

Raycap

Heat Shrinkable –
Component Datasheets



Heat Shrinkable – Component Datasheets

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Heatshrinkable Medium Wall Tubing TMTI Series

TMTI is a medium wall tubing with or without hot melt adhesive coating, designed for insulating, protecting and sealing electrical connections and joints in medium and low voltage cables.



Description

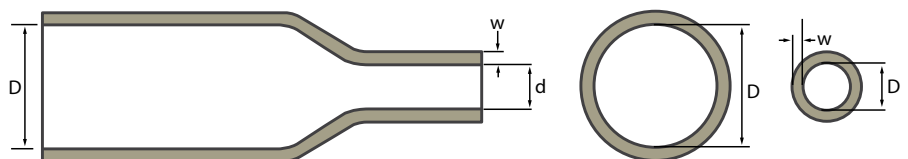
TMTI is a medium wall tubing with or without hot melt adhesive coating. It is a heatshrinkable tubing made from radiation crosslinked polyolefin designed for insulating, protecting and sealing electrical connections and joints in medium and low voltage cables. The specially designed formulation gives the tubing outstanding physical, chemical and electrical properties. It is resistant to chemicals, UV, moisture and oils.

Features

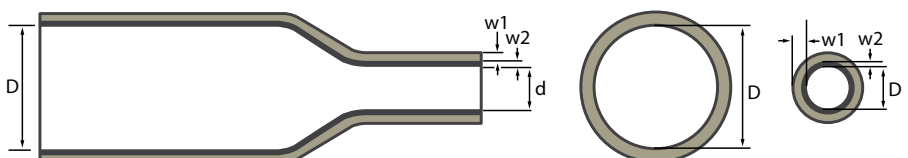
- UV resistant, Semi-rigid
- Minimum full recovery temperature: 120 °C
- Shrink ratio 3:1
- Black color

Product Diagrams

Non-Coated Series



Coated Series



Legend

- D = Inner diameter as supplied
d = Inner diameter after fully recovered
w1 = Outer jacket layer wall thickness after fully recovered
w2 = Inner hot melting adhesive layer wall thickness after fully recovered

Non-coated Sizes					Coated Sizes					
Size	As supplied (mm)	After fully recovered (mm)			Size	As supplied (mm)	After fully recovered (mm)			Standard length(m)
	Inner Diameter D* (min)	Inner Diameter d* (max)	w1* (min)	Standard length (m)		Inner Diameter D* (min)	Inner Diameter d* (max)	w1* (min)	w2* (min)	
12/3	12	3	1.8	1.0-1.5	8/2	8	2	1.8	0.3	1.0-1.5
16/5	16	5	2.1	1.0-1.5	12/3	12	3	1.9	0.4	1.0-1.5
22/6	22	6	2.4	1.0-1.5	16/5	16	5	1.9	0.6	1.0-1.5
28/6	28	6	2.7	1.0-1.5	22/6	22	6	2.5	0.8	1.0-1.5
33/8	33	8	2.6	1.0-1.5	28/6	28	6	2.4	0.8	1.0-1.5
40/12	40	12	2.6	1.0-1.5	33/8	33	8	2.4	0.8	1.0-1.5
55/16	55	16	2.7	1.0-1.5	40/12	40	12	2.4	0.8	1.0-1.5
65/19	65	19	2.9	1.0-1.5	55/16	55	16	2.4	0.8	1.0-1.5
75/22	75	22	3.0	1.0-1.5	65/19	65	19	2.6	1.0	1.0-1.5
95/25	95	25	3.6	1.0-1.5	75/22	75	22	2.8	1.0	1.0-1.5
115/34	115	34	3.5	1.0-1.5	85/25	85	25	2.9	1.1	1.0-1.5
140/42	140	42	3.3	1.0-1.5	95/25	95	25	3.1	1.1	1.0-1.5
160/50	160	50	3.3	1.0-1.5	115/34	115	34	3.5	1.2	1.0-1.5
180/58	180	58	3.3	1.0-1.5	140/42	140	42	3.4	1.2	1.0-1.5
235/65	235	55	3.7	1.0-1.5	160/50	160	50	3.4	1.2	1.0-1.5
300/75	300	75	3.8	1.0-1.5						
350/100	350	100	4.3	1.0-1.5						
450/150	450	150	4.3	1.0-1.5						

*See Legend on previous page.

Product Guide

TMTI x-y/z (for example TMTI 28/6-1500/C)

x : size of tube

y : Customized length in millimeters or S for spools

z : C for Coated or N for Non-coated

Technical Characteristics

Description	Unit	Test Method	Required Value	Typical Value	
				Coated	Non-coated
Shrinking Properties					
Longitudinal Changes	%	IEC 60684-2	-10 to +5	0 to -10	0 to -10
Concentricity	%	IEC 60684-2	≥50	75	75
Physical Properties (Jacket Layer)					
Tensile Strength	MPa	ASTM D 412	min 12	15.57	17.56
Ultimate Elongation	%	ASTM D 412	min 350	966.1	938.7
After Ageing at 150°C/168 hrs					
Tensile Strength	MPa	ASTM D 412	min 12	14.99	15.68
Ultimate Elongation	%	ASTM D 412	min 300	791.5	926.7
Heat Shock 200°C/ 4 hrs		IEC 60684-2	No cracking, flowing, dropping		
Bend at low temp. -20°C/ 4 hrs		IEC 60684-2	No cracking		
Water Absorption	%	ISO 62	max 0.5	0.20	0.15
Density	g/cm³	ISO 1183-1	1.0-1.1	1.05	1.05
Electrical Properties (Jacket Layer)					
Dielectric Strength	kV/mm	IEC 60243-1	min 15	22	21
Volume Resistivity	Ω.cm	IEC 62631-3-1	min 10 ¹²	9.06 × 10 ¹³	2.25 × 10 ¹⁴
Chemical Properties (Jacket Layer)					
UV Resistance		ASTM G154	No color change and crack		
Adhesive Properties					
Peel Strength to PE	N/25mm	ASTM 2671	min 80	100	
Softening Point	°C	ASTM E 28	105±5	105	

Heatshrinkable Heavy Wall Tubing

THTI Series

THTI is a co-extruded heavy wall tubing designed to provide maximum reliability and chemical resistance protection.



Description

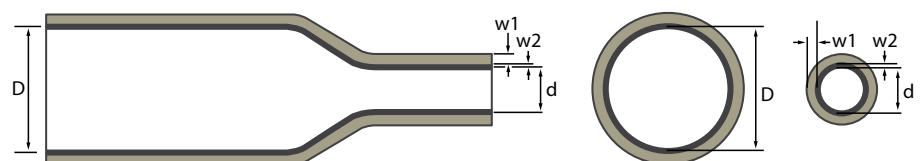
THTI is a co-extruded, heavy wall, heat shrinkable tubing lined with hot melting adhesive. It is made from radiation crosslinked polyolefin. The product is specially designed for insulating, protecting and sealing electrical connections and joints in medium and low voltage cable. It is also resistant to chemicals, UV, moisture and oils.

Features

- UV resistant, Semi-rigid
- Dual wall, hot melt adhesive lined by co-extrusion. Also manufactured without hot melt adhesive
- Flammable
- Minimum full recovery temperature: 120°C
- Shrink ratio 3:1
- Black color

Product Diagrams

THTI Series



Legend

- D= Inner diameter as supplied
 d = Inner diameter after fully recovered
 w1 = Wall thickness after fully recovered
 w2 = Inner hot melting adhesive layer wall thickness after fully recovered

Heatshrinkable Heavy Wall Tubing

THTI Series

Continuous Length Tubing

Size	As supplied (mm)	After fully recovered (mm)			Standard length (mm)
	Inner Diameter D* (min)	Inner Diameter d* (max)	w1* (min)	w2* (min)	
9/3	9	3	1.90	0.4	1000-1500mm
12/3	12	3	1.90	0.4	1000-1500mm
13/4	13	4	2.30	0.6	1000-1500mm
15/4	15	4	2.30	0.6	1000-1500mm
24/6	24	6	2.60	0.8	1000-1500mm
34/8	34	8	3.20	0.8	1000-1500mm
43/12	43	12	4.00	0.8	1000-1500mm
48/12	48	12	4.00	0.8	1000-1500mm
56/16	56	16	4.00	0.8	1000-1500mm
75/22	75	22	4.00	1.0	1000-1500mm
85/25	85	25	4.00	1.0	1000-1500mm
95/25	95	25	4.00	1.0	1000-1500mm
105/25	105	25	4.00	1.0	1000-1500mm
115/34	115	34	4.00	1.2	1000-1500mm
130/36	130	36	4.00	1.2	1000-1500mm
160/50	160	50	4.10	1.2	1000-1500mm

*See Legend on previous page.

Product Guide

THTI x-y/z (for example THTI 24/6-S/C)

x : size of tube

y : Customized length in millimeters or S for spools

z : C for Coated or N for Non-coated

Technical Characteristics

Description	Unit	Test Method	Required Value	Typical Value
Shrinking Properties (Whole)				
Longitudinal Changes	%	IEC 60684-2	-10 to +5	0 to -10
Concentricity	%	IEC 60684-2	≥50	75
Physical Properties (Jacket Layer)				
Tensile Strength	MPa	ASTM D 412	min 12	16.4
Ultimate Elongation	%	ASTM D 412	min 350	975.2
After Ageing at 150°C/168 hrs				
Tensile Strength	MPa	ASTM D 412	min 12	15.7
Ultimate Elongation	%	ASTM D 412	min 300	802.4
Heat Shock 200°C/ 4 hrs		IEC 60684-2	No cracking, dropping	
Bend at low temp. -20°C/ 4 hrs		IEC 60684-2	No cracking	
Water Absorption	%	ISO 62	max 0.5	0.21
Density	g/cm³	ISO 1183-1	1.0-1.1	1.05
Electrical Properties (Jacket Layer)				
Dielectric Strength	kV/mm	IEC 60243-1	min 12	22
Volume Resistivity	Ω.cm	IEC 62631-3-1	min 10 ¹²	9.06×10 ¹⁴
Chemical Properties (Jacket Layer)				
UV Resistance		ASTM G154	No color change and crack	
Adhesive Properties				
Peel Strength to PE	Pli	ASTM D 2671	min 80	100
Softening Point	°C	ASTM E28	105±5	105

Medium Voltage Tubing TBIM

Medium wall tubing for busbar insulation

TBIM medium wall halogen free busbar insulation tubing for application in insulation voltage busbar up to 24KV.

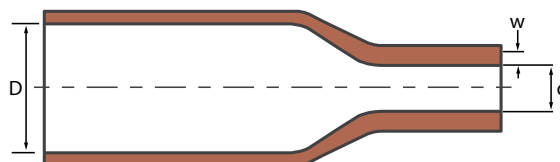


Description

TBIM is a heavy wall halogen free busbar insulation tubing which is made from radiation crosslinked halogen free compounds. Specially designed formulation gives the tubing excellent electrical, shrinking and anti-tracking properties.

