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GOVERNMENT OF INDIA  
(MINISTRY OF DEFENCE)

Provisional Specification No.  
~~DIS/DE/103/03/101~~

IND/TC/2287

SPECIFICATION

FOR

FABRIC GLASS FIBRE FABRIC, PVC COATED, OLIVE GREEN

Cat No. : NIV

1. THIS SPECIFICATION CONSISTS OF EIGHT PAGES.
2. THIS SPECIFICATION IS INTENDED TO GUIDE PURCHASE, INSPECTION AND MANUFACTURE OF GLASS FIBRE PVC COATED OLIVE GREEN.  
*(Fabric) (FIBRE)*
3. THIS SPECIFICATION OR ANY OTHER INFORMATION ISSUED IN CONNECTION THEREWITH SHALL ONLY BE USED FOR SPECIFIC ORDER PLACED BY A COMPETENT AUTHORITY. IT IS NOT TO BE USED FOR ANY OTHER PURPOSE WHAT-SO-EVER WITHOUT THE EXPRESS WRITTEN SANCTION OF THE APPROPRIATE AUTHORITY.
4. ALL CLAUSES IN THIS SPECIFICATION SHALL BE COMPLIED WITH IN EVERY RESPECT IRRESPECTIVE OF THE SOURCE OF SUPPLY OF THE MATERIAL.
5. IN CASE OF DISCREPANCY BETWEEN THIS SPECIFICATION AND THE SAMPLE LOANED FOR ANY PURPOSE, THIS SPECIFICATION AND OTHER CONNECTED SPECIFICATIONS SHALL BE TAKEN AS CORRECT.
6. WHENEVER A REFERENCE TO ANY OTHER SPECIFICATION OCCURS, IN THIS SPECIFICATION, IT SHALL BE TAKEN AS A REFERENCE TO THE LATEST VERSION OF THAT SPECIFICATION EXISTING AT THE TIME OF FINALISATION OF CONTRACT.

ISSUED BY

THE DIRECTOR  
DEFENCE MATERIALS AND STORES  
RESEARCH & DEVELOPMENT ESTABLISHMENT  
POST BOX NO. 320,  
KANPUR.

Price: Rs. 12/-

Ref. F/65 of S/6420/TC-6

CONTROLLER  
CONTROLLERATE OF QUALITY ASSURANCE  
TEXTILES & CLOTHING, P O No 284  
KANPUR-200 001



SCOPE

1. This specification covers the requirement of Glass Fibre Fabric Coated with PVC on both sides. The fabric is intended for use in fabrication of Cover Padding Flameproof and items of allied nature.

RELATED SPECIFICATIONS AND AVAILABILITY

2. The following are related specifications:

- IS: 5 - Colours for Ready Mixed Paints.
- IS: 1964 - Methods for determination of Weight per sq. metre and weight per linear metre of fabrics.
- IS: 1954 - Methods for determination of length and width of fabrics.
- IS: 7016 - Method of Test for Coated and Treated Fabrics.
- IS: 1259 - Specification for Vinyl Coated Fabrics (Leather Cloth)
- IS: 7941 - Method for Determining the Water Repellency of fabrics by Cone Test.
- IS: 3400 - Method of Test for Vulcanised Rubber.
- IS: 3119 - Method of Test for flame-proof materials.
- IS: 4905 - Methods for random sampling.

The Indian Standard Specifications are available from Indian Standard Institution, Manak Bhawan, 9 Bahadur Shah Zafar Marg, New Delhi-110002 or from their regional offices.

SEALED SAMPLE

3. The sealed pattern held in the custody of the AHSP shall constitute the standard as regards any particulars or properties not noted/defined in this specification.

MATERIALS

4. The coated fabric shall be manufactured as per the following:-

- (a) Basic Fabric :- The basic fabric shall be made from continuous filament of 'A' Type Glass Yarn of approx. 6 x 2 Tex count shall be used in both, warp and weft, directions. The fabric shall be in plain weave. The essential particulars of the fabric are laid down in Appendix 'A' for guidance.

Contd.....3.



- (b) Coating is The coating shall be Poly Vinyl Chloride in Olive Green shade conforming to shade No. 270 of IS:5 and shall be properly compounded with suitable pigment, heat stabilisers and plasticisers of low volatility. Adequate quantity of Tri-cresyl-phosphate shall also be added besides conventional plasticisers to ensure protection against mould growth/rotting.

MANUFACTURE/CONSTRUCTION

5. The basic fabric shall be uniform in texture and shall be free from weaving defects such as creases, streaks, cuts, other permanent distortions and shall not be brittle or fused. The fabric shall be thoroughly desized before imparting PVC coating.

