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## Shrink-Kon<sup>®</sup> - Heat-shrinkable tubing



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# Shrink-Kon - Heat-shrinkable tubing

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# Overview



**Protect against moisture, corrosion and abrasion. ABB has you covered when it comes to insulation.**

- Easy to use
- Heat shrinkable
- Products with heavy, medium and thin walls
- Covers available for H-type taps and splices

## Heavy-wall Shrink-Kon – heat-shrinkable insulators

When it comes to moisture-proofing connections and terminations, ABB's heat-shrinkable tubing, boots and end caps have proven themselves over years of service to the industry. Made of thermally stabilized cross-linked polyolefin, these heat-shrinkable insulators can be used over lead, steel, aluminum, copper, standard plastic and elastomeric insulating materials.

ABB heat-shrinkable insulators are designed to be easy to use. They provide an appropriate level of insulation and abrasion protection.

Where applicable, ABB heat-shrink insulators are UL Listed. Also, all standard size insulators have an internally applied adhesive sealant.

## Heavy-wall Shrink-Kon Heat-shrinkable end cap and boots

### Redesigned for superior durability and performance.

Seals and insulates cable ends at a 600 V rating. Installs fast, while providing insulation resistance to moisture, corrosion and abrasion. The extra thickness at the tip of the end cap prevents sharp ends of the cable from puncturing the seal.

Seals and insulates multiconductor cables and conduit with the same cost savings and superior properties of ABB's heat-shrinkable tubing. These boots replace time-consuming tapes, epoxies, encapsulations and dips. The boots are internally coated with sealant.

### ABB heat-shrinkable insulators offer:

- Heavy-duty protection
- A full range of sizes from #14 to 2500 kcmil
- Field-proven reliability
- Internal sealant provides protection against moisture

### Featured products include:

- High shrink ratio HSHR series with 6:1 shrink ratio designed for applications with extreme differences between cable, connector and back shell sizes
- Flame-retardant HSHR series provides maximum flame retardancy



#### **Shrink-Kon – medium-wall tubing**

More flexible than heavy-wall products, with excellent resistance to impact and abrasion.

- Seals and protects cable splices and terminations
- Thermoplastic adhesive liner guarantees complete environmental protection and insulation

#### **Shrink-Kon – thin-wall tubing**

Manufactured from stabilized polyolefin, these insulators are used to insulate bare Sta-Kon® and Color-Keyed® connectors and splices. They also provide a degree of strain relief and may be used to harness wires. Available in cut pieces or reels.

#### **Featured products include:**

- Standard non-lined 2:1 thin-wall tubing
- 3:1 adhesive lined thin-wall CPO-A series provides excellent flexibility with environmental sealing capability
- Extra-clear heat shrink for use on power connections and data connections

#### **Covers**

These insulating covers provide hard-shell insulated protection for “H” type compression taps and splices, and, because there is no taping required, you get uniform quality and appearance each time. The exclusive locking design provides the range-taking capability. Only six H-tap insulating catalogue numbers accommodate the range of 6 AWG–1,000 kcmil in the main and 12 AWG–500 kcmil.

- Hard-shell outer covers guard against impact... inner seal keeps out dust
- Installs quickly and easily without special tools... simply snaps together
- Eliminates time-consuming taping
- Provides high-quality, neat, uniform installations
- Range-taking design reduces inventory





## Heavy-wall heat-shrinkable tubing

### HS Series



#### 3:1 Shrink ratio

- Made of thermally stabilized cross-linked polyolefin, enabling a recovered wall thickness greater than that of the cable jacket replaced
- Withstands severe mechanical requirements of U.R.D., submersible and direct burial installations
- Tubing, featuring an internally applied sealant, offers protection against moisture, and may be used over lead, steel, aluminum, copper, standard plastic and elastomeric insulating materials
- Shrink temperature of 120 °C
- High-impact, abrasion, corrosion and chemical resistance
- Rated for 600 V, 90 °C continuous use
- Thermoplastic adhesive liner provides complete environmental protection and insulation
- Meets: UL and CSA standards, ANSI C119.1, Western Underground Guide Nos. 2.4, 2.5, ICEA and NEMA insulation thickness requirements
- Continuous operating temperature: -55 °C to 110 °C
- ABB recommended up to 1 kV
- UV rated (ASTM G53)



#### HS Series specifications

Property	Test method	Typical performances
<b>Physical</b>		
Tensile strength	ASTM D412, ISO 37	2100 psi (14.5 MPa)
Elongation	ASTM D412, ISO 37	600%
Elongation after heat aging (168 hrs. at 150 °C)	ASTM D2671	500%
Heat shock (4 hrs. at 225 °C)	ASTM D2671	No cracking or flowing
Longitudinal change	ASTM D2671	+1%, -10%
Low temperature flexibility (4 hrs. at -55 °C)	ASTM D2671	No cracking
Specific gravity	ASTM D792	1.1
Hardness (Shore D)	ASTM D2240	50D
<b>Electrical</b>		
Dielectric strength	ASTM D149	500 V/mil (20 kV/mm)
Dielectric voltage withstand (2500 V, 600 Hz, 1 min.)	UL 486D	No breakdown, 24 kV-1 min., 15 kV-4 hrs.
Volume resistivity	ASTM D257	1016 ohm-cm
<b>Chemical</b>		
Fluid resistance	MIL-DTL-23053	Good to excellent
Fungus resistance	ASTM G21	No growth
Copper corrosion	ASTM D2671	No corrosion
Water absorption	ASTM D570	0.1%
<b>Adhesive</b>		
Adhesive lap shear (1 in./min. at 23 °C)	ASTM D1002	125 psi (0.875 MPa)
Adhesive softening point	ASTM E28	90 °C ±5 °C
Adhesive peel strength (300 mm/min. at 23 °C)		
– To steel, aluminum, P.E.	ASTM D 1000	35 linear lb/in.
– PVC	ASTM D 1000	20 linear lb/in.
Water penetration	STM 706	No penetration after 236 hrs. of continuous immersion

## Heavy-wall heat-shrinkable tubing

### HS Series

#### Heavy-wall heat-shrinkable tubing – Black



Cat. no.	Min. expanded I.D. (in.)	Max. recovered I.D. (in.)	Nom. recovered wall (in.)	Std. length (in.)	Fits any listed or certified Al or Cu splice with dia. no larger than		Cable range (AWG) or kcmil	Std. pkg. qty.
					O.D. (in.)	Length (in.)		
HS16-12	0.35	0.12	0.07	3	0.27	1.00	#16-#12	25
HS16-12L	0.35	0.12	0.07	6	0.27	1.00	#16-#12	25
HS16-12-4	0.35	0.12	0.07	48	0.27	1.00	#16-#12	5
HS12-6	0.51	0.16	0.09	3	0.38	1.75	#12-#6	25
HS12-6L	0.51	0.16	0.09	6	0.38	1.75	#12-#6	25
HS12-6-4	0.51	0.16	0.09	48	0.38	1.75	#12-#6	5
HS6-1	0.75	0.24	0.09	4	0.63	2.50	#6-#2	25
HS6-1L	0.75	0.24	0.09	8	0.63	2.50	#6-#2	25
HS6-1-4	0.75	0.24	0.09	48	0.63	2.50	#6-#2	5
HS4-30	1.10	0.35	0.12	5	0.75	3.25	#4-3/0	20
HS4-30L	1.10	0.35	0.12	9	0.75	3.25	#4-3/0	10
HS4-30-4	1.10	0.35	0.12	48	0.75	3.25	#4-3/0	5
HS40-400	1.50	0.47	0.16	8	-	-	2/0-350	10
HS40-400L	1.50	0.47	0.16	12	-	-	2/0-350	10
HS40-400-4	1.50	0.47	0.16	48	-	-	2/0-350	5
HS500-1000	2.00	0.63	0.16	9	-	-	500-1000	5
HS500-1000L	2.00	0.63	0.16	15	-	-	500-1000	2
HS500-1000-4	2.00	0.63	0.16	48	-	-	500-1000	2
HS12-30**	3.54	1.18	0.16	12	-	-	800-1250	2
HS30-30**	3.54	1.18	0.16	30	-	-	800-1250	2
HS30-4**	3.54	1.18	0.16	48	-	-	800-1250	1
HS12-40**	4.72	1.57	0.17	12	-	-	1500-2500	1
HS30-40**	4.72	1.57	0.17	30	-	-	1500-2500	1
HS40-4-TB	4.72	1.57	0.17	48	-	-	1500-2500	1

