



HEAT SHRINKABLE PRODUCTS



About Us

We Unicorp Global Industries Pvt. Ltd. are an ISO 9001:2015 compliant manufacturers/suppliers of Ener Heat Shrinkable Sleeves (Tubes), Ener Industrial Electrical Equipment & Ener Insulation Accessories.

Fire Retardant, Low-Smoking, No-Halogen, Environment Friendly Heat Shrink Products & Accessories

Heat Shrinkable Sleeves (Tube) • Dual-Wall Heat Shrinkable Sleeves with Adhesive Lining • Thin Wall Heat Shrinkable Sleeves • Dual Colour Heat Shrinkable Sleeves • High Temperature Heat Shrinkable Sleeves • Heat Shrinkable Marking Sleeves • PVC Heat Shrinkable Sleeves for Busbar • Hi-Voltage Heat Shrinkable Sleeves 1kV, 6kV, 11kV, 36 kV • Heat Shrinkable Tape • Heat Shrinkable XLPE/PVC/PILC Cable Jointing & Termination Kits upto 33kV for Indoor/Outdoor • Heat Shrinkable Busbar End Caps, Cable Breakout Fittings upto 5 core & other Accessories • Non-Heat Shrinkable PVC Sleeves • Fibre Glass Sleeves • PTFE Sleeves

Ener Heat Shrink Products are UL 224, CSA C22.2, CE, RoHS (EU) 2015/863 & ERDA Tested

Ener products feature good acid and alkali resistance, insulation and not aging easily. Leading to excellent electrical and mechanical performance, easy installation and can be used in hot and cold conditions. These products are widely used in Industrial Electrical, Telecommunication, Electronics, Metallurgy, Mining, Military, Shipbuilding, Home Appliances, Construction, Petrochemical and other industries.

Ener products are manufactured through a controlled production process thus helping us to maintain global quality standards at competitive prices. Our Constant pursuit of rigorous innovation and product development has enabled us to provide the most reliable thermal products. Our continuous efforts have made Ener brand popular amongst our customers.



We sincerely welcome our customers to experience the products that we offer.

Product Brief

Heat-Shrink Tubing (or, commonly, Heat Shrink Sleeve or HST) is a sleeve/tube ordinarily made of Polyolefin (POX), Fluoropolymer (FPM), Polyvinylidene fluoride (PVDF) and Polytetrafluorethylene (PTFE), which shrinks radially (but not longitudinally) when heated, to between one-half and one-sixth of its diameter. It is a shrinkable plastic tube used to insulate wires, providing abrasion resistance and environmental protection for stranded and solid wire conductors, connections, joints and terminals in electrical work. It can also be used to repair the insulation on wires or to bundle them together, to protect wires or small parts from minor abrasion, and to create cable entry seals, offering environmental sealing protection.

Content

Corporate Profile	Certifications	
	Company Certifications, Product Approvals & Test Certificates	4-5
Product Range	EN-HRSFR-201	
	Fire Retardant 2:1 Heat Shrinkable Polyolefin Tubing	6
	EN-HFR-301	
	Fire Retardant 3:1 Heat Shrinkable Polyolefin Tubing	8
	EN-HRSFR-201(TW)	
	Thin-Wall 2:1 Heat Shrinkable Polyolefin Tubing	9
	EN-HDW-201	
	Dual-Wall, Adhesive Lined 2:1 Heat Shrinkable Polyolefin Tubing	10
	EN-HDW-301, EN-HDW-401	
	Dual-Wall, Adhesive Lined 3:1 & 4:1 Heat Shrinkable Polyolefin Tubing	11
	EN-HGYS	
	Yellow & Green Striped Flame Retardant 2:1, 3:1 Heat Shrinkable Polyolefin Tubing	12
	EN-HTHBB	
	High Tension Flexible Heat Shrinkable Polyolefin Tubing up to 36kV	13-14
	EN-H175	
	High Temperature, Flexible Heat Shrinkable Polyolefin Tubing	15
	EN-HSMK	
	Heat Shrinkable Identification Marking Sleeve	16
	EN-HSHMK	
	High Temperature Heat Shrinkable Identification Marking Sleeve	17
	EN-HSPVCT	
	Flame Retardant Heat Shrinkable PVC Tubing for Busbar	18
	EN-HCJK	
	Heat Shrinkable Cable Jointing Kits	19
	EN-HCTK	
	Heat Shrinkable Cable Termination Kit	20
	EN-PVCT	
	Non-Heat Shrinkable Flame Retardant PVC Tubing	21
	EN-HSAB	
	Electrical Hot Air Blower	21
	EN-HSCEC	
	Heat Shrinkable Cable End Cap	22
	EN-HSTAPE	
	Heat Shrinkable Tape with Adhesive Lining	23
	EN-HSCBR	
	Heat Shrinkable Cable Breakout Insulation Fitting	23

Certifications

UL Certificate – File No. YDPU2.E508782

UL Product iQ™



YDPU2.E508782 - TUBING, EXTRUDED INSULATING - COMPONENT

Tubing, Extruded Insulating - Component

See General Information for Tubing, Extruded Insulating - Component

UNICORP GLOBAL INDUSTRIES PVT. LTD
D-176, SECTOR-10,
NOIDA, UTTAR PRADESH 201301 INDIA

E508782

Cat. No.	Max V rms	Max Oper Temp, °C	Color Recognized	Oil-resistance Class[a]	VW-1 Rated[b]
Flexible heat shrinkable irradiation crosslinked modified Fluoropolymer tubing					
EN-H175 (e)	600	150	CL	-	Yes
Flexible heat shrinkable Polyolefin tubing with meltable liner					
EN-HDW-201 (a)	600	125	All except clear	-	No
EN-HDW-301 (a)	600	125	All except clear	-	No
EN-HDW-401 (a)	600	125	All except clear	-	No
Flexible heat shrinkable Polyolefin					
EN-HFR-201 (c)	600	125	All except clear	-	Yes
EN-HFR-201(TW) (b)	300	125	All except clear	-	Yes
EN-HFR-301 (c)	600	125	All except clear	-	Yes
EN-HFR-301(TW) (b)	300	125	All except clear	-	Yes
EN-HGYS-201 (c)	600	125	All except clear	-	Yes
EN-HGYS-301 (c)	600	125	All except clear	-	Yes
EN-HRSFR-201 (c)	600	125	All except clear	-	Yes
EN-HRSFR-201(TW) (b)	300	125	All except clear	-	Yes
EN-HSHMK (d)	600	125	All except clear	-	Yes
EN-HSMK (d)	600	125	All except clear	-	Yes
Not heat shrinkable PVC tubing					
EN-PVCT (f)	600	105	All	-	Yes

[a] - Tubing is considered to comply with the optional Oil Resistance requirements only if authorized in the above table and marked "Oil Resistant" (or "Oil Res"), followed by the class (01, 02 or 03).

[b] - Tubing is considered to comply with the optional VW-1 flammability requirements only if authorized in the above table and if so marked.

(a) - Make: ENER Dual Wall; Shrink Ratio: 2:1, 3:1, 4:1 with Meltable Adhesive Lining.

(b) - Make: ENER, Colours: RD,YL,BL,BK,WH,GR,CL

(c) - Make: ENER, Colours: RD,YL,BL,BK,WH,GR,CL

(d) - Make: ENER, Colours: RD,YL,BL,BK,WH,GR,CL

(e) - Make: ENER, PVDF High Operating Temperature Sleeve.

(f) - Make: ENER, Colours: RD,YL,BL,BK,WH,GR,CL

Marking: Company name or trademark , catalog designation, inside diameter (before and after recovery for heat-shrinkable tubing), voltage rating, temperature rating in degrees celsius and date of manufacture (or traceable code) printed on tags attached to both ends of the tubing or printed on the shipping spool label or smallest unit container in which the product is packaged.

Last Updated on 2019-07-11

UL Certificate – File No. YDPU8.E508782

UL Product iQ™



YDPU8.E508782 - TUBING, EXTRUDED INSULATING CERTIFIED FOR CANADA - COMPONENT

Tubing, Extruded Insulating Certified for Canada - Component

See General Information for Tubing, Extruded Insulating Certified for Canada - Component

UNICORP GLOBAL INDUSTRIES PVT. LTD
D-176, SECTOR-10,
NOIDA, UTTAR PRADESH 201301 INDIA

E508782

Cat. No.	Max V rms	Max Oper Temp, °C	Color Recognized	Oil-resistance Class[a]	VW-1 Rated[b]
Flexible heat shrinkable irradiation crosslinked modified Fluoropolymer tubing					
EN-H175 (e)	600	150	CL	-	Yes
Flexible heat shrinkable Polyolefin					
EN-HFR-201 (c)	600	125	All except clear	-	Yes
EN-HFR-201(TW) (b)	300	125	All except clear	-	Yes
EN-HFR-301 (c)	600	125	All except clear	-	Yes
EN-HFR-301(TW) (b)	300	125	All except clear	-	Yes
EN-HGYS-201 (c)	600	125	All except clear	-	Yes
EN-HGYS-301 (c)	600	125	All except clear	-	Yes
EN-HRSFR-201 (c)	600	125	All except clear	-	Yes
EN-HRSFR-201(TW) (b)	300	125	All except clear	-	Yes
EN-HSHMK (d)	600	125	All except clear	-	Yes
EN-HSMK (d)	600	125	All except clear	-	Yes
Not heat shrinkable PVC tubing					
EN-PVCT (f)	600	105	All	-	Yes

[a] - Tubing is considered to comply with the optional Oil Resistance requirements only if authorized in the above table and marked "Oil Resistant" (or "Oil Res"), followed by the class (01, 02 or 03).

[b] - Tubing is considered to comply with the optional VW-1 flammability requirements only if authorized in the above table and if so marked.

(b) - Make: ENER, Colours: RD,YL,BL,BK,WH,GR,CL

(c) - Make: ENER, Colours: RD,YL,BL,BK,WH,GR,CL

(d) - Make: ENER, Colours: RD,YL,BL,BK,WH,GR,CL

(e) - Make: ENER, PVDF High Operating Temperature Sleeve.

