Raychem Heat-shrinkable Busbar Insulation Tubing BBIT

Voltage Class 36 kV, Application Ø 11-125 mm

Product description
Raychem thick wall, heat-shrinkable tubing BBIT provides insulation enhancement and protection against flashover and accidentally induced discharge. Particularly useful in confined spaces, Raychem tubing BBIT can be used on both circular and rectangular copper or aluminium busbars.
On application of heat the tubing shrinks snugly over the busbar profile ensuring that the required minimum wall thickness is obtained. Raychem tubing BBIT can be installed easily during large scale production using an oven or in the field using a gas torch or hot air. Raychem tubing BBIT is manufactured from a non-halogen based polymer which has excellent performance in high voltage environments and reduces the noxious and corrosive effects in fire situations.

Applications
The use of Raychem tubing BBIT allows equipment designers the freedom to reduce air spacing between busbars, such as in the manufacture of switchgear cabinets where space is at a premium. Raychem tubing BBIT provides flashover protection up to 36 kV.

Features/benefits
- Compatible with all other products in the Raychem MV insulation enhancement system
- Excellent flexibility means Raychem tubing BBIT can be installed on a wide range of curved or bent busbars without cracking or creasing
- High shrink ratio reduces inventory and simplifies product selection
- Exceptional insulation and long term reliability even at high continuous operating temperatures
- Extremely durable, resists damage from solvents, ultraviolet light, weathering, mechanical impact and general wear and tear
- Suitable for indoor and outdoor use
- Excellent anti-tracking properties
- Good thermal emissivity and contact with busbars means no derating is required
- Flame retardant and non-halogen based material reduces flammability and the toxic and corrosive effects in fire situations
- Can be stored indefinitely at temperatures up to 50 °C without loss of performance
- Over 30 years of successful operating experience

Raychem
from TE Connectivity

Raychem Medium Voltage Busbar Insulation Tubing BBIT

Clearance reduction
The tables indicate the clearance reductions which are possible using Raychem tubing BBIT. These are derived from BIL, AC withstand, DC withstand and discharge extinction tests. These clearances should not be adopted without testing by the user. Sharp electrodes and unusual geometries may require wider clearances.

Round busbars

Rated voltage (kV)	Phase–phase (mm)	Phase–ground (mm)	IEC 71-2 air clearance (mm)
12	30	40	120
17.5	45	60	160
24	60	90	220
36	100	160	320

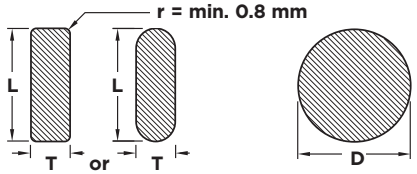
Rectangular busbars

Rated voltage (kV)	Phase–phase (mm)	Phase–ground (mm)	IEC 71-2 air clearance (mm)
12	35	45	120
17.5	55	65	160
24	70	100	220
36	140	190	320

Key product specifications	Test method	Requirement
Thermal endurance	IEC 216	105 °C min.
Accelerated ageing - Tensile strength - Ultimate elongation	ISO 188, ASTM D2671	168 hrs @ 120 °C 10 MPa min. 300% min.
Comparative tracking index	IEC 112, VDE 0303/1	KA 3c
Dielectric strength	ASTM D149, IEC 243	180 kV/cm min. @ 2 mm 150 kV/cm min. @ 2.5 mm 120 kV/cm min. @ 3 mm
Smoke index	NES 711	Less than 120
Acid gas generation	Raychem PPS 3010 4.23	Less than 1% by weight
Low temperature flexibility	ASTM D2671 Procedure C	No cracking after 4 hrs @ -40 °C
Flammability	ANSI C37.20/IEEE-27	No flame conveyance, 60 sec. max.
Tracking and Erosion Resistance	ASTM D2303	No tracking, erosion to top surface or flame failure after 1 hr. at 2.5kV, after 1 hr. at 2.75kV, 1% max.

Note: For further product specification information see Raychem PPS 3010/04.

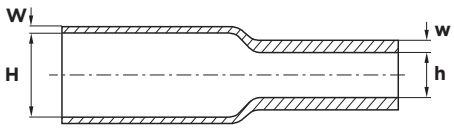
Product selection
BBIT should normally be used on the following busbar sizes



Product size	Rectangular bars L + T (mm) min.	max.	Round bars D (mm) min.	max.
BBIT 25/10	17	28	11	20
BBIT 40/16	28	45	18	32
BBIT 65/25	44	69	28	47
BBIT 100/40	69	102	44	72
BBIT 150/60	102	148	65	105
BBIT 175/80	133	196	85	125

Technical reports
UVR 8136 – (PPR 513) Performance report on busbar insulation for round busbars
UVR 8137 – (PPR 537) Performance report on busbar insulation for rectangular busbars
UVR 8003 – Supplementary qualification of BBIT
UVR 8130 – Resistance of BBIT, MWTM and RNF 100 to 10% HF solution, surface resistance and other tests
UVR 8091 – Production-scale installation of BBIT/BPTM
UVR 8194 – Long term weathering and thermal ageing of BBIT and BPTM tubing

Ordering information



Ordering description	Inside diameter (mm) H min.	h max.	Wall thickness (mm) W nom.	w min.	UOM: roll of length (m)
BBIT-25/10-A/U-4	25	10	1.6	3.6	25
BBIT-40/16-A/U-4	40	16	1.6	3.6	20
BBIT-65/25-A/U-4	65	25	1.6	3.6	15
BBIT-100/40-A/U-4	100	40	1.6	3.6	15
BBIT-150/60-A/U-4	150	60	1.6	3.6	15
BBIT-175/80-A/U-4	175	80	1.6	3.6	10

Note: W, H = as supplied w, h = after free recovery. Maximum longitudinal change after free recovery: ±5%. Maximum eccentricity: 35% (as supplied), 15% (after free recovery). Fit the larger size of BBIT if two sizes fit the required application.

Installation instructions EPP 0618 5/96 and Material Safety Data Sheet available on request.

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