Order multiple is std. pkg. All lengths have factory-applied sealant

\*\*UL not applicable

#### Heavy-wall heat-shrinkable tubing – Red



Cat. No.	Min. expanded I.D. (in.)	Max. recovered I.D. (in.)	Length (in.)	For 2-way connector cable sizes (AWG)		Std. pkg. qty.
				For 2-way connector cable sizes (AWG)	Std. pkg. qty.	
HS12-6LR	0.51	0.16	6	#8-6	25	
HS6-1LR	0.75	0.24	8	#6-2	25	
HS4-30LR	1.10	0.35	9	#1-3/0	10	

Order multiple is std. pkg. All lengths have factory-applied sealant

#### Heavy-wall tubing (25 ft. rolls) – Black



Cat. No.	Min. expanded I.D. (in.)	Max. recovered I.D. (in.)	Nom. recovered wall (in.)	For 2-way connector cable sizes (AWG) or kcmil		Std. pkg. qty.
				For 2-way connector cable sizes (AWG) or kcmil	Std. pkg. qty.	
HS16-12-25	0.35	0.12	0.07	#14-10	1	
HS12-6-25	0.51	0.16	0.09	#8-6	1	
HS6-1-25	0.75	0.24	0.09	#6-#2	1	
HS4-30-25	1.10	0.35	0.12	#1-3/0	1	
HS40-400-25	1.50	0.47	0.16	2/0-350	1	
HS500-1000-25	2.00	0.63	0.16	250-500	1	

Order by reel, not by feet. 25 ft. reels not supplied with factory applied sealant

## Heavy-wall heat-shrinkable tubing

### HSHR Series



#### High shrink ratio of 6:1

- Accommodates a wide variety of connector shapes and configurations
- Thermoplastic adhesive liner for complete environmental protection and insulation
- Continuous operating temperature: -55 °C to 110 °C
- Shrink temperature: 120 °C
- Flame-retardant

#### Heavy-wall heat-shrinkable tubing

	Cat. no.	Min. expanded I.D. (in.)	Max. recovered I.D. (in.)	Nominal recovered wall (in.)	Code cable size (AWG) or kcmil	Standard length (in.)	Std. pkg. qty.
	HSHR750-4	0.75	0.13	0.10	#22-#46	48	25
	HSHR1300-4	1.30	0.22	0.12	#8-700	48	25
	HSHR1750-4	1.75	0.29	0.13	#4-1,000	48	25
	HSHR2000-4	2.00	0.33	0.13	#2-1,250	48	25
	HSHR2750-4	2.75	0.46	0.14	1/0-1,500	48	15
	HSHR3500-4	3.50	0.58	0.15	3/0-1,750	48	10
	HSHR4700-4	4.70	0.78	0.15	300-2,000	48	5

#### HSHR Series specifications

Property	Test method	Typical performances
<b>Physical</b>		
Tensile strength	ASTM D412, ISO 37	2,100 psi (14.5 MPa)
Elongation	ASTM D412, ISO 37	600%
Elongation after heat aging (168 hrs. at 150 °C)	ASTM D2671	500%
Heat shock (4 hrs. at 225 °C)	ASTM D2671	No cracking or flowing
Longitudinal change	ASTM D2671	+1%, -10%
Low temperature flexibility (4 hrs. at -55 °C)	ASTM D2671	No cracking
Specific gravity	ASTM D792	1.1
Hardness (Shore D)	ASTM D2240	50D
<b>Electrical</b>		
Dielectric strength	ASTM D149, IEC 243	500 V/mil (20 kV/mm)
Dielectric voltage withstand (2500 V, 60 Hz, 1 min.)	UL 486D	No breakdown, 15 kV-4 hrs.
Volume resistivity	ASTM D257	1,016 ohm-cm
<b>Chemical</b>		
Fluid resistance	MIL-DTL-23053/15	Good to excellent
Fungus resistance	ASTM G21	No growth
Copper corrosion	ASTM D2671	No corrosion
Water absorption	ASTM D570	0.1%
<b>Adhesive</b>		
Adhesive lap shear (1 in./min. at 23 °C)	ASTM D1002	125 psi (0.875 MPa)
Adhesive softening point	ASTM E28	90 °C ±5 °C
Adhesive peel strength (300 mm/min. at 23 °C)		
– To steel, aluminum, P.E.	ASTM D 1000	35 linear lb/in.
– PVC	ASTM D 1000	20 linear lb/in.
Adhesive blocking (30 °C)	ASTM D1146	No blocking
Water penetration	STM 706	No penetration after 236 hrs. of continuous immersion



## Heavy-wall heat-shrinkable tubing

### HSFR Series




#### 3:1 Shrink ratio

#### Flame-retardant heavy-wall

- Insulates and protects electrical splices and terminations
- High-impact and abrasion resistance
- Thermoplastic adhesive liner
- Rated for up to 2 kV
- Continuous operating temperature: -55 °C to 110 °C

- Shrink temperature of 120 °C
- Meets: UL and CSA standards, ANSI C119.1, Western Underground Guide Nos. 2.4, 2.5, MIL-DTL-23053/15, IEEE 383 vertical flame test, ANSI C37.20.2, ICEA S-19-8 and NEMA insulation thickness requirements
- UV rated (ASTM G53)

#### Heavy-wall heat-shrinkable tubing – Flame-retardant

	Cat. no.	Min. expanded I.D. (in.)	Max. recovered I.D. (in.)	Nominal recovered wall (in.)	Code cable size (AWG) or kcmil	Standard length (in.)	Std. pkg. qty.
	HSFR16-12-4	0.35	0.12	0.07	#14-#10	48	25
	HSFR12-6-4	0.51	0.16	0.09	#8-#6	48	25
	HSFR6-1-4	0.75	0.24	0.09	#6-#2	48	25
	HSFR4-30-4	1.10	0.35	0.12	#1-3/0	48	25
	HSFR40-400-4	1.50	0.47	0.16	2/0-350	48	25
	HSFR500-1000-4	2.00	0.63	0.16	250-500	48	25

