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GOVERNMENT OF INDIA  
MINISTRY OF DEFENCE



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*Prasanta K. Mallik*  
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S P E C I F I C A T I O N  
FOR

(NIV) CORD, NYLON, BRAIDED, CORELESS, RED, 1176 N (TYPE-1)  
(NIV) CORD, NYLON, BRAIDED, U/D, 1960 N (TYPE-II)

FOR AERONAUTICAL PURPOSES

ISSUED BY

HAWAI VITRAN ANUSANDHAN AVAM VIKAS SANSTHAPAN  
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AGRA CANTT-282001

*Prasanta K. Mallik*

(ii)

RECORD OF AMENDMENTS

Sub heading to which amendment pertains	Authority	Incorporated by (Name and Rank in block letters)	Initials
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- 0.1 **FOREWORD** This specification has been prepared by a special committee of ADRDE and approved by DIRECTOR ADRDE, Agra Cantt.
- 0.2 This specification would be used for manufacture, inspection and procurement of Cord, Nylon, Braided, Coreless, Red, 1176 N (Type - 1) and Cord, Nylon, Braided, 1960 N (Type - II) for Aeronautical purpose.
- 0.3 In case of any discrepancy between this specification and any sample or pattern, this specification will be taken as correct.
- 0.4 Enquiries regarding this specification, in relation to any contractual conditions should be addressed to the Inspecting Authority named in the tender or contract. Other enquiries will be referred to ADRDE, Agra Cantt.
- 0.5 Copies of this specification can be obtained on payment from :-

"Aerial Delivery Research & Development Estt.  
Post Box No. 51, Station Road, AGRA CANTT - 282001"  
or  
The concerned inspecting authority.

## 1. SCOPE

- 1.1 This specification covers the requirements of under-mentioned two types of cord :-

Type I - Cord, Nylon, Braided, Coreless, Red, 1176 N.

Type II - Cord, Nylon, Braided, U/D, 1960 N.

## 2. RELATED SPECIFICATIONS

- 2.1 Reference is made in this specification to :-

- |                      |  |
|----------------------|--|
| i) IS : 2            | Rules for rounding off numerical values.   |
| ii) IS : 4910 Part I | Methods of Test for tyre cords and tyre cord fabrics made from man-made fibre-Pt I Linear density. |
| iii) IS : 4437       | Braided Nylon Cords for Personnel Parachute.   |

APPENDIX 'A'	Method for determination of plaits per decimetre.
APPENDIX 'B'	Method for determination of weight per 100 metre.
APPENDIX 'C'	Method for determination of Breaking load and elongation of Cord.
APPENDIX 'D'	Method for determination of Sheath slackness and core looping tendency.
iv) IS : 1390	Methods for determination of pH value of Aqueous Extracts of Textile materials (Cold method).
v) IS : 2454	Methods for determination of colour fastness of textile materials to artificial light (Xenon lamp).
vi) IS : 687	Colour fastness to washing : Test-1
vii) IS : 4905	Methods for random sampling.

- 2.2 All the specifications/drawings referred to in this specification for any tender or contract shall mean the edition current on the date of such tender or contract.
- 2.3 Indian Standard specifications are issued by the Bureau of Indian Standard and are obtainable on payment from the Sales Section, Bureau of Indian Standard, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi - 110002 or their regional officers.

### 3. MATERIALS

- 3.1 The basic materials of yarn used in the manufacture of the Cords, shall be of bright, multifilament, high tenacity nylon type, 66 or 6.

### 4. MANUFACTURE

- 4.1 The yarn shall first be suitably twisted and plied to the requirement, given in clause 5 below, under uniform tension. The braiding machine shall be so adjusted that it gives a firm and tight braiding without putting any non-uniform and undue tension on the yarn.

### 5. DIMENSIONS AND OTHER DETAILS

- 5.1 The cords shall conform to the essential particulars given in the table under Appendix 'A'.

5.2 The cords shall not be more than one year old from the date of manufacture to the date of delivery.

6. **WORKMANSHIP AND FINISH**

6.1 The cord shall be free from manufacturing flaws. The core and braiding ends shall be free from knots, slubs and stains. There shall be no broken core threads through out the length of cord for type II, the finished cord shall be free from slackness of sheath, and tendency for core threads to penetrate the sheath when tested in accordance with the method described in Appendix 'D' to IS : 4437.

6.2 The cords shall have uniform diameter with round cross section and shall be smooth to handle. These shall be free from all manufacturing flaws.

7. **MARKING**

7.1 Each hank/ball shall be tied with a cardboard label 75mm x 45mm which shall be marked with the contractor's name, trade mark, date of manufacture, length of the hank/ball, D.S. Cat. No. and nomenclature of store.

8. **QUALITY**

8.1 Any portion of the samples drawn from a consignment, on examinations, shall show its conformity to the particulars furnished in Table under Appendix 'A' in addition to the following, when tested in accordance with the standard methods.

