



## BUSBAR INSULATION TUBING (BBIT)

VOLTAGE CLASS 36 kV, APPLICATION Ø 11-125 MM

### KEY FEATURES

- Exceptional insulation and long term reliability even at high continuous operating temperatures
- Suitable for indoor and outdoor use
- Excellent anti-tracking properties
- Flame retardant and halogen-free
- Good thermal emissivity
- Long shelf life and can be stored at temperatures up to 50°C without loss of performance
- REACH and RoHS compliant
- UL approved

TE Connectivity's (TE) Raychem BBIT thick-wall, heat shrink tubing provides insulation enhancement and protection against flashover and accidentally induced discharge. Particularly useful in confined spaces, TE's Raychem 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. The BBIT tubing can be installed easily during large scale production using an oven or in the field using a gas torch or hot air. The BBIT tubing is manufactured from a halogen-free based polymer which has excellent performance in high voltage environments and reduces the noxious and corrosive effects in fire situations.

The use of the 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. The BBIT tubing provides flashover protection up to 36 kV.

**Customers can count on consistent, high quality products, driven by TE's proven innovation and backed by our extraordinary customer support.**

## Busbar Insulation Tubing (BBIT)



TE's wildlife and asset protection products and systems of tubes, tapes, sheets, pre-formed covers and barriers provide a proven, cost-effective and easy-to-install solution to bird, animal and weather related outages.

## CLEARANCE REDUCTION

The tables indicate the clearance reductions which are possible using TE's Raychem 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.

| ROUND BUSBARS      |                     |                      |                                |
|--------------------|---------------------|----------------------|--------------------------------|
| Rated voltage (kV) | Phase-phase mm (in) | Phase-ground mm (in) | IEC 71-2 air clearance mm (in) |
| 12                 | 30 (1.18)           | 40 (1.57)            | 120 (4.72)                     |
| 17.5               | 45 (1.77)           | 60 (2.36)            | 160 (6.30)                     |
| 24                 | 60 (2.36)           | 90 (3.54)            | 220 (8.66)                     |
| 36                 | 100 (3.93)          | 160 (6.30)           | 320 (12.60)                    |

| RECTANGULAR BUSBARS |                     |                      |                                |
|---------------------|---------------------|----------------------|--------------------------------|
| Rated voltage (kV)  | Phase-phase mm (in) | Phase-ground mm (in) | IEC 71-2 air clearance mm (in) |
| 12                  | 35 (1.38)           | 45 (1.77)            | 120 (4.72)                     |
| 17.5                | 55 (2.17)           | 65 (2.56)            | 160 (6.30)                     |
| 24                  | 70 (2.76)           | 100 (3.93)           | 220 (8.66)                     |
| 36                  | 140 (5.51)          | 190 (7.48)           | 320 (12.60)                    |

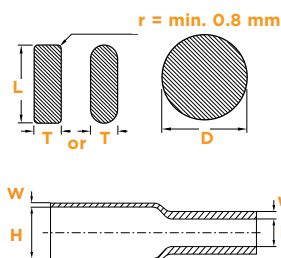
| TECHNICAL REPORT |                                             |
|------------------|---------------------------------------------|
| EDR 5535         | BBIT Tubing Qualification Report            |
| PPR 3320         | Thermal Endurance Temperature Index of BBIT |
| UVR 8122         | Resistance of BBIT in Hydrofluoric Acid     |
| 20180627-E498737 | BBIT UL Certificate Reference               |