Order multiple is std. pkg. – Standard colour: black

#### HSFR Series specifications

Property	Test method	Typical performances
<b>Physical</b>		
Tensile strength	ASTM D412, ISO 37	2,100 psi (14.5 MPa)
Elongation	ASTM D412, ISO 37	600%
Longitudinal change	ASTM D2671	+1%, -10%
Specific gravity	ASTM D792	1.2
Elongation after heat aging (168 hrs. at 175 °C)	ASTM D2671, ISO 37	500%
Heat shock (4 hrs. at 225 °C)	ASTM D2671	No cracking or flowing
Low temperature flexibility (4 hrs. at -55 °C)	ASTM D2671	No cracking or splitting
Hardness (Shore D)	ASTM D2240	50D
Oxygen index	ASTM D2863	27.00
Flammability	ASTM D2671	Flame-retardant
<b>Electrical</b>		
Dielectric strength	ASTM D149	500 V/mil (20 kV/mm)
Dielectric voltage withstand (2500 V, 60 Hz, 1 min.)	UL 486D	No breakdown, 24 kV-4hrs, 15 kV-4 hrs.
Volume resistivity	ASTM D257	1,016 ohm-cm
<b>Chemical</b>		
Fluid resistance	MIL-DTL-23053/5	Good to excellent
Fungus resistance	ASTM G21	No growth
Copper corrosion	ASTM D2671	No corrosion
Water absorption	ASTM D570	0.2%
<b>Adhesive</b>		
Adhesive lap shear (1 in./min. at 23 °C)	ASTM D1002	125 psi (0.875 MPa)
Adhesive softening point	ASTM E28	90 °C ±5 °C
Adhesive peel strength (300 mm/min. at 23 °C)		
– To steel, aluminum, P.E.	ASTM D 1000	35 linear lb/in.
– PVC	ASTM D 1000	20 linear lb/in.
Adhesive blocking (30 °C)	ASTM D1146	No blocking
Adhesive water absorption	ASTM D570	Less than 0.3%
Water penetration	STM 706	No penetration after 286 hrs. of continuous immersion

## Heavy-wall heat-shrinkable tubing

### HSC Series – Heat-shrinkable end caps



#### 3:1 Shrink ratio

- Provides effective method for sealing cable ends, pipe conduit, etc.
- Extra thickness at the tip of the end cap prevents sharp ends of the cable from puncturing the seal
- Flame-retardant
- Rated from 600/1,000 V, 90 °C continuous use

- Shrink temperature of 120 °C
- Resistant to common fluids and solvents
- Adhesive liner provides complete environmental protection and insulation
- Heat indicating lines; continuous operating temperature: -55 °C to 110 °C

#### Heat-shrinkable end caps



	Cat. no.	Min. expanded I.D. (in.)	Max. recovered I.D. (in.)	Recovered wall (in.)	Code cable size (AWG) or kcmil	Nom. length (in.)	Std. pkg. qty.
	HSC8-4	0.51	0.16	0.09	#8-#6	2.50	100
	HSC2-20	0.75	0.24	0.09	#6-#2	2.50	100
	HSC30-250	1.10	0.35	0.12	#1-3/0	3.00	50
	HSC300-600	1.50	0.47	0.16	2/0-350	3.25	50
	HSC700-1000	2.00	0.63	0.16	250-500	3.50	50
	HSC750	2.70	0.87	0.16	600-1,000	4.00	10
	HSC300	3.50	1.18	0.16	800-1,250	4.50	5
	HSC500	4.70	1.57	0.17	1,500-2,500	5.50	5

Order multiple is std. pkg.

#### HSC Series specifications

Property	Test method	Typical performances
<b>Physical</b>		
Tensile strength	ASTM D412, ISO 37	2,100 psi (14.5 MPa)
Elongation	ASTM D412, ISO 37	550%
Elongation after heat aging (168 hrs. at 150 °C)	ASTM D412, ISO 37	500%
Heat shock (4 hrs. at 225 °C)	ASTM D2671	No cracking or flowing
Longitudinal change on recovery	ASTM D2671	+1%, -10%
Low temperature flexibility (4 hrs. at -55 °C)	ASTM D2671	No cracking
Specific gravity	ASTM D792	1.1
Hardness (Shore D)	ASTM D2240	50D
<b>Electrical</b>		
Dielectric strength	ASTM D149, IEC 243	500 V/mil (20 kV/mm)
Dielectric voltage withstand (2500 V, 60 Hz, 1 min.)	UL 486D	No breakdown, 15 kV-4 hrs.
Volume resistivity	ASTM D257	1,016 ohm-cm
<b>Chemical</b>		
Fluid resistance	MIL-DTL-23053	Good to excellent
Fungus resistance	ASTM G21	No growth
Copper corrosion	ASTM D2671	No corrosion
Water absorption	ASTM D570	0.1%
<b>Adhesive</b>		
Adhesive lap shear (1 in./min. at 23 °C)	ASTM D1002	125 psi (0.875 MPa)
Adhesive softening point	ASTM E28	90 °C ±5 °C
Adhesive peel strength (300 mm/min. at 23 °C)		
– To steel, aluminum, P.E.	ASTM D 1000 (mod.)	35 linear lb/in.
– PVC	ASTM D 1000 (mod.)	20 linear lb/in.
Adhesive blocking (30 °C)	ASTM D1146	No blocking
Water penetration	STM 706	No penetration after 236 hrs. of continuous immersion
Room temperature	168 hrs./40 psi	No leaks
Temp. cycling (-40 °C to 60 °C)	50 cycles/15 psi	No leaks
Burst pressure		100 psi (0.70 MPa)

## Heavy-wall heat-shrinkable tubing

### HSB Series – Heat-shrinkable breakout boots

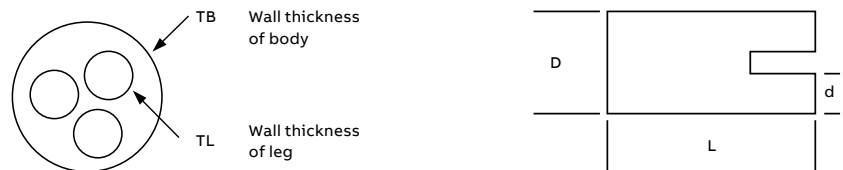


- Boots for 2-, 3- and 4-cable breakouts
- Thermoplastic adhesive liner provides complete environmental protection and insulation
- Meets ESI 09-11
- Strain relief and mechanical protection
- Continuous operating temperature: -55 °C to 100 °C
- Shrink temperature of 135 °C

#### Heat-shrinkable breakout boots

Cat. no.	No. legs	D		d		L	TB	TL	Application legs 600 V conductor (AWG/kcmil)	Std. pkg. qty.
		Expanded dia. (min.) (in.)	Recovered dia. (max.) (in.)	Expanded dia. (min.) (in.)	Recovered dia. (max.) (in.)					
HSB200-75-2	2	1.97	0.90	0.83	0.30	4.69	0.13	0.13	#3–300	10
HSB120-50-3	3	1.50	0.50	0.65	0.16	4.47	0.11	0.11	#8–3/0	10
HSB170-82-3	3	2.20	0.89	1.20	0.35	7.09	0.12	0.12	#1–600	10
HSB240-112-3	3	2.83	1.38	1.46	0.69	7.01	0.16	0.12	300–1,000	10
HSB125-50-4	4	1.83	0.47	0.59	0.12	3.74	0.10	0.08	#12–2/0	10
HSB175-82-4	4	2.36	0.90	1.18	0.25	7.95	0.16	0.13	#4–600	10
HSB265-120-4	4	3.10	1.40	1.50	0.49	9.45	0.13	0.13	3/0–1,000	10
HSB350-138-3	3	3.54	1.34	1.38	0.55	7.87	0.12	0.08	4/0–1,000	5
HSB430-157-3	3	4.33	1.38	1.57	0.69	7.01	0.16	0.12	300–1,000	5
HSB490-200-3	3	4.92	2.32	2.00	1.00	11.14	0.15	0.15	450–1,000	5
HSB520-135-4	4	5.25	3.00	1.35	0.55	10.02	0.13	0.16	4/0–1,000	5