The PVC Coating shall be evenly and uniformly applied on both sides of the base fabric. The coating shall be resistant to fungus, bacteria and mould growth. The coated fabric shall be flexible and shall flatten under its own weight when spread over an even surface.

WORKMANSHIP AND FINISH

6. The basic fabric shall be free from oil stains and grease spots. The finished fabric shall be free from patches, pin holes, embedded foreign matter, tackiness and objectionable odour. The PVC coating shall not contain any additive which may bleed out or stain the surface coming in its contact.

TEST AND REQUIREMENTS

7. The coated fabric when tested in accordance with IS:7015 shall conform to the following particulars:

Length (m)	Width (cm)	Mass per unit area (g/m <sup>2</sup> )	Thickness (mm) under pressure of 200 g/cm <sup>2</sup>	Breaking strength (N) (5 x 20 cm between grips)	
				Warp	Weft
20 ± 2 ordered or as per IS:1954	100 ± 1 or as ordered (as per IS:1954)	640 ± 10% (as per IS:1964)	0.48 ± 0.02	2000	2000
				2150-5%	2150-5%

Note:- The thickness shall be determined by using a circular pressure foot of 9.5 ± 0.02 mm diameter at a pressure of 200 g/cm<sup>2</sup>.

In addition, the coated fabric shall conform to the following stipulations:-

Contd.....4.

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COATING ADHESION

8. When the coated fabric is tested as per the method given in IS specification No. 7016 (Pt V), the adhesion strength between PVC coating layer and the glass fabric shall not be less than 1.0 Kg. per 2.5 cm width in both warp and weft directions and on both the surfaces of the coated fabric.

COLOUR FASTNESS

- 9. (a) Accelerated Fading Test: The coating shall withstand the accelerated fading test for at least 100 hours (when tested as per IS:1259) without showing signs of fading of the shade.
- (b) Light Exposure Test :- When tested as per IS:1259 the fading shall not be less than 5.

WATER PROOFNESS

- 10. (a) Pressure Head Test :- A 20 cm dia circular piece of coated fabric, when subjected to a constant head of water column of 60 cm height for 30 minutes, shall not show any leakage or wetting of its outer surface.
- (b) Cone Test :- When tested in accordance with IS:794 there shall be no leakage through the fabric and the outer surface of the cone shall also be wet.

FLAME RESISTANCE

11. Six test specimens cut from different places of the finished fabric when tested as per BS 3119 shall comply with the following:-

- i) No test specimen shall continue to flame after withdrawal of the igniting flame.
- ii) Average length of the material which chars/melts on the six specimens shall not exceed 10 mm and maximum length of charred/melted material in any sample shall not exceed 15 mm.
- iii) After glow shall not be visible for more than 5 seconds.

AGEING RESISTANCE

12. The breaking strength of the coated fabric in each of warp and weft directions, when determined (as per method described in ISI Specn. No. IS:7016) after ageing at a temperature of  $70 \pm 1^\circ\text{C}$  for 168 hours in air woven, shall not be less than 90 percent of that determined by the same method before ageing. Other details of ageing shall be as per method described in specification No. IS:3406 (Part IV).

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**VOLATILITY OF PLASTICIZER**

13. When tested in accordance with IS:1259 the finished material shall not have appreciable change in pliability or a loss of weight more than 4 percent.

**FREEDOM FROM TACKINESS**

14. The coated fabric shall satisfy the test as proscribed in Appendix 'B' attached to this specification.

**MARKING**

15. Each bolt, prior to being offered for inspection shall be legibly and indelibly marked by the contractor with his name, initials or recognised trade mark, the year of manufacture, the brief nomenclature, catalogue number of the store, the length of the piece and number of flags contained in the piece as indicated below:-

BHARAT & CO  
1983  
Fabric  
GLASS FIBRE FABRIC PVC COATED  
METRE - 20, Flag 8  
Cat. No.....NIL.....

**PACKING**

16. Each bolt of Glass Fibre Fabric PVC Coated Olive Green shall be delivered in a new, dry and clean condition and shall be neatly rolled on shippers roll.

17. If ordered for delivery to a local Inspection Depot, the fabric shall be delivered loose in firm's returnable packs. After inspection, the accepted supplies shall be packed by the Inspection Depot authorities as indicated below:-

Each roll shall be wrapped with a layer of polythene film (150 gauge), Eight such rolls shall then be arranged one over the other and secured at three places by Twine Jute 3 ply or Line Cotton 3 mm to form the pack. It shall then be wrapped with Paper Kraft Wrapping and placed in case wood packing of appropriate size. The gross weight of the package shall be around 100 kg. The empty space inside the case, if any, shall be filled in with cushioning material to prevent movement of contents inside the case wood packing. The top lid of the case shall then be nailed in. Care shall be taken that the nails do not pierce into the contents of the case. The packaging materials shall be of best trade quality previously approved by the Inspector.

