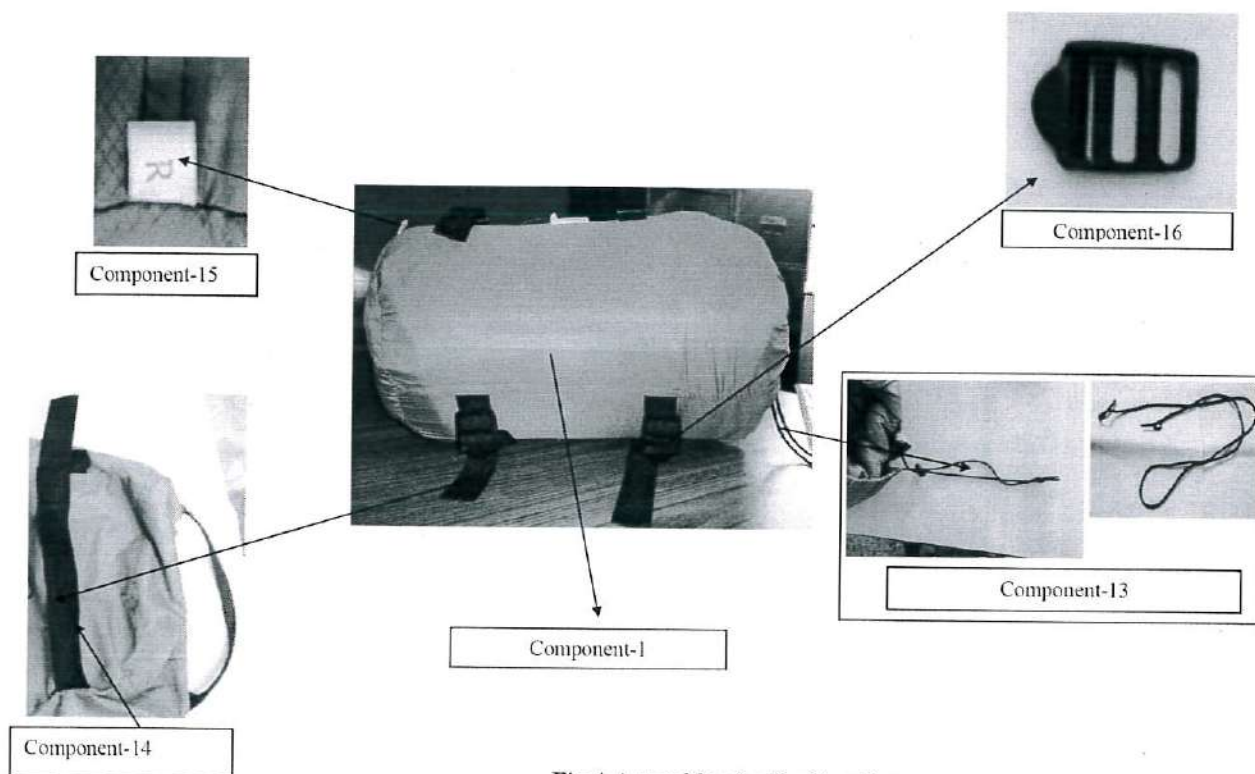


Fig.4-Assembly of a Packing Bag

Jay
 Kumar
 ITRSP
 se
 dea
 sh
 Samp
 22/11/21
 SD
 94
 Ravi!

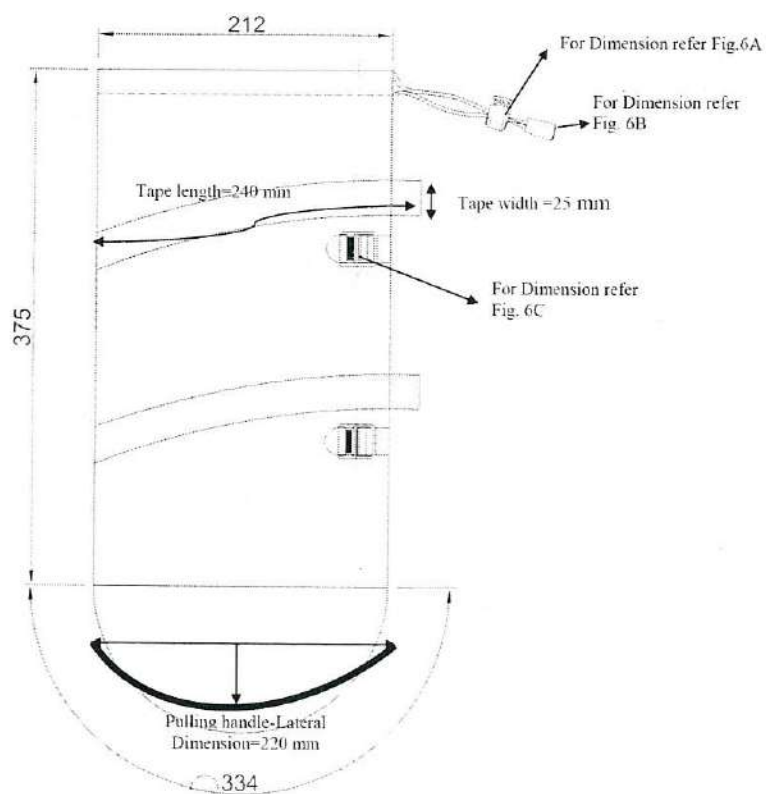


Fig.5-Dimension of a Packing Bag for guidance (All dimensions are in mm)