#### Diagrams



#### HSB Series specifications

Property	Test method	Typical performances
<b>Physical</b>		
Tensile strength	ASTM D412, ISO 540	2,100 psi (14.5 MPa)
Ultimate elongation	ASTM D412, ISO 540	600%
Elongation after heat aging (168 hrs. at 175 °C)	ASTM D412, ISO 540	520%
Heat shock (4 hrs. at 225 °C)	ASTM2671	No dripping, cracking, flowing
Low temperature flexibility (-55 °C)	ASTM2671	No cracking
Flammability	ASTM D630	Self ext. within 1.97 sec.
<b>Electrical</b>		
Dielectric strength	ASTM D2671	280 V/mil (11 kV/mm)
<b>Chemical</b>		
Water absorption	ASTM D570	0.03%

## Medium-wall heat-shrinkable tubing

### HSMW Series



#### 3:1 Shrink ratio

- More flexible than heavy-wall products
- Seals and protects cable splices and terminations
- High resistance to impact and abrasion
- Shrink temperature of 120 °C
- Continuous operating temperature: -55 °C to 110 °C
- Thermoplastic adhesive liner guarantees complete environmental protection and insulation
- UV rated (ASTM G53)

#### Medium-wall heat-shrinkable tubing

Cat. no.	Min. expanded I.D. (in.)	Max. recovered I.D. (in.)	Nominal recovered wall (in.)	Code cable size (AWG) or kcmil	Standard length (in.)	Std. pkg. qty.
HSMW400-48	0.40	0.15	0.08	#4-#14	48	25
HSMW750-48	0.75	0.22	0.08	4/0-#8	48	25
HSMW1100-48	1.10	0.40	0.08	400-#1	48	25
HSMW1300-48	1.30	0.40	0.08	600-#1	48	25
HSMW1500-48	1.50	0.50	0.08	750-3/0	48	25
HSMW1700-48	1.70	0.50	0.08	1,000-2/0	48	25
HSMW2050-48	2.05	0.75	0.08	250-600	48	25
HSMW2750-48	2.75	1.00	0.08	500-1,000	48	15
HSMW3500-48	3.50	1.18	0.10	750-1,250	48	10
HSMW4700-48	4.70	1.57	0.11	1500-2,500	48	10
HSMW6700-48	6.70	2.30	0.11	-	48	10
HSMW9000-48	9.00	3.00	0.12	-	48	5

Order multiple is std. pkg.

#### HSMW Series specifications

Property	Test method	Typical performances
<b>Physical</b>		
Tensile strength	ASTM D412, ISO 37	2,100 psi (14.5 MPa)
Elongation	ASTM D412, ISO 37	550%
Elongation after heat aging (168 hrs. at 150 °C)	ASTM D412, ISO 37	500%
Heat shock (4 hrs. at 225 °C)	ASTM D2671	No cracking or flowing
Longitudinal change	ASTM D2671	+1%, -10%
Low temperature flexibility (4 hrs. at -55 °C)	ASTM D2671	No cracking
Specific gravity	ASTM D792, ISO/R1183	1.1
Hardness (Shore D)	ASTM D2240	50D
<b>Electrical</b>		
Dielectric strength	ASTM D149, IEC 243	500 V/mil (20 kV/mm)
Dielectric voltage withstand (2500 V, 600 Hz, 1 min.)	UL 486D	No breakdown, 24 kV-1 min., 15 kV-4 hrs.
Volume resistivity	ASTM D257	1,016 ohm-cm
<b>Chemical</b>		
Fluid resistance	MIL-DTL-23053/5, ISO 1817, ISO 37	Good to excellent
Fungus resistance	ASTM G21	No growth
Copper corrosion	ASTM D2671	No corrosion
Water absorption	ASTM D570	0.1%
<b>Adhesive</b>		
Adhesive lap shear (1 in./min. at 23 °C)	ASTM D1002 (mod.)	125 psi (0.875 MPa)
Adhesive softening point	ASTM E28	92 °C/-5 °C
Adhesive peel strength (300mm/min. at 23 °C)		
- To steel, aluminum, P.E.	ASTM D 1000	35 linear lb/in.
- PVC	ASTM D 1000	20 linear lb/in.
Adhesive blocking (30 °C)	ASTM D1146	No blocking
Water penetration	STM 706	No penetration after 286 hrs. of continuous immersion

# Thin-wall heat-shrinkable tubing

## CPO Series



### 2:1 Shrink ratio

#### Thin-wall tubing, non-lined

- Flame-retardant, cross-linked polyolefin
- Continuous operating temperature: -55 °C to 135 °C
- Shrink temperature of 120 °C

- Meets UL and CSA standards; MIL-DTL-23053/ 5 Class 1 and 2; AMS 3636 and 3637; DEF STAN 59-97, Issue 3, Type 2a
- Shelf life 5 years from date of manufacture
- UV rated (ASTM G53)

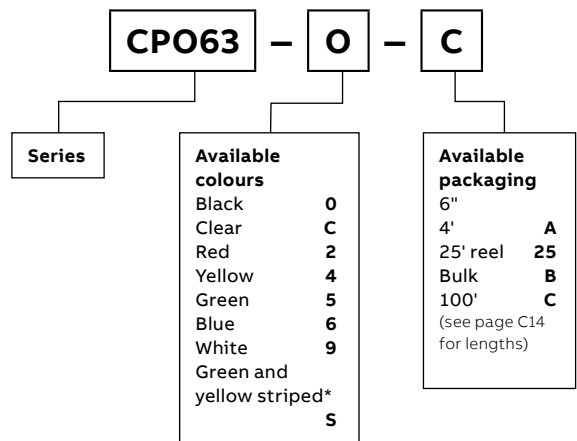
### Thin-wall heat-shrinkable tubing

Cat. no.*	Min. expanded I.D. (in.)	Max. recovered I.D. (in.)	Nom. recovered wall thickness (in.)	Code cable size (AWG) or kcmil
CPO63-_-_-	0.06	0.03	0.02	-
CPO93-_-_-	0.09	0.05	0.02	-
CPO125-_-_-	0.13	0.06	0.02	#24-#30
CPO187-_-_-	0.18	0.09	0.02	#14-#22
CPO250-_-_-	0.25	0.13	0.03	#10-#16
CPO375-_-_-	0.38	0.19	0.03	#6-#12
CPO500-_-_-	0.50	0.25	0.03	#1-#6
CPO750-_-_-	0.75	0.38	0.03	4/0-#2
CPO1000-_-_-	1.00	0.50	0.04	350-2/0
CPO1250-_-_-	1.25	0.625	0.04	1/0-350
CPO1500-_-_-	1.50	0.75	0.04	2/0-500
CPO2000-_-_-	2.00	1.00	0.045	250-1,000

\*See catalogue construction to complete.  
 UL Recognized and CSA Certified. (NOTE: Clear material not UL Recognized).  
 When ordering standard package, order by package not feet.  
 Larger diameters available upon special request; contact your regional sales office.  
 Order multiple for 4' sticks is 25 sticks.  
 Order multiple for reels is 1 reel.