Features

- Tracking resistant
- Flame retardant
- Shrink ratio 2.5:1
- UV resistant
- Flexible
- IEC 60684-3-283 compliant
- Min. full recovery temp.: 120°C
- Application up to 36kV



Dimensions

Normal Size	As Supplied (mm)	After Recovered (mm)		Standard Length*
	Inside Diameter D*(Min)	Inside Diameter d*(Max)	Wall Thickness w*(Min)	
TBIM 15/6	25	10.0	3.9	30m/spool
TBIM 30/12	33	8.0	4.0	30m/spool
TBIM 40/16	40	16.0	4.0	30m/spool
TBIM 50/20	55	16.0	4.0	15m/spool
TBIM 65/25	65	25.0	4.0	15m/spool
TBIM 75/30	75	25.0	4.0	15m/spool
TBIM 100/40	100	40.0	3.9	15m/spool
TBIM 120/50	120	40.0	4.10	15m/spool

*Note:

D= Inner diameter as supplied

d= Inner diameter after fully recovered

w= The typical wall thickness value after fully recovered

*Other cut lengths or continuous lengths are available according to the customer requirement.

Technical Requirements

Properties	Unit	Test Method	Required Value	Typical Value
Operating temperature			-40°C-120°C	
Shrinkable properties				
Longitudinal Changes	%	IEC 60684-2	0 to -10%	-5%
Concentricity	%	IEC 60684-2	≥65%	70-85%
Physical properties				
Tensile Strength	MPa	ASTM D 412	Min. 12 MPa	15.7
Ultimate Elongation	%	ASTM D 412	Min. 400%	900
Heat aging (120°C, 168h)				
Tensile Strength	MPa	ASTM D 412	Min. 10 MPa	14.0
Ultimate Elongation	%		Min. 300%	780
Bend at low temp. (-40°C / 4hrs)		IEC 60684-2	No Cracking	No Cracking
Electrical Properties				
Volume Resistivity	Ω.cm	IEC 62631-3-1	Min. 10 ¹²	4x10 ¹⁴
Dielectric Strength	KV/mm	IEC 60243-1	Min. 20	22
Permittivity		IEC 62631-2-1	Max. 5	3.5
Tracking Resistance		ASTM D 2303	No Tracking	No Tracking
Chemical Properties				
Water Absorption (24hrs immersed in water (25°C))	%	ISO 62	Max. 0.5%	0.2
Density	g/cm ³	IEC 1183-1	1.2-1.3 (nom.)	1.23
Copper Corrosion		UL 224	No Corrosion	No Corrosion
Flammability (Oxygen Index)	%	ISO 4589	≥22	26
Flammability	s	IEC 60684-2 Method C	Max. 60s	15

*The concentricity shall not be less than 60% for the size ≥100/40.

Medium Voltage Tubing

TBIH

Heavy wall tubing for busbar insulation

TBIH heavy wall halogen free busbar insulation tubing for application in insulation voltage busbar up to 36KV.

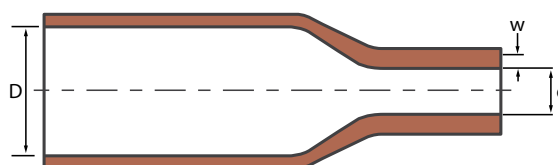


Description

TBIH is a heavy wall halogen free busbar insulation tubing which is made from radiation crosslinked halogen free compounds. Specially designed formulation gives the tubing excellent electrical, shrinking and anti-tracking properties.

Features

- Tracking resistant
- Flame retardant
- Shrink ratio 2.5:1
- UV resistant
- Flexible
- IEC 60684-3-283 compliant
- Min. full recovery temp.: 120°C
- Application up to 36kV



Dimensions

Normal Size	As Supplied (mm)	After Recovered (mm)		Standard Length*
	Inside Diameter D*(Min)	Inside Diameter d*(Max)	Wall Thickness w*(Min)	
TBIH 25/10	25	10.0	3.9	30m/spool
TBIH 40/16	40	16.0	4.0	30m/spool
TBIH 65/25	65	25.0	4.0	15m/spool
TBIH 75/25	75	25.0	4.0	15m/spool
TBIH 95/30	95	30.0	4.0	15m/spool
TBIH 100/40	100	40.0	3.9	15m/spool
TBIH 120/40	120	40.0	4.10	1.0m
TBIH 180/58	180	58.0	4.10	1.0m

*Note:

D= Inner diameter as supplied

d= Inner diameter after fully recovered

w= The typical wall thickness value after fully recovered

*Other cut lengths or continuous lengths are available according to the customer requirement.

Technical Requirements

Properties	Unit	Test Method	Required Value	Typical Value
Operating temperature			-40°C-120°C	
Shrinkable properties				
Longitudinal Changes	%	IEC 60684-2	0 to -10%	-5%
Concentricity	%	IEC 60684-2	≥65%	70-85%
Physical properties				
Tensile Strength	MPa	ASTM D 412	Min. 12 MPa	15.7
Ultimate Elongation	%	ASTM D 412	Min. 400%	900
Heat aging (120°C, 168h)				
Tensile Strength	MPa	ASTM D 412	Min. 10 MPa	14.0
Ultimate Elongation	%		Min. 300%	780
Bend at low temp. (-40°C / 4hrs)		IEC 60684-2	No Cracking	No Cracking
Electrical Properties				
Volume Resistivity	Ω.cm	IEC 62631-3-1	Min. 10 ¹²	4x10 ¹⁴
Dielectric Strength	KV/mm	IEC 60243-1	Min. 20	22
Permittivity		IEC 62631-2-1	Max. 5	3.5
Tracking Resistance		ASTM D 2303	No Tracking	No Tracking
Chemical Properties				
Water Absorption (24hrs immersed in water (25°C))	%	ISO 62	Max. 0.5%	0.2
Density	g/cm ³	IEC 1183-1	1.2-1.3 (nom.)	1.23
Copper Corrosion		UL 224	No Corrosion	No Corrosion
Flammability (Oxygen Index)	%	ISO 4589	≥22	26
Flammability	s	IEC 60684-2 Method C	Max. 60s	15

*The concentricity shall not be less than 60% for the size ≥100/40.

Heatshrinkable Stress Control Tubing TSTR Series

TSTR is a stress control tubing designed to provide maximum reliability in medium voltage joints and terminations.



Description

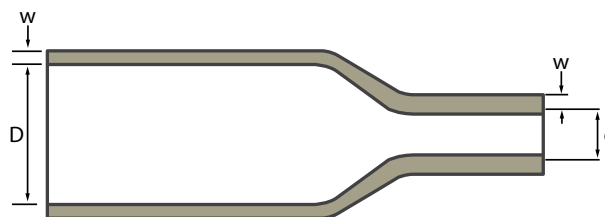
TSTR is a stress control tubing which is made from radiation crosslinked polyolefin. The specially designed formula and carefully controlled manufacturing technology effectively release the high electrical stress present at insulation screen in medium voltage joints and terminations of power cables.

Features

- UV resistant, Flexible
- Electric stress relieve
- ESI 09-13 compliant
- Minimum full recovery temperature: 120 °C
- Application up to 24 kV
- Shrink ratio 3:1
- Black color

Product Diagrams

TSTR Series



Legend

D= Inner diameter as supplied
d = Inner diameter after fully recovered
w= Wall thickness after fully recovered

Heatshrinkable Stress Control Tubing

TSTR Series

Continuous Length Tubing

Size	As supplied (mm)	After fully recovered (mm)		Standard length (m)
	Inner Diameter D* (min)	Inner Diameter d* (max)	w* (min)	
26/10	26	10	2.1	15m/spool or 1.0-1.5m
30/12	30	12	2.2	15m/spool or 1.0-1.5m
35/15	35	15	2.3	15m/spool or 1.0-1.5m
40/16	40	16	2.4	15m/spool or 1.0-1.5m
47/18	47	18	2.4	15m/spool or 1.0-1.5m
55/21	55	21	2.4	15m/spool or 1.0-1.5m
65/25	65	25	2.4	15m/spool or 1.0-1.5m
75/30	75	30	2.4	15m/spool or 1.0-1.5m

*See Legend on previous page.

Product Guide

TSTR x-y/z (for example TSTR 30/12-S/C)

x : size of tube

y : Customized length in millimeters or S for spools

z : N for Non-coated

Technical Characteristics

Description	Unit	Test Method	Typical Value
Shrinking Properties			
Longitudinal Changes	%	IEC 60684-2	-15 to +5
Concentricity	%	IEC 60684-2	≥ 60
Physical Properties			
Tensile Strength	MPa	ASTM D 412	≥ 8.0
Ultimate Elongation	%	ASTM D 412	≥ 200
Heat Ageing at 120°C/168 hrs			
Ultimate Elongation	%	ASTM D 412	min 200
Heat Shock 150°C/4 hrs		IEC 60684-2	No cracking, flowing or dripping
Bend at low temp. -40°C/4 hrs		IEC 60684-2	No cracking
Water Absorption 23°C/24 hrs	%	ISO 62	max 0.5
Density	g/cm ³	ISO 1183-1	1.2~1.4
Electrical Properties			
Permittivity		IEC 62631-2-1	15~30
Volume Resistivity	Ω.cm	IEC 62631-3-1	≥ 10 ¹¹
1000Hz Loss Factor (tgδ)		IEC 62631-2-1	< 0.15

Medium Voltage Tubing **TMTJ Series**

TMTJ is a medium voltage tubing designed to provide maximum reliability in medium voltage joints.



Description

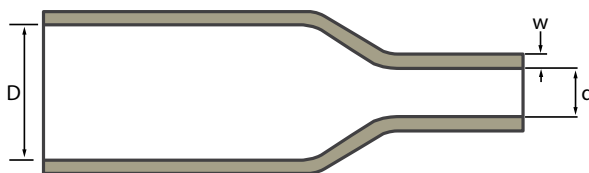
TMTJ is a high insulation heat-shrinkable tubing made from radiation cross-linked polyolefin. The specially designed heavy wall insulation tubing has excellent insulation properties and can be used up to 36kV.

Features

- Heavy Wall
- High Insulation
- Minimum full recovery temperature: 120°C
- Shrink ratio 3:1
- Red color

Product Diagrams

TSTJ Series



Legend

D= Inner diameter as supplied
d = Inner diameter after fully recovered
w= Wall thickness after fully recovered

Medium Voltage Tubing

TMTJ Series

Continuous Length Tubing				
Size	As supplied (mm)	After fully recovered (mm)		Standard length (m)
	Inner Diameter D* (min)	Inner Diameter d* (max)	w* (min)	
35/12	35	12	3.2	1.0-1.5
45/14	45	14	3.5	1.0-1.5
52/15	52	15	3.9	1.0-1.5
55/18	55	18	3.9	1.0-1.5
66/20	66	20	4.4	1.0-1.5
75/25	75	25	4.7	1.0-1.5
95/30	95	30	4.7	1.0-1.5

*See Legend on previous page.

