tyco Electronics

Energy Division

BBIT
Heat-shrinkable busbar insulation tubing
Voltage class 36 kV
Application Ø 11 – 125 mm

Product description
BBIT is a thick wall, heat-shrinkable tubing which provides insulation enhancement and protection against flashover and accidentally induced discharge.

Particularly useful in confined spaces, BBIT tubing 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.

BBIT tubing can be installed easily during large scale production using an oven or in the field using a gas torch or hot air.

BBIT tubing 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 BBIT tubing 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. BBIT tubing provides flashover protection up to 36 kV.

Clearance reduction
The table below indicates the clearance reductions which are possible using BBIT tubing. 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.

Rated voltage (kV)	Phase–phase (mm)	Phase–ground (mm)	IEC 71-2 air clearance (mm)
Round busbars			
12	30	40	120
17.5	45	60	160
24	60	90	220
36	100	160	320
Rectangular busbars			
12	35	45	120
17.5	55	65	160
24	70	100	220
36	140	190	320

Features/benefits
- Compatible with all other products in the Raychem MV insulation enhancement system
- Excellent flexibility means 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 20 years of successful operating experience

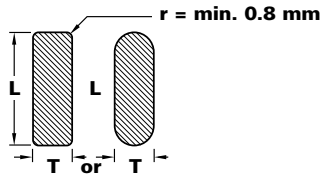
Raychem

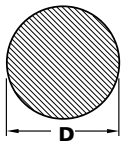
BBIT Heat-shrinkable busbar insulation tubing

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

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

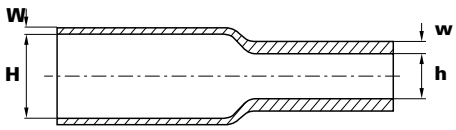
Product selection
BBIT should normally be used on the following busbar sizes





Product size	Rectangular bars, L + T (mm)		Round bars, D (mm)	
	min.	max.	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

Ordering information



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

Note: Dimensions in mm unless otherwise stated. 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.

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

tyco Electronics

Energy Division

AMP AXICOM B&H Bowthorpe EMP Critchley Dorman Smith
Dulmison Hellstern La Prairie Morlynn Insulators Raychem SIMEL SUCOFIT

Argentina
Phone: ++54-11-4733 2277
Fax: ++54-11-4733 2267

Australia
Phone: ++61-2-4390 1111
Fax: ++61-2-4353 2497

Brazil
Phone: ++55-11-3611 1862
Fax: ++55-11-3611 2457

Canada
Phone: ++1-905-475 6222
Fax: ++1-905-470-4453

France
Phone: ++33-3-80583200
Fax: ++33-3-80341015

Mexico
Phone: ++52-5-729 0405
Fax: ++52-5-361-8545

Thailand
Phone: ++66-2-7394026 - 32
Fax: ++66-2-3260563 - 64

United States of America
Phone: ++1-800-327-6996
Fax: ++1-800-527-8350

United Kingdom
Phone: ++44-1772-325400
Fax: ++44-1772-726276

Tyco Electronics Raychem GmbH
Energy Division
Haidgraben 6, 85521 Ottobrunn/Munich, Germany
Phone: ++49-89-6089-0, Fax: ++49-89-6096345 **http://energy.tycoelectronics.com**