Series	Bulk length (ft)	Series	Bulk reel length (ft)
CPO63 = 1/16 in.	1,000	CPO500 = 1/2 in.	500
CPO93 = 3/32 in.	1,000	CPO750 = 3/4 in.	200
CPO125 = 1/8 in.	1,000	CPO1000 = 1 in.	100
CPO187 = 3/16 in.	1,000	CPO1250 = 1 1/4 in.	100
CPO250 = 1/4 in.	500	CPO1500 = 1 1/2 in.	100
CPO375 = 3/8 in.	500	CPO2000 = 2 in.	100

### Catalogue number construction



**Final order no.**  
 CPO63-0-C

\* Contact your regional sales office for bulk reel quantity

Cat. no.	Min. expanded I.D. (in.)	Max. recovered I.D. (in.)	Nom. recovered wall thickness (in.)	Std. pkg. qty.
CPO63-0-6	0.06	0.03	0.02	20
CPO93-0-6	0.09	0.05	0.02	20
CPO125-0-6	0.13	0.06	0.02	20
CPO187-0-6	0.19	0.09	0.02	20
CPO250-0-6	0.25	0.13	0.03	20
CPO375-0-6	0.38	0.19	0.03	20
CPO500-0-6	0.50	0.25	0.03	10
CPO750-0-6	0.75	0.38	0.03	10
CPO1000-0-6	1.00	0.50	0.04	5

Order multiple is std. pkg.  
 Catalogue numbers listed are black colour;  
 other colours available upon request.  
 Contact your regional sales office.



## Thin-wall heat-shrinkable tubing



### The original black version HS-KIT

- Over 37 ft. (11 m) of black polyolefin thin-wall heat-shrink tubing
- Convenient plastic kit for single storage location
- Individual 6 in. (15 cm) pieces for easy installation
- 2:1 shrink ratio
- UL recognized and CSA certified

### HS-KIT thin-wall insulation kit

Cat. no.	Description	Weight each kit	UPC code
HS-KIT	37' (11 m) assorted sizes – black colour thin-wall heat-shrink tubing in plastic reusable case	1 lb /0.45 kg	76821093898

### Products included in HS-KIT

Cat. no.	Size in. (mm)	Qty./kit
CPO187-0-6	$\frac{3}{16}$ (5)	32
CPO250-0-6	$\frac{1}{4}$ (6)	20
CPO375-0-6	$\frac{3}{8}$ (9)	8
CPO500-0-6	$\frac{1}{2}$ (12)	6
CPO750-0-6	$\frac{3}{4}$ (19)	4
CPO1000-0-6	1 (25)	4

## Thin-wall heat-shrinkable tubing

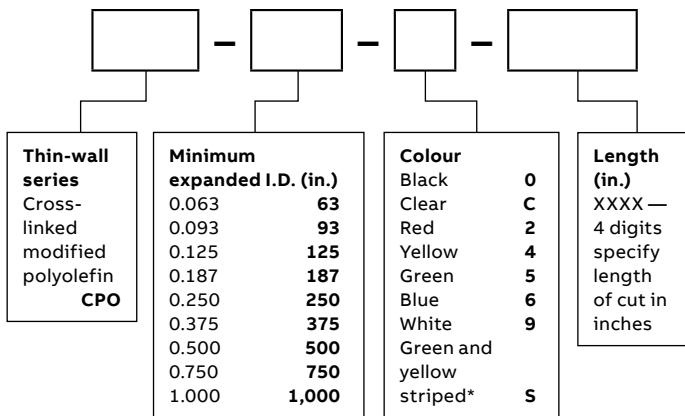


**2:1 Shrink ratio**  
**Custom order lengths for those special jobs.**  
**Custom-cut length of bulk packaging –**  
**Thin-wall tubing**

To best meet your requirements for thin-wall heat-shrinkable tubing, ABB welcomes the opportunity to cut bulk reels of tubing. Minimum order requirement is one standard bulk reel, and

multiples thereof. See table for bulk reel length by size. Tubing cannot be cut smaller than ½ in. When ordering custom-cut lengths of tubing, order by piece, not by length. To determine the minimum number of pieces to order, simply figure how many pieces of a specific length of tubing is required to make use of a complete bulk reel.

### Cut piece catalogue no. construction



### Example 1

If a bulk length of tubing is 1,000 ft. and the desired length of each individual piece is 6 in., the minimum order requirement is 2,000 pieces.

Given (length of reel) 1,000  
 Convert to inches by multiplying by 12 12 x 1,000  
 Length of reel in inches 12,000  
 Divide by desired length 2,000 ÷ 6  
 Total number of 6 in. pieces in a 1,000' reel (minimum order) 2,000

### Example 2

If a bulk reel of tubing is 400 ft. and the desired length of each individual piece is 2 in., the minimum order requirement is 2,400 pieces.

Given (length of reel) 400  
 Convert to inches by multiplying by 12 12 x 400  
 Length of reel in inches 4,800  
 Divide by desired length 4,800 ÷ 2  
 Total number of 2 in. pieces in a 400' reel (minimum order) 2,400

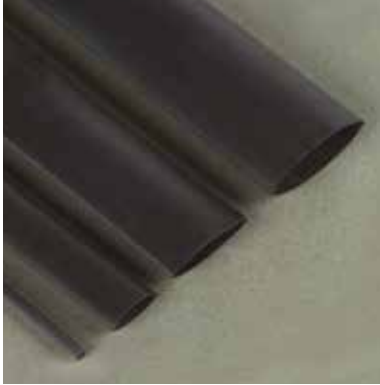
Contact your regional sales office for pricing and availability on cut pieces.

### CPO Series specifications

Property	Test method	Typical performances
<b>Physical</b>		
Tensile strength	ASTM D412, ISO 37	2,200 psi (15.0 MPa)
Elongation		400%
Longitudinal change	ASTM D2671	+1%, -10%
2% Secant modulus		16,000 psi (110 MPa)
Specific gravity	ASTM D792, ISO/R1183	1.3 in. (colours) 0.95 in. (clear)
Restricted shrinkage	ASTMD2671	No cracking
Elongation after heat aging (168 hrs. at 175 °C)		350%
Heat shock (4 hrs. at 250 °C)		No cracking or flowing
Low temperature flexibility (4 hrs. at -55 °C)		No cracking or splitting
Flammability		Flame-retardant (except clear)
<b>Electrical</b>		
Dielectric strength	ASTM D2671, IEC 243	600 V/mil (24 kV/mm)
Volume resistivity	ASTM D2671	1,016 ohm-cm
<b>Chemical</b>		
Fluid resistance	MIL-DTL-23053/5, ISO 1817, ISO 37	Good to excellent
Fungus resistance	ASTM G21	No growth
Copper corrosion	ASTM D2671	No corrosion
Water absorption	ASTM D570	0.2%

## Thin-wall heat-shrinkable tubing

### CPO-A Series



#### 3:1 Shrink ratio

#### Thin-wall, adhesive lined

- Adhesive lined for moisture-proof environmental seal
- High 3:1 shrink ratio for covering irregularly shaped objects
- Continuous operating temperature: -55 °C to 110 °C
- Shrink temperature: 120 °C
- UV rated (ASTM G53)

#### Thin-wall heat-shrinkable tubing

Cat. no.	Min. expanded I.D. (in.)	Max. expanded I.D. (in.)	Nom. recovered wall (in.)	Code cable size (AWG)	Standard length (in.)	Std. pkg. qty.
CPO-A-125-48	0.13	0.02	0.04	#24-#30	48	25
CPO-A-187-48	0.18	0.06	0.05	#14-#22	48	25
CPO-A-250-48	0.25	0.08	0.05	#10-#22	48	25
CPO-A-375-48	0.38	0.14	0.05	#6-#16	48	25
CPO-A-500-48	0.50	0.19	0.07	#2-#12	48	25
CPO-A-750-48	0.75	0.31	0.07	3/0-#4	48	25

Note: Non-standard colours, sizes and lengths available subject to your regional sales office quotation.  
Standard colour: Black

