

SECRET

12

ADRDE/SPECN/1982/7(C)

SEPT 1985

RAKSHA MANTRALAYA

SPECIFICATION
FOR
FABRIC NYLON 136 GM UNDYED (U/D)

ISSUED BY
DIRECTOR
AERIAL DELIVERY RESEARCH & DEVELOPMENT ESTABLISHMENT
MINISTRY OF DEFENCE
POST BOX NO.51, STATION ROAD,
AGRA CANTT-282001

SECRET

SECRET

- 1 2 1 -

AMEND/111111/1902/7 (C)

SEPTEMBER 1985

RECORD OF AMENDMENTS

Amendment No.	Sub-heading to which amend- ment pertains	Authority	Incorporated by Memo & Bank in block letters	Initials
------------------	---	-----------	--	----------

Contd 3/-

SECRET

CONTENTS

	<u>PAGE No.</u>
0. FOREWORD	4
1. SCOPE	5
2. RELATED SPECIFICATIONS	5
3. STANDARD PATTERN	5
4. MATERIAL	6
5. MANUFACTURE	6
6. DIMENSIONS, MASS AND OTHER DETAILS	6
7. WORKMANSHIP AND FINISH	6
8. MARKING	6
9. QUALITY	6
10. PRE-INSPECTION OF STORES/CONSIGNMENT	6
11. SAMPLING	7
12. CRITERIA FOR CONFORMITY	8
13. INSPECTION	8
14. WARRANTY	8
15. PACKAGING	8
16. DEFENCE STORES CATALOGUE NUMBER	9
17. SUGGESTIONS FOR IMPROVEMENT	9
18. APPENDIX 'A'	10
19. APPENDIX 'B'	11
20. APPENDIX 'C'	12

SEPTEMBER 1905

0. FORWARD

- 0.1 This specification has been prepared by a special committee at ADRDE and approved by Director, ADRDE, AGRA CANTT.
- 0.2 This specification is sealed by Chief Resident Engineer (Air Armament), Dte of Aero (R&D), Min of Defence, Ammanat Post, P.O.
- 0.3 This specification would be used to guide design, manufacture, inspection and procurement of the item.
- 0.4 In case of any discrepancy between this specification and any sample or pattern, this specification will be taken as correct.
- 0.5 Enquiries regarding this specification in relation to any contractual conditions should be addressed to the Inspection Authority named in the tender or contract. Other enquiries will be referred to the issuing authority i.e. Director, ADRDE, Agra Cantt.
- 0.6 Copies of this specification can be obtained on payment from:

The Director
A.D.A.D.E., Post Box No. 51,
Station Road,
AGRA CANTT-202001

or

appointed inspection authority of Ministry of Defence.

- 0.7 Indian standard specifications are issued by the Indian Standard Institution and are obtainable on payment from the sales section, Indian Standards Institution, Mansak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi-110 002 or their regional Offices.

Contd. . . . 5/-

SECRET

ADIDAS/STITCH/1902/1(C)

SEPTEMBER 1905

1. SCOPE

1.1 This specification covers the requirements of fabric nylon used in the manufacture of parachutes.

2. RELATED SPECIFICATIONS

2.1 Reference is made in this specification to :

- (i) IS : 1954 - Methods for determination of length and width of fabrics
- (ii) IS : 1963 - Methods for determination of threads per unit length in woven fabrics.
- (iii) IS : 1227 - Method for determination of twist in continuous filament rayon yarn and acetate yarn.
- (iv) IS : 1315 - Method for determination of linear density of yarns spun on cotton system.
- (v) IS : 1964 - Methods for determination of weight/Sq meter and weight/ linear meter of fabrics.
- (vi) IS : 7702 - Methods for determination of thickness of woven and knitted fabrics.
- (vii) IS : 1969 - Method for determination of breaking load and elongation at break of woven textile fabrics.
- (viii) IS : 6409 - Method for determination of tear strength of woven textile fabrics by EL mendorf tester.
- (ix) IS : 1966 - Methods for determination of bursting strength and bursting distension of fabrics- Diaphragm method.
- (x) IS : 4905 - Methods for random sampling.

2.2 All specifications referred to in this specification for any tender or contract shall mean the current edition on the date of such tender or contract.

3. STANDARD PATTERN

3.1 The standard pattern, held by the Director, ADIDE, Agaa shall constitute the standard as regards any particulars or properties not noted/ defined in this specification.

