



भारत सरकार
GOVERNMENT OF INDIA
रक्षा मंत्रालय
MINISTRY OF DEFENCE

संयुक्त सेवा विनिर्देश
JOINT SERVICES SPECIFICATION

ON

CLOTH, COTTON CLOSELY WOVEN VARIETIES
A.B.C. 91 cm WIDE

8305-000206 NSN 8305720298126, 8305-000201 NSN 8305720298131
8305-000203 NSN 8305720298133, 8305-000382 NSN 8305720298149
8305-000383 NSN 8305720298150, 8305-000384 NSN 8305720298151
8305-000385 NSN 8305720298152 8305-000386 NSN 8305720298153
8305-000076 NSN 8305720298094, 8305-000208 NSN 8305720298138 &
8305-000210 NSN 8305720298140

मानकीकरण निदेशालय
रक्षा उत्पादन विभाग रक्षा मंत्रालय,
'एच'- ब्लॉक, निर्माण भवन डाकघर
नई दिल्ली - ११००११

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RECORD OF AMENDMENTS

Amendment		Amendment pertains to S. No./Para No./ Column No.	Authority	Amended by	Signature & Date
No.	Date			Name & Appointment (In Block Letters)	

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0. FOREWORD

0.1 This specification has been prepared by the Stores Standardisation Sub-Committee on the authority of Standardisation Committee, Ministry of Defence.

0.2 This specification has been approved by the Ministry of Defence and is mandatory for use by the Defence Services.

0.3 This JSS 8305-05 : 2020 (Fourth Revision):

a) was prepared in the year 1980 and supersedes CIT&C Schedule No. TC-IIA/6 and Specns. No. IND/TC/0115(e) and IND/TC/0116(f).

b) was revised in the year 2000, 2008 & 2014.

c) is a revision of 8305-05 : 2014 (Third Revision) and supersedes the same.

0.4 This specification would be used for Manufacture, Quality Assurance and Procurement of the item.

0.5 Quality Assurance Authorities for the item covered in this specification are CQA (T&C), Kanpur-208004, Email address of the CQA (T&C) Kanpur is cqatcknp-dgqa@nic.in. Enquiries regarding any technical parameter shall be addressed to the Quality Assurance Authority, while other enquiries shall be referred to Secy SSSC by email at sssc.defstand@gov.in or by post to:

The Director,
Directorate of Standardisation,
Ministry of Defence,
'H' Block, Nirman Bhawan PO,
New Delhi-110011.

0.6 Non-registered users can obtain the following on payment:

a) Copies of IS from:

Bureau of Indian Standards,
Manak Bhawan,
9, Bahadur Shah Zafar Marg,
New Delhi-110002.

or

their regional/branch offices.

b) Copies of JSSs/JSGs from:

The Director,
Directorate of Standardisation,
Standardisation Documents Centre,
Ministry of Defence,

JSS 8305-05 : 2020
(Fourth Revision)

Room No. 05, 'J' Block, Nirman Bhawan PO,
New Delhi-110011.

0.7 This specification holds good only for the supply order for which it is issued.

0.8 Indian Standard (IS) specifications are available free of cost for registered users on:

Directorate of Standardisation Website
www.ddpdos.gov.in
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0.9 Directorate of Standardisation Website-All approved JSSs/JSGs are available on the Directorate of Standardisation Website ***www.ddpdos.gov.in***. Defence organisations desirous of accessing a copy of this document are requested to approach the Directorate of Standardisation for obtaining user id/password to access the website.

1. SCOPE

This specification covers the requirement of under mentioned three varieties of Closely Woven Fabrics intended for use by the Defence Services for the fabrication of snow Clothing items and various Arctic tents to be used at high altitudes and Overall for Technical Officers & Airmen.

<i>Variety</i>	<i>End Use</i>
A	Bags Sleeping and Arctic Tent small and Overall for Technical Officers & Airmen
B	Suits Parks, Shorts Great Coats. Tent Arctic Medium Mark II, Tent Arctic Medium Mark II (Medical)
C	Capes, WP Snow

2. RELATED SPECIFICATIONS

References are made in this specification to:

Table 1

S. No.	Specification/ Document No.	Nomenclature
a)	IS 187 : 1978 (Second Revision)	Specification for Cotton Long Cloth
b)	IS 323 : 2009 (Second Revision) Reaffirmed 2019	Specification for Rectified Spirit for Industrial use-Specification
c)	IS 392 : 1989 (Third Revision) Reaffirmed 2016	Textiles-Determination of water absorption and penetration of fabrics using Bundesmann type apparatus
d)	IS 718 : 1977 (Second Revision) Amd 2 Reaffirmed 2015	Specification for Carbon Tetrachloride
e)	IS/ISO 105-C10 : 2006 Reaffirmed 2017	Textiles-Tests for Colour Fastness Part C10 Colour Fastness to Washing with Soap or Soap and Soda
f)	IS 1070 : 1992 (Third Revision) Reaffirmed 2019	Reagent grade water-Specification
g)	IS 1383 : 1977 (First Revision) Reaffirmed 2017	Method for determination of scouring loss in grey and finished cotton textile materials
h)	IS 1390 : 2019/ ISO 3071 : 2005 (Second Revision)	Methods for determination of pH value of aqueous extracts of textile materials
j)	IS 1398 : 1982 (Second Revision) Amd 1 Reaffirmed 2019	Specification for Packing Paper, Water-Proof, Bitumen-Laminated

Table 1 (Continued)

