RAYCHEM BUSBAR INSULATION TUBES BPTM

WILDLIFE AND ASSET PROTECTION PRODUCTS

THE HALOGEN-FREE-BASED POLYMER OFFERS EXCELLENT PERFORMANCE IN HARSH ENVIRONMENTS, PROVIDING FLASHOVER PROTECTION UP TO 24 kV.

APPLICATIONS

- Switchgear
- Substation Solutions

RELEVANT STANDARDS AND TESTING

- Busbar Spacing - IEC 60071
- Thermal Endurance - IEC 60216
- Dielectric Strength - ASTM D149
- UV Resistance - ASTM G154

KEY FEATURES

- Exceptional insulation and long term reliability, even at high continuous operating temperatures
- Suitable for indoor and outdoor use
- Flame retardant and halogen-free, with excellent anti-tracking properties
- Good thermal emissivity
- Long shelf life, and can be stored at temperatures up to 50 °C (122 °F) without loss of performance
- REACH and RoHS compliant
- UL approved

TE Connectivity's (TE) Raychem BPTM heat-shrink busbar insulating tubes offer improved insulation and protection against accidental induced discharge and flashover. These tubes are useful in confined spaces on circular and rectangular copper or aluminum busbars. They are applicable to both outdoor and indoor environments.

Our BPTM tubes feature a medium thick wall, optimizing phase-to-phase and phase-to-ground clearance for highly compact equipment according to IEC 60071 for any applications where busbar insulation is up to 24 kV, such as in the manufacture of switchgear cabinets where space is at a premium. When heated, the tube shrinks snugly over the busbar profile to obtain the minimum required wall thickness. The BPTM tubes can be installed easily during large-scale production using an oven or in-field using a gas torch or hot air.

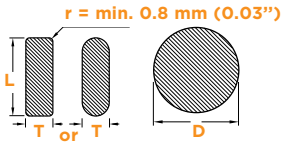
Use of the BPTM tubes allow equipment designers the freedom to reduce air spacing between busbars, such as in the manufacture of switchgear cabinets where space is at a premium. The BPTM tubes provide flashover protection up to 24 kV.

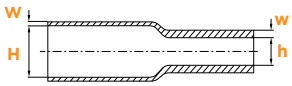
TECHNICAL SPECIFICATIONS

PRODUCT SELECTION					ORDERING INFORMATION				
Ordering Description	Rectangular Bars L + T mm (inch)		Round Bars D mm (inch)		Inside Diameter mm (inch)		Wall Thickness mm (inch)		UoM: Roll of Length m (ft)
	min.	max.	min.	max.	H min.	h max.	W nom.	w min.	
BPTM-15/6-A/U-4	12 (0.47)	18 (0.71)	6.5 (0.25)	12 (0.47)	15 (0.59)	6 (0.24)	1.1 (0.04)	1.90 (0.07)	30 (98.43)
BPTM-30/12-A/U-4	22 (0.87)	38 (1.50)	13.5 (0.53)	25 (0.98)	30 (1.18)	12 (0.47)	1.1 (0.04)	2.20 (0.09)	30 (98.43)
BPTM-50/20-A/U-4	36 (1.42)	65 (2.56)	22 (0.87)	43 (1.69)	50 (1.97)	20 (0.79)	1.1 (0.04)	2.35 (0.09)	30 (98.43)
BPTM-75/30-A/U-4	55 (2.17)	95 (3.74)	33 (1.30)	63 (2.48)	75 (2.95)	30 (1.18)	1.1 (0.04)	2.35 (0.09)	20 (65.62)
BPTM-100/40-A/U-4	70 (2.76)	130 (5.12)	44 (1.73)	86 (3.39)	100 (3.94)	40 (1.57)	1.1 (0.04)	2.35 (0.09)	25 (82.02)
BPTM-120/50-A/U-4	90 (3.44)	165 (6.50)	55 (2.17)	105 (4.13)	120 (4.72)	50 (1.97)	1.3 (0.05)	2.80 (0.11)	25 (82.02)
BPTM-175/70-A/U-4	125 (4.92)	235 (9.25)	80 (3.15)	150 (5.91)	170 (6.69)	70 (2.76)	1.3 (0.05)	2.80 (0.11)	15 (49.21)
BPTM-205/110-A/U-4	200 (7.87)	276 (10.87)	127 (5.00)	190 (7.48)	205 (8.07)	110 (4.33)	1.3 (0.05)	2.80 (0.11)	10 (32.81)
BPTM-235/130-A/U-4	235 (9.25)	315 (12.40)	150 (5.91)	220 (8.66)	235 (9.25)	130 (5.12)	1.5 (0.06)	3.10 (0.12)	20 (65.62)

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 BPTM if two sizes fit the required application. Installation instructions EPP-3264 and Material Safety.





CLEARANCE REDUCTION

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

SPECIFIED VOLTAGE	MINIMUM SPACING mm (inch)		
	PHASE/PHASE	PHASE/GROUND	IEC 60071 AIR CLEARANCE
ROUND BARS			
12	55 (2.17)	65 (2.56)	120 (4.72)
17.5	70 (2.76)	85 (3.35)	160 (6.30)
24	95 (3.74)	125 (4.92)	220 (8.66)
36	150 (5.91)	205 (8.07)	320 (12.60)
RECTANGULAR BARS			
12	65 (2.56)	75 (2.95)	120 (4.72)
17.5	85 (3.35)	105 (4.13)	160 (6.30)
24	115 (4.53)	150 (5.91)	220 (8.66)
36	200 (7.87	285 (11.22)	320 (12.60)

PRODUCT PERFORMANCE

KEY PRODUCT SPECIFICATIONS	TEST METHOD	REQUIREMENT
Thermal Endurance	IEC 60216	125°C min. (257°F min.)
Accelerated Ageing	ASTM D2671	10 Mpa min.
Tensile Strength		
Ultimate Elongation		300% min.
Inclined Tracking Strength	IEC 60587; ASTM D2303	No Tracking or Erosion
		1 Hr. @ 2.5 kV
		1 Hr. @ 2.75 kV
Dielectric Strength	ASTM D149	350 kV/cm min. @ 1.00 mm (889 V/mil min. @ 0.04 inch)
		140 kV/cm min. @ 2.00 mm (450 V/mil min. @ 0.08 inch)
		150 kV/cm min. @ 2.50 mm (381 V/mil min. @ 0.10 inch)
		120 kV/cm min. @ 3.00 mm (304.80 V/mil min. @ 0.12 inch)
Volume Resistivity	ASTM D257	1E+14
Low Temperature Flexibility	ASTM D2671 Procedure 1	No cracking after 4 Hrs. @ -40°C (-40°F)
Smoke Index	NES 711	Less than 120
Flammability	ANSI C37.20/IEEE-27	No Flame Conveyance, 60 sec. max.

TECHNICAL REPORTS

DOCUMENT REFERENCE	DESCRIPTION
PPR-3725	Material Test Report for MV and HV Busbar Insulation Tubing
PPR-3754	Product Qualification Report
20180627-E498737	UL Certificate Reference

INSTALLATION INSTRUCTIONS

DOCUMENT REFERENCE	DESCRIPTION
EPP-3264	Installation Instructions

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