Contd . . . 6/-

SECRET

SEPTEMBER 1965

4. MATERIAL

4.1 The basic material of yarn shall be nylon type '6' or '66'. The yarn for both warp and weft shall be bright multifilament, of high tenacity.

5. MANUFACTURE

5.1 Fabric shall be woven as per the weave pattern given in the enclosed Appendix 'A'.

5.2 Nylon 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.

5.3 The fabric shall not be more than one year old from the date of manufacture to the date of delivery. A certificate to this effect shall be provided by the manufacturer/contractor at the time of delivery.

6. DIMENSION, MASS & OTHER DETAILS

6.1 The fabric shall conform to the essential particulars given in Appendix 'B'.

7. WORKMANSHIP AND FINISH

7.1 The fabric shall be free from weaving flaws, stains, processing defects and other defects listed in inspection process scheduled (IPS) on parachute fabric no. ARDE/IPS/014.

7.2 The fabric shall be given a preliminary scour sufficient to remove sizing and other contamination, at a temperature which will not cause fixation of the same into the fabric or result in permanent setting of the fabric. The fabric shall not be calendered and be free from finishing defects.

8. MARKING

8.1 Each piece, prior to being offered for inspection shall legibly be marked by the supplier with his name, initials or recognised trade mark, the year of manufacture, brief nomenclature, DS cat. number of the store and length of the piece alongwith the number of flag contained in the piece.

9. QUALITY

9.1 Examination of sample taken from any portion of consignment shall show that the fabric conforms to the requirements of clause 6 above.

10. PRE-INSPECTION OF STORES/CONSIGNMENT

10.1 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 storing the same for inspection to the inspecting officer nominated under terms of the contract. A pre-inspection declaration by the contractor that necessary pre-inspection has been carried out on the stores tendered will be submitted alongwith 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,

10.2 If the inspection officer finds that pre-inspection of the consignment as required above has not been carried out, the consignment is liable to be rejected.

11. SAMPLING

11.1 The manufacturer/supplier shall tender the store duly numbered serially and arranged in such a way that all the units are easily accessible to the inspector.

11.2 The inspector shall draw samples from the bulk lot at random using the technique of simple random sampling as given in IS : 4905.

11.3 The samples shall be drawn lotwise for carrying out tests specified in this standard. Unless otherwise agreed to between the buyer and the seller, the lot shall be defined under respective sampling plans as detailed below.

11.4 Unless otherwise specified the fabric shall be in continuous lengths without joints of not less than 40 m. Shorter cuts are allowed in accordance with the following schedule:

75%	of the total supply in length of 40 m or above		
15%	"	-do-	20 m or above
10%	"	-do-	10 m or above

11.5 SAMPLING PLAN 'A' FOR AIR POROSITY

11.5.1 Lot - The total length of the fabric manufactured from same type of yarn and of same weave and finish delivered to a buyer against one despatch note shall constitute a lot.

11.5.2 Each roll for the lot shall be tested for airporosity at intervals of 5 m. All the porosity readings shall be rounded off in accordance with IS : 2-1960.

11.6 SAMPLING PLAN 'B'

11.6.1 Lot : All the rolls of fabric manufactured from same type of yarn and same weave and finish delivered to a buyer against one despatch note shall constitute a lot.

11.6.2 One sample of one meter in length and of full width shall be drawn from each roll for carrying out the following tests :

- (a) Mass
- (b) Thickness
- (c) Breaking load
- (d) No of threads per Cm (Warp & Weft)
- (e) Linear density of yarn in tex
- (f) Bursting strength.

11.7 SAMPLING PLAN 'C'

11.7.1 Lot : The quantity of fabric manufactured from the same type of yarn and of same weave and finish delivered to a buyer against one despatch note shall constitute a lot.

will have the test certificate attached to the challan/declaration,

10.2 If the inspection officer finds that pre-inspection of the consignment as required above has not been carried out, the consignment is liable to be rejected.

11. SAMPLING

11.1 The manufacturer/supplier shall tender the store duly numbered serially and arranged in such a way that all the units are easily accessible to the inspector.

11.2 The inspector shall draw samples from the bulk lot at random using the technique of simple random sampling as given in IS : 4905.

11.3 The samples shall be drawn lotwise for carrying out tests specified in this standard. Unless otherwise agreed to between the buyer and the seller, the lot shall be defined under respective sampling plans as detailed below.