S. No.	Specification/ Document No.	Nomenclature
k)	IS 1912 : 1984 (Second Revision) Amd 1 Reaffirmed 2017	Specification for Country Jute Twine
m)	IS 1954 : 1990 (Second Revision) Reaffirmed 2017	Determination of Length and Width of Woven Fabrics-Methods
n)	IS 1963 : 2004 (Second Revision) Reaffirmed 2018	Methods for Determination of Threads per Unit Length in Woven Fabrics
p)	IS 1964 : 2001 (Second Revision) Reaffirmed 2017	Textiles-Methods for determination of Mass per unit length and mass per unit area of fabrics
q)	IS 1969 : 1985 (Second Revision) Reaffirmed 2018	Methods for Determination of Breaking load and Elongation of Woven Textile Fabrics
r)	IS 2454 : 1985 (First Revision) Amd 1 Reaffirmed 2017	Methods for determination of colour fastness of textile materials to artificial light (xenon lamp)
s)	IS 2508 : 2016 (Third Revision) Amd 3	Polyethylene Films and Sheets-Specification
t)	IS 2771 (Part 1) : 1990 (Second Revision) Amd 3 Reaffirmed 2018	Corrugated Fibreboard Boxes-Specification Part 1 General Requirements
u)	IS 3751 : 1993 (First Revision) Amd 1 Reaffirmed 2016	Textile-Heavy Cee Jute Cloth-Specification
w)	IS 4472 (Part 1) : 1967 Reaffirmed 2016	Methods for Identification of the Application Classes of Dyes on Textile Materials Part 1 Cotton and Other Cellulosic Fibres
y)	IS 4905 : 2015/ ISO 24153 : 2009 (First Revision)	Random Sampling and Randomization Procedures
z)	IS 7941 : 1976 Reaffirmed 2016	Method for determining the water repellency of fabrics by cone test
aa)	IS 10106 (Part 3/Sec 1) : 1984 Reaffirmed 2014	Packaging Code Part 3 Ancillary Materials Section 1 Cushioning Materials
ab)	JSS 8040-08 : 2014 (Third Revision)	Tape Adhesive Transparent Water-Proof

Table 1 (Concluded)

S. No.	Specification/ Document No.	Nomenclature
ac)	JSS 8046-06 : 1974	Tape Adhesive Transparent Water Proof with Plastic Base
ad)	JSS 8135-10 : 2016 (Second Revision)	Polypropylene Strapping, 12 mm wide × 0.55 mm thick
ae)	CQA(GS)/US/460	Boxes fibre board rigid corrugated triple wall 7 ply

NOTE-All the relevant IS Specification updated as per BIS website. However all specification referred to in this specification for any tender or contract shall mean the edition current on the date of such tender or contract.

3. STANDARD PATTERN

The Standard pattern, held by the Controller, Controllerate of Quality Assurance (Textiles & Clothing), Ashok Path, Kanpur-208004 shall constitute the standard as regards any particulars or properties not noted/defined in this specification.

4. MATERIAL

The fabric shall be all cotton.

5. MANUFACTURE

5.1 The cloth shall be woven in 2/2 Matt weave conforming to the constructional details given in clause 6.

5.2 Cotton yarn used in the manufacture of the fabric shall be of a quality that will ensure the compliance of the fabric with the requirements of this standard. It shall be free from defects such as neps, slubs and knots. The approximate count of warp and weft yarns used in the manufacture of the cloth, is given below for the guidance of the manufacturer.

Variety	Linear Density (Approx)	
	Warp	Weft
A	6 tex x 2	7.5 tex x 2
B	9.8 tex x 2	13.4 tex x 2
C	16.4 tex x 2	19.7 tex x 2

5.3 The dual shade effect shall be obtained by printing with a solid olive green shade on one side of the bleached fabric by roller/screen printing with dye paste of suitable viscosity so that the olive green pigments are not percolated to the other side.

5.4 The water repellent finish shall then be imparted by treating the fabric with a suitable composition adding not more than 6 percent on the mass of the unproofed fabric. The water repellent fabric shall be rendered resistant to microbial attack by incorporating a suitable fungicide.

5.5 The cloth in deep grey shade or in any other shade shall be dyed with vat dye only.

6. DIMENSIONS AND TOLERANCES

Examination of sample taken from any portion of a consignment shall show that the cloth cotton closely woven shall conform to the requirement of Table 2 & 3 given below:

Table 2

Variety	Width (Min)	Length	Mass per sq meter	Threads/cm		Breaking load (Min) 10 cm x 20 cm (rip length) 'N'	
	cm	m	gm	Ends	Pick	Warp	Weft
A	91	36 as ordered	170	87	43	1960	1250
B	91	36 as ordered	235	67	35	2230	1515
C	91	36 as ordered	310	51	30	2310	1695
Tolerance	-	-	+ 5% -2.5%	+ 5% -2.5%	+ 5% -2.5%		
Method of test		IS 1954	IS 1964	IS 1963		IS 1969	

NOTE-The following tolerances shall be permissible in the breaking load of the fabric when supplied in different finishes.