(f) - Make: ENER, Colours: RD,YL,BL,BK,WH,GR,CL

Marking: Company name or trademark , catalog designation, inside diameter (before and after recovery for heat-shrinkable tubing), voltage rating, temperature rating in degrees celsius, date of manufacture (or traceable code) and the Recognized Component Mark for Canada printed on tags attached to both ends of the tubing or printed on the shipping spool label or smallest unit container in which the product is packaged.

Last Updated on 2019-07-11

UL Certificate of Compliance

CERTIFICATE OF COMPLIANCE

Certificate Number 20190710-E508782
Report Reference E508782-20190705
Issue Date 2019-JULY-10Issued to: UNICORP GLOBAL INDUSTRIES PVT. LTD
D-176, SECTOR-10,
NOIDA, UTTAR
PRADESH 201301
INDIAThis certificate confirms that representative samples of TUBING, EXTRUDED INSULATING - COMPONENT
See Addendum Page for Models/Product

Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

Standard(s) for Safety: UL 224 & CSA C22.2 No. 198.1-06 - Standard for Extruded Electrical Tubing

Additional Information: See the UL Online Certifications Directory at <https://iq.ulprospector.com> for additional information.

This Certificate of Compliance does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

UL LLC
Underwriters Laboratories, Division of American Certification ProgramAny information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact your local UL Customer Service Representative at ULCustomerService@ulprospector.com

Page 1 of 3

UL Approved Products Addendum

CERTIFICATE OF COMPLIANCE

Certificate Number 20190710-E508782
Report Reference E508782-20190705
Issue Date 2019-JULY-10

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Flexible heat shrinkable Polyolefin tubing with meltable liner(USR only):

EN-HDW-201 (a), EN-HDW-301 (a), EN-HDW-401 (a).

NOTE: (a) - Dual-Wall Heat Shrinkable Polyolefin Sleeve with Meltable Adhesive Lining. Shrink Ratio: 2:1, 3:1, 4:1. Colours: Red, Yellow, Blue, Black, White, Green, Clear, Green-Yellow.

Flexible heat shrinkable Polyolefin:

EN-HRSFR-201(TW) (b), EN-HFR-201(TW) (b), EN-HFR-301(TW) (b).

NOTE: (b) - Ultra-Thin Wall Fire Retardant Halogen Free Heat Shrinkable Polyolefin Sleeve/Tube; Shrink ratio: 2:1, 3:1. Colours: Red, Yellow, Blue, Black, White, Green, Clear, Green-Yellow.

Flexible heat shrinkable Polyolefin:

EN-HRSFR-201 (c), EN-HFR-201 (c), EN-HFR-301 (c), EN-HGYS-201 (c), EN-HGYS-301 (c).

NOTE: (c) - Heat Shrinkable, Halogen Free, Fire Retardant, Environment Friendly Polyolefin Sleeve. Colours: Red, Yellow, Blue, Black, White, Green, Clear, Green-Yellow.

Flexible heat shrinkable Polyolefin:

EN-HSMK (d), EN-HSHMK (d).

NOTE: (d) - Heat Shrinkable Marking Sleeve. High Temperature Heat Shrinkable Marking Sleeve. Colours: Red, Yellow, Blue, Black, White, Green, Clear, Green-Yellow.

Flexible heat shrinkable irradiation crosslinked modified Fluoropolymer tubing:

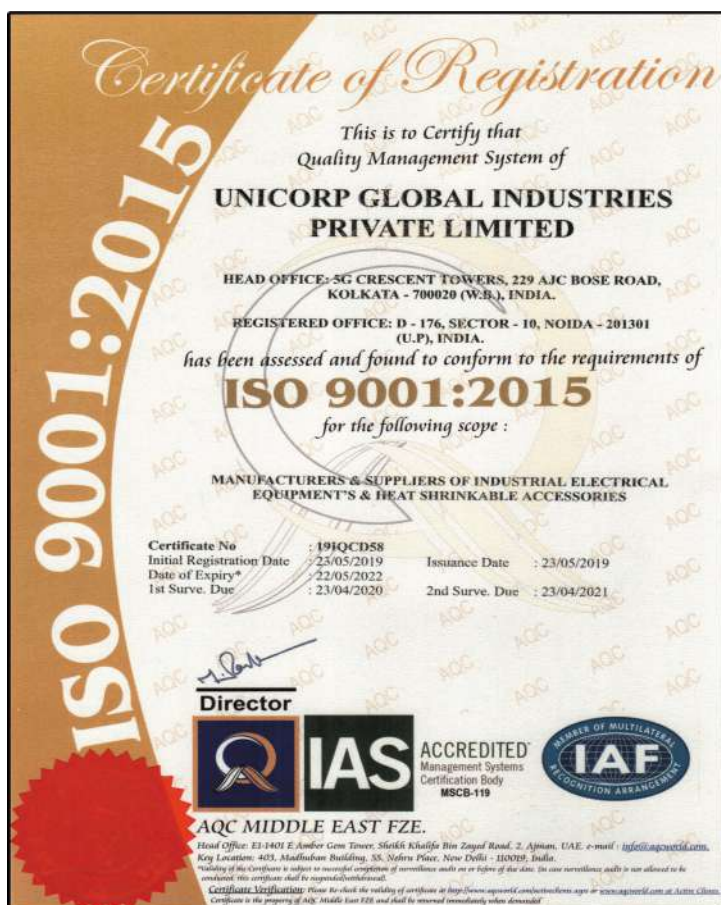
EN-H175 (e).

NOTE: (e) - High Temperature Heat Shrinkable PVDF Sleeve. Colours: Red, Yellow, Blue, Black, White, Green, Clear, Green-Yellow.

UL LLC
Underwriters Laboratories, Division of American Certification ProgramAny information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact your local UL Customer Service Representative at ULCustomerService@ulprospector.com

Page 2 of 3

ISO 9001:2015



RoHS-3 Directive (EU) 2015/863



CE Certification



CE Certification – Appendix for Products



Halogen Free, low smoking, Flame – Retardant Polyolefin Tubing

EN-HRSFR-201

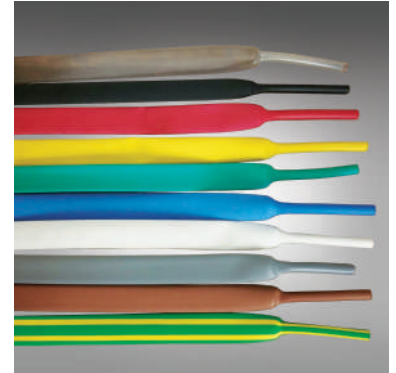
Application

EN-HRSFR-201 is halogen free, low smoking, flame-retardant irradiated cross-linked polyolefin heat-shrinkable tubing suitable for environmentally friendly application. It contains no added halogens and excellent fire safety characteristics combined with low emission of harmful gases, while retaining good mechanical and fluid resistance properties.

Free of PCBs, PCPs, polybrominated biphenyls (PBBs), polybrominated biphenyl oxides and ethers (PBBOs, PBBEs and PBDEs) and toxic heavy metal compounds, which are classified as environmentally hazardous substances.

Features/Benefits

- Shrink ratio; 2:1.
- Very flexible, highly flame-retardant.
- Low shrink temperature
- Good thermal stability.
- Excellent physical, chemical and electrical properties.
- Conform to RoHS-3 Directive (EU) 2015/863
- Wide range of sizes and colors.

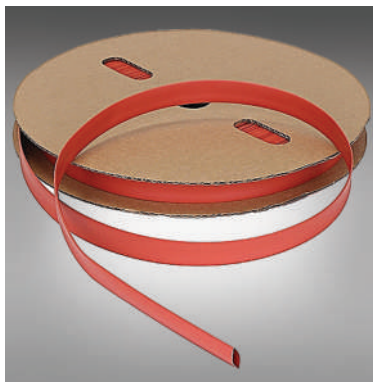


Operating Temp. Range	Min. Shrink Temp.	Min. Full Recovery Temp.
-55°C~135°C	70°C	110°C

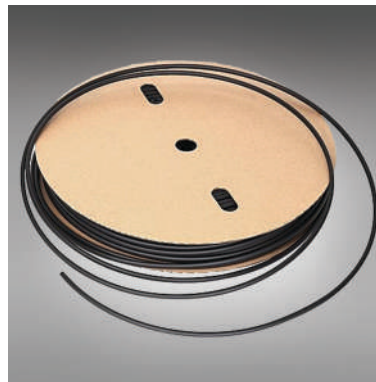
Technical Specifications

	Property	Requirement	Test method	Typical data
Physical	Concentricity	70% min.	ASTM D 2671	≥70%
	Tensile strength	10.4Mpa min.	ASTM D 638	≥12Mpa
	Elongation	200% min.	ASTM D 638	≥300%
	Heat shock 250°C, 4hrs	No cracking, dripping or flowing	ASTM D 2671	Pass
	Low temperature flexibility -55°C, 4hrs	No cracking	ASTM D 2671	Pass
	Aging 158°C, 168hrs Tensile strength after aging	70% of original min.	ASTM D 638	≥80%
	Elongation after aging	100% min.	ASTM D 638	≥200%
Electrical	Dielectric voltage withstand	2500V, 60sec no breakdown	UL224	Pass
	Dielectric strength	19.7KV/mm min.	ASTM D 2671	25KV/mm
	Volume resistivity	10 ¹⁴ Ω *cm min.	ASTM D 876	10 ¹⁴ Ω cm min.
Chemical	Corrosion	No corrosion	ASTM D 2671	Pass
	Flammability	VW-1	UL224	Pass

Packaging



Spool of 25 mtrs.



Spool of 400 mtrs.