11.4 Unless otherwise specified the fabric shall be in continuous lengths without joints of not less than 40 m. Shorter cuts are allowed in accordance with the following schedule:

75%	of the total supply in length of 40 m or above
15%	" -do- 20 m or above
10%	" -do- 10 m or above

11.5 SAMPLING PLAN 'A' FOR AIR POROSITY

11.5.1 Lot - The total length of the fabric manufactured from same type of yarn and of same weave and finish delivered to a buyer against one despatch note shall constitute a lot.

11.5.2 Each roll for the lot shall be tested for airporosity at intervals of 5 m. All the porosity readings shall be rounded off in accordance with IS : 2-1960.

11.6 SAMPLING PLAN 'B'

11.6.1 Lot : All the rolls of fabric manufactured from same type of yarn and same weave and finish delivered to a buyer against one despatch note shall constitute a lot.

11.6.2 One sample of one meter in length and of full width shall be drawn from each roll for carrying out the following tests :

- (a) Mass
- (b) Thickness
- (c) Breaking load
- (d) No of threads per Cm (Warp & Weft)
- (e) Linear density of yarn in tex
- (f) Tensile strength.

11.7 SAMPLING PLAN 'C'

11.7.1 Lot : The quantity of fabric manufactured from the same type of yarn and of same weave and finish delivered to a buyer against one despatch note shall constitute a lot.

SEPTEMBER 1905 -

- 11.7.2 One sample of one metre in length and of full width shall be selected from each lot for carrying out the following tests.
- (a) Weave
(b) Tenacity of yarn.
- 11.8 The finished fabric shall contain no sizing or weighting materials of any description. The amount of matter extractable by water when determined by the method described in appendix 'C' shall not exceed 0.5% by weight. RH value shall be between 5.5 to 8.5

12. CRITERIA FOR CONFORMITY

- 12.1 All the sample units, drawn as per clause 11.2 above when tested/examined if meet the requirements of the specification, the lot shall be considered to be in conformity with the specification requirements otherwise not.

13. INSPECTION

- 13.1 On examination, material found not conforming to the specification requirements shall be rejected.

14. WARRANTY

- 14.1 The store supplied shall be deemed to bear a warranty of the contractor against defective material, workmanship and performance for a period of six months from the date of receipt of the stores at consignee's depot. If during this period the stores supplied are found by the consignee to be defective, the same shall be replaced immediately with serviceable stores by the contractor at site free of any charge or cost.

15. PACKAGING

- 15.1 Each roll/piece shall be wrapped with polythene 150 gauge and secured at two ends by line cotton (0.32 Cm) to form a unit pack. 7 such unit packs shall then be wrapped with paper kraft wrapping and placed in case wood packing provided with liners water proof bag. The empty spaces if any shall be filled in with cushioning material to prevent any movement of the contents inside the cases wood packing and the top lid of the cases shall be nailed in. Care shall be exercised that the nails do not pierce the contents inside the cases wood packing. The cases wood packing shall be made secure by fastening with metal hoops or metal wire.
- 15.2 Packing materials used should be of best trade quality & previously approved by the inspecting officer.
- 15.3 If the store is intended for factory use the gross mass of packages shall not exceed 250 Kg.
- 15.4 For Director Ordnance services (DOS) packing, the gross mass of packages shall not exceed 40 Kg.
- 15.5 If ordered for delivery to a local inspection depot the store shall be delivered loose in firms returnable packs. After inspection the

SECRET

-:9 :-

ADRDE/SPEEN/1902/7 (C)

SEPTEMBER 1985

accepted supplies shall be packed by the inspection depot concerned as indicated in para 15.1 above.

15.6 Before despatch, each case wood packing (CWP) shall be legibly and indelibly marked showing the following details.

- (a) Nomenclature and DS category number of the store
- (b) Quantity packed in each CWP
- (c) Serial No. of the CWP
- (d) Month and year of packing
- (e) Name and trade mark of the manufacturer
- (f) Gross mass of each CWP in Kg.
- (g) Name and address of the consignee
- (h) Inspection Note number and date.

16. DEFENCE STORES CATALOGUE NUMBER

16.1 Not allotted yet

17. SUGGESTIONS FOR IMPROVEMENT

17.1 Any suggestion for improvement of this document may be forwarded to the Director, ADR & DE, Agra Cantt, 282001.

Dated: 30 Sept 92

Certified

(Y. Suresh)