18. In all other cases the fabric shall be packed as indicated above.



19. Before despatch, each package shall be legibly and indelibly marked showing the following details:

Front end top of the package

- i) Cat. No. and brief designation of the store.
- ii) Quantity packed preceded by abbreviation "QTY" eg. 100 m in 6 rolls.

Back of the package

- i) Name and address of the consignee as given in the contract.
- ii) Weight of the package in Kilogram preceded by abbreviation "KG".
- iii) Serial No. of the individual packages and the total No. of the packages in the consignment, eg. 1 of 4, 2 of 4, 3 of 4, and 4 of 4 where the consignment consists of 4 packages.

Left end of the package

- i) Supplier's name, initials or recognised trade mark.
- ii) The month and year of packing in the form of a three letter abbreviation for the month and a two figure abbreviation for the year eg. "DEC 83".

**PRE-INSPECTION**

20. Before tendering the store to the Government Inspector, the supplier will carry out a thorough pre-inspection of each delivery to satisfy himself that the store fully conforms to this specification.

**INSPECTION**

21. If, on examination of any sample from any portion of a consignment the material is found not to be fully in accordance with this specification, the whole supply may be rejected.

If, on examination of 20% of any delivery, 20% of those examined are found not to conform to this specification in any respect, the whole consignment may be rejected.

However, when delivery lots are large, the decision may be based on the examination of 10% only i.e. if on examination of 10% of the delivery, 20% are found not to conform to this specification, the whole delivery may be rejected.

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SAMPLING

22. Bolt length of the fabric has been taken into account as 20 metres and sampling has been based on this consideration.

Lot : In any consignment, all the rolls of PVC coated fabric offered against one despatch note shall constitute a lot.

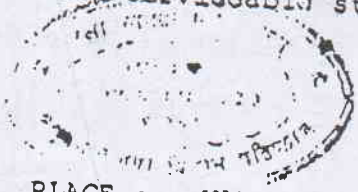
The conformity of the lot to the requirements of the specification shall be ascertained for each lot separately. The number of rolls (n) to be selected from a lot shall depend on the size of the lot (N) and shall be as given below :

N	n
Upto 25	5
25 to 50	6
51 to 90	13
91 to 150	20
151 to 280	32
281 to 500	50

The rolls shall be selected at random and to ensure the randomness of selection, random number tables (see IS-4905) shall be used.

WARRANTY CLAUSE

23. The stores supplied against any order 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 stores at consignee's end. If during this period, the stores supplied are found by the consignee to be so defective the same shall be replaced immediately with serviceable stores without any charges or cost.



PLACE : KANPUR

DATED : 26.2.86

CPGOEL/  
25763

STATION - KANPUR

DATED - 28 - 4 - 88

*(Signature)*  
330  
(Brahma Nand)

for DIRECTOR  
DEFENCE MATERIALS AND STORES  
RESEARCH & DEVELOPMENT ESTT.  
POST BOX NO. 320, KANPUR-208013.

*Sd/-*  
( DR R K SAXENA )  
SSCI  
for CONTROLLER  
COMBINED INSTITUTE OF QUALITY ASSURANCE  
TEXTILES & CLOTHING P B No 284  
KANPUR-200 001

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APPENDIX 'A'

PARTICULARS OF GLASS FIBRE FABRIC

Width 'cm'	Weight/ sq.m 'g'	No. of threads per 2.5 cm		Thickness (mm) under pressure of 200 g/cm <sup>2</sup>	Breaking Strength (N) (Min.) (5 x 20 cm between grips)	
		warp	weft		warp	weft
100 or as ord- ered	300 ± 15	32 ± 1	27 ± 1	0.24 ± 0.02	2650	2650

APPENDIX 'B'

METHOD OF TEST FOR TACKINESS

A test specimen 5 cm x 10 cm in size cut from the finished cloth shall be folded double to a size of 5 cm x 5 cm, placed between two glass plates of slightly larger size under a total weight of 1.5 Kg and heated for 30 minutes at 80°C ± 1°C in a thermostatically controlled air oven. At the end of the heating period, the specimen shall be removed from the oven and allowed to cool to room temperature. The two faces of the finished cloth in contact shall be easily separable by hand without showing any signs of damage. The test shall be repeated with a piece folded the other way.

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