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REPL®

# POWER CABLE ACCESSORIES CATALOGUE



CABLE JOINTING – TERMINATING – SHEATH REPAIR – SEALING – BUSBAR INSULATION – HEAT SHRINK – CABLE BREAKOUTS – CABLE END CAPS – PHASE IDENTIFICATION – CABLE ABANDONMENT – COLD SHRINK – CABLE LOOPS – SEPARABLE CONNECTORS – CABLE GLANDS – PUSH ON PREMOULDED – MASTICS – TUBING – TAPES – SMART ACCESSORIES – JOINTING

# RIBT

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:

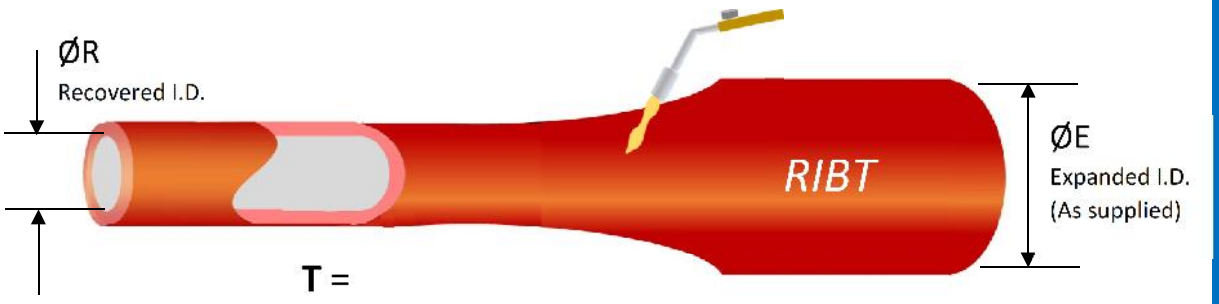
- **RIBT - Medium Wall thickness, Shrink Ratio of 3:1**
- **RIBT-T - Heavy Wall thickness, Shrink Ratio of 3:1**

| 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$^0$C for 168hrs)** | >10 MPa | IEC 60684-2 / ASTM D-412 |
| **Ultimate Elongation after heat ageing (150$^0$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<br>24hrs immersion at room temperature in NaOH 40% strength, Toluene, Acetone and $H_2SO_4$ 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.

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# RIBT




**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% | m |
| 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% | m |
| 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 |

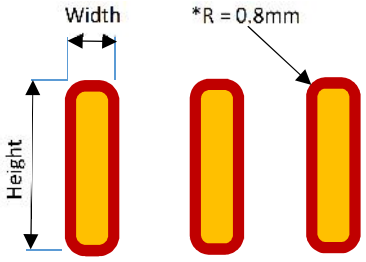

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## Application Range Guidance

RIBT

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 (Height + Width) | | Round Section Bus-Bar (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 |

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# RTBM

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 ⅔ 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$^0$C for 168hrs)** | >10 MPa | IEC 60684-2 / ASTM D-412 |
| **Ultimate Elongation after heat ageing (150$^0$C for 168hrs)** | >450% | IEC 60684-2 / ASTM D-412 |
| **Volume Resistivity** | ≥1x10$^{14}$ Ωcm | 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<br>24hrs immersion at room temperature in NaOH 40% strength, Toluene, Acetone and $H_2SO_4$ 3% strength |

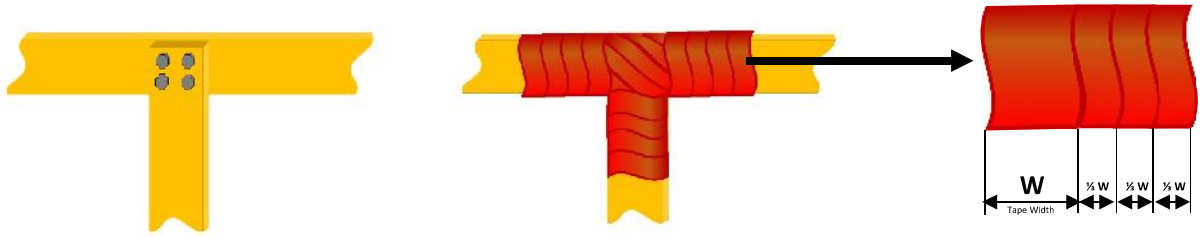
| Product Code | As Supplied Width | As Supplied Wall Thickness | Pack Size 5 metre Roll | | Pack Size 10 metre Roll | |
|---|---|---|---|---|---|---|
| | mm | mm | Roll dimensions Ø x W (mm) | Roll weight (kgs) | Roll dimensions Ø x W (mm) | Roll weight (kgs) |
| RTBM-25 | 25 | 1.0 +/-0.1 | 78 x 25 | 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 | |


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# RTBM

## 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 |

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