Customized Cut Pieces

Product Sizes

Size		As Supplied (mm)		After Recovery (mm)		Standard Length (mtrs./spool)
MM	Inch	Inside Diameter	Wall Thickness	Inside Diameter(max.)	Wall Thickness	
Φ0.8	3/64	1.0±0.2	0.15±0.05	0.5	0.25±0.05	200/400
Φ1.0	1/16	1.5±0.3	0.18±0.06	0.6	0.33±0.08	200/400
Φ1.5	-	2.0±0.3	0.20±0.08	0.75	0.36±0.08	200/400
Φ2.0	3/32	2.5±0.3	0.20±0.08	1.0	0.42±0.08	200/400
Φ2.5	-	3.0±0.3	0.22±0.08	1.25	0.44±0.08	200/400
Φ3.0	1/8	3.5±0.3	0.25±0.08	1.5	0.44±0.08	200/400
Φ3.5	-	4.0±0.3	0.25±0.08	1.75	0.44±0.08	200/400
Φ4.0	-	4.5±0.3	0.25±0.08	2.0	0.44±0.08	200/400
Φ4.5	3/16	5.0±0.3	0.25±0.08	2.25	0.44±0.08	200
Φ5.0	-	5.5±0.3	0.25±0.08	2.5	0.50±0.08	100
Φ5.5	-	6.0±0.3	0.25±0.08	2.75	0.50±0.08	100
Φ6.0	1/4	6.5±0.3	0.28±0.10	3.0	0.54±0.10	100
Φ7.0	5/16	7.6±0.3	0.30±0.10	3.5	0.56±0.10	100
Φ8.0	-	8.6±0.3	0.30±0.10	4.0	0.56±0.10	100
Φ9.0	3/8	9.6±0.4	0.30±0.10	4.5	0.56±0.10	100
Φ10.0	-	10.7±0.4	0.30±0.10	5.0	0.56±0.10	100
Φ11.0	-	11.7±0.4	0.30±0.12	5.5	0.56±0.10	100
Φ12.0	1/2	12.7±0.4	0.30±0.12	6.0	0.56±0.12	100
Φ13.0	-	13.7±0.4	0.35±0.12	6.5	0.65±0.12	100
Φ14.0	-	14.7±0.4	0.35±0.12	7.0	0.65±0.12	100
Φ15.0	5/8	15.7±0.5	0.35±0.12	7.5	0.65±0.12	100
Φ16.0	-	16.7±0.5	0.35±0.12	8.0	0.65±0.12	100
Φ17.0	-	17.7±0.5	0.35±0.12	8.5	0.65±0.12	100
Φ18.0	3/4	19.0±0.5	0.40±0.12	9.0	0.77±0.15	100
Φ20.0	-	21.0±0.5	0.40±0.15	10.0	0.77±0.15	100
Φ22.0	-	23.0±0.5	0.40±0.15	11.0	0.77±0.15	100
Φ25.0	1	26.0±1.0	0.45±0.15	12.5	0.87±0.15	50
Φ28.0	-	29.0±1.0	0.45±0.15	14.0	0.87±0.15	50
Φ30.0	1-1/4	31.5±1.0	0.45±0.15	15.0	0.87±0.15	50
Φ35.0	1-1/2	36.5±1.0	0.50±0.20	17.5	0.97±0.15	50
Φ38.0	-	39.5±1.0	0.50±0.20	19.0	0.97±0.20	50
Φ40.0	-	41.5±1.0	0.50±0.20	20.0	0.97±0.20	50
Φ50.0	2	51.5±1.0	0.55±0.20	25.0	1.00±0.20	25
Φ60	-	63.0±3.0	0.60±0.25	30.0	1.00±0.20	25
Φ70	-	71.0±3.0	0.60±0.25	35.0	1.05±0.20	25
Φ80	3	81.0±3.0	0.65±0.25	40.0	1.05±0.20	25
Φ90	-	91.0±3.0	0.75±0.25	43.0	1.10±0.25	25
Φ100	4	101.0±3.0	0.75±0.25	50.0	1.10±0.25	25
Φ120	5	121.0±4.0	0.80±0.30	60.0	1.15±0.30	15
Φ150	6	151.0±4.0	0.80±0.30	75.0	1.15±0.30	15
Φ180	7	181.0±4.0	0.80±0.30	90.0	1.15±0.30	15

Ordering Information

Standard Colours – Black, Red, Yellow, Blue, Green, White, Clear/Transparent

Standard Packaging on Spools/Rolls

Special Sizes, Colours, Printing, Packaging or Cut Pieces available on request

Flexible, Flame-Retardant, High-Shrink Ratio Polyolefin Tubing

EN-HFR-301

Application

EN-HFR-301 is flexible, flame retardant, high-shrink-ratio irradiated cross-linked heat-shrinkable modified polyolefin tubing. EN-HFR-301 has 3:1 shrink ratio which is needed to cover larger size differences like wire harnesses with installed connectors. It is used for insulation protection, bundling or capsuling wire terminals and components with larger size differences.

Features/Benefits

- Shrink ratio; 3:1.
- Flexible, highly flame-retardant.
- Excellent physical, chemical and electrical properties and high reliability.
- Abrasion and fluids resistance.
- Conform to RoHS-3 Directive (EU) 2015/863.

Operating Temp. Range	Min. Shrink Temp.	Min. Full Recovery Temp.
-55°C~135°C	70°C	110°C



Technical Specifications

	Property	Requirement	Test method	Typical data
Physical	Concentricity	70% min	ASTM D 2671	≥70%
	Tensile strength	10.4Mpa min.	ASTM D 638	≥14.0Mpa
	Elongation	200% min.	ASTM D 638	≥400%
	Heat shock 250°C, 4hrs	No cracking, dripping or flowing	ASTM D 2671	Pass
	Low temperature flexibility -55°C, 4hrs	No cracking	ASTM D 2671	Pass
	Aging 175°C, 168hrs Tensile strength after aging	70% of original min.	ASTM D 638	≥90%
	Elongation after aging	100% min.	ASTM D 638	≥300%
Electrical	Dielectric voltage withstand	2500V, 60sec no breakdown	UL224	Pass
	Dielectric strength	19.7KV/mm min.	ASTM D 2671	25kV/mm
	Volume resistivity	10 ¹⁴ Ω *cm min.	ASTM D 876	10 ¹⁴ Ω *cm min.
Chemical	Corrosion	No Corrosion	ASTM D 2671	Pass
	Flammability	VW-1	UL224	Pass

Product Sizes

Size (mm)	As supplied(mm)		After recovery		Standard length (mtrs./spool)
	Inside diameter	Wall thickness	Inside diameter(max.)	Wall thickness(mix.)	
1.5/0.5	1.8±0.3	0.20±0.05	0.5	0.50±0.10	200
3/1	3.3±0.3	0.20±0.05	1.0	0.60±0.10	200
6/2	6.5±0.3	0.25±0.05	2.0	0.70±0.10	100
9/3	9.5±0.4	0.30±0.06	3.0	0.80±0.15	100
12/4	12.5±0.4	0.30±0.06	4.0	0.85±0.15	100
18/6	18.5±0.5	0.35±0.06	6.0	1.00±0.15	50
24/8	26.0±1.0	0.40±0.10	8.0	1.20±0.20	50
40/13	41.5±1.0	0.45±0.10	13.0	1.25±0.20	50

Ordering Information

Standard Colours – Black, Red, Yellow, Blue, Green, White, Clear/Transparent

Standard Packaging on Spools/Rolls

Special Sizes, Colours, Printing, Packaging or Cut Pieces available on Request

Environment friendly,Ultra Thin-wall, Flexible, Flame-Retardant Polyolefin Tubing

EN-HRSFR-201(TW)

Application

EN-HRSFR-201(TW) is environment friendly, ultra thin-wall, flexible, flame-retardant, irradiated crosslinking heat-shrinkable modified polyolefin tubing. It is designed for applications that require an ultra thin wall for rapid shrinking and space saving. Low shrink temperature further reduces installation time and the risk of damage to temperature-sensitive components.

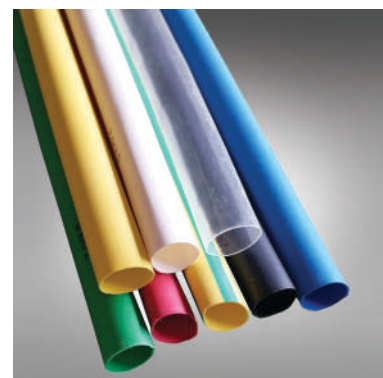
Features/Benefits

- Shrink ratio; 2:1.
- Low shrink temperature.
- Ultra thin-wall,rapid shrinking.
- Very flexible, flame-retardant

Operating Temp. Range	Min. Shrink Temp.	Min. Full Recovery Temp.
-55°C~125°C	60°C	100°C

Standard Colours – Black, Red, Yellow, Blue, Green, White, Clear/Transparent

Standard Packaging on Spools/Rolls



Technical Specifications

	Property	Requirement	Test method	Typical data
Physical	Concentricity	70%	ASTM D 2671	≥70%
	Tensile strength	10.4Mpa min.	ASTM D 638	≥14.0Mpa
	Elongation	200% min.	ASTM D 638	≥400%
	Heat shock 250°C, 4hrs	No cracking, dripping or flowing	ASTM D 2671	Pass
	Low temperature flexibility -55°C, 4hrs	No cracking	ASTM D 2671	Pass
	Aging 158°C,168hrs Tensile strength after aging	70% of original min.	ASTM D 638	≥90%
Electrical	Dielectric voltage withstand	2500V, 60sec no breakdown	UL224	Pass
	Dielectric strength	19.7KV/mm min.	ASTM D 2671	25KV/mm
	Volume resistivity	10 ¹⁴ Ω*cm min.	ASTM D 876	≥10 ¹⁴ Ω*cm min.
Chemical	Flammability	VW-1	UL224	Pass

Product Sizes

Size (mm)	As supplied(mm)		After recovery		Standard length (mtrs./spool)
	Inside diameter	Wall thickness	Inside diameter(max.)	Wall thickness(max.)	
Φ1.0	1.4±0.2	0.10±0.03	0.65	0.20	200
Φ1.5	1.9±0.2	0.10±0.03	0.75	0.20	200
Φ2.0	2.4±0.2	0.12±0.03	1.0	0.20	200
Φ2.5	2.8±0.3	0.13±0.05	1.25	0.25	200
Φ3.0	3.4±0.3	0.13±0.05	1.5	0.25	200
Φ3.5	3.9±0.3	0.13±0.05	1.75	0.25	200
Φ4.0	4.4±0.3	0.15±0.05	2.0	0.25	200
Φ5.0	5.5±0.3	0.15±0.05	2.5	0.25	100
Φ6.0	6.5±0.3	0.15±0.05	3.0	0.28	100
Φ7.0	7.5±0.3	0.15±0.05	3.5	0.28	200
Φ8.0	8.6±0.4	0.15±0.05	4.0	0.28	200
Φ9.0	9.6±0.4	0.15±0.05	4.5	0.28	200
Φ10.0	10.6±0.4	0.15±0.05	5.0	0.28	200
Φ11.0	11.6±0.4	0.18±0.05	5.5	0.28	100
Φ12.0	12.6±0.4	0.20±0.05	6.0	0.28	100
Φ13.0	13.6±0.4	0.20±0.05	6.5	0.30	100
Φ14.0	14.6±0.4	0.20±0.05	7.0	0.30	100
Φ15.0	15.6±0.5	0.20±0.05	7.5	0.32	100
Φ16.0	16.6±0.5	0.20±0.05	8.0	0.36	100
Φ18.0	18.6±0.5	0.22±0.05	9.0	0.36	100
Φ20.0	21.0±1.0	0.25±0.05	10.0	0.36	100
Φ22.0	23.0±1.0	0.25±0.05	11.0	0.40	100
Φ25.0	26.0±1.0	0.25±0.05	12.5	0.40	100

