



## Energy Division

# Raychem busbar insulation tape HVBT Voltage class 25 kV

### Product description

Raychem HVBT is a heat-shrinkable, adhesive-coated tape which provides insulation enhancement and protection against accidentally induced discharge. Raychem tape HVBT is designed to combine the integrity of a heat-shrinkable tubing with the versatility of a wraparound product. It is quick and easy to install. Upon application of heat the tape shrinks down and the adhesive lining melts amalgamating the overlapping layers together, producing a complete lap to lap seal. A single layer of Raychem tape HVBT, two-thirds overlapped, will provide AC voltage withstand (flashover protection) to at least 17.5 kV increasing to 25 kV if a second layer is applied. Although Raychem tape HVBT will stick to itself and other insulating materials it will not adhere to metal or porcelain allowing easy removal for maintenance.

### Applications

Raychem tape HVBT offers a simple and effective solution to the problems of retrofit insulation of busbars particularly where existing equipment cannot be dismantled. It can be used for indoor and outdoor applications and is easily installed over a wide variety of shapes including complex connections.

### Features/benefits

- Compatible with all other products in the Raychem MV insulation enhancement system
- Easy to apply using readily available equipment
- Suitable for both indoor and outdoor use

- Excellent anti-tracking properties
- Continuous operating temperature up to 70 °C
- Extremely versatile and flexible at temperatures as low as -40 °C, the 30% shrink ratio enables coverage of almost any shape
- Good thermal emissivity and contact with busbars means no derating is required
- Manufactured from non-halogen based materials, reducing the toxic and corrosive effects in the event of fire
- Can be stored indefinitely at temperatures up to 50 °C without loss of performance



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# Raychem medium voltage busbar insulation tape HVBT

## Clearance reduction

The tables indicate the clearance reductions which are possible using Raychem tape HVBT. 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	55	65	120
17.5	70	85	160
24	95	125	220
36	150	205	320

## Rectangular busbars

Rated voltage (kV)	Phase-phase (mm)	Phase-ground (mm)	IEC 71-2 air clearance (mm)
12	65	75	120
17.5	85	104	160
24	115	150	220
36	200	285	320

## Key product specifications

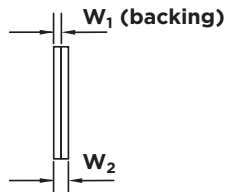
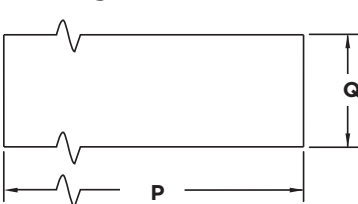
Key product specifications	Test method	Requirement
Dielectric strength	ASTM D149, IEC 243	130 kV/cm min. @ 2 mm
Accelerated ageing - Tensile strength - Ultimate elongation	ISO 188, ASTM D2671	168 hrs @ 120 °C 10 MPa min. 300% min.
Low temperature flexibility	ASTM D2671 Procedure C	No cracking after 4 hrs @ -40 °C
Volume resistivity	ASTM D257, IEC 93	1 x 10 <sup>13</sup> Ohm cm min.
Smoke index	NES 711	Less than 50
Acid gas generation	Raychem PPS 3010 4.23	Less than 3% by weight
Resistance to transformer oil - Tensile strength - Ultimate elongation	VDE 0370	168 hrs @ 23 °C 10 MPa min. 300% min.

**Note:** For further product specification information see Raychem PPS 3010/33. The above information refers to backing material only, for adhesive requirements see PPS 3012/13.

## Product selection

Rectangular busbars width (mm)	Recommended product	HVBT length needed per meter of busbar (m)	Round busbars diameter (mm)	Recommended product	HVBT length needed per meter of busbar (m)
25	HVBT-12-A	10.0	12	HVBT-12-A	5.0
50	HVBT-14-A	7.6	25	HVBT-14-A	5.0
75	HVBT-14-A	11.4	50	HVBT-14-A	10.0
100	HVBT-14-A	15.6	75	HVBT-14-A	16.7
150	HVBT-14-A	25.0	100	HVBT-16-A	10.0
200	HVBT-16-A	15.6			

## Ordering information



Ordering description	Dimensions				UOM: roll of length, P (m)
	Q a min.	W <sub>1</sub> a min.	W <sub>1</sub> b min.	W <sub>2</sub> b min.	
HVBT-12-A	25	0.38	0.56	0.86	10
HVBT-14-A	50	0.38	0.56	0.86	10
HVBT-16-A	100	0.38	0.56	0.86	10

**Note:** Dimensions in mm unless otherwise stated. a = as supplied b = after free recovery. Maximum longitudinal change after free recovery: -30 %. Installation instructions EPP 0619 5/96 and Material Safety Data Sheet available on request.

## Technical reports

UVR 8023 – Qualification report for HVBT

UVR 8147 – Testing of HVBT tape to demonstrate its capability as electrical insulation on busbars

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