

KeHong Enterprises Co.,Ltd.

No7118,Floor 7, Sha feng business building, Jin sha zhou, Baiyun District, Guangzhou, China.

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SPECIFICATIONS

FOR

Medium Wall Halogen Free Busbar Insulation Tubing

HFB-M (15KV to 24KV)

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1 Aim and Scope

1.1 Aim

This specification is a controlled file used for describing the products customer ordered. It's applicable in the following department also:

R&D Department: Major for product design and development

Technology Department: Major for preparing production directives

Quality control Department: Major for quality control

Purchasing Department: Major for external materials purchasing

1.2 Scope

This specification can be used for the production and quality control of HFB-M. It described the product specifications, dimension, requirements and the standards followed.

1.3 Product type

The product described in this specification is Medium Wall Halogen Free Busbar Insulation Heat Shrinkable Tubing with type model of: HFB-M

2 Standards

This specification takes precedence over documents referenced herein. Unless otherwise specified, the latest issue of referenced documents applies. The following documents form apart of this specification to the extent specified herein.

IEC-60684-2 Flexible insulating sleeving - Part 2: Methods of test

ASTM D 2671 Standard Test Method for Heat Shrinkable Tubing for Electrical Use

ASTM D 495 Standard Test Method for High-Voltage, Low-Current, Dry Arc Resistance of Solid Electrical Insulation

ASTM D 149 Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies

NES 711 Determination of the Smoke Index of the Products of Combustion from Small Specimens of Materials

ISO 4589 Plastics-Determination of burning behavior by oxygen index

3 Technical specifications

3.1 Dimensions

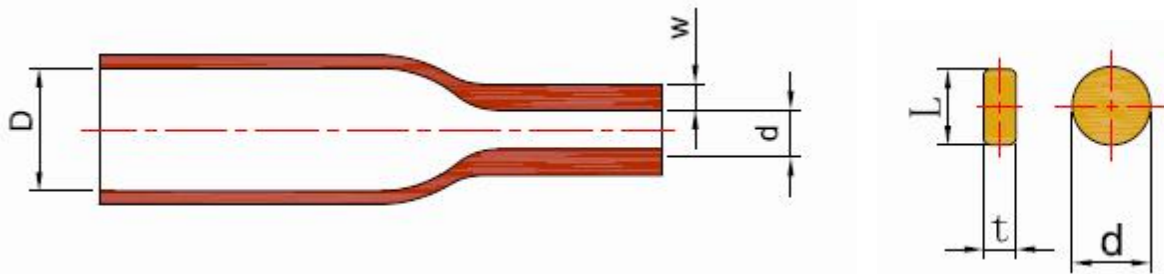
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As supplied (mm)	After recovered(mm)		Dimensions		Standard length*
	Inside Diameter D(Min)	Inside Diameter d(Max)	Wall Thickness w(Min)	L+t	
15	6	2.00	12...18	6.5...12	30m/spool
30	12	2.30	22...38	13.5...25	30m/spool
40	16	2.50	27...45	17...32	15m/spool
50	20	2.50	36...65	22..43	15m/spool
65	25	2.50	45...75	26...52	15m/spool
75	30	2.60	55..95	33..63	15m/spool
100	40	2.80	70..130	44..86	15m/spool
120	50	2.80	90..165	55..105	15m/spool
150	60	3.30	110..200	70...120	15m/spool
180	60	3.30	125..235	80...150	1.0-1.5m
205	75	3.80	200...276	127...190	1.0-1.5m
235	75	3.80	235...315	150...220	1.0-1.5m
265	85	3.80	265...340	175...250	1.0-1.5m

Other cut lengths are available

3.2 Basic requirements

HFB-M is made from radiation crosslinked halogen free compounds. Specially designed formulation makes the tubing to have excellent electrical, shrinking and anti-tracking properties. The tubing is suitable for application in insulating voltage busbar 15KV-24KV. The tubing shall be homogeneous and essentially free from flaws, defects, pinholes, bubbles, seams, cracks and inclusions.

3.3 Technical requirements

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Property	Unit	Test Method	Requirement	Typical Value				
Shrinking properties								
Longitudinal Changes	%	ASTM D 2671	0 to-10%	-5%				
Physical properties								
Tensile strength As such After shrunk	MPa	ASTM D 2671	Min10MPa.	17.8 14.2				
Elongation at break As such After shrunk	%	ASTM D 2671	Min300%	607 585				
Heat aging(120℃ 168 h) Tensile strength Elongation at break	Mpa %	ASTM D 2671	Remain 70% Min100%	14.0 574				
Heat shock 250℃ / 30min		ASTM D 2671	No cracking, flowing, dropping	No cracking, flowing, dropping				
Low temperature properties (-40℃ / 4hrs)		ASTM D 2671	No cracking	No cracking				
Electrical properties								
Arc resistance	Sec	ASTM D 495		Central: 132.6 Minimum:125.3				
Dielectrical strength	kV/mm .min	ASTM D 149	3mm	2.5mm	2mm	3mm	2.5m m	2mm
			12	15	18	14	16	18
Chemical properties								
Water absorption 24hrs immersed in water(25℃)	%	IEC 60684-2	Max 1%	0.3				
Density	g/cm ³	IEC 60684-2		1.3				
Corrosion resistance test In contact with copper at 120℃ for 168 h		UL 224	No corrosion	No corrosion				
Flammability		ISO 4589	≥25	26				
Fluid resistance		MIL-DTL-23053/4	Pass	Pass				

4 Environmental protection requirements

The tubing has to meet the latest RoHS and REACH requirements.

Test Method

The environment test of the sample would be tested according to RoHS (Restriction of Hazardous Substances)

Test Machine

Thermo Scientific NITON XL3t XRF Analyzer

Test condition

Test temperature: 23 ± 3℃

Test Results

Element Unit Content

Cd ppm <LOD*

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Pb ppm <LOD

Br ppm 35.96

Hg ppm <LOD

Cr ppm <LOD

*LOD: Limit of Detection (5ppm)

Conclusions

The HFB-M tubing is Halogen Free (<1000ppm) and RoHS compliant.