Dual Wall, Adhesive-Lined Flexible Polyolefin Tubing

EN-HDW-201

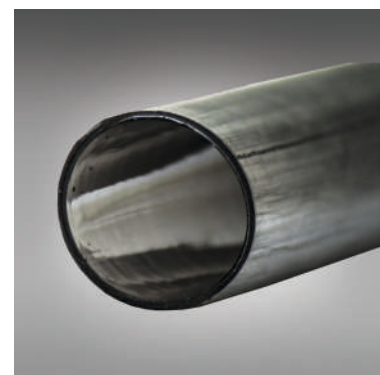
Application

EN-HDW-201 is flexible, flame retardant, dual wall, irradiated heat-shrinkable tubing manufactured by co-extrusion of polyolefin and hot-melt adhesive. Inner is hot-melt adhesive with good stickiness and outer is flexible, irradiated cross-linked polyolefin. The adhesive can stick the material of both sides entirely and seal the point connection. It is widely used to seal and protect interconnections, joints and components from fluids, moisture and corrosion and repair damaged wire insulations etc.

Features/Benefits

- Shrink ratio; 2:1.
- Flexible of both outer tubing and inner adhesive.
- Adhesive bonds to outer tubing and surface below to form a positive environmental seal.
- Good mechanical, electrical and chemical properties.
- Adhesive bonds to a wide variety of plastics, rubbers and metals.
- Conform to RoHS-3 Directive (EU) 2015/863.

Operating Temp. Range	Min. Shrink Temp.	Min. Full Recovery Temp.
-55°C~110°C	80°C	110°C



Technical Specifications

	Property	Requirement	Test method	Typical data
Physical	Tensile strength	10.4Mpa min.	ASTM D 638	≥10.4Mpa min.
	Elongation	200% min.	ASTM D 638	≥400%
	Heat shock 250°C, 4hrs	No cracking, Dripping or flowing of outer wall	ASTM D 2671	Pass
	Low temperature flexibility -55°C, 4hrs	No cracking	ASTM D 2671	Pass
	Aging 158°C, 168hrs Tensile strength after aging	70% of original min.	ASTM D 638	≥90%
	Elongation after aging	100% min.	ASTM D 638	≥300%
Electrical	Dielectric voltage withstand	2500V, 60sec no breakdown	ASTM D 2671	Pass
	Volume resistivity	10 ¹⁴ Ω*cm min.	ASTM D 876	≥10 ¹⁴ Ω*cm min.
Chemical	Copper Corrosion 158°C, 168hrs	No corrosion	ASTM D 2671	Pass
	Flammability	ALL TUBING FLAME TESTED	UL224	Pass

Product Sizes

Size (inch)	As supplied(mm)		After recovery(mm)			Standard length (mtrs/pcs)
	Inside diameter (min)	Wall thickness* (nominal)	Inside diameter (max.)	Wall thickness (nominal)	Adhesive wall thickness (nominal)	
1/8	3.2	0.4	1.6	0.70	0.20	1.22
3/16	4.8	0.4	2.4	0.70	0.20	1.22
1/4	6.4	0.4	3.2	0.75	0.20	1.22
3/8	9.5	0.4	4.8	0.75	0.20	1.22
1/2	12.7	0.4	6.4	0.75	0.20	1.22
3/4	19.1	0.5	9.5	0.90	0.20	1.22
1	25.4	0.5	12.7	1.10	0.20	1.22
1 1/2	38.1	0.6	19.1	1.20	0.25	1.22

*Wall thickness includes adhesive wall thickness.

Ordering Information

Standard Colours – Black

Non-Standard Colours - Red, Yellow, Blue, Green, White, Clear/Transparent

Standard packaging – Each Piece of 1.22mtrs Length or in Spool as per request

Special Sizes, Colours, Printing, Packaging or Cut Pieces available on Request

Dual-Wall, High-Shrink Ratio Adhesive Lined Flexible Polyolefin Tubing

EN-HDW-301, EN-HDW-401

Application

EN-HDW-301, EN-HDW-401 is flexible, flame retardant, dual-wall, high-shrink ratio irradiated heat-shrinkable tubing manufactured by co-extrusion of polyolefin and hot-melt adhesive. Inner is hot-melt adhesive with good stickiness and outer is flexible, irradiated cross-linked polyolefin. High shrink ratio allows for connector-to-cable sealing and makes it possible to repair most damaged cable jackets without removing connectors.

Features/Benefits

- Shrink ratio; 3:1, 4:1.
- Environmentally seals and protects components, joints and interconnections from fluids, moisture and corrosion.
- Good mechanical, electrical and chemical properties.
- Adhesive has good stickiness and bonds to a wide variety of plastics, rubber and metals.
- Conform to RoHS-3 Directive (EU) 2015/863.

Operating Temp. Range	Min. Shrink Temp.	Min. Full Recovery Temp.
-55°C~110°C	80°C	110°C



Technical Specifications

	Property	Requirement	Test method	Typical data
Physical	Tensile strength	9.0Mpa min.	ASTM D 638	≥9.0Mpa min.
	Elongation	250% min.	ASTM D 638	≥400%
	Heat shock at 250°C, for 4hrs	No cracking, dripping or flowing	ASTM D 2671	Pass
	Low temperature flexibility -55°C, 4hrs	No cracking	ASTM D 2671	Pass
	Aging 175°C, 168hrs Tensile strength after aging	70% of original min.	ASTM D 638	≥90%
	Elongation after aging	100% min.	ASTM D 638	≥300%
Electrical	Dielectric voltage withstand	2500V, 60sec no breakdown	ASTM D 2671	Pass
	Volume resistivity	10 ¹⁴ Ω *cm min.	ASTM D 876	≥10 ¹⁴ Ωcm min.
Chemical	Corrosion	No corrosion	ASTM D 2671	Pass
	Flammability	ALL TUBING FLAME TEST	UL224	Pass

Product Sizes

Size (inch)	As supplied (mm)		After recovery (mm)			Standard length (mtrs/pcs)
	Inside dia. (min)	Wall thickness (nominal)	Inside diameter (max.)	Wall thickness (nominal)	Adhesive wall thickness (nominal)	
3:1 inch (mm)						
1/8 (3/1)	3.0	0.35	1.0	1.00±0.28	0.50	1.22
3/16 (4.8/1.6)	4.8	0.35	1.6	1.00±0.28	0.50	1.22
1/4 (6/2)	6.0	0.40	2.0	1.00±0.28	0.50	1.22
3/8 (9/3)	9.0	0.50	3.0	1.40±0.28	0.60	1.22
1/2 (12/4)	12.0	0.60	4.0	1.78±0.38	0.76	1.22
3/4 (18/6)	18.0	0.70	6.0	2.25±0.55	0.76	1.22
1 (24/8)	24.0	0.80	8.0	2.54±0.55	1.02	1.22
1-1/2 (39/13)	39.0	0.80	13.0	2.54±0.55	1.02	1.22
4:1 (mm)						
4/1	4.0	0.40	1.0	1.00±0.28	0.50	1.22
8/2	8.0	0.45	2.0	1.00±0.28	0.50	1.22
12/3	12.0	0.50	3.0	1.40±0.28	0.60	1.22
16/4	16.0	0.60	4.0	1.78±0.38	0.76	1.22
24/6	24.0	0.70	6.0	2.25±0.55	0.76	1.22
32/8	32.0	0.80	8.0	2.54±0.55	1.02	1.22
52/13	52.0	0.80	13.0	2.54±0.55	1.02	1.22

Ordering Information

Standard Colours – Black, Non-Standard Colours - Red, Yellow, Blue, Green, White, Clear/Transparent

Standard packaging – Each Piece of 1.22mtrs Length or in Spool as per request

Special Sizes, Colours, Printing, Packaging or Cut Pieces available on Request

Yellow & Green Striped, Flexible, Flame-Retardant Polyolefin Tubing

EN-HGYS

Application

EN-HGYS is yellow & green striped, flexible, flame-retardant, irradiated cross-linked heat shrinkable modified polyolefin tubing. It is designed for use in earth sleeving. 3:1 shrink ratio is for more suitable for application to irregular, awkward shapes.

Features/Benefits

- Shrink ratio: 2:1, 3:1.
- Flexible, flame-retardant.
- Excellent physical, chemical and electrical properties and high reliability.
- Conform to RoHS-3 Directive (EU) 2015/863.

