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Provisional

Specification No. CI/DS/16 (a)

SCOPE

1 This specification covers the requirements of Cord, Elastic Shock Absorber of high breaking ~~strength~~ load and 10 mm diameter size.

GENERAL

2 Cord, Elastic, Shock Absorber, described in this specification, is required for absorbing shock developed on lowering the Personal Equipment Bayor the Weapons Case by the Paratrooper prior to landing.

MATERIAL

3 The Cord, Elastic, Shock Absorber shall be made of multiple straight rubber threads of round or square cross-section, all of one size, and tightly encased in two layers of cotton braid as specified.

4 The rubber threads shall be made from first grade natural rubber or rubber latex suitably compounded with vulcanising agents and other ingredients including adequate amount of antioxidants. Reclaimed rubber, vulcanised waste or other rubber substitutes shall not be used in the rubber composition.

5 The rubber threads shall not contain prohibited impurities copper and manganese or their compounds in amount exceeding 0.002% by ~~weight~~ mass (max). The Specific gravity of the rubber threads shall not exceed 1.02 and the amount of acetone - extractable sulphur in the finished rubber threads shall not exceed 0.5 percent by ~~weight~~ mass.

6 The braiding shall be made from good quality unbleached three fold cotton yarn in the range of ~~2/18 to 2/80~~. All the braiding ends in the cord shall be of the same count. 84 Tex/3 to 74 Tex/3

MANUFACTURE/WORKMANSHIP AND FINISH

7 The size and number of rubber threads in the cord shall be so chosen as to obtain a finished cord of the required diameter, tightly encased in the braid. The number of rubber threads in the cord, shall however be not less than indicated in the attached Schedule I. All the rubber threads in the cord shall be of one type and of one nominal size only. The rubber threads shall be thoroughly dusted/ treated with soapstone or talc to prevent adherence to each other in the finished cord.

8 The braiding shall be of uniform pitch and the construction shall be such that when a piece of the finished cord is stretched to twice the original length, rubber shall not be visible. The braid shall be sufficiently tight and prevent dirt entering between the individual threads of the braid.

9 The finished cord shall be smooth, reasonably uniform in diameter, free from broken rubber threads, broken cotton yarn and other visible imperfections.

....2.

DIMENSIONS AND OTHER DETAILS

10 The cord shall conform to the particulars stipulated in the attached Schedule 1.

TESTS

11 The cord shall be tested in accordance with standard test methods and those described in appendices I - II and conform to particulars mentioned in the attached Schedule I & II.

PACKING

12 After manufacture the cord shall be allowed to remain for two days under no tension, then cut to 50 metres lengths and the ends of each length of cord shall be securely and tightly bound with suitable twine. Each length (50 mtrs) of cord shall be wound into a coil of about 20 cms diameter and securely tied with ties at suitable intervals, each tie being strong enough to support the mass ~~weight~~ of the coil. The coil shall be wrapped in a layer of kraft paper and a label marked indelibly and legibly with the nomenclature, part No, size, length of cord in the coil, the month and year of manufacture, manufacturer's name and initials or recognised trade mark shall be affixed to the kraft paper wrapping. The wrapped coil shall then be packed in a polyethylene (~~450 gauge~~ 0.04 mm thick) bag and sealed.

BALING

13 The packed Coils, each containing 50 metres of the cord shall be wrapped with a layer of cloth 'C' heavy or equivalent hessian cloth to form a package, rectangular in shape and gross ~~weight~~ mass not exceeding 40 Kgs. The seams of the wrapping cloth shall be securely stitched with double 3 ply jute twine having not less than 6 stitches/dm ~~10 stitched per 10 cm~~. While stitching, care shall be exercised to avoid any damage to the contents of the package. Sufficient jute cloth shall be pulled out at each corner to form ears about 15 cms in length. Each package so formed, shall be securely bound with suitable cordage or tape and sealed. The packing materials used shall be of best trade quality, previously approved by the inspecting officer.

14 If ordered for delivery to a local Inspection Depot, the cord in length of 50 metres shall be delivered loose in coils and in firm's returnable packs. After inspection, the accepted supplies shall be packed by the inspection depot as per details given in para 12, 13 above.

15 Before despatch, each package shall be legibly and indelibly marked by stencil showing the following details.

(i) Nomenclature, Part No, and size of the store
(ii) Quantity packed in the Package
(iii) Lot and Serial No. of the Package
(iv) Month and year of Packing
(v) Name and trade mark (if any) of the manufacturer.
(vi) Gross ~~weight~~ mass of the Package in Kg.
(vii) Name and address of the consignee
(viii) Inspection Note No. and date.

....3.

PRE-INSPECTION

16 Before tendering the store to the Govt Inspector, the supplier will carryout a thorough pre-inspection of each delivery to satisfy himself that store fully conforms to the specification.

INSPECTION

17 (i) If on examination, material from any portion of a consignment is found not to be fully in accordance with this specification, the whole consignment is liable to be rejected.

(ii) If, on examination of 20 percent of any delivery, 20 percent of these examined are found not to conform to this specification in any respect then the whole consignment may be rejected.

(iii) All pieces not fully in accordance with this specification shall be rejected.