Technical Characteristics

Property	Test Method	Test Requirements	Typical Data
Longitudinal Changes	IEC 60684-2	-10 to +5%	-5 %
Tensile Strength	ASTM D 412	≥12 MPa	13 MPa
Ultimate Elongation	ASTM D 412	≥200%	500%
Volume Resistivity	IEC 62631-3-1	10 ¹⁴ Ω.cm min.	2.6×10 ¹⁴ Ω.cm
Dielectric Strength	IEC 60243-1	20kV/mm(1.0mm)	22 kV/mm
Water Absorption	ISO 62	0.5% max.	0.25%

Heatshrinkable Heavy Wall Insulation Tubing

THTJ Series

THTJ is an insulation medium voltage tubing designed for rapid shrink rate to provide maximum reliability and insulation protection in medium voltage joints.



Description

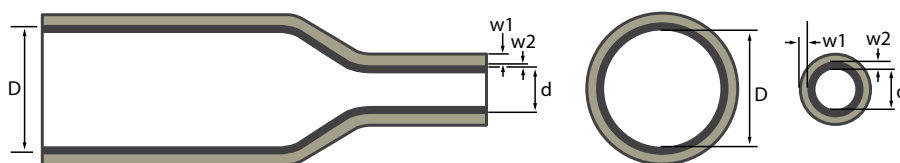
THTJ is an insulation double layer heatshrinkable tubing which is made from crosslinked polyolefin. The inner layer is made from elastomeric insulation materials to provide rapid shrinking rates, high insulation and high reliability. The external layer is made from insulation materials to provide high insulation. It is suitable for medium voltage joints up to 36KV.

Features

- High insulation
- Heavy wall
- Minimum full recovery temperature: 120°C
- Shrink ratio 3:1
- Red color

Product Diagrams

THTJ Series



Legend

- D= Inner diameter as supplied
d = Inner diameter after fully recovered
w1= Outer insulation layer wall thickness after fully recovered
w2= Inner elastomeric insulation layer wall thickness after fully recovered

Heatshrinkable Heavy Wall Insulation Tubing

THTJ Series

Continuous Length Tubing

Size	As supplied (mm)	After fully recovered (mm)			Standard length (m)
	Inner Diameter D* (min)	Inner Diameter d* (max)	w1* (min)	w2* (min)	
42/16	42	16	2.0	1.9	0.38-1.5m
55/20	55	20	3.0	2.9	0.38-1.22m
62/25	62	25	3.0	2.9	0.38-1.22m
70/30	70	30	3.0	2.9	0.38-1.22m
80/34	80	34	3.0	2.9	0.38-1.22m
95/40	95	40	3.0	2.9	0.38-1.22m

*See Legend on previous page.

Product Guide

THTJ x-y/z (for example THTJ 42/16-S/C)

x : size of tube

y : Customized length in millimeters

z : N for Non-coated

Technical Characteristics

Description	Unit	Test Method	Typical Value
Shrinking Properties			
Longitudinal Changes	%	IEC 60684-2	-15 to +5
Concentricity	%	IEC 60684-2	≥50
Physical Properties of Elastomeric Insulation Layer			
Tensile Strength	MPa	ASTM D 412	≥ 4.5
Ultimate Elongation	%	ASTM D 412	> 500
Density	g/cm ³	ISO 1183-1	1.1-1.25
Volume Resistivity	Ω.cm		≥ 10 ¹⁴
Physical Properties of External Insulation Layer			
Tensile Strength	MPa	ASTM D 412	≥ 11
Ultimate Elongation	%	ASTM D 412	≥ 300
Density	g/cm ³	ISO 1183-1	1.0-1.2
Volume Resistivity	Ω.cm	IEC 62631-3-1	≥ 10 ¹⁴
Dielectric Strength	kV/mm	IEC 60243-1	≥ 20
Water Absorption	%	ISO 62	< 0.5

Heatshrinkable Insulating/Conductive Tubing

TISD Series

TISD is an semi-conductive insulation medium voltage triple layered tubing designed to provide maximum reliability and insulation protection.



Description

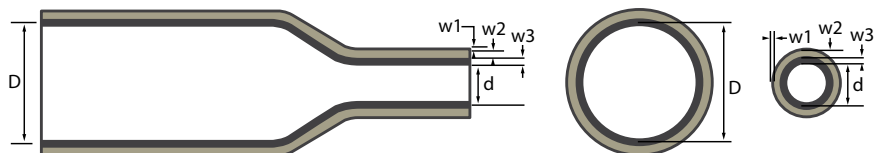
TISD is a semi-conductive/insulation/elastomeric triple layer heat shrinkable tubing which is made from crosslinked polyolefin. The inner layer is made from elastomeric insulation materials to provide a rapid shrinking rate, high insulation and reliability. The intermediate layer is made from insulation materials to provide high insulation, and the external layer is made from semi-conductive materials to provide electric shielding. The tubing is suitable for applications in power cable joints up to 36kV.

Features

- Semi-conductive
- Extra heavy insulation layer wall
- Co-extruded elastomer triple layer
- Applications up to 36kV
- Minimum full recovery temperature 130°C
- Shrink ratio 3:1
- Black/red/red color

Product Diagrams

TISD Series



Legend

- D= Inner diameter as supplied
d= Inner diameter after fully recovered
w1= Outer wall thickness after fully recovered
w2= Intermediate insulation layer wall thickness after fully recovered
w3= Inner elastomeric insulation layer wall thickness after fully recovered

Continuous Length Tubing

Size	As supplied (mm)	After fully recovered (mm)				Standard length (m)
	Inner Diameter D* (min)	Inner Diameter d* (max)	w1* (min)	w2* (min)	w3* (min)	
36/12	36	12	0.7	3.3	3.3	1000-1220m
46/15	46	15	0.7	3.3	3.3	1000-1220m
50/18	50	18	0.7	3.3	3.3	1000-1220m
56/21	56	21	0.7	3.3	3.3	1000-1220m
62/25	62	25	0.7	3.3	3.3	1000-1220m
70/30	70	30	0.7	3.3	3.3	1000-1220m
80/36	80	36	0.7	3.3	3.3	1000-1220m
95/40	95	40	0.7	3.3	3.3	1000-1220m
120/50	120	50	0.7	3.3	3.3	1000-1220m

*See Legend on previous page.

Product Guide

TISD x-y/z (for example TISD 30/10-S/C)

x : size of tube

y : Customized length in millimeters

z : N for Non-coated

Technical Characteristics

Description	Unit	Test Method	Typical Value
Shrinking Properties (whole)			
Longitudinal Changes	%	IEC 60684-2	-15 to +5
Concentricity	%	IEC 60684-2	≥60
Restricted Shrinkage		IEC 60684-2	No splitting or cracking
Heat Shock 150°C/4hrs		IEC 60684-2	No cracking, flowing or dripping
Properties of Inner Elastomeric Insulation Layer			
Tensile Strength	MPa	ASTM D 412	≥ 4.5
Ultimate Elongation	%	ASTM D 412	≥ 500
Density	g/cm ³	ISO 1183-1	1.1~1.25
Volume Resistivity	Ω.cm	IEC 62631-3-1	≥ 10 ¹⁴
Properties of Intermediate Insulation Layer			
Tensile Strength	MPa	ASTM D 412	≥ 11
Ultimate Elongation	%	ASTM D 412	≥ 300
Density	g/cm ³	ISO 1183-1	1.0~1.2
Volume Resistivity	Ω.cm	IEC 62631-3-1	≥ 10 ¹⁴
Dielectric Strength	kV/mm	IEC 60243-1	≥ 20
Water Absorption	%	ISO 62	< 0.5
Properties of External Conductive Layer			
Tensile Strength	MPa	ASTM D 412	≥ 11
Ultimate Elongation	%	ASTM D 412	≥ 300
Density	g/cm ³	ISO 1183-1	1.0~1.2
Volume Resistivity	Ω.cm	IEC 62631-3-1	< 10 ⁴
Water Absorption	%	ISO 62	< 0.5

Heatshrinkable Oil Resistant Tubing TOLB Series

TOLB is an oil resistant tubing designed to provide maximum reliability in medium voltage joints.



Description

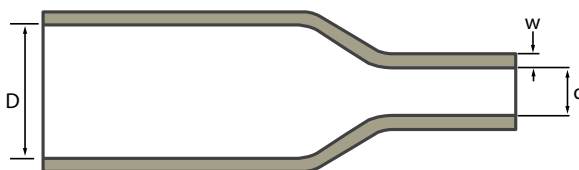
TOLB is an oil resistant heatshrinkable tubing which is made from radiation crosslinked polyolefin. The specially designed formulation gives the tubing excellent electrical and oil resistance properties. The tubing is suitable for application in power cable joints up to 36KV.

Features

- Oil resistant
- Minimum full recovery temperature: 130°C
- Shrink ratio 2.5:1
- Transparent color

Product Diagrams

TOLB Series



Legend

D= Inner diameter as supplied
d = Inner diameter after fully recovered
w= Wall thickness after fully recovered

Heatshrinkable Oil Resistant Tubing

TOLB Series

Continuous Length Tubing

Size	As supplied (mm)	After fully recovered (mm)		Standard length (m)
	Inner Diameter D* (min)	Inner Diameter d* (max)	w* (min)	
19/6	19	6	2.00	30 m/spool
25/10	25	10	2.00	30 m/spool
30/12	30	12	2.00	30 m/spool
35/14	35	14	2.50	30 m/spool
40/16	40	16	2.50	30 m/spool
50/20	50	20	2.50	15 m/spool
65/25	65	25	2.95	15 m/spool
85/35	85	35	2.95	15 m/spool

*See Legend on previous page.

Product Guide

TOLB x-y/z (for example TOLB 30/10-S/C)

x : size of tube

y : Customized length in millimeters or S for spools

z : N for Non-coated

Technical Characteristics

Description	Unit	Test Method	Required Value	Typical Value
Shrinking Properties				
Longitudinal Changes	%	IEC 60684-2	-10 to +5	0 to -10
Concentricity	%	IEC 60684-2	≥50	75
Physical Properties				
Tensile Strength	MPa	ASTM D 412	min 12	13
Ultimate Elongation	%	ASTM D 412	min 200	850
Water Absorption	%	ISO 62	max 0.5	0.12
Electrical Properties				
Dielectric Strength	kV/mm	IEC 60243-1	min 20 (1.0 mm)	24
Volume Resistivity	Ω.cm	IEC 62631-3-1	min 10 ¹⁴	2.3×10 ¹⁴
Chemical Properties				
Oil Resistance 23°C/24 hrs		Transform Oil/ 23°C/24hrs	Weight Increase 10% max	2

Heatshrinkable Conductive Tubing TSMC Series

TSMC is a conductive medium voltage tubing designed to provide maximum reliability in medium voltage joints.