Operating Temp. Range	Min. Shrink Temp.	Min. Full Recovery Temp.
-55°C~135°C	70°C	110°C



Technical Specifications

	Property	Requirement	Test method	Typical data
Physical	Concentricity	70% min.	ASTM D 2671	≥70%
	Tensile strength	10.4Mpa min.	ASTM D 638	≥14.0Mpa
	Elongation	220% min.	ASTM D 638	≥400%
	Heat shock 250°C, 4hrs	No cracking, dripping or flowing	ASTM D 2671	Pass
	Low temperature flexibility -55°C, 4hrs	No cracking	ASTM D 2671	Pass
	Aging 175°C, 168hrs Tensile strength after aging	70% of original min.	ASTM D 638	≥90%
	Elongation after aging	100% min.	ASTM D 638	≥300%
Electrical	Dielectric voltage withstand	2500V, 60sec no breakdown	UL224	Pass
	Dielectric strength	19.7KV/mm min.	ASTM D 2671	25KV/mm
	Volume resistivity	≥10 ¹⁴ Ω *cm min.	ASTM D 876	≥10 ¹⁴ Ω *cm
Chemical	Corrosion	No corrosion	ASTM D 2671	Pass
	Flammability	VW-1	UL224	Pass

Product Sizes

Shrink Ratio - 2:1

Size (inch)	As supplied (mm)		After recovery (mm)		Standard length (mtrs./spool)
	Inside diameter(min)	Wall thickness	Inside diameter(max.)	Wall thickness(min.)	
1/16	1.6	0.20	0.8	0.43±0.08	200
3/32	2.4	0.25	1.2	0.51±0.08	200
1/8	3.2	0.25	1.6	0.51±0.08	200
3/16	4.8	0.25	2.4	0.51±0.08	200
1/4	6.4	0.30	3.2	0.64±0.08	100
5/16	8.0	0.30	4.0	0.64±0.08	100
3/8	9.5	0.30	4.8	0.64±0.08	100
1/2	12.7	0.35	6.4	0.64±0.08	100
5/8	16.0	0.35	8.0	0.76±0.08	100
3/4	19.1	0.40	9.5	0.76±0.08	50
1	25.4	0.45	12.7	0.89±0.12	50
1 1/4	31.8	0.45	15.9	1.02±0.15	50
1 1/2	38.1	0.50	19.0	1.02±0.15	50
2	50.8	0.55	25.4	1.14±0.16	50

Shrink Ratio - 3:1

Size(inch)	As supplied(mm)		After recovery(mm)		Standard length (mtrs./spool)
	Inside diameter(min)	Wall thickness(nominal)	Inside diameter(max.)	Wall thickness(min.)	
1/16	1.6	0.20	0.5	0.51	200
3/32	2.4	0.25	0.8	0.51	200
1/8	3.2	0.25	1.0	0.55	200
3/16	4.8	0.25	1.6	0.60	200
1/4	6.4	0.30	2.1	0.65	100
3/8	9.5	0.30	3.2	0.75	100
1/2	12.7	0.30	4.2	0.75	100
3/4	19.1	0.40	6.4	0.90	50
1	25.4	0.45	8.5	1.00	50
1 1/2	39.0	0.50	13.0	1.15	50

Ordering Information

Standard Colours – Yellow & green stripe

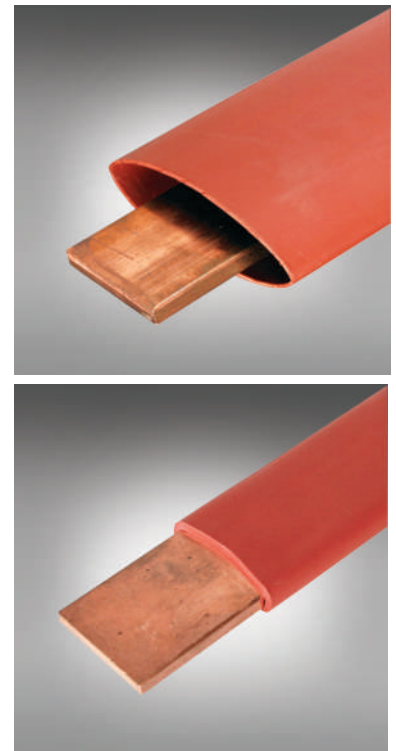
Standard Packaging on Spools/Rolls

Special Sizes, Other Dual-Colours, Printing, Packaging or Cut Pieces available on Request

High Tension Heat Shrinkable Tube upto 36kV**EN-HTHBB**

EN-HTHBB is heat shrinkable tube designed to insulate busbar systems and cables up to 36KV & to protect against accidental flash-over. The tubes are manufactured from high quality non tracking cross-linked polyolefin material. Meets ANSI C37.20.2 standards for MV switchgear application up to 36 KV.

- Reduce busbar clearance
- Prevent busbar from chemical corrosion effected by strong acid, alkali, salt, etc.
- Avoid accidental injury to overhaul persons when they enter electrophorus clearance by mistake.
- It provides excellent insulation performance to supply required flash over protection for the busbar system
- Avoid short circuit fault caused by closed space in bus ducts or small animals such as mice snakes and so on.
- High dielectric strength. Halogen free flame retardant
- Highly flexible for use on straight or angled bars without creasing
- Voltage class: 1KV, 6kV, 11KV, 22kV, 36KV
- Shrink Temperature: 125°C
- Available colors: Red, Yellow, Green, Black
- Continuous Temperature limit : -40°C to 110°C

**Technical Specifications**

	Property	Requirement	Test method
Physical	Tensile strength	12 N/mm ² (MPA)(min.)	ASTM D638
	Ultimate Elongation	300% (Min.)	ASTM D 638
	Water Absorption	0.5 % (max.)	ASTM D 570
	Density	1.20 ± 0.2 gm/cm ³	ASTM D 792
	Hardness	45 >10 °Shore D	ASTM D 2240
Thermal	Accelerated Ageing	120°C for 500 Hrs	ASTM D2671
	Tensile Strength	10 N/mm ² (MPA)(min.)	ASTM D 638
	Ultimate Elongation	250%(Min.)	ASTM D638
	Low temperature Flexibility (-40°C for 4 Hrs.)	No Cracking	ASTM D 2671
	Heat Shock (250°C for 30 Min.)	No Cracking or flowing	ESI 09-11
Electrical	Resistant to track & erosion	No Tracking, erosion or flame failure upto 3.25 KV for 20 min.	ASTM D2303
	Dielectric Strength	22 KV/mm. (Min.)	ASTM D149
	Volume Resistivity	1 x 10 ¹⁴ Ohm.cm (min.)	ASTM D257
	Dielectric Constant	5 (Max.)	ASTM D150

Product Sizes

Voltage Rating	As supplied(mm)		After recovery(mm)	Standard length (mtrs/spool)
	Busbar width (mm)	Inner Diameter (wall thickness)	Max. Inner Diameter (wall thickness)	
1kV	30	31.5±1.0 (0.45±0.15)	15 (0.095±0.15)	50
1kV	40	37.0±1.5 (0.50±0.15)	16 (1.0±0.15)	50
1kV	40	40.5±1.5 (0.50±0.15)	20 (1.0±0.15)	50
1kV	50	50.5±2.0 (0.50±0.15)	25 (1.0±0.15)	25
1kV	60	60±3.0 (0.80±0.2)	30 (1.3±0.2)	25
1kV	80	70±3.0 (0.80±0.2)	32 (1.5±0.2)	25
1kV	80/100	80±3.0 (0.80±0.3)	40 (1.5±0.3)	25
1kV	100	90±4.0 (0.80±0.3)	43 (1.5±0.3)	25
1kV	100/120	100±4.0 (0.80±0.3)	50 (1.5±0.3)	25
1kV	120	120±4.0 (0.80±0.3)	60 (1.5±0.3)	25
1kV	140	150±4.0 (0.80±0.3)	75 (1.5±0.3)	25

Voltage Rating	As supplied(mm)		After recovery(mm)	Standard length (mtrs./spool)
	Busbar width (mm)	Inner Diameter (wall thickness)	Max. Inner Diameter (wall thickness)	
10kV	20	20±0.8 (1.0±0.2)	9 (2.5±0.2)	25
10kV	25	25±0.8 (1.0±0.2)	12 (2.5±0.2)	25
10kV	30	30±0.8 (1.0±0.2)	13 (2.5±0.2)	25
10kV	40	40±1.0 (1.2±0.2)	15 (2.5±0.2)	25
10kV	50	50±2.0 (1.2±0.2)	20 (2.5±0.2)	25
10kV	60	65±3.0 (1.2±0.2)	24 (2.8±0.2)	25
10kV	80/100	80±3.0 (1.2±0.3)	32 (2.8±0.3)	25
10kV	100/120	100±4.0 (1.2±0.3)	40 (2.8±0.3)	25
10kV	120	120±4.0 (1.2±0.3)	48 (2.8±0.3)	25
10kV	150	150±4.0 (1.2±0.3)	60 (2.8±0.3)	25
10kV	180	180±4.0 (1.2±0.3)	70 (2.8±0.3)	25
10kV	200	210±4.0 (1.2±0.3)	80 (2.8±0.3)	25
10kV	220	240±4.0 (1.2±0.3)	90 (3.8±0.3)	25
10kV	280	300±4.0 (1.2±0.3)	100 (3.8±0.3)	25

Voltage Rating	As supplied(mm)		After recovery(mm)	Standard length (mtrs./spool)
	Busbar width (mm)	Inner Diameter (wall thickness)	Max. Inner Diameter (wall thickness)	
35kV	25	25±1.0 (2.0±0.3)	12 (4.0±0.3)	25
35kV	30	30±1.0 (2.0±0.3)	13 (4.0±0.3)	25
35kV	40	40±1.0 (2.0±0.3)	15 (4.0±0.3)	25
35kV	50	50±2.0 (2.2±0.3)	20 (4.5±0.3)	25
35kV	60	65±2.0 (2.2±0.3)	24 (4.5±0.3)	25
35kV	80/100	80±3.0 (2.2±0.3)	32 (4.5±0.3)	25
35kV	100/120	100±4.0 (2.5±0.3)	40 (4.5±0.3)	25
35kV	120	120±4.0 (2.5±0.3)	48 (5.0±0.3)	25
35kV	150	150±4.0 (2.5±0.3)	60 (5.0±0.3)	25
35kV	180	180±5.0 (2.5±0.3)	70 (5.5±0.3)	25
35kV	200	210±5.0 (2.5±0.3)	80 (5.5±0.3)	25

Ordering Information

Standard Colours – Black, Red, Yellow, Blue, Green, White, Clear/Transparent

Standard Packaging on Spools/Rolls

Special Sizes, Colours, Printing, Packaging or Cut Pieces available on Request

Flexible, High-Temperature, Solvent-Resistant Viton Tubing

EN-H175

Application

With superior resistance to high and low temperature, fluids, solvents and corrosive chemical, VITON is particularly suitable for applications that require heat resistance (such as electric and hydraulic systems near engines and fuel tanks of airplanes and vehicles) and resistance to chemical solvents. It is particularly used in applications that require high temperature (200°C) resistance or in chemically exposed environments. It can be used in applications where additional protection against weather, ultraviolet radiation and ozone degradation is needed.