NOTE : (a) Specifications in IS Series are held and issued by the Director, Indian Standards Institution, Manak Bhavan, 9-Bahadur Shah Zafar Marg, NEW DELHI-1 or his regional offices at Bombay, Calcutta, Madras and Kanpur.

(b) Defence Specification in IND/ADE, IND/GS, IND/TC and IND/SL Series are held and issued on payment by the Chief Inspectors of CIADE, Agra Cantt-1, CIGS, CITEC and Director of Research Laboratory (Materials) Kanpur respectively or from their regional Inspectors located at Bombay, Madras, Calcutta, Delhi and Kanpur.

Kanpur
~~AGRA CANTT~~

DATED 19-8-80

CHIEF INSPECTORATE OF ~~AERIAL DELIVERY EQUIPMENT~~

19/8/80

CHIEF INSPECTOR

19/8/80

SCHEDULE – I TO PROV SPECIFICATION No. C DE/16 (a)

NIV CORD, ELASTIC, SHOCK ABSORBER, HIGH STRENGTH, TEN M.M. DIAMETER

Length per Coil (~~Mtrs~~) (m)	Diameter of the Cord (mm)	Construction of the Cord	~~Weigh~~ MASS per 100 metres (Kgs)	Count of cotton yarn, of the braiding threads	Reaction of aqueous extract (5 percent) of the Cotton Yarn on boiling for 30 ~~mts~~ minutes followed by cooling and decantation	No of Rubber Threads	Size of Rubber Threads (mms)	Load ~~(Kgs)~~ Newton for 100% Elongation	BS ~~(Kgs)~~ Breaking Load (Newton)	Ultimate Elongation (Percent)	Tension set under 350% Elongation for 96 hrs at ~~60°±5°F~~ 16°C ±3k & Recovery of 24 hrs at room temperature (Percent)
50±0.5	10±0.5	Construction:- Braided-two layers of cotton braiding ends and central core of rubber threads.	7.5 (Max)	~~3/7s~~ to ~~3/8s~~ 84 Tex/3 to 74 Tex/3	Not acidic to Methyl orange	120 (Minimum)	1 Millimetre diametre for round cross-section OR 0.9 mm each side for square cross-section.	392 N ~~40 kg~~ Minimum 637 N ~~65 kg~~ Maximum	1224 N ~~125~~ Minimum	140 Minimum	10 Maximum

(i) Outer layer: 48 ± 2 braiding ends each 3 folds.

(ii) Inner layer: 32 ± 2 braiding ends each 3 folds

(iii) Central Core: 120^{+5}_{-0} Rubber threads.

Note – Conversion factor
1 kg force = 9.80665 Newton (N)

CIAGE/18 (a)

SCHEDULE - II TO PROV SPECN NO CIAGE/18

NIV CORD, PLASTIC, SHOCK ABSORBER, HIGH STRENGTH, TEN ~~MILLIMETER~~ mm DIAMETER

PARTICULARS OF INDIVIDUAL THREADS

Specific Gravity	Rubber Hydrocarbon Content Percent)	Acetone Extractable Sulphur Percent)	Ash content (Percent)	Copper and its Compounds Calculated as Cu (Percent, by ~~weight~~ mass)	Manganese and its Compounds Calculated as (Mn) Percent, by wt)
1.02	80.0	0.5	8.0	0.001	0.002
Maximum	Minimum	Maximum	Maximum	Maximum	Maximum

APPENDIX - I

Method for the determination of load for 100 percent extension or Cord.

1. The cord shall be conditioned in an atmosphere of 65±2% relative humidity at a temperature of 27°C±2K ~~[illegible]~~ for a period of not less than 24 hours immediately preceding the test and shall be tested under the same conditions to temperature and relative humidity.

2. The test shall be made by the continuous extension method with the test piece from the uncut coil and gripped by means of suitable clamps. The initial length of the test piece between the grips shall be 18 cm and a test length of 12.5 cm shall be suitably marked on the piece. The test length shall then be stretched to 25 cm, the load immediately removed and after a period of one minute the position again marked to give a test length of 12.5 cm where necessary. The test piece shall then be stretched between the grips of the testing machine and the load required for 100 percent extension noted. In the test, the rate of extension of the cord from 0 to 125 percent with in 100±30 seconds. The range of the testing machine shall be such that the test load shall be between 15 percent and 85 percent of the maximum scale reading.
The rate of stretching shall be uniform and shall be so adjusted as to cause the

APPENDIX - II

Method for determination of tension set of rubber thread

A sample of the rubber thread 10 cm long shall be taken and 5 cm length marked off. Cotton thread shall be tied on the rubber thread at the marked points and the ends of the rubber threads suitably fixed on a metal frame so as to stretch the thread to give a length of 22.5 cm between the gauge marks. The whole assembly shall be subjected to accelerated ageing at 47°C±3K ~~[illegible]~~ for 96 hours in a suitable air oven as described in Indian Standard specification No. IS:443-~~1964~~. The sample shall then be removed from the oven gently released and allowed to rest on a smooth flat surface at room temperature for 24 hours. The distance between the gauge marks of the test piece shall then be measured and the residual extension i.e. tension set, calculated as a percentage of the original length between the gauge marks.

"BANSAL"