Description

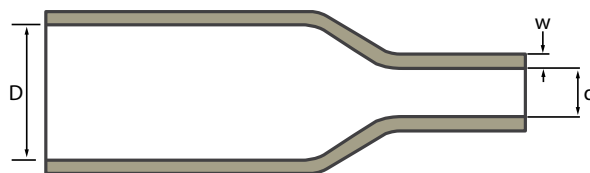
TSMC is a conductive tubing made from radiation cross-linked conductive polyolefin. A specially designed formulation provides excellent electrical & mechanical properties for use in medium voltage joints.

Features

- UV resistant, semi-rigid
- Semi-conductive
- Minimum full recovery temperature: 120 °C
- Shrink ratio 3:1
- Black color

Product Diagrams

TSMC Series



Legend

- D= Inner diameter as supplied
d = Inner diameter after fully recovered
w= Wall thickness after fully recovered

Heatshrinkable Conductive Tubing

TSMC Series

Continuous Length Tubing

Size	As supplied (mm)	After fully recovered (mm)		Standard length (m)
	Inner Diameter D* (min)	Inner Diameter d* (max)	w* (min)	
33/8	33	8.0	2.4	30m/spool or 1.0-1.5m
40/12	40	12.0	2.5	30m/spool or 1.0-1.5m
44/16	44	16.0	2.5	30m/spool or 1.0-1.5m
55/16	55	16.0	2.8	30m/spool or 1.0-1.5m
75/22	75	22.0	3.0	1.0-1.5m
95/25	95	25.0	3.1	1.0-1.5m
120/34	120	34.0	3.2	1.0-1.5m
140/42	140	42.0	3.3	1.0-1.5m
180/58	180	58.0	3.3	1.0-1.5m

*See Legend on previous page.

Product Guide

TSMC x-y/z (for example TSMC 33/8-S/C)

x : size of tube

y : Customized length in millimeters or S for spools

z : N for Non-coated

Technical Characteristics

Description	Unit	Test Method	Typical Value
Shrinking Properties			
Longitudinal Changes	%	IEC 60684-2	-15 to +5
Concentricity	%	IEC 60684-2	≥60
Physical Properties			
Tensile Strength	MPa	ASTM D 412	min 10
Ultimate Elongation	%	ASTM D 412	min 200
Heat Ageing at 150°C/168 hrs			
Tensile Strength	MPa	ASTM D 412	Remain 70%
Ultimate Elongation	%	ASTM D 412	min 100%
Water Absorption 23°C/14 days	%	ISO 62	max 0.15
Electrical Properties			
Volume Resistivity	Ω.cm	IEC 62631-3-1	max 10 ⁴

Heatshrinkable Anti-tracking Tubing TATR Series

TATR is an anti-tracking insulation medium voltage tubing.



Description

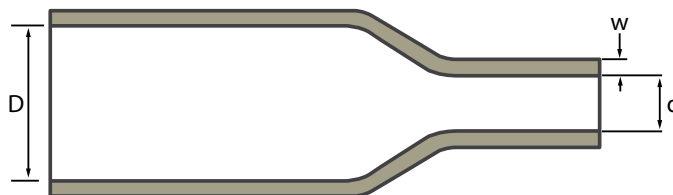
TATR is an anti-tracking insulation medium voltage tubing with red sealing mastic. It is made from radiation crosslinked polyolefin. The specifically designed formulation gives the tubing excellent electrical, creeping resistance and anti-tracking properties. It is used to provide maximum operational reliability and outer protection for cable terminations up to 36kV.

Features

- UV resistant, Flexible
- Anti-tracking
- Flame retardant
- Minimum full recovery temperature: 120°C
- Shrink ratio 3:1
- Red color

Product Diagrams

Non-Coated Series



Legend

- D = Inner diameter as supplied
d = Inner diameter after fully recovered
w = Wall thickness after fully recovered

Heatshrinkable Anti-tracking Tubing

TATR Series

Continuous Length Tubing

Size	As supplied (mm)	After fully recovered (mm)		Standard length (m)
	Inner Diameter D* (min)	Inner Diameter d* (max)	w* (min)	
19/6	19	6	2.7	30 m/spool or 0.5-1.5 m
30/10	30	10	2.9	30 m/spool or 0.5-1.5 m
38/12	38	12	3.1	30 m/spool or 0.5-1.5 m
40/16	40	16	3.1	30 m/spool or 0.5-1.5 m
49/16	49	16	3.2	30 m/spool or 0.5-1.5 m
55/18	55	18	3.2	30 m/spool or 0.5-1.5 m
65/21	65	21	3.3	30 m/spool or 0.5-1.5 m
75/25	75	25	3.5	30 m/spool or 0.5-1.5 m
85/29	85	29	3.5	30 m/spool or 0.5-1.5 m
100/40	100	40	4.0	0.5-1.5 m
130/50	130	50	4.0	1.0-1.5 m

*See Legend on previous page.

Product Guide

TATR x-y/z (for example TATR 30/10-S/C)

x : size of tube

y : Customized length in millimeters or S for spools

z : N for Non-coated

Technical Characteristics

Description	Unit	Test Method	Required Value	Typical Value
Shrinking Properties				
Longitudinal Changes	%	IEC 60684-2	-15 to +5	-7 to -2
Concentricity	%	IEC 60684-2	≥60	65 to 85
Physical Properties				
Tensile Strength	MPa	ASTM D 412	min 10	13.8
Ultimate Elongation	%	ASTM D 412	min 200	860.1
After Ageing at 120°C/168 hrs				
Tensile Strength	MPa	ASTM D 412	min 10	12.7
Ultimate Elongation	%	ASTM D 412	min 100	651.5
Heat Shock 150°C/ 4 hrs		IEC 60684-2	No cracking, dropping	
Bend at low temp. -40°C/ 4 hrs		IEC 60684-2	No cracking	
Water Absorption	%	ISO 62	max 0.5	0.20
Density	g/cm ³	ISO 1183-1	1.2~1.3	1.25
Electrical Properties				
Dielectric Strength	kV/mm	IEC 60243-1	min 15 (1 mm)	22
Volume Resistivity	Ω.cm	IEC 62631-3-1	min 10 ¹²	9.06×10 ¹⁴
Tracking Resistance 3.75kV/ 1 hr	kV/hr	ASTM D 2303	No tracking	No tracking
Permittivity		IEC 62631-2-1	3 (nom)	3
Chemical Properties				
Copper Corrosion		ASTM D2671	No Corrosion	
UV Resistance		ASTM G154	No color change and crack	

Heatshrinkable Cable Repair Sleeve WRSL Series

WRSL is a cable repair sleeve that provides maximum reliability and chemical resistance protection.



Description

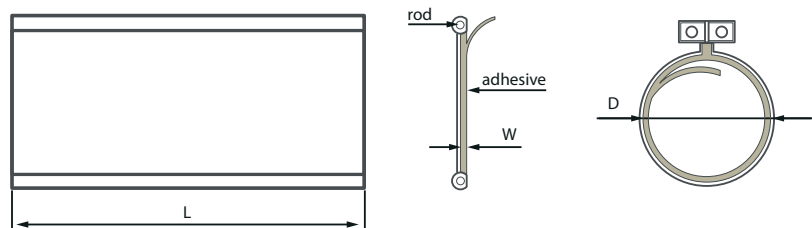
WRSL is a cable repair sleeve which is made from radiation crosslinked polyolefin. The specifically designed formulation makes the tubing to have outstanding physical, chemical and electrical properties.

Features

- Quick and easy installation
- Covered with thermo paint
- Protection against mechanical stress
- Sleeve and channel can be cut to suit shorter applications
- For insulation on low voltage cable up to 1 kV
- Hot melt adhesive forms a durable, moisture resistant seal
- Fits a wide range of cable sizes
- Black color

Product Diagrams

WRSL Series



Legend

- D= Inner diameter as supplied
d = Inner diameter after fully recovered
W= Wall thickness of sleeve as supplied
w = Wall thickness of sleeve after fully recovered

Continuous Length Tubing

Size	As supplied (mm)		After fully recovered (mm)		Standard length (mm)
	Inner Diameter D* (min)	Wall Thickness W* (min)	Inner Diameter d * (max)	Wall Thickness w* (min)	
36/10	38	0.7	10	3.2	500, 750, 1000, 1500 mm
55/13	57	0.7	13	3.2	500, 750, 1000, 1500 mm
85/20	85	0.7	20	3.2	500, 750, 1000, 1500 mm
108/27	110	0.7	27	3.2	500, 750, 1000, 1500 mm
136/30	138	0.7	30	3.2	500, 750, 1000, 1500 mm
180/50	183	0.7	50	3.2	500, 750, 1000, 1500 mm

*See Legend on previous page.

Product Guide

WRSL x-y/z (for example WRSL 36/10-S/C)

x : size of tube

y : Customized length in millimeters or S for spools

z : C for Coated or N for Non-coated

Technical Characteristics

Description	Unit	Test Method	Typical Value
Physical Properties			
Bursting Strength	MPa	Test Temperature: 23°C±5°C/min	15
Thermal Aging	MPa	Test Temperature: 150°C±2°C/168 hrs	min 13.7
Bursting Strength		After free shrinkable	min 14
Dielectric Strength	kV/mm	Electrode Surface Diameter: 6 mm Weight: 50±2gms Voltage Steps: 2kV/20 sec	min 12
Split Resistance	°C	Test Temperature: 200°C±2°C/30 mins	No split propagation
Carbon Content UV Resistance of Outer Layer	%	Heating Rate: 20°C/min Gas Flow Rate: 300 cc/min	min 2.6±0.25
Cold Crack Resistance	°C	-40°C/4 hrs	No cracking
Resistance to Aggressive Media Bursting Strength	MPa	Test Media: Fuel Oil, Petroleum Jelly Test Temperature: 70°C±2°C	min 13.7
Environmental Stress Cracking	°C	10% Igepal Co 630 Solution Immersion Test Temperature: 50°C±3°C/30 days	No cracking
Temperature Indicating Paint Conversion		Complete Conversion	Complete Conversion
Adhesive Properties			
Adhesive Softening Point	°C	ASTM E28	90±10°C
Peel Strength to PE at 23°C±2°C		ASTM D 2671	min 70N
Shear Strength at 23°C±2°C	°C	Copper Mirror Test Test Temperature: 60°C±2°C/16 hrs	min 100N
Corrosive Effect		ASTM D 1693	No effect

Heatshrinkable Fiber Reinforced Sleeve SFBR Series

SFBR is a sleeve made from composite materials designed to repair different types of cables.