It is used for insulation and strain relief on appliances and for protection of electronic components.

Features/Benefits

- Shrink ratio; 2:1.
- Excellent resistance to high temperatures, fluids, solvents, corrosive chemicals and radiation.
- Extreme resistance to fuels.
- High flame-retardance.
- Conform to RoHS-3 Directive (EU) 2015/863.

Operating Temp. Range	Min. Shrink Temp.	Min. Full Recovery Temp.
-65°C~200°C	150°C	175°C



Technical Specifications

	Property	Requirement	Test method	Typical data
Physical	Tensile strength	8.2Mpa min.	ASTM D 638	≥10.4Mpa
	Elongation	250% min.	ASTM D 638	≥300%
	Heat shock 300°C, 4hrs	No cracking, dripping or flowing	ASTM D 2671	Pass
	Low temperature flexibility -65°C, 4hrs	No cracking	ASTM D 2671	Pass
	Aging 250°C, 168hrs Tensile strength after aging	8.2Mpa min.	ASTM D 638	≥8.2Mpa
	Elongation after aging	200% min.	ASTM D 638	≥200%
Electrical	Dielectric voltage withstand	2500V,60sec no breakdown	ASTM D 2671	Pass
	Dielectric strength	7.9KV/mm min.	ASTM D 2671	≥7.9KV/mm
	Volume resistivity	10 ⁹ Ω*cm min.	ASTM D 876	≥10 ⁹ Ω*cm
Chemical	Corrosion	No corrosion	ASTM D 2671	Pass
	Flammability	Self extinguished within 15 sec.	ASTM D 2671	Pass
Fluid Resistance	23°C, 24hrs (aviation and diesel fuels, hydraulic fluids, lubricating oils etc).			
	Tensile strength	8.2Mpa min.	ASTM D 2671	≥8.2Mpa
	Elongation	200% min.	ASTM D 2671	≥200%

Product Sizes

Size (inch)	Inside diameter		Wall thickness after recovery (mm)		Standard length (mtrs./spool)
	As supplied (mm)	After recovery (mm)	In mm	In inches	
1/8	3.2 (0.125)	1.6 (0.062)	0.76±0.13	0.030±0.005	100
3/16	4.8 (0.187)	2.4 (0.093)	0.89±0.18	0.035±0.007	100
1/4	6.4 (0.250)	3.2 (0.125)	0.89±0.18	0.035±0.007	50
3/8	9.5 (0.375)	4.8 (0.187)	0.89±0.18	0.035±0.007	50
1/2	12.7 (0.500)	6.4 (0.250)	0.89±0.18	0.035±0.007	30
3/4	19.1 (0.750)	9.5 (0.375)	1.07±0.21	0.042±0.008	30
1	25.4 (1.000)	12.7 (0.500)	1.25±0.30	0.049±0.011	30
1 1/2	38.1 (1.500)	19.0 (0.750)	1.40±0.38	0.055±0.015	30
2	50.8 (2.000)	25.4 (1.000)	1.65±0.43	0.055±0.017	30

Ordering Information

Standard Colours – Black

Non-Standard Colours - Red, Yellow, Blue, Green, White, Clear/Transparent

Standard Packaging on Spools/Rolls

Special Sizes, Colours, Printing, Packaging or Cut Pieces available on Request

Heat-Shrinkable Identification Marker Sleeves

EN-HSMK

Application

EN-HSMK heat shrinkable identification marker sleeves are designed to meet the requirements of high-performance identification of wire and cable, tools, hoses and equipments. Made from reliable flame-retardant polyolefin with outstanding properties, sleeves can also be used as electrical insulation. Marking is permanent after printing.

Features/Benefits

- Sleeves meet the requirements of AMS-DTI-23053/5.
- Flexible, highly flame-retardant, shrink ratio; 3:1.
- Sleeves meet the print performance requirements of SAE-AS 81531
- Markers can also provide insulation and strain relief.
- Marks are permanent after printing; mark performance improves after shrinking.
- Conform to RoHS-3 Directive (EU) 2015/863.



Operating Temp. Range	Min. Shrink Temp.	Min. Full Recovery Temp.
-55°C~135°C	70°C	110°C

Technical Specifications

	Property	Requirement	Test method	Typical data
Physical	Tensile strength	10.4Mpa min.	ASTM D 638	≥12.0Mpa
	Elongation	200% min.	ASTM D 638	≥400%
	Low temperature flexibility(-55°C, 4hrs)	No cracking	ASTM D 2671	Pass
	Heat shock (250°C, 4hrs)	No cracking,dripping or flowing	ASTM D 2671	Pass
Print	Print Performance	50 rubs, legible	UL224	Pass
		50 rubs, legible	SAE-AS81531	Pass
		30 strokes, legible	MIL-STD-202	Pass
Electrical	Dielectric voltage withstand	2500V,60sec no breakdown	ASTM D 2671	Pass
	Dielectric strength	19.7KV/mm min.	ASTM D 2671	25KV/mm
	Volume resistivity	10 ¹⁴ Ω*cm min.	ASTM D 876	≥10 ¹⁴ Ω*cm
Chemical	Corrosion	No corrosion	ASTM D 2671	Pass
	Flammability	Average burn time is less than 1 minute	AMS-DTL-23053	Pass
Fluid resistance	23°C, 24hrs, followed by test for print performance Hydraulic fluids (MIL-H-5606) JP-4 fuel (MIL-T-5624) Lubricating oil (MIL-L-7808) Lubricating oil (MIL-L-23699) Freeze resistance liquid (MIL-A-8243)	20 rubs, legible	SAE-AS81531	Pass

Product Sizes

Size (inch)	Inside diameter(mm/inch)		Standard length mm (inch)
	As supplied(mm)	After recovery(mm)	
3/32	2.4 (0.093)	0.8 (0.031)	0.9-2.0 (0.035-0.079)
1/8	3.2 (0.125)	1.0 (0.042)	1.1-2.7 (0.044-0.105)
3/16	4.8 (0.187)	1.6 (0.062)	1.8-4.1 (0.069-0.160)
1/4	6.4 (0.250)	2.1 (0.083)	2.3-5.5 (0.091-0.215)
3/8	9.5 (0.375)	3.2 (0.125)	3.5-8.0 (0.137-0.320)
1/2	12.7 (0.500)	4.2 (0.166)	4.7-10.8 (0.183-0.425)
3/4	19.1 (0.750)	6.4 (0.252)	7.0-16.3 (0.275-0.640)
1	25.4 (1.000)	8.5 (0.333)	9.3-21.6 (0.366-0.850)
1 1/2	38.1 (1.500)	19.1 (0.750)	21.0-33.0 (0.827-1.300)
2	50.8 (2.000)	25.4 (1.000)	27.0-48.0 (1.063-1.890)

Ordering Information

Standard Colours – White, Yellow

Standard Packaging on Continuous Printed Spools/Rolls or Printed Piece of 2 inches

Special Sizes, Colours, Printing, Packaging or Cut Pieces available on Request

High Temperature, Heat Shrinkable Identification Marker Sleeves

EN-HSHMK

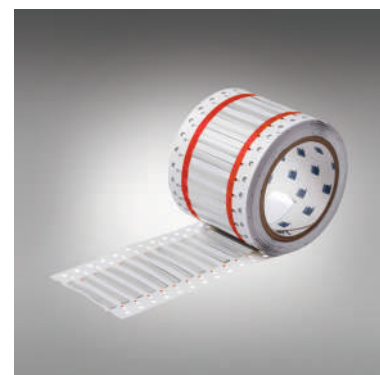
Application

EN-HSHMK-201 temperature rating 200°C, are designed to meet the requirement of high temperature identification of wire and cable, tools, hoses and equipment. Made from flexible fluoropolymer with outstanding properties. Sleeves can be used as identification under rigorous condition such as high temperature, solvent, etc. Marking is permanent after printing.

Features/Benefits

- Meet the requirements of AMS-DTI-23053/18.
- Highly flame-retardant, shrink ratio; 2:1.
- Meet the print performance requirements of SAE-AS 81531
- Markers can also provide insulation and strain relief.
- Marks are permanent after printing; mark performance improves after shrinking.
- Conform to RoHS-3 Directive (EU) 2015/863.

Operating Temp. Range	Min. Shrink Temp.	Min. Full Recovery Temp.
-55°C~200°C	155°C	175°C



Technical Specifications

Property		Requirement	Test method	Typical data
Physical	Tensile strength	24.3Mpa min.	ASTM D 638	≥25Mpa
	Elongation	200% min.	ASTM D 638	≥200%
	Low temperature flexibility -55°C, 4hrs	No cracking	ASTM D 2671	Pass
	Heat shock 275°C, 4hrs	No cracking, dripping or flowing	ASTM D 2671	Pass
Print	Print Performance	50 rubs, legible	UL224	Pass
		50 rubs, legible	SAE-AS81531	Pass
		30 strokes, legible	MIL-STD-202	Pass
Electrical	Dielectric voltage withstand	2500V, 60sec no breakdown	ASTM D 2671	Pass
	Dielectric strength	23.6KV/mm min.	ASTM D 2671	≥30KV/mm
	Volume resistivity	10 ¹² Ω*cm min.	ASTM D 876	≥10 ¹² Ω*cm min.
Chemical	Corrosion	No corrosion	ASTM D 2671	Pass
	Flammability	Average burn time is less than 1 minute	ASM-DTL-23053	Pass
Fluid resistance	23°C, 24hrs, followed by test for print performance Hydraulic fluids(MIL-H-5606) JP-4 fuel(MIL-T-5624) Lubricating oil(MIL-L-7808) Lubricating oil(MIL-L-23699) Freeze resistance liquid(MIL-A-8243)	20 rubs, legible	SAE-AS81531	Pass

Product Sizes

Size (inch)	Inside diameter(mm/inch)		Standard length mm(inch)
	As supplied(mm)	After recovery(max.)	
3/32	2.4 (0.093)	1.2 (0.047)	1.4-2.0 (0.055-0.079)
1/8	3.2 (0.125)	1.6 (0.062)	1.8-2.8 (0.071-0.110)
3/16	4.8 (0.187)	2.4 (0.093)	2.5-4.5 (0.098-0.177)
1/4	6.4 (0.250)	3.2 (0.125)	3.5-6.0 (0.138-0.236)
3/8	9.5 (0.375)	4.8 (0.187)	5.0-9.0 (0.197-0.354)
1/2	12.7 (0.500)	6.4 (0.252)	7.0-12.0 (0.276-0.472)
3/4	19.1 (0.750)	9.5 (0.375)	10.0-18.0 (0.394-0.709)
1	25.4 (1.000)	12.7 (0.500)	13.0-23.0 (0.512-0.906)
1 1/2	38.1 (1.500)	19.1 (0.750)	21.0-33.0 (0.827-1.300)
2	50.8 (2.000)	25.4 (1.000)	27.0-48.0 (1.063-1.890)

Ordering Information

Standard Colours – White, Yellow

Standard Packaging on Continuous Printed Spools/Rolls or Printed Piece of 2 inches

Special Sizes, Colours, Printing, Packaging or Cut Pieces available on Request

PVC Heat Shrinkable Lay Flat Busbar Tubing

EN-HSPVCT

Application

PVC heat shrinkable lay flat busbar tubing provides the perfect electrical insulation for bus bars of low tension systems in control panels & switchgear systems. Bus bar sleeves are an excellent latest modern technology for insulation compared to age old conventional method of taping and painting etc.