<i>Finish</i>	<i>Tolerance in Breaking load</i>
White (bleached) & dual shade (%)	-5
OG Water-repellant (%)	-10
White (bleached) WR & dual shade in WR (%)	-15

Table 3

S. No	Test	Requirements	Methods refer to
a)	Shrinkage, Percent,	2.5 Max	Appx 'A'
b)	pH value of Aqueous extract	6.5 to 8.5	IS 1390 (Cold method)
c)	Loss on Scouring, percent not applicable for WR varieties)	2 Max	IS 1383 (Mild Method 'B' Diastase Test
d)	Dyed and Dyed WR Varieties Fastness of dye		
	1)	To Light	Rating 5 or better or Class V or above as per classification adopted by the SDC Bradford, Yorkshire
	2)	To washing	Rating 4 or better
e)	Water Repellent Varieties		
	1)	Bundesman water Repellency test	aa) There shall be no penetration of water through the fabric
			IS 392

Table 3 (Concluded)

S. No	Test		Requirements	Methods refer to
			ab) The water absorption shall not exceed 60%	
	2)	Cone Test	There shall be no leakage through the fabric	IS 7941
	3)	Water repellent finish content, percent	6 <i>Max</i>	Appx 'B'
f)	Nature of Dye (for dyed fabric only)		Vat dye	IS 4472 (Part 1)

7. WORKMANSHIP AND FINISH

7.1 The cloth shall be free from spinning, weaving and other processing defects.

7.2 The white fabric shall have a full bleached finish. The manufacturer may use an appropriate optical whitening agent to impart desired degree of whiteness to the cloth.

7.3 The olive green and the dual shade fabric shall be of the approved shade, free from stains, streaks, patches and specks.

7.4 The water repellent fabric shall be pliable and free from tackiness and objectionable odours.

7.5 The fabric shall be free from loading materials or from substances liable to cause subsequent tendering.

7.6 In appearance, shade and finish and in all other respects not noted/defined in this specification, the cloth shall conform to the corresponding standard pattern.

7.7 The deep grey fabric or other shade fabric as agreed between seller and buyer shall be dyed with approved shade free from stains, patches specks.

8. QUALITY ASSURANCE

On receipt of supply order the Quality Assurance Process comprises of the following (whenever/wherever applicable):

- a) Assessment of firm's preparedness to execute the order.
- b) Visual inspection, sampling, lab testing, verdicting, packaging and confirmation followed by issue of I/Note.
- c) Quality Audit (both product & process) and surveillance.

- d) Surprise checks, vigilance checks and consignee end checks.
- e) Periodical monitoring of product both in storage & exploitation.
- f) Addressing defect report, remedial measures and fixing accountability.
- g) Collecting, collating presenting & inferring the feedback data for specification amendments and product improvements.
- h) Working out quality rating and supply rating to assess the feasibility of self Certification.
- j) Issue of Quality Improvement Notes to facilitate the manufacture to enhance process efficiency and flow between the processes (Lean Process).

9. PRE-INSPECTION OF STORES/CONSIGNMENT

9.1 Manufacturer/contractor must satisfy themselves that the stores are in accordance with the terms of the contract and fully conform to the required specification by carrying out a thorough pre-inspection of each lot before actually tendering the same for inspection to the Inspecting Officer nominated under terms of the contract. A declaration by the contractor that a necessary pre-inspection has been carried out in the stores tendered will be submitted along with the challan. The declaration will also indicate the method followed in carrying out pre-inspection showing the features checked/tested and will have the test certificate attached to the challan/declaration.

9.2 If the Inspecting Officer finds that pre-inspection of the consignment as required above has not been carried out, the consignment is liable for rejection.

10. SAMPLING PROCEDURE

10.1 Formation of Lot

The supplier shall offer the store serially numbered and arranged in such a way that the entire lot is accessible to the Quality Assurance Officer. The delivery shall be visually inspected by the Quality Assurance Officer on the spot in the first instance to ascertain the homogeneity in respect of nature, source and year of manufacture, batch, uniformity of production etc. If the product units are homogenous, the delivery shall be treated as one lot, if not. If shall be segregated by the supplier into separate groups, so that each groups, which is homogeneous within itself to form a sub lot. The supplier shall arrange the units of the homogeneous lot in such a way that all the product units are easily accessible to the Quality Assurance Officer from all sides to enable him to draw samples from any portion of the homogeneous lot. The sampling of the lot to be done as per table given below:

Table 4
BASED ON 4% AQL ISO 2859-1 : 1999 & IS 2500 (Part 1)

Lot Size in Numbers of Rolls/Bolts	Sampling Plan for							
	Visual Examination/Dimensional Check at the Time of Sampling		Physical Parameters (for Laboratory Tests)		Chemical Parameters and other Physical Parameters Requiring Long Testing Time (for Laboratory Tests)		Sample Size for Visual Check at Bulk QA Stage	
	Gen Inspection Level II		Spl Insp. Level S-4		Spl Insp. Level S-2		Gen Inspection Level III	
	Sample Size	Acceptance No.	Sample Size	Acceptance No.	Sample Size	Acceptance No.	Sample Size	Acceptance No.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Below 150	20	2	8	1	3	0	32	3
151-280	32	3	13	1	5	0	50	5
281-500	50	5	13	1	5	0	80	7
501-1200	80	7	20	2	5	0	125	10
1201-3200	125	10	32	3	8	1	200	14

NOTES

1. Samples drawn as per column (2) to be first examined visually.
2. If above is found satisfactory, the samples for lab testing as per column (4) be drawn out from the samples originally drawn as per column (2) by the Sampling Officer and marked accordingly.
3. For chemical parameters samples to be drawn at random as per IS 4905/ISO 24153 from those samples drawn as per column (4).
4. Level III of sampling plan is applied to have enhanced visual examination in bulk QA stage.
5. Lot Size 25,000 Mtrs (*Max*).