#### CPO-A Series specifications

Property	Test method	Typical performances
<b>Physical</b>		
Tensile strength	ASTM D412, ISO 37	2,200 psi (15.0 MPa)
Elongation	ASTM D412, ISO 37	400%
Heat shock (4 hrs. at 250 °C)	ASTM D2671	No cracking or flowing
Longitudinal change	ASTM D2671	±5%
Low temperature flexibility (4 hrs. at -55 °C)	ASTM D2671	No cracking
Specific gravity	ASTM D792, ISO/R1183	1.1
2% Secant modulus	ASTM D2671	1600 psi (110 MPa)
Heat-resistant properties (168 hrs. at 175 °C)	MIL-DTL-23053/4	240%
Flammability	ASTM D2671	Moderately flame retardant
<b>Electrical</b>		
Dielectric strength	ASTM D2671, IEC 243	600 V/mil (24 kV/mm)
Volume resistivity	ASTM D2671	1016 ohm-cm
<b>Chemical</b>		
Fluid resistance	MIL-DTL-23053/5, ISO 1817, ISO 37	Good to excellent
Fungus resistance	ASTM G21	No growth
Copper corrosion	ASTM D2671	No corrosion
Water absorption	ASTM D570	0.2%

## Splice Insulators and insulating covers

### H-Tap insulating covers (hard covers)



- Interlocking insulating covers for H-type compression taps
- Easy installation: place the H-tap in the cover and snap the cover closed
- Consult your regional sales office for flame-retardant version
- Can also be used on C-taps

#### Specifications

- HTC2 and HTC2S use insulation wrap instead of end cushions for inner seal
- Connector cat. nos. 54755 through 54790 and 63148 through 63180 require hydraulic crimping tools; refer to instruction sheets
- Outer hard shell covers: high-impact black thermoplastic (Noryl) flammability class, UL 94V-1
- Inner seal: Black neoprene sponge soft closed cell, oxygen index 28% UL 94 HBF
- Temperature rating: 90 °C maximum
- Voltage rating: 600 V maximum



Diagram	Cat. no.	Nominal dimensions (in.)			Std. pkg. qty.
		A (length)	B (thick.)	C (width)	
	HTC2S	2	1.13	1.44	15
	HTC2	3.5	1.13	1.44	15
	HTC40	4.25	1.56	2	2
	HTC500	6	1.75	2.75	8
	HTC1000	7	2.38	3.88	2
	HTC1000L	10	2.38	3.88	3

#### For H-tap applications

Cover cat. no.	Al/Cu H-tap no.	Cu H-tap
HTC2	63105	-
HTC2S	-	CHT814-10
HTC40	63110	CHT214-9
HTC40	63118	CHT250214-8
HTC40	63125	CHT2514-7
HTC40	63140	CHT2502-6
HTC500	63148	CHT50010-5/CHT50040-4
HTC500	63160	CHT75010-3/CHT750350-2
HTC1000L	63170	-
HTC1000	63180/63169	CHT750350-1F

#### For C-tap applications

Cover cat. no.	C-tap no.	Colour code
HTC40	54720	Brown
HTC40	54725	Green
HTC40	54730	Pink
HTC40	54755	Blue
HTC40	54760	Brown
HTC40L2	54735	Black
HTC40L2	54740	Orange
HTC40L2	54745	Purple
HTC40L2	54750	Yellow
HTC500	54765	Pink
HTC500	54770	Black
HTC500	54775	Yellow
HTC500	54780	White
HTC500	54785	-
HTC1000	54790	-

## Splice insulators and insulating covers

### H-tap insulating covers (soft covers)



- Eliminates taping
- Provided with three positive locking latches and overlapping fringe for maximum cable insulation

#### Specifications

- Rating: 90 °C, 600 V
- Material: Flame-retardant, high-impact polypropylene
- Colour: Black



Cat. no.	Wire range (AWG or kcmil)		Installs "H" tap cat. no.	Std. pkg. qty.
	Min.	Max.		
HT20C	6	2/0	63110 and 63125	50
HT40C	6	4/0	63140 and 63148	25
HT600C	2	500	63160 and 63169	10
HT1000C	1/0	750	63180	5
HT1000C-L	1/0	1,000	63170	5

Order multiple is std. pkg.

### H-tap insulating covers

Diagram	Cat. no.	Wire range (AWG or kcmil)		Use to insulate ABB H-taps	Dimensions (in.)		
		Max.	Min.		A	B	C
	HT20C	2/0	6	6110/63115 63125/63120	4.5	1.25	1.13
	HT40C	4/0	6	63140 63148	5.61	1.41	1.19
	HT600C	500	2	63160/63169	6.81	2.13	1.45
	HT1000C	100–500	250–1/0	63180	[184.15 mm] 7.250	2.330 +0.060	–
	HT1000C-L	1,000–500	250–250	63170	[263.40 mm] 10.374	2.330 +0.060	–

(C) Height, typical both halves



# Splice insulators and insulating covers

## Adhesive insulating covers



- Seals against moisture
- Voltage rating up to 600 V
- Workable from -10 °C to 49 °C (14°F to 120°F)
- Maximum operating temperature of 80 °C (176°F)
- No installing tools required

### Electrical

- Dielectric constant: 3.2 ASTM-D150 (60 Hz)
- Power factor: 0.07 ASTM-D150 (60 Hz)
- Dielectric strength: 340 V/mil ASTM-D1373

### Chemical

- Water absorption: 0.06% ASTM-570
- Ozone resistance: excellent: 0.03% ASTM-D1373
- Corrosion: none visible per ASTM-D 69
- UL listed – for use with ABB covers
- For H-taps, C-taps, two-way connectors, mechanical taps, and Color-Keyed® lugs and joints
- Material: 6 mil vinyl backing, butyl rubber mastic adhesive thickness 3/8 in. approx. Polyethylene release sheet
- Not for submersion in liquid



Diagram	Cat. no.	A (in.)	B (in.)	Std. pkg. qty.
	AC 5 x 3	5	3	10
	AC 5 x 7	5	7	10
	AC 85 x 75	8.5	7.5	5
	AC 85 x 105	8.5	10.5	5

Order multiple is std. pkg.

