

The REPL RIBT Heat Shrinkable Bus-Bar Insulation Tubing is used to insulate copper and aluminium bus-bars, preventing flashovers and accidentally induced discharge. It can be used in confined spaces to reduce the clearance necessary between bus-bar phases.

The tubes are made from thermally stabilized, cross linked, weather resistant polymeric material with a nominal shrink ratio of 3:1 and an unlimited shelf life when stored at normal warehouse temperatures.

It is available in two grades of wall thickness and can be used on all bus-bar systems, as long as minimum clearances are maintained as shown in the accompanying tables.

- Unlimited shelf life
- Halogen free
- UV & weather resistant
- Shrink ratio: 3:1
- Continuous operating temperature: 50°C to 125°C
- Conforms to specifications: IEC 60684-3 / ENATS 09-13, RoHS 2011/65/EU & 2015/863/EU Compliant
- Colour: Flame red (RAL 3000)



Product Types:

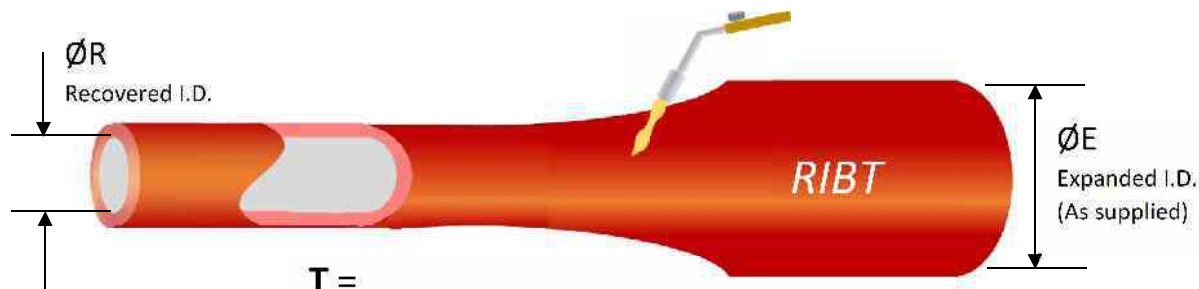
- **RIBT** - Medium Wall thickness, Shrink Ratio of 3:1
- **RIBT-T** - Heavy Wall thickness, Shrink Ratio of 3:1

Material Properties	Value	Test Method
Minimum Shrink Temperature	120°C	-
Density	1.19 g/cm ³ +/-10%	IEC 60684-2 / ASTM D-1505
Water Absorption	<01%	IEC 60684-2 / ASTM D-570
Tensile Strength	>14 MPa	IEC 60684-2 / ASTM D-412
Ultimate Elongation	>300%	IEC 60684-2 / ASTM D-412
Low Temperature Flexibility	No cracking after 4h @40°C	IEC 60684-2
Heat Shock	No cracking or flow	IEC 60684-2
Tensile Strength after heat ageing (150°C for 168hrs)	>10 MPa	IEC 60684-2 / ASTM D-412
Ultimate Elongation after heat ageing (150°C for 168hrs)	>200%	IEC 60684-2 / ASTM D-412
Hardness	45 +/-3 Shore D	ISO 868 / ASTM D-2240
Volume Resistivity	≥1x10 ¹⁴ Ωcm	IEC 60093 / ASTM D-229
Dielectric Strength	>20kV/mm	IEC 60243 / ASTM D-149
Dielectric Constant	<3.5	IEC 60250 / ASTM D-150
Fungus Resistance	No Growth	ASTM G-21
Chemical Resistance	Good	ISO 175 24hrs immersion at room temperature in NaOH 40% strength, Toluene, Acetone and H ₂ SO ₄ 3% strength

IMPORTANT – Please refer to the information on the following pages regarding the recommended minimum clearances to be used for distance between each phases and phase to earth.