| KEY PRODUCT SPECIFICATIONS  | TEST METHOD                | REQUIREMENT                                                                                                                                                                                                            |
|-----------------------------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thermal endurance           | IEC 216                    | 125°C min. (257°F min.)                                                                                                                                                                                                |
| Accelerated ageing          | ISO 188; ASTM D2671        | 168 hrs @ 150°C (302°F)                                                                                                                                                                                                |
| - Tensile strength          |                            | 10 MPa min.                                                                                                                                                                                                            |
| - Ultimate elongation       |                            | 300% min.                                                                                                                                                                                                              |
| Inclined tracking test      | IEC 60587 ASTM D2303       | No tracking or erosion<br>1hr @ 2.5 kV<br>1hr @ 2.75 kV                                                                                                                                                                |
| Dielectric strength         | ASTM D149; IEC 243         | 350 kV/cm min. @ 1.00 mm (889 v/mil min. @ 0.04 in)<br>180 kV/cm min. @ 2.00 mm (450 v/mil min. @ 0.08 in)<br>150 kV/cm min. @ 2.50 mm (381 v/mil min. @ 0.10 in)<br>120 kV/cm min. @ 3.00 mm (304.80 v/mil @ 0.12 in) |
| Volume resistivity          | IEC 60093 ASTM D257        | 1E+10 <sup>14</sup> Ωcm                                                                                                                                                                                                |
| Low temperature flexibility | ASTM D2671 Procedure C     | No cracking after 4 hrs @ -40°C (-40°F)                                                                                                                                                                                |
| Smoke index                 | NES 711                    | Less than 120                                                                                                                                                                                                          |
| Acid gas generation         | TE's Raychem PPS 3010 4.23 | Less than 1% by weight                                                                                                                                                                                                 |
| Flammability                | ANSI C37.20/IEEE-27        | No flame conveyance, 60 sec. max.                                                                                                                                                                                      |

| INSTALLATION INSTRUCTIONS |                                    |
|---------------------------|------------------------------------|
| EPP-3264-12/18            | Installation Instructions for BBIT |

## PRODUCT SELECTION

TE's Raychem tubing BBIT tubing should normally be used on the following busbar sizes:



| Ordering description | PRODUCT SELECTION              |            |                     |            | ORDERING INFORMATION    |           |                        |            |                            |
|----------------------|--------------------------------|------------|---------------------|------------|-------------------------|-----------|------------------------|------------|----------------------------|
|                      | Rectangular bars L + T mm (in) |            | Round bars D m (in) |            | Inside diameter mm (in) |           | Wall thickness mm (in) |            | UOM: roll of length m (ft) |
|                      | min.                           | max.       | min.                | max.       | H min.                  | h max.    | W min.                 | w max.     |                            |
| BBIT-25/10-A/U-4     | 17 (0.67)                      | 28 (1.10)  | 11 (0.43)           | 20 (0.79)  | 25 (0.98)               | 10 (0.39) | 1.6 (0.06)             | 3.6 (0.14) | 25 (82.02)                 |
| BBIT-40/16-A/U-4     | 28 (1.10)                      | 45 (1.77)  | 18 (0.71)           | 32 (1.26)  | 40 (1.57)               | 16 (0.63) | 1.6 (0.06)             | 3.6 (0.14) | 20 (65.62)                 |
| BBIT-65/25-A/U-4     | 44 (1.73)                      | 69 (2.72)  | 28 (1.10)           | 47 (1.85)  | 65 (2.56)               | 25 (0.98) | 1.6 (0.06)             | 3.6 (0.14) | 15 (49.21)                 |
| BBIT-100/40-A/U-4    | 69 (2.72)                      | 102 (4.02) | 44 (1.73)           | 72 (2.83)  | 100 (3.94)              | 40 (1.57) | 1.6 (0.06)             | 3.6 (0.14) | 15 (49.21)                 |
| BBIT-150/60-A/U-4    | 102 (4.02)                     | 148 (5.83) | 65 (2.56)           | 105 (4.13) | 150 (5.91)              | 60 (2.36) | 1.6 (0.06)             | 3.6 (0.14) | 15 (49.21)                 |
| BBIT-175/80-A/U-4    | 133 (5.24)                     | 196 (7.72) | 85 (3.35)           | 125 (4.92) | 175 (6.89)              | 80 (3.15) | 1.6 (0.06)             | 3.6 (0.14) | 10 (32.81)                 |

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-3264-12/18 and Material Safety Data Sheet available on request.

[te.com/energy](http://te.com/energy)

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