11. CRITERIA FOR CONFORMITY

All the sample units drawn shall be tested/examined to the specification requirement. If all the sample units are found conforming to requirement of this specification the supply would be considered to be in conformity, otherwise not.

12. WARRANTY

12.1 Except as otherwise provided in the invitation to the tender, the contractor/seller hereby declare that the goods, stores, articles sold/supplied to the purchaser under this contract shall be of the best quality and workmanship and new in all respect and shall be strictly in accordance with the specification and particulars contained/mentioned in the contract.

12.2 The contractor/seller hereby guarantees that the said goods/stores/articles would continue to conform to the description and quality aforesaid for a period of 12 months from the date of delivery of the said goods/stores/articles to the purchaser or 15 months from the date of shipment/dispatch from the contractor's work whichever is earlier and that notwithstanding the fact that the purchaser (Inspector) may have inspected and/or approved the said goods/stores/articles, if during the aforesaid period of 12/15 months the said goods/stores/articles, be discovered not to conform to the description and quality aforesaid or not giving satisfactory performance or have deteriorated and the decision of the purchaser in the behalf shall be final and binding on the contractor/seller to rectify/replace by acceptable goods/stores/articles or such portion or portions thereof as is found to be defective by the purchaser within a reasonable period not exceeding 03 months or as may be allowed by the purchaser in his discretion on the application made thereof by the contractor/seller and in such an event the above mentioned warranty period shall apply to the goods/stores/articles rectified/replaced from the date of rectification/replacement thereof, otherwise the contractor/seller shall pay to the purchaser such compensations as determined by the purchaser as may arise by reason of the break of the warranty herein contained.

13. MARKING OF INDIVIDUAL STORE

Each bolt on either end shall be legibly and indelibly marked with DS Cat Part No., Nomenclature of the store, piece length, No. of flags, Month and year of manufacture and Contractor's Name, Initials or recognized Trade Mark, if any.

14. PACKING MATERIALS

The following materials shall be used for packing of the bolts & bales:

Table 5

S. No	Material	Conforming to
a)	Polythene Film 0.04 mm thick	IS 2508
b)	Jute Twine 3 Ply	IS 1912
c)	Boxes fibre board rigid corrugated triple wall 7 ply	CQA(GS)/US/460
d)	Water proof paper	1398
e)	Tape adhesive transparent water proof with plastic base	JSS 8046-06
f)	Tape transparent W.P.	JSS 8135-10
g)	Polypropylene strapping 12 mm wide	
h)	Long Cloth Khaki	IS 187 V. No. 1
j)	Cushioning material	IS 10106 (Part 3)/Sec 1

14.1 Method of Packing

Each bolt is first folded/rolled suitably and then tied with jute Twine 3 ply IS 1912 width wise at three places so as to accommodate conveniently in the fibre board rigid corrugated triple wall 7 ply, box 95 cm x 70 cm 45 cm (unit box, specification No. CQA(GS)/US/460.

Each such bolt is initially kept in a polyethylene bag of 0.04 mm thick polyethylene film IS 2508 to make a unit pack. Suitable number of such unit packs containing similar shade are kept one over the other/side by side then tied with jute twine 3 ply IS 1912 at three places to form a bundle. Suitable number of such bundles are then placed one over the other/side by side in the above unit box which is lined with water proof paper IS 1398/polyethylene film of 0.04 mm thick and corner sides though out of each unit box is reinforced with long cloth khaki IS 187 V. No. 1 by using synthetic resin. The empty space if any, shall be filled with cushioning material IS 10106 (Part 3)/Sec 1 to prevent movement of the contents. Each such unit box is then sealed with tape adhesive transparent waterproof JSS 8046-06 & CIGS/SS/126(a). Finally, each unit box is then strapped with polypropylene strapping 12 mm wide and 0.55 mm thick JSS 8135-10 at three places length wise and two places width wise. The final weight of the unit box does not exceed 10 kg for Central Ordnance Depot as well as Ordnance Factories.

14.2 Marking of Package

Before dispatch each final pack (95 cm x 70 cm x 45 cm) corrugated fibre board box shall be legibly and indelibly marked with marking ink/paint showing the following details:

- a) DS Cat Part Number, NSN and nomenclature of the store.
- b) Quantity of bolts packed in the bale.
- c) Lot and serial number of the bale.
- d) Month and year of packaging.
- e) Gross weight of the bale.
- f) Name & trade mark of manufacturer.
- g) Name and address of the consignee.
- h) Contract number and date.
- j) Inspection Note Number and date.
- k) Packing note placed inside the bale.
- m) Consignor's name and address.
- n) Defence acceptance mark of suitable size at right top corner.

15. DEFENCE STORES CATALOGUE NUMBER'S/NATO STOCK NUMBERS

The stores covered by this specification shall bear the following DS Cat numbers:

<i>S. No.</i>	<i>DS Cat No.</i>	<i>NSN</i>	<i>Store</i>	<i>Nomenclature</i>
(V. No. A)				
a)	8305-000206	8305720298126	Cloth Cotton C/W	170 g White Bleached WR 91cm.
b)	8305-000201	8305720298131	Cloth Cotton C/W	170 g D/S (OG White) WR 91cm.
c)	8305-000203	8305720298133	Cloth Cotton C/W	170 g OG WR 91cm.
(V. No. B)				
d)	8305-000382	8305720298149	Cloth Cotton C/W	235 g White Bleached 91cm.
e)	8305-000383	8305720298150	Cloth Cotton C/W	235 g White Bleached WR 91cm.
f)	8305-000384	8305720298151	Cloth Cotton C/W	235 g D/S (OG/White) 91cm.
g)	8305-000385	8305720298152	Cloth Cotton C/W	335 g D/S (OG/White) WR 91cm.
h)	8305-000386	8305720298153	Cloth Cotton C/W	235 g OG WR 91cm.
(V. No. C)				
j)	8305-000076	8305720298094	Cloth Cotton C/W	310 g White Bleached WR 91cm.
k)	8305-000208	8305720298138	Cloth Cotton C/W	310 g D/S (OG/White) WR 91cm.
m)	8305-000210	8305720298140	Cloth Cotton C/W	310 g OG WR 91cm.