RIBT



T =

Recovered Wall Thickness = 2.5-2.8mm for RIBT

Recovered Wall Thickness = 4.00mm for RIBT-T

RIBT 3:1 Shrink Ratio

Medium Wall Bus-Bar insulating Tubing

Product Code	ØE Expanded	ØR Recovered	T Thickness Recovered	Standard Reel Lengths
	mm	mm	mm +/-20%	
RIBT 015/006	15	6	2.5	30
RIBT 020/008	20	8	2.5	30
RIBT 025/010	25	10	2.5	30
RIBT 030/012	30	12	2.5	30
RIBT 040/016	40	16	2.5	30
RIBT 050/020	50	20	2.8	15
RIBT 060/024	60	24	2.8	15
RIBT 070/028	70	28	2.8	15
RIBT 080/032	80	32	2.8	15
RIBT 100/040	100	40	2.8	15
RIBT 120/048	120	48	2.8	15

RIBT-T 3:1 Shrink Ratio

Thick Wall Bus-Bar insulating Tubing

Product Code	ØE Expanded	ØR Recovered	T Thickness Recovered	Standard Reel Lengths
	mm	mm	mm +/-20%	
RIBT-T 030/012	30	12	4.0	30
RIBT-T 040/016	40	16	4.0	30
RIBT-T 050/020	50	20	4.0	15
RIBT-T 060/024	60	24	4.0	15
RIBT-T 070/028	70	28	4.0	15
RIBT-T 080/032	80	32	4.0	15
RIBT-T 100/040	100	40	4.0	15
RIBT-T 120/048	120	48	4.0	15

Application Range Guidance

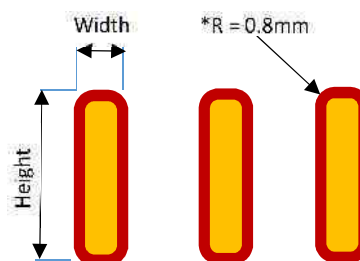
REPL RIBT Heat Shrinkable Bus-Bar Insulating Tubing is suitable for round or rectangular section Bus-Bars.

The table below gives a guide to the application range for each size of tube.

For rectangular sections, add the bus-bar height and width together – for round sections use diameter of Bus-Bar – the values in the table indicate the tube to use based on the Bus-Bar dimensions



Product Code	Rectangular Section Bus-Bar		Round Section Bus-Bar	
	(Height + Width)		(Diameter Range)	
	Min (mm)	Max (mm)	Min (mm)	Max (mm)
RIBT 015/006	12	18	6.5	12
RIBT 020/008	15	24	9	16
RIBT 025/010	19	31	11	20
RIBT-(T) 030/012	22	38	13.5	25
RIBT-(T) 040/016	29	50	18	34
RIBT-(T) 050/020	36	63	22	42
RIBT-(T) 060/024	43	76	26	51
RIBT-(T) 070/028	50	89	31	60
RIBT-(T) 080/032	57	102	35	69
RIBT-(T) 100/040	70	130	44	86
RIBT-(T) 120/048	70	156	44	100



*Note – for rectangular section bus-bar it is recommended that the edges have a minimum rounded edge of 0.8mm

Clearance Reduction Guidance

The table below gives recommendations on the potential reduction in clearances that can be achieved by using the RIBT or RIBT-T tubing on bus-bar sections.

However, they are intended for guidance only and the user should satisfy themselves through testing of the suitability for a specific application.

Rectangular Section Bus-Bar					
System Voltage	Without (Air Clearance) IEC 60071.2	With one layer of RIBT		With one layer of RIBT-T	
kV	Phase-Phase	Phase-Phase	Phase-Earth	Phase-Phase	Phase-Earth
12	120mm	65mm	75mm	35mm	45mm
17.5	160mm	85mm	105mm	55mm	55mm
24	220mm	115mm	150mm	70mm	70mm
36	320mm	200mm	285mm	140mm	140mm

Round Section Bus-Bar					
System Voltage	Without (Air Clearance) IEC 60071-2	With one layer of RIBT		With one layer of RIBT-T	
kV	Phase-Phase	Phase-Phase	Phase-Earth	Phase-Phase	Phase-Earth
12	120mm	30mm	40mm	30mm	40mm
17.5	160mm	45mm	60mm	45mm	60mm
24	220mm	60mm	90mm	60mm	90mm
36	320mm	100mm	160mm	100mm	160mm



Bus-Bar Insulation Heat Shrinkable Tape

REPL Bus-Bar Insulating Tape RTBM is a dual layer tape combining a heat shrinkable outer tape with excellent insulating and weathering properties with an inner hot melt adhesive layer, to provide moisture tight sealing.

It is used to provide insulation enhancement and protection for copper or aluminium bus-bar sections where tube products cannot easily be applied such as junctions and bends.