Technical Specifications

Working Temperature : 90°C

Dielectric strength : 20 kV/mm

Insulation Resistance : 20 x 10¹⁰ohms at 500V DC

Tensile Strength: Min. 400 Kg/cm

Ultimate Elongation: Min 11%

Chemical resistance: Good

Fire Resistance:

(As per UL94-V) Self Extinguishing with no dripping of materials

Shrinking Temperature: 150°C - 170°C for 4-5 mins.

Mechanical Strength: Excellent

Heat Dissipation: Excellent



Product Sizes

Size in mm	Suitable for Bus Bars
17mm	8x4, 6x6, 10x3
22mm	12x3, 9x6
25mm	15x3, 12x6
30mm	20x3, 18x6, 16x3
35mm	25x3, 20x6
41mm	26x6, 25x9
48mm	30x10, 30x6, 25x12
55mm	38x6, 30x12
61mm	40x10, 40x6, 38x12, 38x9
73mm	50x6
81mm	50x12, 50x10
85mm	60x6, 60x10, 60x12
93mm	75x6
103mm	75x12
110mm	90x12, 90x6
128mm	100x9, 100x6
140mm	100x12
150mm	120x6, 120x10, 125x6
170mm	125x10, 125x12
190mm	150x12, 150x10, 150x6
210mm	175x12, 175x10, 150x6
230mm	200x6
250mm	200x12, 200x10
300mm	250x6, 250x12, 250x10

Ordering Information

Standard Colours – Black, Red, Yellow, Blue, Green, White, Grey, Brown

Standard Packaging on Spools/Rolls

Special Sizes, Colours, Printing, Packaging or Cut Pieces available on Request

Heat Shrinkable Cable Joints

EN-HCJK

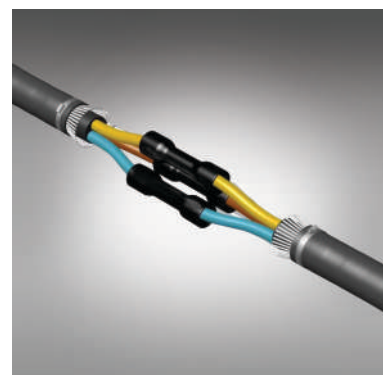
Application

To maintain the continuity of cable especially for long length, the cable jointing systems came into existence. The power cable jointing systems can be Straight Through for XLPE to XLPE or PILC to PILC Cable and can be Transition Cable Joint type for connection of XLPE to PILC Cable. The voltage grade is from 1.1 kV onwards upto 33kV. The cable jointing system works properly in underground cable even with water stagnation in the ground.

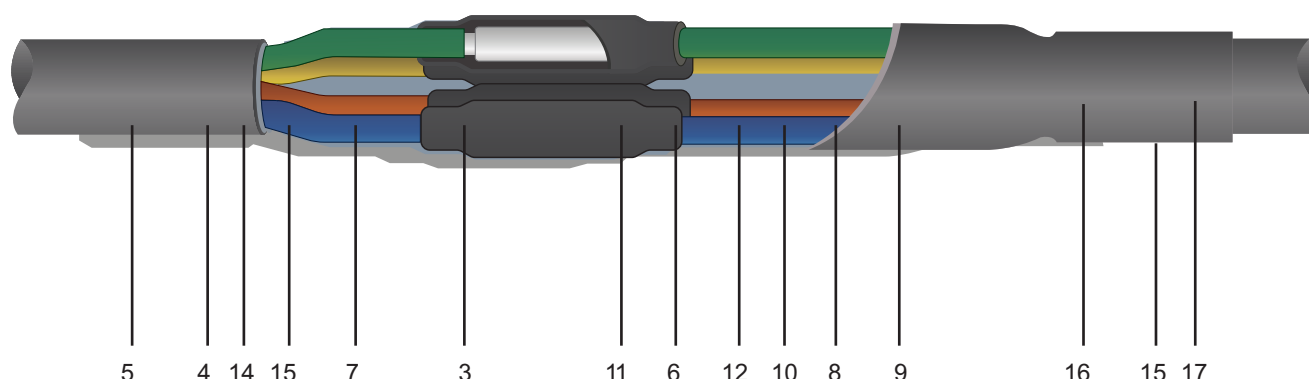
We have a broad spectrum of heat shrinkable joints products, which is great for trifurcating and transition applications. The selection criterion for an appropriate type of cable jointing system by the user should be dependent on the site conditions, operating parameters, voltage applications and cable types.

Technical Specifications

Product	Supported Cable Type
Dielectric strength	$\geq 15\text{Kv/mm}$
Tensile strength	$1 \times 10^{12} \text{N/mm}^2$
Elongation	$\geq 300\%$
Water absorption	$\leq 0.1\%$
Volume resistivity	$\geq 1 \times 10 \text{ ohm.cm}$
Longitudinal Change	Max 10%
Tracking Index	Excellent



Tests	12kV System (6.6, 6.35/11kV)	15-24kV System	33-36kV System
AC Withstand 1 Minute	35 kV	50 kV	75 kV
DC Withstand 1 Minute	48 kV	96 kV	144 kV
Discharge Extinction Voltage(<5pc.)	75 kV (min)	125 kV (min)	170 kV (min)
Impulse Withstand (Crest kV)	75 kV (min)	125 kV (min)	170 kV (min)
Continuous Current Rating	As per Cable	As per Cable	As per Cable



Cross-linked cable connection single phase structure

- | | | |
|-------------------------------------|-----------------------------|------------------------------|
| 1. Conductor | 7. Stress control tube | 13. Stress evacuation paster |
| 2. Internal semi-conducting surface | 8. Internal insulation tube | 14. Sealant |
| 3. XLPE insulation | 9. External insulation tube | 15. Copper shield net |
| 4. External semi-conducting surface | 10. Shield tube | 16. Copper weaving net |
| 5. Copper shield | 11. Semi-conducting strip | 17. Band |
| 6. Connection tube | 12. Fill | |

Available Models

Product	Supported Cable Type	Core	Rated Voltage	Cable size (sq. mm)
Heat Shrinkable Straight Through Joints	PVC / XLPE/ PILC Cables	1-4	1.1kV, 3.3kV	1.5 - 400
Heat Shrinkable Straight Through Joints	XLPE/PVC Insulated Cables	3	12kV, 15-24kV, 36kV	16-400
Heat Shrinkable Straight Through Joints	XLPE/EPR/PVC Insulated Cables	1	12kV, 15-24kV, 36kV	16-1000
Heat Shrinkable Straight Through Joints	Paper Insulated Lead Covered (PILC) Cable	3	12kV	16-630
Heat Shrinkable Straight Through Joints	Paper Insulated Lead Covered (PILC) Cable	3	15kV-24kV, 36kV	25-400
Heat Shrinkable Transition Joint	XLPE/PILC Cables	3	upto 12k	16-630
Heat Shrinkable Transition Joint	XLPE/PILC Cables	3	V15kV-24kV, 36kV	25-400

Heat Shrinkable Cable Termination for Indoor and Outdoor Application

EN-HCTK

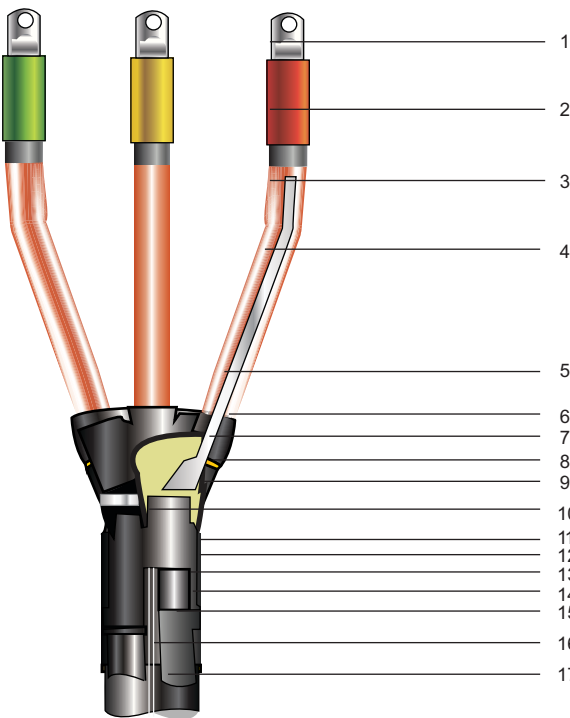
Application

For connection of Cable to Switchgear Terminal, Transformer Terminal, Poles etc. termination kits are required. The Heat Shrinkable Termination kits can be Indoor or Outdoor based on actual application, with voltage grade ranging from 1.1 kV up to 33kV. It can also be single core or 3 core / 3.5 core based on cable configuration. Termination can be for XLPE & PILC Cable and can be used in extreme hazardous atmosphere conditions.

There are wide range of cable jointing systems available today, which can be classified by the way they are applied such as taped type, pre-moulded / push-on / slip-on type, cold application type and heat shrinkable type. The selection criterion for an appropriate type of cable jointing system by the user should be dependent on the site conditions, operating parameters, voltage applications and cable types.