Description

The SFBR is a wraparound heat-shrinkable sleeve which is made from PE with integrated fibers. It is suitable for repairing all types of non - pressurized cables: aerial, buried or ducted, non-filled or jelly filled with polyethylene or metal jackets. Integrated moisture barrier completely reconstitutes the cable sheath construction. The sleeve with hot melt adhesive ensures a permanent, reliable, watertight seal. Extended size range can accommodate cables with diameters ranging from 8 to 200mm.

Installation indicators: heat sensitive paint and adhesive flow, white line

Features

- Easy Installation
- Covered with Thermo Paint
- Easy Cut Sleeve
- Fits a Wide Range of Cables

Heatshrinkable Fiber Reinforced Sleeve

SFBR Series

Sizing Information

Size	Max Cable Diameter (mm)	Min Cable Diameter (mm)	Standard lengths (mm) *
36/8	36	8	500, 1000, 1500, 2000
46/12	46	12	500, 1000, 1500, 2000
50/13	50	13	500, 1000, 1500, 2000
56/15	56	15	500, 1000, 1500, 2000
75/15	75	15	500, 1000, 1500, 2000
100/25	100	25	500, 1000, 1300, 1500, 2000
125/30	125	30	500, 1000, 1300, 1500, 2000
146/34	146	34	500, 1000, 1300, 1500, 2000
164/42	164	42	500, 1000, 1300, 1500, 2000

* custom lengths can be supplied

Sleeve Information

Sleeve thickness without adhesive coating before shrinking	Adhesive coating before shrinking	Shrinking rate	Sleeve thickness after shrinking
1.1mm	0.4mm	>4	4.5mm

Technical Data

Item	Test Condition and Method	Requirement
Bursting Strength	Test Temp: 23±5°C	Min 2500N
Thermal Ageing	168Hrs at 150±2°C	Min 2700N
Bursting Strength	(After free shrinkage)	
Dielectric Strength	Electrode Surface Dia: 6mm Weight: 50±2gms Voltage steps: 2KV/20sec	Min 12 KV/mm
Split Resistance	Temp: 200±2°C Test Temp: 23±3°C	No split propagation
Carbon Content	Heating rate: 20°C/min	Min 2.5%
UV Res of Out/layer	Gas flow rate: 300cc/mm	
Cold Crack Resistance	Test Temp ≤-40°C	No cracking
Resistance to aggressive media	Test media: Fuel oil, petroleum jelly	Min 2000N
Bursting Strength	Test temp: 70±2°C	
Environmental Stress Cracking	10% Igepal Co 630 solution immersion Time 30 days Test Temp: 50±3°C	No cracking
Temp. Indicating Paint Conversion	Scraped off paint from sleeve	130°C-150°C
Hot Melt Adhesive		
Item	Test Condition and Method	Requirement
Peel Strength	-PE at 23±2°C -PE at 23±2°C -Pb at 23±2°C	Min 100N/25mm
Shear Strength	At 23±2°C	Min 200N
Corrosive Effect	Copper Mirror Test Test Time: 16hrs Test Temp: 60±2°C	No effect

Heatshrinkable Insulation Breakout MCBI Series

MCBI is a low voltage breakout which is made from radiation crosslinked polyolefin.



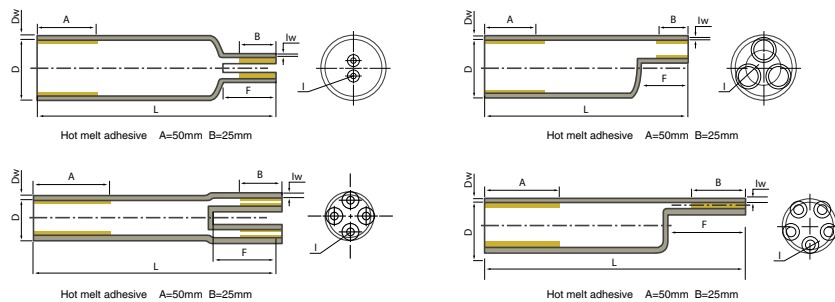
Description

MCBI is a low voltage breakout made from radiation crosslinked polyolefin. The product is suitable for applications in low voltage cable terminations where electrical insulation and water proof qualities are required. The specifically designed formulation gives the product outstanding physical, chemical and electrical properties.

Features

- Shrink ratio 2-3:1
- Spiral adhesive coated
- UV resistant
- Black color

Product Diagrams

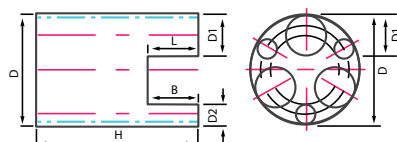


Legend

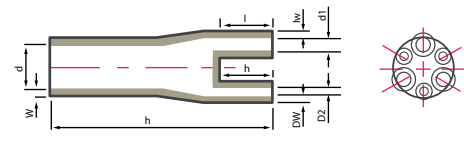
- I = The length of L as supplied
 f = The length of F as supplied
 a* = Inner diameter as supplied
 b* = Inner diameter as fully recovered

6 cores cable breakout

EXPANDED (As Supplied)



STANDARD PART (After Unrestricted Recovery)



Available Sizes

Size (mm)	As supplied (mm) ±10%		D (mm)		l (mm)		Recovered Length (mm) ±10%		Recovered wall (mm)±20%						
	l	f	a*(min)	b* (min)	a* (min)	b* (min)	L	F	Dw	lw					
2 Cores cable breakout															
2122	55	16	22	12	11	3.5	60	18	2.2	1.8					
2230	80	22	30	14	14	4.5	84	21	2.6	2.4					
2340	100	30	40	16	15	5.0	110	30	2.2	2.2					
2460	95	21	60	23	25	8.0	105	25	2.4	2.4					
2590	165	45	90	60	30	8.0	170	48	3.0	3.0					
2160	290	170	160	92	50	30	310	160	4.5	4.5					
3 Cores cable breakout															
3138	100	35	38	16	15	5	110	30	2.3	2.0					
3260	170	40	60	25	26	8	175	45	3.2	2.8					
3370	175	45	70	28	32	10	180	45	3.3	3.0					
3480	190	50	80	38	34	16	195	55	3.5	3.3					
3511	220	55	110	50	46	19	230	60	3.8	3.5					
3125	230	58	125	57	55	20	240	65	3.7	3.3					
3140	250	58	140	70	62	26	270	68	3.9	3.6					
3170	250	55	170	77	75	28	270	68	3.9	3.6					
4 Cores cable breakout															
4140	95	23	40	15	12	5.0	100	24	2.2	2.0					
4255	145	40	55	21	20	5.5	150	42	2.9	2.7					
4365	170	45	65	26	25	7.5	180	50	3.3	3.1					
4475	180	45	75	26	28	7.5	190	50	3.3	3.1					
4582	170	46	82	37	30	11	180	45	3.3	3.0					
4690	170	46	90	37	32	11	180	50	3.3	3.0					
4100	180	55	100	47	38	12	190	55	3.9	3.3					
4125	215	50	125	52	50	15	240	68	4.0	4.0					
4160	240	50	160	70	64	20	270	68	3.8	3.7					
5 Cores cable breakout															
5140	90	20	40	19	13	4.5	85	20	2.5	2.2					
5255	145	36	55	24	18	5.5	150	40	3.0	2.6					
5380	160	46	80	33	26	8	175	50	3.2	3.0					
5100	185	52	100	42	35	10	195	55	3.5	3.2					
6 Cores cable breakout															
Size	As supplied (mm) ±10%						Recovered Dimensions (mm) ±10%								
	D	D1	D2	H	B	L	h	b	l	w	dw	lw	d	d1	d2
6175	75	27	13	115	30	30	125	32	32	3/0	2.4	2.2	2.6	9.0	5.0

*See Legend on previous page.

Technical Characteristics

Property	Test Method	Required Value	Typical Value
Tensile strength	ASTM D 412	≥ 12 MPa	14 MPa
Tensile strength after thermal aging	ASTM D 412 /120°/168 hrs.	≥ 10 MPa	12 MPa
Ultimate elongation	ASTM D 412	$\geq 200\%$	600%
Ultimate elongation after thermal aging	ASTM D 412 /120°/168 hrs.	$\geq 200\%$	520%
Dielectric strength	IEC 60243-1	≥ 12 kV/mm(1.0mm)	17 kV/mm(1.0mm)
Volume resistivity	IEC 62631-3-1	$\geq 10^{14}$ Ω .cm	3.0×10^{14} Ω .cm
Water absorption	ISO 62	$\leq 0.5\%$	0.3%
Heat shock at 200°C/4 hrs	IEC 60684-2	No cracking, dropping	No cracking, dropping

Heatshrinkable Conductive Breakout MCBC Series

MCBC is a conductive breakout which is made from radiation crosslinked polyolefin.



Description

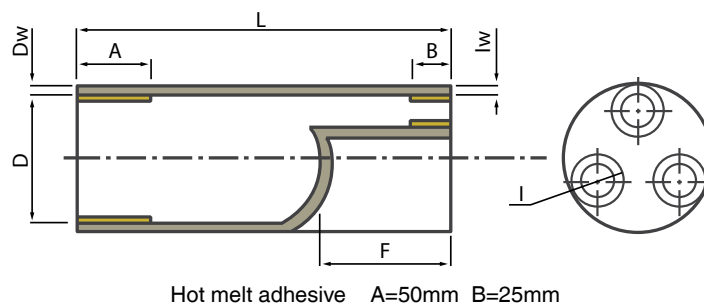
MCBC is a three cores conductive cable breakout which is made from radiation crosslinked polyolefin. The electrically semi-conductive property of the breakout provides effective conductive screen and sealing protection to cable terminations up to 36KV.

Features

- Sealing mastic coated
- UV resistant
- Minimum full recovery temperature: 130°C
- Conductive
- Shrink ration 2-3:1
- Black color

Product Diagrams

MCBC Series



Legend

- l = The length of L as supplied
- f = The length of F as supplied
- a = Inner diameter as supplied
- b = Inner diameter after fully recovered

Size (mm)	As supplied (mm) $\pm 10\%$		D (mm)		I (mm)		Recovered length (mm) $\pm 10\%$		After recovered (mm) $\pm 20\%$	
	l*	f*	a* (min)	b* (max)	a* (min)	b* (max)	L	F	Dw	lw
60/25	170	40	60	25	26	8	170	40	2.8	2.6
80/ 38	210	50	80	38	34	16	215	55	3.5	3.2
110/50	210	55	110	50	46	19	230	60	3.5	3.3
125/57	220	60	125	57	55	20	240	68	3.5	3.2

*See Legend on previous page.