When installed, the outer tape shrinks and the inner adhesive layer forms a tight bond between the layers.

A single layer of RTBM applied at $\frac{2}{3}$ overlap will provide AC withstand of a flashover up to 17.5kV. Double layers will increase withstand level up to 36kV.

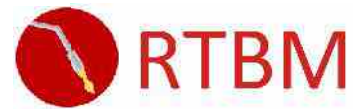
It is suitable for both indoor and outdoor applications.

- Continuous operating temperature up to 90°C
- Can be used in ambient temperatures down to -40°C
- Suitable for indoor and outdoor use
- Unlimited shelf life when stored at <50°C
- Available in rolls of 25/50 and 100mm width
- Colour: Flame Red RAL 3000



Material Properties	Value	Test Method
Minimum Shrink Temperature	120°C	-
Density	1.1g/cm ³ +/-10%	IEC 60684-2 / ASTM D-1505
Water Absorption	<1%	IEC 60684-2 / ASTM D-570
Tensile Strength	>11 MPa	IEC 60684-2 / ASTM D-412
Ultimate Elongation	>500%	IEC 60684-2 / ASTM D-412
Low Temperature Flexibility	No cracking after 4h @40°C	IEC 60684-2
Heat Shock	No cracking or flow	IEC 60684-2
Tensile Strength after heat ageing (150°C for 168hrs)	>10 MPa	IEC 60684-2 / ASTM D-412
Ultimate Elongation after heat ageing (150°C for 168hrs)	>450%	IEC 60684-2 / ASTM D-412
Volume Resistivity	$\geq 1 \times 10^{14} \Omega \text{cm}$	IEC 60093 / ASTM D-229
Dielectric Strength	>20kV/mm	IEC 60243 / ASTM D-149
Dielectric Constant	<3	IEC 60250 / ASTM D-150
Fungus Resistance	No Growth	ASTM G-21
Chemical Resistance	Good	ISO 175 24hrs immersion at room temperature in NaOH 40% strength, Toluene, Acetone and H ₂ SO ₄ 3% strength

Product Code	As Supplied Width	As Supplied Wall Thickness	Pack Size 5 metre Roll		Pack Size 10 metre Roll	
	mm	mm	Roll dimensions Ø x W (mm)	Roll weight (kgs)	Roll dimensions Ø x W (mm)	Roll weight (kgs)
RTBM-25	25	1.0 +/-0.1	78 x 25	0.15	110 x 25	0.29
RTBM-50	50	1.0 +/-0.1	78 x 50	0.29	115 x 50	0.60
RTBM-100	100	1.0 +/-0.1	80 x 100	0.30	Not Available	



Application Range Guidance

REPL RTBM Heat Shrinkable Bus-Bar Insulating Tape is suitable for round or rectangular section Bus-Bars.

It should be applied around the Bus-Bar with an overlap of 2/3 tape width for optimum performance.



Select the required tape width according to the diameter or width of bus-bar section in the table below.

Product Code	Rectangular Section Bus-Bar		Round Section Bus-Bar	
				
	Diameter Range	Length of Tape per metre of bus-bar section to be covered @ 2/3 overlap	Diameter Range	Length of Tape per metre of bus-bar section to be covered @ 2/3 overlap
	(mm)	m	(mm)	m
RTBM-25	8 - 15	5	<25	10
RTBM-50	15 - 50	5 - 10	25 - 100	5 - 15
RTBM-100	50 - 100	5 - 10	100 - 200	5 - 15

Clearance Reduction Guidance

The table below gives recommendations on the potential reduction in clearances that can be achieved by using the RTBM tape on bus-bar sections.

However, they are intended for guidance only and the user should satisfy themselves through testing of the suitability for a specific application.

It should be noted that any sharp edges and unusual geometries will affect the performance of the tape.

System Voltage	Without (Air Clearance) IEC 60071.2	Rectangular Section Bus-Bar		Round section Bus-Bar	
					
		With one layer of RBTM at 2/3 overlap		With one layer of RBTM at 2/3 overlap	
kV	Phase-Phase	Phase-Phase	Phase-Earth	Phase-Phase	Phase-Earth
12	120mm	65	75	55	65
17.5	160mm	85	105	70	85
24	220mm	115	150	95	125
36	320mm	200	285	150	205