16. SUGGESTIONS FOR IMPROVEMENT

Any suggestion for improvement in this document may be forwarded to:

The Director,
Directorate of Standardisation,
Ministry of Defence,
'H' Block, Nirman Bhawan, P.O,
New Delhi-110011.

APPX 'A'

METHOD OF DETERMINATION OF SHRINKAGE OR ELONGATION

A test piece not less than 60 cm x 60 cm shall be cut (not torn) from the sample. Accurate marking of not less than 50 cm shall be made in warp and weft directions and the test piece shall be immersed in 0.5 % soap solution at room temperature for 24 hours, taken out and laid flat, be allowed to dry on a flat and smooth surface in an atmosphere of 65 ± 2 % Relative Humidity. Measurements shall be taken on the glass plate before and after the treatment and the percentage of shrinkage/elongation calculated.

METHOD OF DETERMINATION OF WATER REPELLANT FINISH CONTENT

B-1. APPARATUS

B-1.1 Soxhlet Apparatus

B-2. REAGENTS

B-2.1 Carbon tetrachloride

B-2.2 Rectified spirit

B-3. PROCEDURE

B-3.1 Four pieces of material 75 mm x 75 mm shall be cut accurately from different places from a sample of the water-repellant material and conditioned for 24 h under standard atmospheric condition. The conditioned pieces shall be weighed accurately and subjected to successive extraction in a soxhlet apparatus with (a) Carbon tetrachloride for 3 hours, (b) Rectified spirit for 2 hours, and (c) Water for 2 hours.

B-3.2 After the treatment, the material may contain pigments in the interslices of the fabric. To remove these, separate individual threads from the pieces, collect together and give light treatment with soap. Wash the threads thoroughly with water to remove last traces of soap. Dry and condition the test specimen in standard atmosphere.

NOTES-Other solvents may be used in case the water repellent material is not extracted by (Carbon tetrachloride and rectified spirit)

B-4. CALCULATIONS

$$\text{Water-repellent content, percent} = \frac{M - M1}{M1} \times 100$$

Where,

M = Initial mass in g, of the test specimens, and

M1= Mass in g of test specimens after deproofing.

APPX 'C'
 (Clause 14 (c))

CQA(GS)/US/460-BOXES FIBRE BOARD RIGID
CORRUGATED TRIPLE WALL 7 PLY

C-1. SCOPE

C-1.1 This specification covers the requirements of triple wall (7 ply) Boxes Fibre Board Rigid Corrugated of following sizes for packing of Ordnance Stores of mass upto 30 kg.

<i>S. No.</i>	<i>DS Cat Part No.</i>	<i>Designation</i>
a)	8115-NIV	Boxes, Fibre Board Rigid Corrugated. Triple Wall, 7 Ply 500 mm × 375 mm × 300 mm
b)	8115-NIV	Boxes, Fibre Board Rigid Corrugated. Triple Wall, 7 Ply 650 mm × 375 mm × 300 mm
c)	8115-NIV	Boxes, Fibre Board Rigid Corrugated. Triple Wall, 7 Ply 625 mm × 350 mm × 320 mm
d)	8115-NIV	Boxes, Fibre Board Rigid Corrugated. Triple Wall, 7 Ply 600 mm × 450 mm × 300 mm
e)	8115-NIV	Boxes, Fibre Board Rigid Corrugated. Triple Wall, 7 Ply 675 mm × 400 mm × 350 mm
f)	8115-NIV	Boxes, Fibre Board Rigid Corrugated. Triple Wall, 7 Ply 560 mm × 375 mm × 300 mm
g)	8115-NIV	Boxes, Fibre Board Rigid Corrugated. Triple Wall, 7 Ply 575 mm × 380 mm × 320 mm
h)	8115-NIV	Boxes, Fibre Board Rigid Corrugated. Triple Wall, 7 Ply 600 mm × 420 mm × 340 mm

C-1.2 This specification does not cover the requirements of Boxes, Fibre Board Rigid Corrugated for packing of armament stores (Ammunition, Explosives and Weapons).