Technical Requirements

Physical Property	Unit	Test Method	Required Value	Typical Value
Tensile Strength	MPa	ASTM D 412	≥ 12 MPa	13
Ultimate Elongation	%	ASTM D 412	$\geq 200\%$	500
After Thermal Ageing at 120°C/168 hrs	MPa			
Tensile Strength		ASTM D 412	≥ 10 MPa	12
Ultimate Elongation	%	ASTM D 412	$\geq 200\%$	480
Volume Resistivity	$\Omega \cdot \text{cm}$	IEC 62631-3-1	$\leq 10^4 \Omega \cdot \text{cm}$	4.6×10^1
Water Absorption	%	ISO 62	$\leq 1.0\%$	0.25
Heat Shock at 150°C/4 hrs		IEC 60684-2	No cracking, dropping	
Density	g/cm^3	ISO 1183-1	1.0~1.1 g/cm^3	1.05

Heatshrinkable Insulating End Cap MCCP Series

MCCP is a heat shrinkable insulating end cap with or without spiral adhesive coated which is made from radiation crosslinked polyolefin.



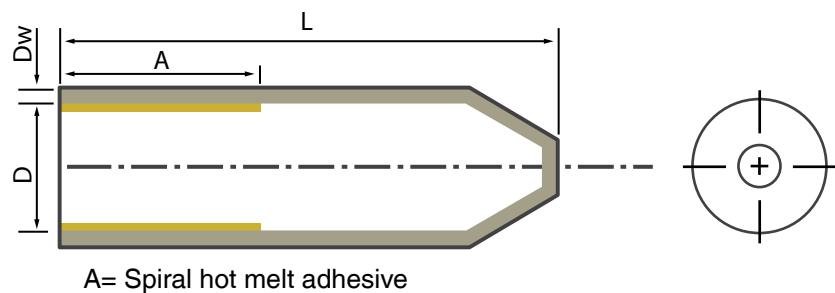
Description

MCCP is a heat shrinkable insulating end cap made from radiation crosslinked polyolefin and available with or without spiral adhesive coating. The special formulation gives the product UV resistance, as well as excellent mechanical and bonding properties.

Features

- UV resistant
- Min. full recovery temp : 120°C
- Shrink ratio 3:1
- Black color

Product Diagrams



Legend

- L = Length of cap as supplied
- D = Inner diameter after fully recovered
- A = Length of adhesive after fully recovered
- d = Length of diameter after fully recovered
- I = Length of end cap after fully recovered

Non-coated Sizes

Size (mm)	As supplied (mm)		After fully recovered (mm)			
	L* (±10%)	D* (Min.)	A* (±10%)	d* (±10%)	l* (±10%)	w* (±10%)
(mm)						
MCCP 10 12/4	38	12	15	4	40	2.6
MCCP 15 14/5	45	14	18	5	42	2.2
MCCP 20 20/6	65	20	25	6	55	2.5
MCCP 25 25/8.5	75	25	30	8.5	65	2.5
MCCP 30 35/16	92	35	35	16	83	3.3
MCCP 35 40/15	95	40	40	15	75	3.3
MCCP 40 55/26	114	55	50	26	105	3.5
MCCP 50 75/36	132	75	55	36	115	4.2
MCCP 60 100/52	153	100	70	52	130	4.0
MCCP 70 120/60	155	120	70	60	150	4.2
MCCP 80 145/60	160	145	70	60	150	4.2
MCCP 90 160/82	160	160	70	82	133	4.5
MCCP 100 200/90	170	200	70	90	145	4.5

*See Legend on previous page.

Technical Characteristics

Property	Unit	Test Method	Required Value	Typical Value
Shrinking Properties				
Longitudinal Changes	%	IEC 60684-2	-10 to +5	-5
Physical properties (Jacket layer)				
Tensile strength	MPa	ASTM D 412	Min. 12	13
Ultimate Elongation	%	ASTM D 412	Min. 200	650
After ageing at 150°C/168 hrs Ultimate Elongation	%	ASTM D 412	Min. 200	600
Heat shock 200°C/ 4 hrs		IEC 60684-2	No cracking, flowing, dropping	No cracking, flowing, dropping
Water absorption	%	ISO 62	Max. 0.5	0.35
Density	g/cm ³	ISO 1183-1	1.0-1.1	1.05
Electrical properties (Jacket layer)				
Dielectric strength	kV/mm	IEC 60243-1	Min. 12 (1.0mm)	16.7
Volume resistivity	Ω.cm	IEC 62631-3-1	Min. 10 ¹⁴	3.5×10 ¹⁴
Chemical properties (Jacket layer)				
UV resistance		ASTM G154	No color change and crack	No color change and crack
Properties of adhesive				
Peel strength to PE	N/25mm	ASTM D2671	-	80
Softening point	°C	ASTM E28	85 ±5	85

Heatshrinkable Anti-tracking Shedding MRSA Series

MRSA is an anti-tracking heat shrinkable rain shed available with or without sealing mastic coated.



Description

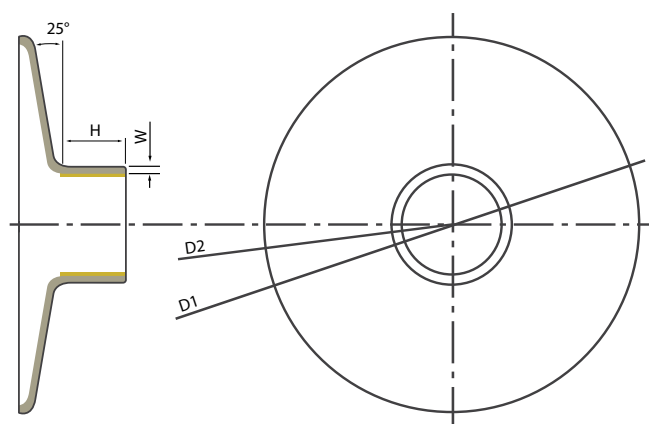
MRSA is an anti-tracking heat shrinkable rain shed with or without sealing mastic coated. It is made from radiation crosslinked polyolefin. The specifically designed formulation gives the product creep resistance and anti-tracking properties. It is used to provide maximum operational reliability in medium voltage terminations.

Features

- Sealing mastic coated
- UV resistant
- Minimum full recovery temperature: 130°C
- Anti-tracking
- Shrink ration 2-3:1
- Red Color

Product Diagrams

MRSA Series



Size	D2 (mm)		As supplied (mm)		After recovered (mm)	
	a* (min)	b*(min)	H (min)	D1 (nom)	W (±10%)	H (min)
10	35	12	20	95	3.0	18
20	48	20	28	120	3.5	20
30	60	25	30	120	3.3	20
40	60	30	35	140	3.5	30
50	75	30	35	140	3.3	30
60	100	35	35	140	3.3	30

Legend

a* = As supplied

b* = After fully recovered

Technical Requirements

Physical Properties	Unit	Test Method	Required Value	Typical Value
Tensile Strength	MPa	ASTM D 412	≥ 12	13
Ultimate Elongation	%	ASTM D 412	≥ 200	800
After Thermal Ageing at 120°C/168 hrs				
Tensile Strength	MPa	ASTM D 412	≥ 10	12
Ultimate Elongation	%	ASTM D 412	≥ 200	720
Dielectric Strength	kV/mm	IEC 60243-1	≥ 12 kV/mm(1.0mm)	17 kV/mm (1.0mm)
Volume Resistivity	Ω.cm	IEC 62631-3-1	≥ 10 ¹⁴	3.0×10 ¹⁴
Water Absorption	%	ISO 62	≤ 0.5	0.2
Heat Shock at 150°C/4 hrs		IEC 60684-2	No cracking, dropping	
Density	g/cm ³	ISO 1183-1	1.1~1.3	1.20

Mastic Tape SMTS Series

SMTS is suitable for
joint and power
cable termination
applications.



Description

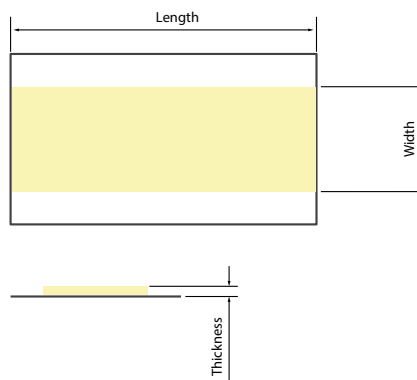
SMTS is a stress relief mastic tape for 11-36kV joints and power cable terminations. The specially designed formulation gives the mastic excellent electrical properties.

Features

- Oil resistant
- Void filling
- Stress relief
- High permittivity
- Yellow color

Product Diagrams

SMTS Series



Mastic Tape

SMTS Series

Continuous Length Tape

Size	Standard Length (mm)	Width (mm)	Thickness (mm)
20/1/100	100	20±3	1.6±0.3
20/1/150	150	20±3	1.6±0.3
20/1/300	300	20±3	1.6±0.3
30/2/700	700	30±3	2.0±0.3
30/3/1000	1000	25±3	3.0±0.3

Technical Characteristics

Description	Unit	Test Method	Required Value	Typical Value
Physical Properties				
Density	g/cm ³	ISO 1183-1	1.2-1.5	1.3
Tensile Strength	MPa	ASTM D 638		0.1
Ultimate Elongation	%	ASTM D 638	>1000	1024
Electrical Properties				
Dielectric Strength	kV/mm	IEC 60243-1	≥ 10	12
Permittivity		IEC 62631-2-1	10-25	17
Volume Resistivity	Ω.cm	IEC 62631-3-1	10 ⁸ ~10 ¹²	10 ⁹
50Hz Loss Factor (tgδ)		IEC 62631-2-1	< 0.2	0.15
Adhesive Properties				
Operating Temperature	°C		-20~+90	-20~+90
Adhesive and Self-amalgamation		Transform Oil	Good	Good

Mastic Tape SMTA Series

SMTA is suitable for power cable termination applications.



Description

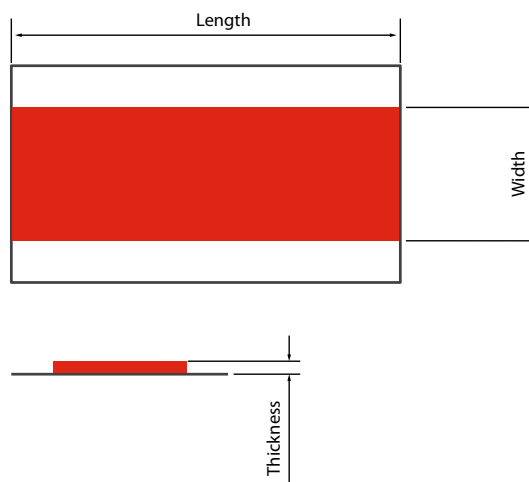
SMTA is an anti-tracking mastic. It performs anti-tracking function when used in 11-36KV terminations of power cables. The specially designed formulation gives the mastic excellent electrical properties.