JG Kamber
 17/01/21
 20
 dear
 [Signature]
 11/1/21
 [Signature]
 [Signature]

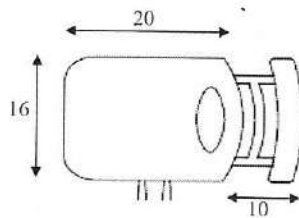


Fig.6A-Draw Cord Lock
(Dimensions in mm)

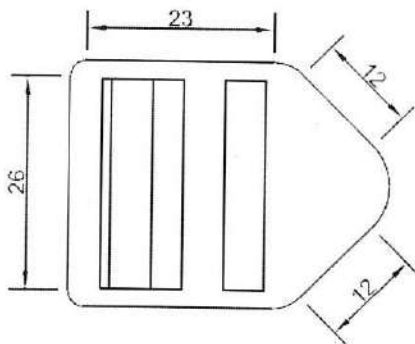


Fig.6C- Ladder
Lock(Dimensions in
mm)

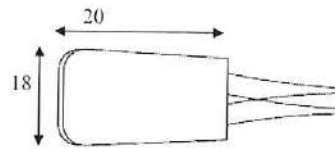









Fig.6B-Nylon Cord End
Lock(Dimensions in mm)

Fig.6-Components used in a Sleeping/Packing Bag













B	X		X	X	X		X	X	X		X	X		X		X	X	X		X	X	X		X	X		8
F			X				X				X		X			X				X				X		X	7
B	X	X	X		X	X	X		X	X			X	X	X		X	X	X		X	X	X				6
F	X				X				X				X	X			X				X					X	5
B	X		X	X	X		X	X	X		X	X		X		X	X	X		X	X	X		X	X		4
F			X				X				X		X			X				X				X		X	3
B	X	X	X		X	X	X		X	X	X			X	X	X		X	X	X		X	X	X			2
F	X				X				X				X	X				X				X				X	1
	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	7	8	9	10	11	12	13	


Fig.-7 Polypropylene tape 25 mm wide –Weave repeat
(F-Face, B-Back)

Note:

1. Warp No. 1-12 are body ends
2. Warp No. 13 is stitching end
3. One pick in weave represents two threads


 J. G. Kamesh
 1/1/2017

20 dear 


 1/1/2017


 20

9.0 REFERENCES

Sl. No.	Method/Spec. number	Title
1	IS:397(Part I) : 2003	Method for statistical quality control during production : Part I Control charts for variable
2	AATCC-20 & 20A	Fibre Analysis: qualitative & quantitative
3	IS:6359: 1971	Method for conditioning of Textiles
4	IS:10789:2000	Classification and terminology of stitch types used in seams
5	IS:11161:2000	Textiles-seam types-classification and terminology
6	IS:1963:1981	Method for determination of thread per unit length in woven fabric
7	IS:1964:1970	Methods for determination of weight per square meter and weight per linear meter of fabric
8	IS: 1954:1990	Determination of length and width of woven fabric
9	IS: 1969: 1985	Method for determination of breaking strength and elongation of woven fabrics
10	IS: 6489: 1993	Textile-woven fabrics-determination of tear resistance by falling pendulum method.
11	IS: 12673: 1989	Textile fabrics-Abrasion resistance
12	IS 764 : 1979	Method for determination of colour fastness of textile material to washing
13	IS 971:1983	Method for determination of colour fastness of textile material to perspiration
14	IS 766:1988	Method for determination of colour fastness of textile material to rubbing
15	IS 2454:1985	Method for determination of colour fastness of textile material to artificial light (Xenon lamp) pressing
16	IS 1390 : 1983	Method for determination of pH value of aqueous extract of textile materials
17	AATCC Test method 173 : 2005	CMC: Calculation of small colour differences for acceptability
18	AATCC Evaluation Procedure 7 : 2003	Instrumental assessment of the change in colour of a test specimen

[Signature]
CISF

[Signature]
Kamdar
ITBP

[Signature]

[Signature]
BPRD.

[Signature]
11/12/1
Sahil chandra
DC, BSF

[Signature]
AKK.

[Signature]
P.O.

[Signature]

DR. A P MAHESHWARI, IPS
DG, CRPF