C-2. RELATED SPECIFICATIONS

References are made in this Specification to:

S. No.	IS No. & Year	Nomenclature
a)	IS 1060 (Part 1) : 1966 Revised Amd 6 Reaffirmed 2016	Methods of Sampling and Test for Paper and Allied Products Part 1
b)	IS 2102 (Part 1) : 1993 (Third Revision) Reaffirmed 2014	General Tolerances Part 1 Tolerances for Linear and Angular Dimensions without Individual Tolerance Indications

(Concluded)

S. No.	IS No. & Year	Nomenclature
c)	IS 2500 (Part 1) : 2000/ ISO 2859-1 : 1999 (Third Revision) Amd 2 Reaffirmed 2016	Sampling Procedures for Inspection by Attributes Part 1 Sampling Schemes Indexed by Acceptable Quality Limit (AQL) for Lot-by- Lot Inspection
d)	IS 2771 (Part 1) : 1990 (Second Revision) Amd 3 Reaffirmed 2018	Corrugated Fibreboard Boxes-Specification Part 1 General Requirements
e)	IS 4006 (Part 1) : 1985 (First Revision) Reaffirmed 2018	Methods of Test for Paper and Pulp based Packaging Material Part 1
f)	IS 4006 (Part 2) : 1985 (First Revision) Reaffirmed 2018	Methods of Test for Paper and Pulp based Packaging Material Part 2
g)	IS 4267 : 1967 Reaffirmed 2016	Specification for Stands, Wash Hand Basin
h)	IS 7028 (Part 6) : 1987 (First Revision) Reaffirmed 2018	Performance Tests for Complete, Filled Transport Packages Part 6 Compression Test
j)	IS 7186 : 1973 Reaffirmed 2018	Glossary of Terms Relating to Paper and Flexible Packaging
k)	Specification No. IND/GS/1683 (a)	Polypropylene Strapping 0.55 mm thick x 12 mm wide
m)	JSS 8040-08 : 2014 (Third Revision) Amd 1	Tape Adhesive Transparent Water Proof

C-3. TERMINOLOGY

For the purpose of this specification, the definitions given in IS 4261, IS 7186 and IS 2771 (Part 1) shall apply.

C-4. STANDARD PATTERN

The standard pattern of the store held in the custody of the AHSP i.e. Controllerate of Quality Assurance (General Stores), Post Box No. 127, Kanpur shall constitute the standards as regard to any particular or properties not noted/defined in the particulars/specifications.

C-5. MATERIAL

The boxes shall be manufactured from the following materials:

- a) Corrugated Fibre Board-It shall be triple wall corrugated fibre board manufactured from well sized kraft paper of the appropriate substances to satisfy the requirements as laid down in clause **C-13**. The face of the board, forming the outer surface of the assembled box shall be rendered waterproof by using any suitable

moisture barrier material such as bitumen-laminated kraft paper or poly laminated kraft paper (Kraft Paper + Polythene film + Kraft Paper) as outer liner.

b) Adhesive-Any suitable adhesive capable of firmly adhering the various plies together shall be used. Sodium Silicate or any other highly alkaline adhesive shall not be used. The adhesive shall contain a mould inhibitor in sufficient quantity to provide adequate protection from mould growth. The following mould inhibitors and their percentages by mass of the fibre board are recommended.

1)	Sodium Salycil Anilide(SSA)	-	0.1%
2)	Sodium Pentachlorophenate (Sentobrite)	-	0.5%
3)	TBZ (Merasol TK-100)	-	0.1%
4)	Copper Oxyne	-	0.5%

c) Staples-MS galvanised (Zinc coated 5 micron) 0.625 mm thick × 13 mm crown × 3 mm wide shall be used for stapling the manufacturing joints.

C-6. PROCESSING

C-6.1 Boxes upto 300 mm in length shall be manufactured from one piece of fibre board; whereas the boxes more than 300 mm in length shall be manufactured from not more than two pieces of fibre boards.

C-6.2 The blank shall be properly creased and slotted so that when the box is assembled, there shall be no holes at the corners. The flaps along the longer edge shall form the outer flaps and those along the shorter edge shall form the inner flaps. All flaps shall be of equal length and the outer flaps shall meet when closed.

C-6.3 The body joint shall be lapped on the outside and the lapping shall not be less than 50 mm. The lapped joint shall be secured by two rows of staples, spaced not more than 30 mm apart. The body joint shall be stapled at an angle of 45 degree. The distance between the outer staple and the end of the joint shall not exceed 10 mm. All staples shall completely pass through all the seven (7) plies of the board, shall be well clinched and shall not show cracks or other indications of weakness.

C-6.4 All the corners and the edges of the box shall be reinforced on the outside with 50 mm wide cloth adhesive tape (best trade quality to be approved by the Quality Assurance officer) which shall than be varnished to render it waterproof.

C-7. DIMENSIONS AND TOLERANCES

C-7.1 The internal dimensions of the assemble box shall be “as ordered” in mm. These shall always be stated in the sequence of Length × Width × Height.

C-7.2 A tolerance of ±5 mm shall be permissible on the ordered individual dimensions.

C-8. WORKMANSHIP AND FINISH

The outer surface of the assemble box shall be free from stains and spots of bitumen compositions or any other surface defects such as wrinkles, delamination, deformation or damage. The general workmanship and finish shall be reasonably good.

C-9. PRE-INSPECTION BY PRODUCER

C-9.1 Advance Samples

If required, the manufacturer's have to submit five advance samples of acceptable quality fabricated from specified material for clearance by ASHP prior to commencement of bulk production.

C-9.2 Basic Materials

Manufacturers shall tender the basic materials for approval pf the Quality Assurance Officer prior to fabrication of the store. The entire quantity of the store shall be fabricated only from accepted/approved materials.

C-9.3 Manufacturers must satisfy themselves first that the stores manufactured are in accordance with the contract and fully conform to the specification, by carrying out thorough pre-inspection of each lot before actually tendering the same for inspection to the Quality Assurance Officer nominated under the terms of contract.

C-9.4 A declaration by the contractor that necessary pre-inspection/tests have been carried out the on the stores tendered and the same are fit for inspection on the test shall be tendered alongwith the challan. The declaration shall include the method followed in pre-inspection showing features checked/tested and the challan will be accompanied by the test reports.