Features

- Waterproof
- Anti-tracking
- Void filling
- Excellent electrical properties
- Red color

Product Diagrams

SMTA Series



Mastic Tape

SMTA Series

Continuous Length Tape

Size	Standard Length (m)	Width (mm)	Thickness (mm)
20/1/900	0.9	25±1.0	0.8±0.1
20/1/1500	1.5	25±1.0	0.8±0.1
20/1/3000	3	25±1.0	0.8±0.1
20/1/10000	10	25±1.0	0.8±0.1
20/1/50000	50	25±1.0	0.8±0.1

Technical Characteristics

Description	Unit	Test Method	Required Value	Typical Value
Physical Properties				
Density	g/cm ³	ISO 1183-1	1.2-1.4	1.3
Tensile Strength	MPa	ASTM D 638		0.1
Ultimate Elongation	%	ASTM D 638	>1000%	1024
Electrical Properties				
Dielectric Strength	kV/mm	IEC 60243-1	≥ 15	16
Permittivity		IEC 62631-2-1	3 max	2.9
Volume Resistivity	Ω.cm	IEC 62631-3-1	10 ¹³	10 ¹³
50Hz Loss Factor (tgδ)		IEC 62631-2-1	< 0.2	0.035
Adhesive Properties				
Operating Temperature	°C		-20~+90	-20~+90
Adhesive and Self-amalgamation			Good	Good

Mastic Tape SMTI Series

SMTI is suitable for joint and power cable termination applications.



Description

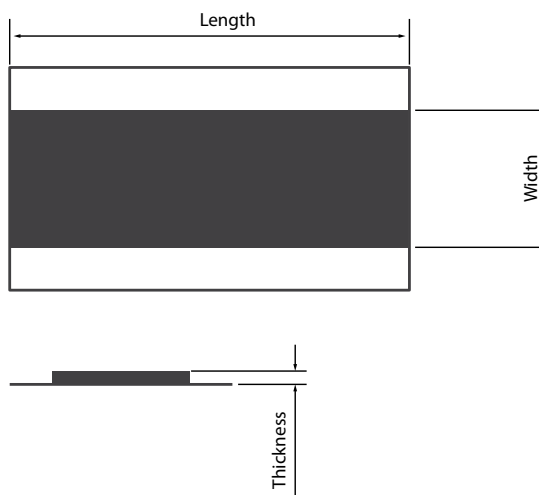
SMTI is a black sealing mastic. It performs sealing and insulation function when used in joints and terminations of power cables. The specially designed formulation gives the mastic excellent electrical properties.

Features

- Watertight seal
- UV resistance
- Self-amalgamating
- Excellent electrical properties
- Black color

Product Diagrams

SMTI Series



Continuous Length Tape

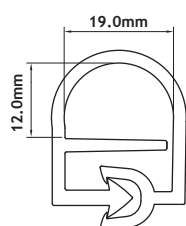
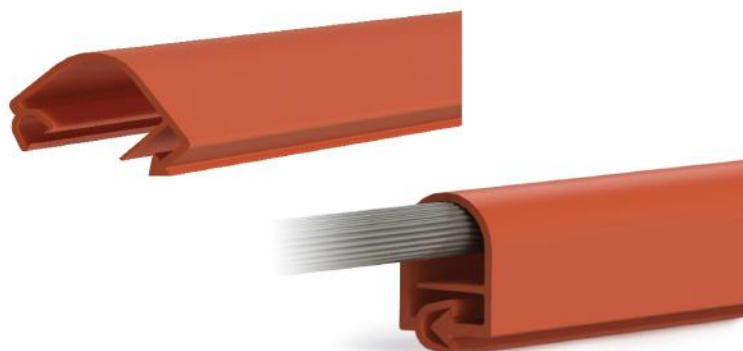
Size	Standard Length (m)	Width (mm)	Thickness (mm)
38/2/10000	10	38±1.0	2.0±0.1
38/3/10000	10	38±1.0	3.0±0.1
50/2/10000	10	50±1.0	2.0±1.0
60/3/10000	10	60±1.0	3.0±0.1

Technical Characteristics

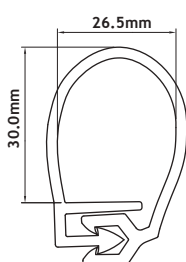
Description	Unit	Test Method	Required Value	Typical Value
Physical Properties				
Density	g/cm ³	ISO 1183-1	1.2-1.4	1.3
Tensile Strength	MPa	ASTM D 638		0.1
Ultimate Elongation	%	ASTM D 638	>1000	1050
Electrical Properties				
Dielectric Strength	kV/mm	IEC 60243-1	≥ 15	16
Permittivity		IEC 62631-2-1	3 max	2.5
Volume Resistivity	Ω.cm	IEC 62631-3-1	10 ¹³	10 ¹³
50Hz Loss Factor (tgδ)		IEC 62631-2-1	< 0.2	0.035
Adhesive Properties				
Operating Temperature	°C		-20~+90	-20~+90
Adhesive and Self-amalgamation			Good	Good

Insulation Enhancement Solutions ICOL for Overhead Lines

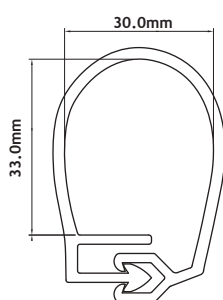
Raycap insulation enhancement products are designed to protect energized conductors or busbars from flashovers due to contact from birds, squirrels and other wildlife as well as trees. Insulation Enhancement Products are made from a UV stable, track resistant, high performance material to ensure years of reliable service.



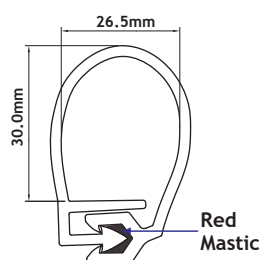
ICOL-101



ICOL-201



ICOL-301



ICOL-2015

Features

ICOL is designed to insulate existing bare lines without costly conductor replacement expenditure or additional line hardware.

- High dielectric strength
- Tracking & Erosion resistant
- Prevent Conductor from chemical corrosion affected by strong acid, alkali, salt, etc.
- Halogen free
- Available in three sizes that covers conductors up to 800 mm².

Selection Chart

Code	Conductor Size Sq. mm.	Packaging (MTR./Roll)
ICOL-101	≤ 99	15
ICOL-201	up to 400	15
ICOL-301	up to 800	15

Technical Specifications*

Property	Value	Test Method
Tensile Strength	10 N/mm ² (Mpa) (min.)	ASTM D638
Ultimate Elongation	400% (min)	ASTM D638
Density	1.20 ± 0.2gm/cm ³	ASTM D792
Hardness	40 ±5% Shore D	ASTM D2240
Water Absorption	0.5% (max.)	ASTM D570
Accelerated ageing	(90°C for 7 Days)	ASTM D2671
a. Tensile Strength	± 25% Variation	ASTM D638
b. Ultimate Elongation	± 25% Variation	ASTM D638
Low Temperature Flexibility	No Cracking	ASTM D2671
(-40°C for 4 hrs.)		
Continuous Temperature Limit	-45 to +105°C	—
Dielectric Strength	20 KV/mm. (min)	ASTM D149
Volume Resistivity	1x10 ¹⁴ Ohm. cm (min)	ASTM D257
Dielectric constant	5 (max.)	ASTM D150
Resistant to Tracking & Erosion	No Tracking, Erosion or Flame failure up to 3.25 kV for 20 min.	ASTM D2303

* The above mentioned values are typical analytical values obtained on material when tested as per applicable standards under controlled laboratory conditions and should not be construed as specifications for the product.

Insulation Enhancement Solutions

ICBC-201

Raycap insulation enhancement products are designed to protect energized conductors or busbars from flashovers due to contact from birds, squirrels and other wildlife as well as trees. Insulation Enhancement Products are made from a UV stable, track resistant, high performance material to ensure years of reliable service.



Features

- A variety of different shapes and sizes are available to cover circuit breaker bushings, bus standoff insulators, capacitors, transformer bushings, voltage regulators, potential transformers and more
- Installation can be made quickly in the field
- The insulation covers can be reentered for other maintenance needs and then reused, thus lowering overall lifetime costs.

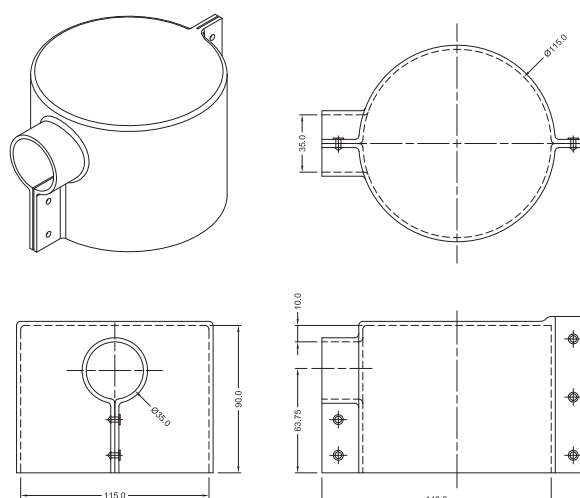
Product Details

Part Number	ICBI-201
Material	Polyolefin

Technical Specifications

Properties	Value	Standard
Tensile Strength	10 N/mm ² (Mpa) (min.)	ASTM D638
Ultimate Elongation	300% (min)	ASTM D638
Water absorption	0.5% (max.)	ASTM D570
Accelerated Ageing		ASTM D2671
2 Tensile Strength	10 N/mm ² (Mpa) (min.)	ASTM D638
Ultimate Elongation	200% (min)	ASTM D638
Low Temp. Flexibility (40°C for 4 hrs.)	No cracking	IEC 216
Dielectric Strength	13 kV/mm. (min)	ASTM D2671
Di-electric Constant	5.0 (max.)	ASTM D150
Volume Resistivity	1 x 10 ¹³ Ohm.cm (min)	ASTM D257

Product Diagram



Raycap insulation enhancement products are designed to protect energized conductors or busbars from flashovers due to contact from birds, squirrels and other wildlife as well as trees. Insulation Enhancement Products are made from a UV stable, track resistant, high performance material to ensure years of reliable service.



Features

- A variety of different shapes and sizes are available to cover circuit breaker bushings, bus standoff insulators, capacitors, transformer bushings, voltage regulators, potential transformers and more
- Installation can be made quickly in the field
- The insulation covers can be reentered for other maintenance needs and then reused, thus lowering overall lifetime costs.