Adhesive insulating cover cat. nos.																
AC5X3	60096	60113	60130	60150	54132	54145	54160	54207	54906	54860	60500	-	54806	63105	54710	54610
Size key #2	60097	60114	60150	60151	54134	54108	54162	54208	54942	54862	60501	-	54807	-	54715	54615
	60099	60016	60230	60230	54105	54147	54163	54255	54947	54864	60507	-	54806	-	54720	54620
	60101	60017	60236	60236	54135	54148	54111	54209	54909	54866	60512	-	54504	-	54725	54625
	60102	60018	60238	60238	54136	54150	54165	54210	54910	-	60516	-	54505	-	54730	54630
	60103	60120	60242	60242	54138	54152	54167	54260	54965	-	60905	-	54506	-	54735	54635
	60104	60122	60244	60244	54106	54153	54168	54211	54970	-	60910	-	54507	-	54740	-
	60106	60123	60248	60248	54139	54109	54112	54265	54850	-	60915	-	54506	-	54745	-
	60107	60124	60250	60250	54140	5415	54170	54212	54852	-	60920	-	54509	-	54750	-
	60108	60126	54104	54104	54107	54157	54204	54270	54854	-	60925	-	54500	-	-	-
	60109	60128	54130	54130	54142	54158	54205	54930	54856	-	54804	-	54511	-	-	-
	60112	60129	54131	54131	54143	54110	54206	54905	54858	-	54805	-	-	-	-	-
AC 5 x 7	-	60152	60169	60267	54173	54115	54129	54222	54920	-	60522	60945	54516	63110	54755	54640
Size key #4	-	60153	60174	60268	54174	54183	54213	54291	54923	-	60530	60950	54518	63115	54760	54645
	-	60154	60172	60269	54113	54116	54275	54223	54928	-	60538	60955	54809	63120	54765	54650
	-	60156	60174	60271	58161	54185	54214	54295	54868	-	60542	60960	54810	63125	54770	-
	-	60157	60176	60276	58162	54118	54280	54224	54870	-	60548	60965	54811	-	54775	-
	-	60159	60178	60274	58163	54187	54215	54226	54872	-	60554	60970	54812	-	54780	-
	-	60160	60180	60275	58165	54120	54282	54228	54874	-	60560	54509	54813	-	-	-
	-	60162	60254	60276	58166	54122	54216	54913	54876	-	60565	54510	54814	-	-	-
	-	60163	60256	60277	54178	54123	54218	54914	54878	-	60568	54511	54815	-	-	-
	-	60165	60260	60278	54179	54124	54286	54915	54880	-	60574	54512	54816	-	-	-
	-	60166	60262	60280	54114	54126	54220	54916	54882	-	60930	54513	54817	-	-	-
	-	60168	60265	54172	54181	54128	54289	54918	-	-	60935	54514	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	60940	54515	-	-	-	-
AC85 x 75	-	-	-	-	60184	-	-	-	-	-	60574	-	54522	63130	-	-
Size key #6	-	-	-	-	60284	-	-	-	-	-	60576	-	54523	63135	-	-
	-	-	-	-	-	-	-	-	-	-	60578	-	54524	63140	-	-
	-	-	-	-	-	-	-	-	-	-	60580	-	54526	63145	-	-
	-	-	-	-	-	-	-	-	-	-	60584	-	54528	63150	-	-
	-	-	-	-	-	-	-	-	-	-	60975	-	54820	-	-	-
	-	-	-	-	-	-	-	-	-	-	60980	-	54823	-	-	-
	-	-	-	-	-	-	-	-	-	-	60985	-	54828	-	-	-
	-	-	-	-	-	-	-	-	-	-	54520	-	-	-	-	-
AC85 x 105	-	-	-	-	-	-	-	-	-	-	-	-	-	63155	-	-
Size key #8	-	-	-	-	-	-	-	-	-	-	-	-	-	63160	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	63165	-	-

## Splice insulators and insulating covers

### Self-fusing insulation tape



**Once you try it, you'll wonder what you ever did without it. Quick and easy insulation, no heat or adhesive required.**

You won't believe how easy it is to use Shrink-Kon Self-Fusing Insulation Tape to insulate splices, terminations and connections. Forget the heat gun and adhesive. Two layers of this self-amalgamating tape form a flexible dielectric layer that protects your connection against moisture, humidity and corrosion. The tape offers high tensile strength, enabling you to stretch the first layer of tape to form a solid, compressed, watertight seal. Apply the second layer with minimal to no stretch, and your insulation job is complete.

- Just two layers form a moisture-proof, abrasion-resistant, dielectric seal
- Suitable for high and low voltage applications
- Smooth filler putty compound available for use under tape when insulating bolted or dimensionally inconsistent splices and terminations



Cat. no.	Width (in.)	Length (ft.)	Thickness (mils)	Colour	Std. pkg. qty.
<b>Self-fusing insulation tape</b>					
TBFT421-12	1	12	40	Red	10
TBFT421-36	1	36	40	Red	10
TBFT201-36	1	36	20	Black	10

Standard package is rolls. Order by rolls; not by feet.

## Splice insulators and insulating covers

### Self-fusing insulation tape

—  
01 TBF421-36

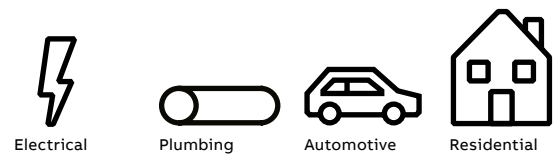
#### Features and benefits

- Requires no heat gun or adhesive to form a moisture-proof abrasion-resistant bond
- Easy-release, non-static-sensitive, high-visibility liner peels right off
- Self-fusing tape material adheres to itself for ease of installation
- Creates an immediate, permanent bond even when wet – no waiting period
- Stable even under extreme temperatures: -90 °C to 260 °C (-130 °F to 500 °F)
- UV, radiation, arc-track, ozone, steam, moisture and saltwater-resistant
- Easily removable – just slice with a knife and pull off – leaves no residue
- Repair deteriorated insulation on cables and conductors
- Insulate and seal underground and above-ground bonding installations
- Insulate harnessing, bundling, cabling and wiring in aircraft, automotive, marine and other industrial machinery/equipment
- Motor connections
- Protects against vibration, scratching and moisture

#### Specifications

- Material: modified silicone rubber compound
- Tensile strength: 1,200 psi (82737 kPa)
- Dielectric strength: 20 mil: 600 VPM; 40 mil: 800 VPM
- Abrasion resistance: 110 lb/in. (49,89 kg/po)
- Water absorption: < 0.5 %
- Temperature range: -90 °C to 260 °C (-130 °F to 500 °F)

#### Typical applications:



## Splice insulators and insulating covers

### Motor stub splice insulators



- Re-enterable motor stub insulator
- Easy installation
- No special tools required
- Permits inspection of connector joint by simply removing the snap-on cap.
- Wide cable range, long life
- UL Listed and CSA Certified (UL 94V-1 flammability class)
- Rated for 600 V and 90 °C application
- Material body: modified neoprene elastomer  
straps: nylon

This innovative product has been designed to insulate motor stub splices quickly, easily and dependably. It consists of a boot-type insulator with integral Ty-Rap® cable ties. To install, simply position the insulator over the bolted splice and tighten the cable ties. That's all there is to it. It produces uniform, high-quality installations every time... in about 30 seconds. The completed installation is immediately ready for inspection and use. If required, the insulator can be easily removed. Simply snip the cable ties and slide the insulator off the splice. It leaves no sticky residue.



	Cat. no.	Wire range (AWG or kcmil)	Length A (in.)	Bolt max. (in.)	Dia. B (in.)	Dia. C (in.)	D (in.)	E (in.)	Std. pkg. qty.
<p>Diagram</p>	MSC14*	#14-#10	1.5	0.38	0.56	0.50	0.38	0.35	15
	MSC8	#12-#8	2.39	0.38	0.76	0.67	0.38	1.20	10
	MSC2	#12-#2	3.25	0.75	0.95	0.88	0.38	1.5	10
	MSC20	#2-2/0	4.25	1.0	1.39	1.05	0.43	1.70	4
	MSC250	3/0-300	7.56	1.5	1.88	1.80	0.45	1.90	2
	MSC500	350-500	8.88	1.75	2.56	2.48	0.45	2.10	5

\*One Ty-Rap cable tie only  
Order in multiples of std. pkg.

## Installation tools



### Portable heat shrink torch

Separate fuel- and air-flow controls enable precise adjustment of flame and temperature to 1,371 °C (2,500 °F).

- 1,371 °C (2,500 °F) output capacity satisfies virtually any heat-shrink, brazing or soldering requirement
- Dual fuel- and air-flow controls enable separate adjustment of temperature and flame precision
- Brass and steel construction provides durability

### Specifications

- Dimensions (without base): 3.9 in. L x 1.4 in. W x 5.4 in. H
- Weight (when filled): 9.88 oz.
- Fuel tank capacity: 2.03 fl. oz.
- Operating time (per full fuel tank): Up to 220 minutes

### Portable heat shrink torch

Cat. no.	Description	Std. pkg. qty.
WT-PTORCH	Shrink-Kon portable heat-shrink torch	1

Order multiple is std. pkg.