C-10. QUALITY ASSURANCE

C-10.1 Examination of the samples taken from any portion of the consignment or during surveillance inspections, shall conform to the requirement when tested in accordance with the methods mentioned against each in the specification.

C-10.2 Control samples shall be forwarded to the controller, CQA(GS), Kanpur from accepted bulk supplies to check/monitor the quality whenever required.

C-11. SAMPLING

C-11.1 Formation of Lot

C-11.1.1 The delivery shall be visually inspected by the Quality Assurance Officer at the spot in the first instance to ascertain its homogeneity in respect of nature, size, shape, source and year of manufacture. If it is homogeneous, the delivery shall be treated as one lot. If not, it shall be segregated by the supplier into separate group so that each group which is homogeneous within itself forms a lot.

C-11.1.2 The suppliers shall arrange the units of the homogeneous lot in such a way that all units are easily accessible to the Quality Assurance Officer to enable him to draw samples from any portion of the homogenous lot.

C-11.2 Sampling Procedure

Sampling of stores shall be done adopting appropriate sampling method as per IS 4905 so that samples drawn as per Table I and II given for assessing various quality requirements are truly representative of the lot.

C-11.3 Scale of Sampling

The number of sample units to be drawn for assessing the quality of the store characteristic wise, should be in accordance with the Table I for dimensional/non-destructive/visual inspection and Table II for detailed laboratory testing.

**Table I Sampling Plan for Visual Inspection (Based On AQL 2.5%)
General Inspection Level II Normal**

Lot Size	Sample Size (n)	Acceptance Number (Ac)
2 to 8	2	0
9 to 15	3	0
16 to 25	5	0
26 to 50	8	0
51 to 90	13	1
91 to 150	20	1
151 to 280	32	2
281 to 500	50	3
501 to 1200	80	5
1201 to 3200	125	7
3201 to 10000	200	10
10001 to 35000	315	14

NOTES

1. The rejection number (R) will always be one more than the acceptance number.
2. When the sample size equals or exceeds lot size, do 100% inspection/testing with zero acceptance number.
3. Sample size pertains to 2.5% AQL or around.

SOURCE -IS 2500 (Part 1) Sampling Inspection Tables.

**Table II Sampling Plan for Laboratory Tests
Based on AQL 4%, Inspection Level S-3**

Lot Size	Sample Size (n)	Acceptance Number (Ac)
Up to 50	3	0
51 to 150	5	0

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151 to 500	8	1
501 to 3200	13	1
3201 to 35000	20	2

NOTES

1. The rejection number (R) will always be one more than the acceptance number.
2. When the sample size equals or exceeds lot size, do 100% inspection/testing with zero acceptance number.
3. Inspection level S-3 for chemical & physical test (individual samples to be tested).
4. Sample size pertains to 4% AQL or around.

SOURCE-IS 2500 (Part 1) Sampling Inspection Tables.

C-12. CRITERIA OF CONFORMITY

C-12.1 All the sample units as specified in Table I and II are required to be tested/inspected irrespective of the rejection number (= Ac +1) being achieved earlier.

C-12.2 The lot shall be considered conforming to the specified quality if the number of defective units observed in the sample is not more than the respective acceptance number of each class of defects.

C-12.3 When the sample size equals or exceeds lot size, do 100% Quality Assurance.

C-12.4 The number of sample units to be sampled for laboratory testing should be a multiple of the number of characteristics/ tests which cannot be carried out simultaneously on the same sample units.

C-12.5 Sampling Inspection

The Quality Assurance Officer shall draw samples as per Table I for dimensional/non-destructive/visual inspection to assess the quality of the lot. If the quality of the lot indicates conformity to the standard as laid down in Table I, sampling for laboratory testing will be done, otherwise the lot shall be straightway rejected.

C-12.6 Sampling for Laboratory Testing

If the lot is considered conforming to the quality standards as specified in Table I sampling for laboratory testing shall be carried out as per Table II and the samples shall be subjected to the laboratory testing.

C-12.7 Bulk inspection

If the laboratory test report indicates that the lot does not conform to the standards as specified in Table II, the whole lot shall be rejected, otherwise that lot shall be inspected

hundred percent thoroughly for workmanship, finish and other critical/major and visual defects. All items found defective shall be rejected.

C-13. TEST AND TEST METHOD

C-13.1 Types of Corrugation (Flutes)

Combination of type A (broad) and type B flute (Narrow).

C-13.2 Arrangement of Flutes

The fluting shall be of a combination of type B and A, The former constituting the outer walls and the later the core of the board.

C-13.3 Thickness of Board

When determined by the method given in clause 7.2 of IS 1060 (Part 1), the thickness of the board shall be not less than 8.0 mm \pm 0.5 mm.

C-13.4 Substance

When determined by the method given in the clause 6.2 of IS 1060 (Part 1), the substance of the board shall be not less than 1600 g/sq.m.

C-13.5 Bursting Strength

When determined by the method given in the clause 12.5 of IS 1060 (Part 1), the average bursting strength of the board shall not be less than 24 kg per Sq. cm. The average shall be based on at least five determinations on each face and no individual reading shall be less than 21 kg per Sq. cm.

C-13.6 Puncture Resistance

When determined by the method given in the clause 8 of IS 4006 (Part 2), the average puncture resistance of the board shall not be less than 600 Beach units. The average shall be based on at least five determinations on each face and no individual reading shall be less than 550 Beach units.