<u>Test</u>	<u>Requirement</u>
i) pH (by cold method)	6 - 8.5
ii) Colour Fastness to daylight	Rating - 5
iii) Colour fastness to washing	Rating 4 or better
iv) Slackness of sheath	3mm (Max) displacement of the mark
v) Core looping tendency	No sign of penetration of sheath by the core thread.

9. **PRE-INSPECTION OF STORES/CONSIGNMENT**

9.1 Manufactures/contractors must satisfy themselves that the stores are in accordance with the terms of the contract and fully conform to the required specification

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by carrying out thorough pre-inspection of each lot before actually tendering the same for inspection to the Inspecting Officer nominated under the terms of the contract. A 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.

- 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

- 10.1 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.

- 10.2 For carrying out full laboratory tests, the hanks/balls selected as in column .2 of the table given below shall constitute the test sample.

- 10.2.1 The Inspector shall draw samples for full tests from the bulk lot at random using the technique of simple random sampling as given in IS : 4905.

- 10.2.2 The length of sample for subjecting to full tests shall be 5 m.

- 10.3 The remaining hanks/balls of the lot shall be subjected to breaking load test only.

- 10.3.1 The length of sample for breaking load test shall be 3 m.

10.3.2

#### TABLE

##### LOT SIZE

No. of Units (In hanks/rolls)	Sample size for full tests
Up to 25	5 or lot size whichever is less.
26 to 50	8
51 to 90	13
91 to 150	20
151 to 280	32
281 to 500	50
501 to 1200	80
1201 and above	125

- 10.4 The hanks shall be supplied in continuous length of 500 metre or more. However, shorter lengths of the hanks as given below may be accepted.

15 % of the lot shall be of length 300 m and above

10 % of the lot shall be of length 200 m and above

11. **CRITERIA FOR CONFORMITY**

- 11.1 All the sample units drawn as per cl.10 shall be tested/ examined to the relevant specification requirement. If all the sample units are found to conform to the specified particulars as given in the specification, the supply shall be considered to be in conformity, otherwise, not.

12. **INSPECTION**

- 12.1 If on examination, material from any portion of a consignment is found not conforming fully to the specification, the whole consignment is liable to be rejected.
- 12.2 If on examination of 20% of any delivery, 20% of those examined are found not conforming to this specification in any respect, then the whole consignment may be rejected.
- 12.3 All hanks/balls not fully in accordance with this specification shall be rejected.

13. **WARRANTY**

- 13.1 The store supplied against the order shall be deemed to bear a warranty of the contractor against defective material, workmanship and performance for a period of 12 months from the date of receipt of stores at consignee's Depot. If during this period the store supplied is found by the consignee to be defective the same shall be replaced immediately with store as per this specification by the contractor at site free of any charge or cost.

14. **PACKING**

- 14.1 Cords shall be supplied in hanks of continuous length without joints, of 500 m or as required by the procuring authority. Each hank shall be packed in a polythene bag (150 gauge film) to form a unit pack. The appropriate number of unit packs shall be properly arranged in case wood packing (CWP) provided with liners waterproof. The empty space, if any, shall be filled-in with cushioning materials to prevent any movement of the contents inside the case wood packing, and top lid of the case shall be nailed carefully so that the nails do not pierce into the content



of the cases. The gross mass of the case shall not exceed 40 Kg. (Packing materials used should be of the best trade quality and previously approved by the inspecting officer).

- 14.2 If ordered for delivery to a local Inspection Depot, the Cords shall be delivered loose in firm's returnable packs. After inspection, the accepted supplies shall be packed by Inspection Depot authorities as indicated in para 14.1 above.
- 14.3 Before despatch each CWP shall legibly and indelibly be marked showing the following details :-
- (a) Nomenclature and Cat No. of the store
  - (b) Quantity packed in each CWP
  - (c) Serial Number of CWP
  - (d) Month and year of packing
  - (e) Name and trade mark of the manufacturer
  - (f) Gross mass of CWP in Kg.
  - (g) Name and address of consignee
  - (h) Inspection Note No. and date

15. **DEFENCE STORES CATALOGUE NO.**

Not yet allotted

16. **SUGGESTIONS FOR IMPROVEMENT**

- 16.1 Any suggestion for the improvement of this document shall be forwarded to the Director, Aerial Delivery Research & Development Establishment, Post Box No. 51, Station Road, Agra Cantt - 282001.

APPROVED



DIRECTOR

(X.N. Krishnamoorthy)

APPENDIX 'A'

PARTICULARS OF CORD NYLON BRAIDED, CORELESS, RED 1176 N (TYPE I)  
 AND CORD, NYLON, BRAIDED, U/D, 1960 N (TYPE II)

Mass per 100m, 'g' Max.	Breaking Load 'N' Min.	Elongation at break, & Min.	CONSTRUCTIONAL PARTICULARS					
			Sheath				Core	
			No. of spindles	No. of ends	Linear density of Yarn Tex.	Plaits per dm	No. of ends	Linear densit of Yar Tex.
370	1176	25	16	16	187	50	-	-
700	1960	25	16	32	140	50	3	140x2

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