PSGSG / 12-13 / 020	SPECIFICATIONS FOR **DS Pull Tube Assy.**	Drg.No.	RD DG 4 35 0517 2014
		Date	16.04.2014
		Product	GSM 245

1.0 APPLICATION:

Tubular insulator with metal flanges is a part of a high voltage, heavy duty switchgear. The component is intended for a 245 kV AC, 50 Hz System.

2.0 SPECIFICATION:

2.1 <u>TUBE MATERIAL</u>

2.1.1 The POLYESTER lining used for tube shall have following properties:

#	**Property**	**Unit**	**Value**
1	Density	g/ccm	~1.3
2	Tensile strength	MPa	>100
3	Impulse dielectric Strength	kV/mm	≥ 16
4	Relative permittivity	-	~3.4
5	Dielectric loss factor	%	~0.4
6	SHRINKAGE	%	< 0.5
7	Water Absorption	%	< 0.5
8	Water Absorption @ 100^0C	%	< 0.5

2.1.2 **Type of Fiber:** Aramid / Kevlar shall be used as fiber. The material shall be resistant against arced SF6 gas.

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	2.1.3	**Manufacturing process:** The fibers shall be wound and impregnated with hot curing epoxy resin in vacuum/ pressure. The casting shall be void free and shall achieve required electrical and mechanical properties. The epoxy used shall be compatible to arced SF6 gas.
	2.1.4	The processed material shall have good Chemical resistance against organic and inorganic acids.
	2.1.5	The shape of the tube shall be in accordance to the approved drawing.
2.2		**METAL INSERTS**
	2.2.1	Profiled metal inserts as per approved drawing shall be machined using NC machining from mechanical grade aluminum alloy as per (DIN/BIS/IS standards).
	2.2.2	The aluminum flanges shall be glued to the epoxy tube using a hot curing adhesive (compatible to arced SF6 gas) and joined as per the practices of the supplier.
	2.2.3	The bonding between insulator and metal flanges shall be done without roll pins /threaded bolts/ cross bolts. The bonding shall not only withstand specified mechanical forces but also offer leak tightness for use in differential pressure application.
3.0		**FACTORY TEST**
	3.1	Dimensional report.
	3.2	Mechanical load bearing capability (Tensile, ~30 kN+ 10%) for the glued joints. The joint shall have an ultimate strength of ~50 kN .

4.0 **QUALIFYING REQUIREMENTS:**

The supplier shall be of national / International repute with proven record and should have supplied similar material for gas insulated system applications at least for last three years.

5.0 **GENERAL**

5.1 Metal Flanges shall be free from sharp corners. Wherever not specified in the drawing, a radius of R 0.5mm shall be provided at unspecified corner/Edge.

5.2 The components shall be packed individually in appropriate packing with moisture absorbents so as to prevent transit damages.

5.3 The components shall be guaranteed against all manufacturing defects.

5.4 In case of doubts in specifications, the supplier shall contact BHEL for clarifications.