Technical Specifications

- Di-electric strength - $\geq 15\text{Kv/mm}$
- Tensile strength - $1 \times 10^{12} \text{N/mm}^2$
- Elongation - $\geq 300\%$
- Water absorption - $\leq 0.1\%$
- Volume resistivity - $\geq 1 \times 10 \text{ ohm.cm}$
- Longitudinal Change - Max 10%
- Tracking Index - Excellent



1. Termination

2. Seal Tube

3. Insulation Tube

4. Conductor insulation

5. Stress control tube

6. Stress evacuation paster

7. Semi-conducting surface

8. Copper shield

9. Copper shield earthing
10. Prick

11. Internal protection surface

12. Fill

13. Steel armour

14. Three-conductor fingertip

15. External sheath

16. Steel armour earthing

17. Thermal shrinkable ring

Available Models

Product	Supported Cable Type	Core	Rated Voltage	Cable size (sq. mm)
Heat Shrinkable Cable Terminations	PVC/XLPE Cables	1-4	1.1kV, 3.3kV	16-400
Heat Shrinkable Cable Terminations	XLPE/EPR Insulated Cables	3	12kV	16-500
Heat Shrinkable Cable Terminations	XLPE/EPR Insulated Cables	3	24kV	16-500
Heat Shrinkable Cable Terminations	XLPE/EPR Insulated Cables	3	36kV	25-400
Heat Shrinkable Cable Terminations	XLPE/EPR Insulated Cables	1	12kV, 15-24kV, 36kV	16-1000
Heat Shrinkable Cable Terminations	Paper Insulated Lead Covered (PILC) Cable	3	12kV	16-500
Heat Shrinkable Cable Terminations	Paper Insulated Lead Covered (PILC) Cable	3	24kV	25-500
Heat Shrinkable Cable Terminations	Paper Insulated Lead Covered (PILC) Cable	3	36kV	35-400

PVC Non Heat Shrinkable Flame Retardant Tubing

EN-PVCT

Application

- Designed for wire bundling of home appliances, automobiles and motorcycles
- The insulating and protection of electronic components.
- Outstanding electrical and mechanical properties.
- 105°C, VW-1, 300V/600V
- Conform to RoHS-3 Directive (EU) 2015/863.
- Operating temperature range: -30°C~105°C

Sizes/colors

- Inside diameter: $\Phi 3.0\text{mm} \sim \Phi 30\text{mm}$
- Wall thickness: 0.3mm~2.0mm
- Colours: ALL colours are available.

Technical Specifications

Property	Value
Tensile strength <MPa>	≥ 10.4
Elongation <%>	≥ 100
Tensile strength after aging <MPa>	≥ 7.3
Elongation after aging <%>	≥ 100
Flexibility after aging	No crack, remain flexible
Insulating voltage <2500V 60S>	Pass
Minimum volume resistivity	$\geq 10^{10}$
Cool bending <-30°C 1h>	No crack
Radial shrinkage <%>	$\geq \pm 5$
Heat shock	No crack



Electrical Hot Air Blower

EN-HSAB

ENER Hot Air Blower is manufactured using high-strength engineering plastic and electronics inside for best strength and durability. It is used for heat shrinkage, drying, paint removal, thawing, preheating, disinfection, workshop welding, glue welding, shrink PVC film, melting electronics solder etc.

- Ergonomic design for comfortable hand held usage.
- Constant temperature control circuit or Variable temperature control circuit.
- High quality heater and turbine for durability and low sound during operation.

Models Available	Voltage	Power	Temperature	Air Flow	Temperature Display & Controller
EN-HSAB-1600	220V	1600W	50°C – 550°C	250L/min – 400L/min	Yes
EN-HSAB-1800	220V	1800W	50°C – 550°C	250L/min – 400L/min	Yes
EN-HSAB-2000	220V	2000W	50°C – 650°C	250L/min – 550L/min	Yes



Colours Available: Red-Black, Grey-Black, Orange-Black, Black

Heat Shrinkable Cable End Caps With Spiral Adhesive Coating

EN-HSCEC

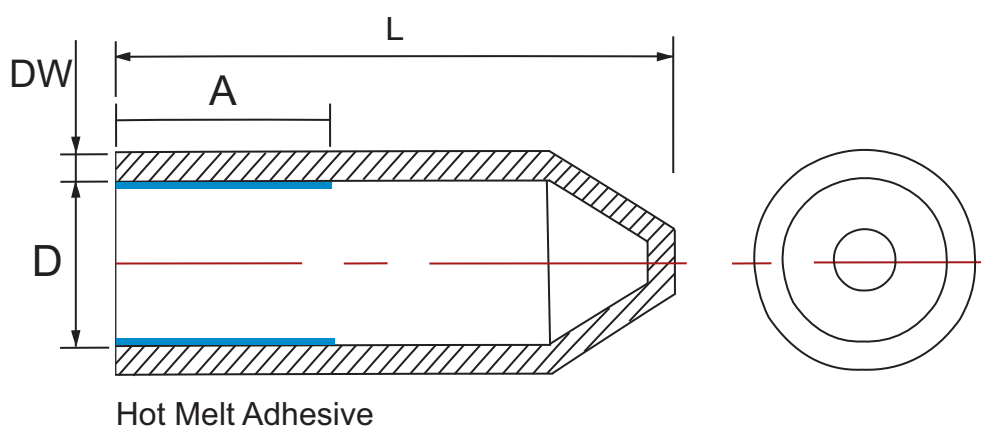
Applications

Ener End Cap offers an economical means of sealing the end of power cable with a completely watertight seal. The internal surface of the end cap has a layer of spiral coated hot meltable adhesive, which retains its flexible properties after Shrinkage. End Cap is recommended for application both in open air or underground power distribution cables with PVC, PILC or XLPE sheaths.

- Effectively offering protection against oxidation, Ozone, UV-radiation etc.
- Coated with hot melt adhesive to ensure environment seal
- Easy to fit into the cable end
- Minimum fully shrink temperature 120°C

Technical Specifications

Property	Test Method	Typical Data
Operating temperature	IEC 216	-55°C to +110°C
Tensile strength	ASTM D 638	>14MPa
Elongation at break	ASTM D 638	>400%
Density	ASTM D 792	1.05
Elongation at break after aging	150°C / 168hrs	>300%
Dielectric strength	IEC 243	>15kV/mm
Volume resistance	IEC 93	>10 ¹⁴ Ω cm



Product Sizes

Product Cat No.	As supplied (mm)	After Recovered (mm)				Cable diameter (mm)
	D(Min.)	D(Max.)	A (±10%)	L (±10%)	DW (±5%)	
EN-HSCEC-12/4	12	4.0	15	40	2.6	4 -10
EN-HSCEC-14/5	14	5.0	18	45	2.2	5 -12
EN-HSCEC-20/6	20	6.0	25	55	2.8	6 -16
EN-HSCEC-25/8.5	25	8.5	30	68	2.8	10 - 20
EN-HSCEC-35/16	35	16.0	35	83	3.3	17 -30
EN-HSCEC-40/16	40	16.0	40	83	3.3	18- 32
EN-HSCEC-55/26	55	26.0	50	103	3.5	28 48
EN-HSCEC-75/36	75	36.0	55	120	4.0	45 -68
EN-HSCEC-100/52	100	52.0	70	140	4.0	55 -90
EN-HSCEC-120/60	120	60.0	70	150	4.0	65-110
EN-HSCEC-145/60	145	60.0	70	150	4.0	70-130
EN-HSCEC-160/82	160	82.0	70	150	4.0	90-150
EN-HSCEC-200/90	200	90.0	70	160	4.2	100-180

Composite Insulated Heat shrink tape with Meltable Adhesive Lining

EN-HSTAPE

Applications

Ener Heat Shrinkable Tape is a composite tape which is constituted by heat shrinkable based materials and fusible linear polyolefin. When the exterior reaches the shrink temperature, the inner adhesive layer melts, so that the recipient material can be sealed and insulated. It has the characteristics of convenient to use, durable, easy to peel and good compatibility with other insulating materials. Can protect and insulate any shape of material.

Features

- Protect and insulate the slender charged body without free end.
- Emergency power supply recovery in case of any damage in the previous insulation
- Partial repair of cable because of any outside damage. Waterproofing or connecting cables.
- Insulation treatment for the charged body which has insufficient ground distance or interphase distance.
- Protection of electrical bare conductor passing through the trees and short-circuit treatment of bare conductor passing the tunnel having icicles.
- Anti-condensation, anti-pollution flash over, anti-corrosion.

Operating Temp. Range	Min. Shrink Temp.	Min. Full Recovery Temp.
-55°C~105°C	80°C	110°C



Product Sizes

Thickness of the tape	Width	Standard Length (Mtrs)
0.4mm	25, 50mm	10, 15, 20

Ener Heat Shrinkable Tape has flame-retardant and without flame-retardant models

Heat Shrinkable Low Voltage Insulating Breakout

EN-HSCBR

Application

Made from irradiated cross-linked polyolefin and suitable for applications up to 1KV. The properties of electrically insulating, UV resistant and water proof makes the breakout fitting widely used in electric power industry to provide insulation and sealing over the crutch of multi-core PVC, XLPE or PILC cables.

Features

- Minimum shrink temperature: 110°C
- Minimum fully recovery temperature: 130°C
- Standard color: Black
- Thermoplastic Adhesive Liner provides complete environmental protection and insulation
- Heat Shrinkable Boots for 2, 3, 4 and 5 way cable breakouts.
- Provides strain relief & Mechanical protection.
- Seals and protects multi-conductor cable and conduit breakouts.

Technical Specifications

	Property	Requirements	Test Method
Physical	Tensile strength	8N/mm ² (min.)	ASTM D412
	Ultimate Elongation	200% (min.)	ASTM D412
	Thermal Aging (168 hrs at 175°C)	200% (min.)	ASTM D412
	Ultimate Elongation		
	Low Temperature Flexibility (-20°C)	No cracking	ASTM D2671
	Heat Shock (4 hrs at 225°C)	No dripping, flowing or cracking	ASTM D2671
	Flammability	Self ext. within 50 mm	ASTM D2671
Electricity	Dielectric Strength	10 kV/mm (min.)	ASTM D149
Chemical	Water absorption	0.5 (max.)	ASTM D570





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