Annexure 'A'

	PLANT PURCHASING SPECIFICATION BHEL -JHANSI	JS 22299	
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GLASS FILAMENT WOUND EPOXY BONDED CYLINDERS/EDGE BLOCK FOR TRANSFORMER

1. GENERAL:-

This specification governs the requirement of glass filament wound epoxy bonded cylinders manufactured by a special thread winding process. Specially formulated Epoxy resin system impregnated glass fibres are wound in exact spirals crosswise on to a cylindrical mandrel. First few inside layers (2 to 3mm radial thickness) can be cut to a sufficient length to remove the weaker cross over build up of winding. The cylinders must have excellent mechanical characteristics attained by winding the filament at a suitable angle approx 45^0 to the mandrel axis. The cylinder's shall have no deterious effect on the properties of transformer oil and are capable of withstanding high degree of mechanical, electrical & thermal stresses . Cylinders should have temperature index of at least 120.

2. APPLICATION :

Used in manufacture of (a) Base cylinder for transformer winding
(b) Edge blocks for end supports.

3. COMPLIANCE WITH NATIONAL STANDARDS :

There is no Indian standard for this type of material.

4. DIMENSIONS & TOLERANCES :

Dimensions & tolerances (if any) of base cylinders and edge blocks shall be stated on the order/drawing .It is mostly required in the form of finished components as per drawings. The acceptable limit of tolerance on thickness of cylinder/ edge block is ±0.25 mm.

Revision : 01	Issued By:- STANDARD SECTION TRE JHANSI		
Date : 06.09.2011	Date of 1st Issue 30.10.2002	Prepared and checked by: (All Power Design Engineers)	Approved (R.K. Mohapatra)

5. FINISH :

5.1. The cylinders shall have a uniform and smooth finish at I/D and be free from splits, inclusion of foreign bodies, visible defects and voids. Cylinders to be machined on outer surface.

5.2. The machined O/D surface shall be uniformly finished with an arc resisting varnish with suitable temperature index, which shall not affect the properties of transformer oil.

5.3. Edge trimming to be done to avoid any sharp corners.

6. TEST METHODS :-

Unless otherwise specified the tests shall be conducted in accordance with the relevant methods AA0851701.

7. PHYSICAL PROPERTIES :

7.1. Apparent Density 1.7 g/cc (Min.) when tested on a sample of 38mm length & 38mm width by any conventional method.

7.2. Water absorption after 4 days of water immersion at room temperature 0.2% max when tested on a cured sample of 38mm length & 38mm width.

7.3. Shrinkage after 4 days at 120+/-4^0 C.

0.5% max. When tested on a cured sample of 38mm length & 38mm width.

7.4. Bond content :

30 to 40% shall be determined by burning the bond at 600-620^0 C for sufficient time.

7.5. Texture of glass:

Test shall be carried out on 50mm long (curved) and 25mm wide sample by burning the bond at 600-620^0 C for sufficient time.

Glass fibres shall not have cross weave orientation.

7.6. Mechanical strength :

Compression strength axial: 85 N/mm^2 (min.)

Compression strength circumferential: 250 N/mm (min.)

8. ELECTRICAL PROPERTIES : (Test to be conducted on a sample test piece and separate test certificate to be submitted)

8.1. Electrical Strength in oil at 90+/-2^0 C : 10kv /mm for 5 minutes.

8.2. Comparative Tracking Index: (400 Min.)

8.3. Dielectric loss factor tan delta at 90^0 C and 50 Hz: 0.005 (Max.)

9. TEST CERTIFICATE :

Material shall be tested for each batch of consignment for physical properties at clause 7. Three copies of test certificates shall be supplied with each consignment giving the following information.

Our Order No.

Supplier's reference No.

Batch No.

10. PACKING AND MARKING :

The cylinder/edge block shall be suitable packed to prevent damage during transit.

Each packing shall bear the following information.

JS 22299 REV01 Glass Filament Epoxy bonded edge-block /Cylinder

Our Order No.

Manufacturer's and / or supplier's Name and Grade

Batch No.

ID x OD x Length/ Drawing No.

No. of Edge block / Cylinder.