C-13.7 Water Absorption (30 minutes Cobb Test)

The face of the board, forming the outer surface of the assembled box, shall be subjected to water absorption test (Cobb Test) for 30 min, as per method given in clause 6 of IS 4006 (Part 1). At the end of 30 min, the increase in mass of board due to water absorption shall not be more than 75 g/sq. M

C-13.8 Acidity and Alkalinity

When determined by the method given in the clause 10 of IS 1060 (Part 1), the hydrogen ion concentration (pH value) of the water extract shall be not less than 5.5 and more than 8.0.

C-13.9 Printability of Outer Surface

The condition of the outer surface of the assembled box shall be such as to allow marking, stamping or stencilling of the box with the type of ink normally used for the purpose. The ink should not smudge or discolour.

C-14. PERFORMANCE REQUIREMENT OF BOXES

C-14.1 Compression Strength

The average compression strength of the empty box in the top to bottom direction, when determined by the method given in IS 7028 (Part 6), shall be not less than 750 kg at a deflection of not more than 15 mm. The average shall be based on at least five determinations and no individual reading shall be less than 650 kg.

C-14.2 Flap Bend Test

The flap shall not crack at the creases when bent through 90° inside and 90° outside.

C-14.3 Strength Joints Test

The strength of the manufactured joint shall be assessed by pulling apart the joints by hand until the Joint ruptures. Failure should occur in Board and not in fasteners.

C-15. MARKING

C-15.1 Firm's Marking

Each box shall be legibly and indelibly marked, on the outer surface of one of the inner flaps, with the following particulars.

- a) Supplier's name or initials or recognised trade mark, if any.
- b) Size of box.
- c) Month and year of manufacture
- d) Any other information as required by the purchaser.

C-15.2 Acceptance Mark by the Quantity Assurance Officer

Each accepted box shall be legibly and indelibly marked by the Quality Assurance Officer. Adjacent to manufacturer's marking using a stamp of size 19 mm.

C-16. PACKAGING

C-16.1 Material

<i>S. No.</i>	<i>Material</i>	<i>Specification</i>
a)	H2/8304-000 063 Cloth Hessian Medium	IS 2818
b)	H2/4020-000 195 Twin Jute	IS 1912
c)	Polythene Film 0.05 mm thick	JSS 9330-02 and CIGS/SS/313(a)

C-16.2 Method

The accepted boxes shall be packed in bundles and the gross weight of a pack shall not exceed 30 kg. Requisite number of boxes in collapsed condition shall be completely covered with at least one layer of waste cardboard or single face corrugated board securely tied with Twine Jute to from a pack. The pack shall be completely wrapped in polythene film 0.05 mm thick and then sewn in single layer of Cloth Hessian Medium to from a bundle.

NOTE-The supplier will be responsible to ensure that the packing offered is worthy of withstanding the rigours of Rail/Road journey and will arrange for free replacement of the damaged boxes enroute.

C-16.3 Marking of the Packages

The bundles shall be legibly and indelibly marked as under.

- a) DS Cat Part No. and designation of the store.
- b) Quantity packed preceded by the abbreviation 'Qty'.
- c) Name and address of the consignee.
- d) Mass of package in Kg'.
- e) Number of individual packages and the total number of packages in the consignment eg. 1 of 4, 2 of 4, 3 of 4 and 4 of 4 when the consignment consists of four packages.
- f) Consigner's name and address.
- g) Month and year of packing.
- h) Contract No. And date.
- j) I/Note No. & Date.

C-16.4 Assembly closing and sealing of the box

C-16.4.1 The box shall be assembled, closed and sealed as follows:

C-16.4.2 Dextrine or any suitable adhesive (Sodium Silicate or any other highly alkaline adhesive shall not be used) shall be applied over the outer surface of the inner flaps and inner surface of the outer flaps and allowed to dry reasonably and then pressed against each other to attain max bonding strength. This will form bottom surface of the assembled box.

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C-16.4.3 The store duly packed as per their respective specifications is to be placed suitably inside the box, the procedure at 16.4.2 above shall then be followed to close the top surface of the box also.

C-16.4.4 Tape adhesive, transparent water proof 50 mm x 60 m (8040-000 048) conforming to JSS 8040-08 and CIGS/SS/126(a) shall be applied over the entire length of the seams at the top, bottom ends and overlapped joints. The taps shall be extended 50mm over end and corner of the box.

C-16.4.5 The boxes shall be strapped at three places (two at about 100mm from the ends and one in the middle) along the length with polypropylene strapping 0.55 mm thick x 12 mm wide conforming to specification number IND/GS/16839a) with the help of tensioner and then sealed with matching galvanised mild steel seals(to be used with strapping). The seal of the correct size should be properly pressed with sealer to avoid loosening of the strapping during transit.

C-17. WARRANTY

Stores supplied against this specification shall be deemed to bear the warranty of the contractor against defective design, material, workmanship and performance for period of 12/15 months from the date of receipt of store at consignee end. If during the specified period, the store supplied are found to be defective, the same shall be replaced immediately with serviceable store by the contractor at site free of any charge as may be decided by the purchasing officer, on recommendation of consignee/Quality Assurance Authority.

C-18. SUGGESTIONS FOR IMPROVEMENT

Any suggestion for improvement of this document may be forwarded to:

The Controller,
Controllerate of Quality Assurance (General Stores),
Ministry of Defence,
Government of India,
Ashok Path, Kanpur-208004.