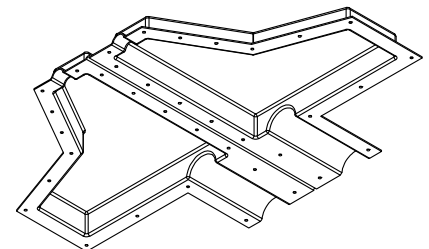
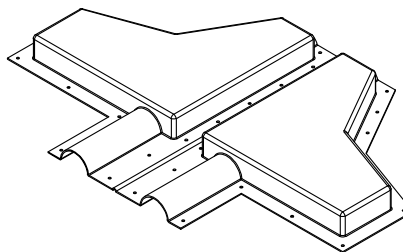
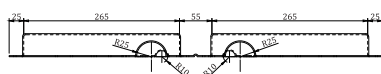
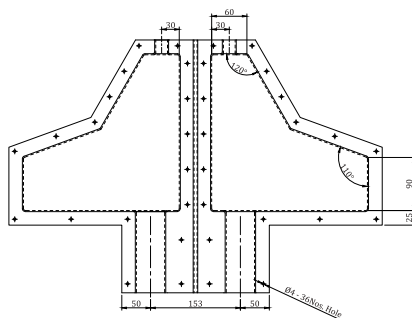
Product Details

Part Number	ICBC-101
Material	Polyolefin

Technical Specifications

Properties	Value	Standard
Tensile Strength	10 N/mm ² (Mpa) (min.)	ASTM D638
Ultimate Elongation	300% (min)	ASTM D638
Water absorption	0.5% (max.)	ASTM D570
Accelerated Ageing		ASTM D2671
2 Tensile Strength	10 N/mm ² (Mpa) (min.)	ASTM D638
Ultimate Elongation	200% (min)	ASTM D638
Low Temp. Flexibility (40°C for 4 hrs.)	No cracking	IEC 216
Dielectric Strength	13 kV/mm. (min)	ASTM D2671
Di-electric Constant	5.0 (max.)	ASTM D150
Volume Resistivity	1 x 10 ¹³ Ohm.cm (min)	ASTM D257

Product Diagram



Insulation Enhancement Solutions

ICIS-101

Raycap insulation enhancement products are designed to protect energized conductors or busbars from flashovers due to contact from birds, squirrels and other wildlife as well as trees. Insulation Enhancement Products are made from a UV stable, track resistant, high performance material to ensure years of reliable service.



Features

- A variety of different shapes and sizes are available to cover circuit breaker bushings, insulators, capacitors, transformer bushings, voltage regulators, current and voltage transformers.
- Installation can be made quickly in the field by trimming the entry and exit holes to the required dimensions.
- The insulation covers can be reentered for other maintenance needs and then reused, thus lowering overall lifetime costs.

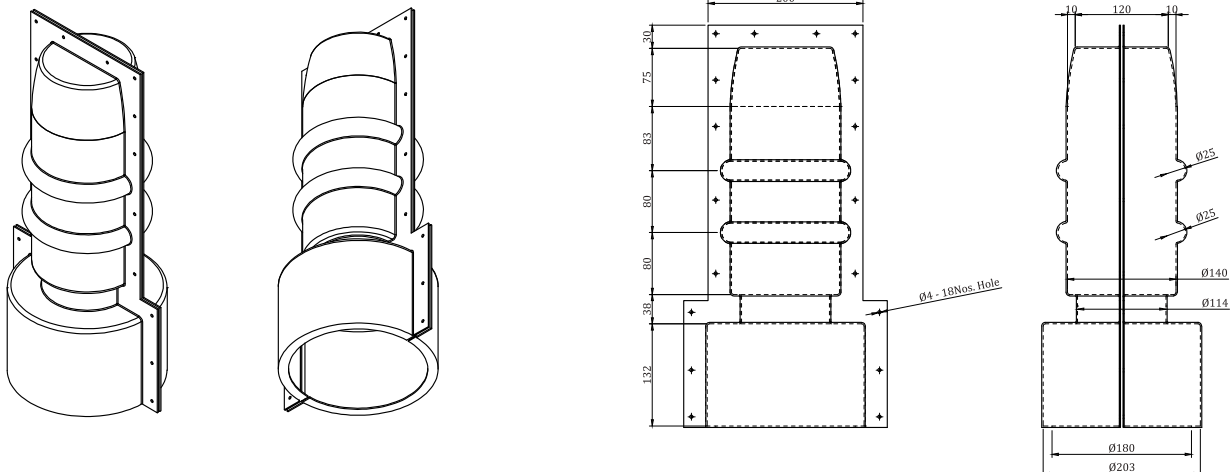
Product Details

Part Number	ICIS-101
Material	Polyolefin

Technical Specifications

Properties	Value	Standard
Tensile Strength	10 N/mm ² (Mpa) (min.)	ASTM D638
Ultimate Elongation	300% (min)	ASTM D638
Water absorption	0.5% (max.)	ASTM D570
Accelerated Ageing		ASTM D2671
2 Tensile Strength	10 N/mm ² (Mpa) (min.)	ASTM D638
Ultimate Elongation	200% (min)	ASTM D638
Low Temp. Flexibility (40°C for 4 hrs.)	No cracking	IEC 216
Dielectric Strength	13 kV/mm. (min)	ASTM D2671
Di-electric Constant	5.0 (max.)	ASTM D150
Volume Resistivity	1 x 10 ¹³ Ohm.cm (min)	ASTM D257

Product Diagram



Insulation Enhancement Solutions

ICOI-301

Raycap insulation enhancement products are designed to protect energized conductors or busbars from flashovers due to contact from birds, squirrels and other wildlife as well as trees. Insulation Enhancement Products are made from a UV stable, track resistant, high performance material to ensure years of reliable service.



Features

- A variety of different shapes and sizes are available to cover circuit breaker bushings, bus standoff insulators, capacitors, transformer bushings, voltage regulators, potential transformers and more
- Installation can be made quickly in the field
- The insulation covers can be reentered for other maintenance needs and then reused, thus lowering overall lifetime costs.

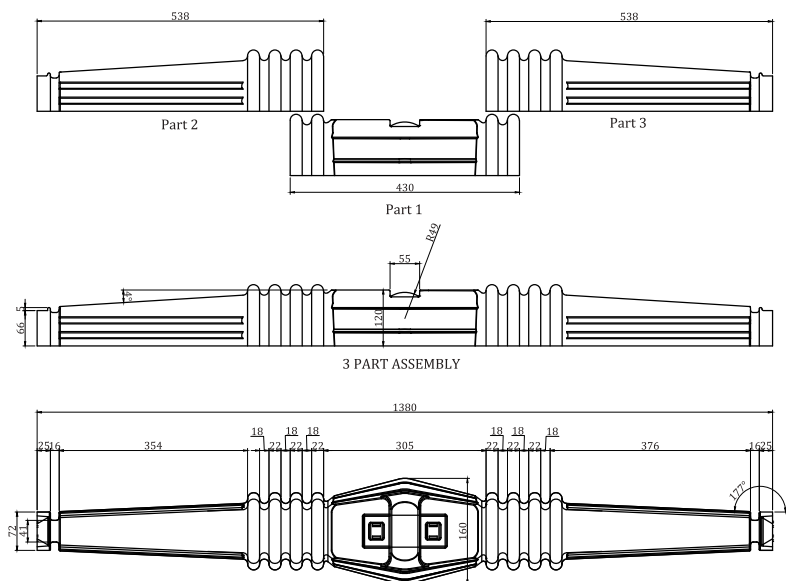
Product Details

Part Number	ICOI-301
Material	Polyolefin

Technical Specifications

Properties	Value	Standard
Tensile Strength	10 N/mm ² (Mpa) (min.)	ASTM D638
Ultimate Elongation	300% (min)	ASTM D638
Water absorption	0.5% (max.)	ASTM D570
Accelerated Ageing		ASTM D2671
2 Tensile Strength	10 N/mm ² (Mpa) (min.)	ASTM D638
Ultimate Elongation	200% (min)	ASTM D638
Low Temp. Flexibility (40°C for 4 hrs.)	No cracking	IEC 216
Dielectric Strength	13 kV/mm. (min)	ASTM D2671
Di-electric Constant	5.0 (max.)	ASTM D150
Volume Resistivity	1 x 10 ¹³ Ohm.cm (min)	ASTM D257

Product Diagram



Raycap Constant Force Springs

ARSR-x

Constant Force Springs consist of a spiral of strip material with built-in curvature so that each turn of the strip wraps tightly on its inner neighbor.



ARSR of constant force spring made from fatigue Resistant Stainless Steel which had been heat treated and coiled. Typical used for solderless shield and armour connections, securing grade brades when splicing and terminating power cable.

Features

- Easily applied by rolling onto the sheath connections
- Exert a constant pressure whereupon
- Nonmagnetic

Dimensions & Ordering Information

Part No.	Application range/mm		Dimensions/mm			
	Min.	Max.	Inner dia.	Width	Thickness	Length
ARSR-A	12	20	10	13	0.15	280
ARSR-K	12	20	10	13	0.15	400
ARSR-B	17	28	14	13	0.18	400
ARSR-C	25	40	20	13	0.2	570
ARSR-D	36	60	30	13	0.26	850
ARSR-E	17	29	14	25	0.2	570
ARSR-F	30	39	22	25	0.3	700
ARSR-G	40	60	30	25	0.35	950
ARSR-H	50	75	38	30	0.4	1100
ARSR-I	50	75	38	30	0.4	1350
ARSR-L	57	85	45	30	0.4	1350
ARSR-M	23	45	25	25	0.33	800
ARSR-N	25	34	25	20	0.25	650
ARSR-O	85	110	70	30	0.4	1500
ARSR-U	110	135	70	30	0.65	1700

Custom lengths can be supplied upon request.

Raycap Tinned Copper Mesh ACWM-60-x

Tinned Copper Mesh for power cables up to 36 kV, provides electrical continuity to the core screen during jointing of power cables resulting into a shielding effect for the joints.

Used for prevention of stress to the conductors and maintaining stability in the cable joint at elevated temperature. It is also used for rebuilding the metallic screen in the cable joints.



Raycap's copper mesh is produced from tinned copper wire, by knitting the wire into a tube. It is formed into a knitted tube having 42 loops, making it flexible and springy in nature. The nominal wire diameter of the standard tinned copper mesh is around 0.12 mm.

Features

- Constructed from tinned copper wire knitted into a tube
- Available in a wide range of widths and lengths
- Extremely light, durable and easy to use
- Corrosion and high temperature resistant
- Significantly stronger than other mesh available in the market
- Strong loops making it flexible and springy in nature

Dimensions and Ordering Information

Part No.	Wire Gauge	Wire Diameter (mm)	# of Loops	Width (mm)	Length/roll (mm)
ACWM-60-36	40 swg	0.12	42	60-63	36
ACWM-60-2	40 swg	0.12	42	60-63	2
ACWM-60-2.5	40 swg	0.12	42	60-63	2.5
ACWM-60-3	40 swg	0.12	42	60-63	3
ACWM-60-5	40 swg	0.12	42	60-64	5
ACWM-60-6	40 swg	0.12	42	60-65	6

Custom lengths can be supplied upon request.

Raycap Cable Solutions

ASWM-100 Steel Mesh

ASWM is used to replace the metal sheath and armour in the joint for armored power cables.



Specifications

Part Number	Diameter of Wire	Width of Mesh	Length	Color
ASWM-100	0.31 mm	100 mm	10 M	Silver

Specify product name and length* (for example, ASWM-100: 100M)

*Other width and lengths are available upon request.