हवाई विमान उड़ान के लिए विलक्षण संस्थान
Aerial Transport & Dev. Establishment
आगरा कैंप/AGRA CANTT 282001

for Director

37 year

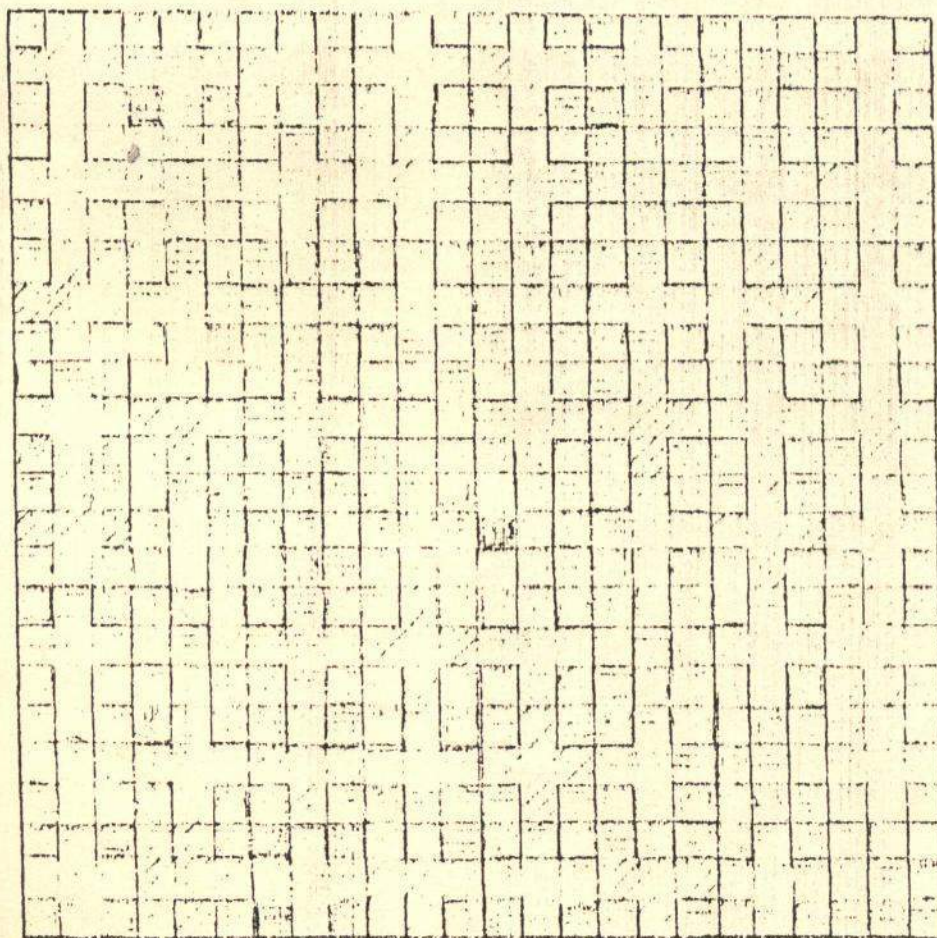
SECRET

VII THE PATTERN OF TACTIC TIPS ON 170 gm

FOR R.T.U PARACHUTE

SECRET

DESIGN REPEATING ON 24 ENDS & 24 PICS



(Fig 4.1)

SECRET

SECRET

APPENDIX 13 to

Specification No. ADPDL/SPR/1982/1(C)

SEPTEMBER 1985

1	2	3	4	5	6	7	8	9	10			11	12	13	14
									N	N	N				
1	2	3	4	5	6	7	8	9	(Min)	(Min)	(Min)	(Min)	(Min)	(Min)	(Min)

40 a 110+1 0.36 26 26 23 23 136
 40 b 110+1 0.36 26 26 23 23 136
 40 c 110+1 0.36 26 26 23 23 136
 40 d 110+1 0.36 26 26 23 23 136

275.0 1570 1570 100 100 295
 to 395.0

at the discretion of manufacturer.
 or at the discretion of manufacturer.
 or at the discretion of manufacturer.

as per order
 or as per order
 or as per order
 or as per order

SECRET

SECRET

-1121-

APPENDIX 'C' to
Specification No. ADDE/SPEC/1982/(C)
SEPTEMBER 1965

METHOD FOR DETERMINATION OF EXTRACTABLE MATTER

A quantity of 5 to 20 Gms of the fabric is cut into pieces about 6 cm Square and kept in a clean chemically resistant glass flask fitted with a ground-glass joint for reflux condenser. 20 times its weight of distilled water is added to the sample and the liquor is boiled gently for one hour. The flask is removed stoppered and allowed to cool.

The aqueous extract is then evaporated to dryness in tared vessels. The residue is then dried to constant weight at 105° - 110° C and residue percentage by weight is calculated in gm

SECRET