### Electric heat gun

- UL Listed and CSA certified
- 232 °C to 649 °C heat range (450 °F to 1,200 °F)
- 120 VAC 60 Hz

### Electric heat gun



Cat. no.	Description	Std. pkg. qty.
WT1400	Dual temp. heat gun. 600 °F / 900 °F, 1,300 W, 120 VAC 60 Hz	1

Order multiple is std. pkg.



## Installation guidelines and cross reference

— 01 Connector and heat-shrinkable tubing prior to installation.

— 02 Crimp connector installed.

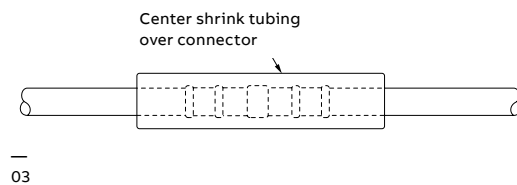
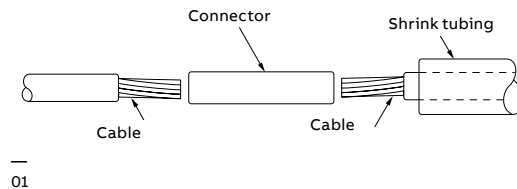
— 03 Heat-shrinkable tubing in position.

— 04 Heat-shrinkable tubing after heat application.

### No special installation skills required

1. Remove any oil, grease, water, dirt, etc., by wiping the cable ends and connector. Remove all sharp edges and burrs from connector.
2. Center tubing over splice connector.
3. Use the light blue outer portion of the flame when using the SIT-1 torch. Do not hold the torch still in one position or concentrate the hot inner flame of the torch on the tubing; this may cause scorching.
4. Begin heating tubing in the center. Recover the central portion of the tubing first by heating around the circumference of the splice. (Keep heat source moving constantly around the circumference of the insulator to ensure uniform shrinkage of the insulator.)
5. Continue heating around the tubing and out toward one end. Move torch around the tubing until one end is completely recovered.
6. Repeat the above procedure on the opposite end of the splice, again working the source from the center outward and around the tubing.
7. Installation is complete when the tubing conforms to splice and sealant flow is apparent at both ends.

Safety warning: Keep clothing and body parts away from flame.



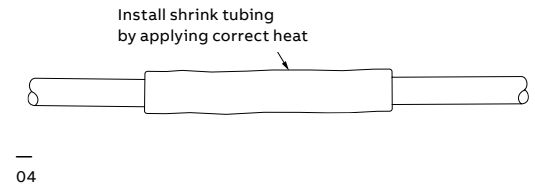
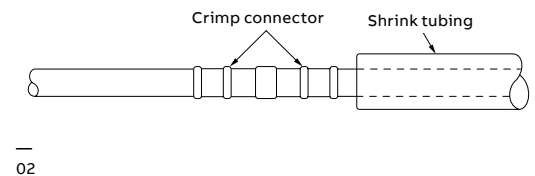
### Typical specifications

Insulating and sealing of all 600 V, in-line cable splices from #16 AWG through 1,000 kcmil shall be done in accordance with the instructions provided with the Shrink-Kon shrinkable insulators, catalogue series HS.

The connector insulator must be made of thermally stabilized, homogeneous polyolefin having internally applied sealant. It must have Underwriter's Laboratories Listing (UL 90 °C, 600 V) and be approved for the use. It must be usable without additional covering or adhesive both indoors and outdoors, in overhead, direct burial or submersed applications at rated voltage. It must not be adversely affected by moisture, ozone, oils, fuels, mild acids and alkalis, or ultraviolet light. It must be compatible with all commonly used cable jacket materials, including rubber, plastic, lead, steel, aluminum and copper.

### Factory-applied sealant

A standard sealant is coated on the entire inside surface of most precut sizes. Tubing is also available without sealant — consult factory. The sealant is rated for continuous 90 °C operation on non-pressurized cable systems and aids in sealing out moisture and corrosion.



## Installation guidelines and cross reference

### Cost and reliability of heat-shrinkable tubing compared to tape

The cost differential in the installation of ABB heat-shrinkable tubing over taping can result in up to a 34% savings in labor and overhead. For example, on a 2/0 AWG aluminum splice, heat-shrinkable tubing can be installed in 3 minutes, versus 10 minutes of taping. In addition to the direct cost reduction, there are the advantages of assured uniformity of wall thickness and moisture sealing.

### Cross reference

ABB	Panduit	3M	Raychem	Sumitomo	Alpha	Coleflex	Insultab
CPO	HSTT and HSTTM	FP 301 (1 and 2)	RNF 100 (1 and 2)	A2 and B2	FIT 221	ST221 / STS221	HS 101
CPO-A	HSTTA and HSTTVA	EPS300	TAT 125 ATUM 3:1	W3B2	FIT321	ST303	HS101 MW 3:1
HSMW	-	-	MWTM (U) BSTS-M / SST-M	-	-	-	CTV
HS	-	-	WSCM / SST	-	FIT700	-	-
HS FR	HST	HDT	BSTS FR / SSTFR WCSF / FCSM	-	-	-	CTVH
HSC	HSEC	ICEC	S3C/ESC SSC-FR / ESC-FR	-	-	TYT	-
CPO-HF	-	-	-	NH	-	-	-
HSM-HF	-	-	XFFR	-	-	-	-

## Break-away connector kits

- 01 Line side housing (receptacle)
- 02 Crimp-on fuse holder\*
- 03 Load side housing (plug)
- 04 Crimp-on fuse holder\*
- 05 Line side housing (receptacle)
- 06 Crimp-on fuse holder\*
- 07 Crimp-on fuse holder\*
- 08 Load side housing (plug)
- 09 Crimp-on fuse holder\*
- 10 Crimp-on fuse holder\*

**Features/benefits:**

- Completely waterproof
- Individual fusing allows separation of kit without de-energizing complete circuit
- Break-away style fuse holder eliminates risk of electrical shock
- Exposed current-carrying components are all contained in harmless load side of the kit
- Readily identifiable problem area simplifies maintenance
- Easy to install, no need for tapes or compounds
- Insulated to 600 V

**Applications:**

- Roadway lighting fixtures
- Flood and area lighting fixtures
- Power distribution systems

**Style 65 break-away**

Type: Single pole in-line

Electrical rating: For 600 V, 10–30 A, 1<sup>3</sup>/<sub>32</sub> in. x 1<sup>1</sup>/<sub>2</sub> in. fuse\*

Cat. no.	Conductor size (AWG)	Conductor material	Packaging unit	Packaging standard
65 U	#14–#6	Copper	1	20

\*Fuse not included with kit. Do NOT use glass fuses.

Max. overall length, installed, 7<sup>1</sup>/<sub>4</sub> in. diameter 1<sup>1</sup>/<sub>8</sub> in.



**Style D65 break-away**

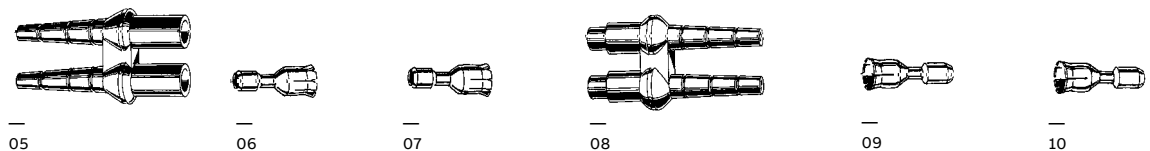
Type: Double pole in-line

Electrical rating: For 600 V, 10–30 amp., 1<sup>3</sup>/<sub>32</sub> in. x 1<sup>1</sup>/<sub>2</sub> in. fuse\*

Cat. no.	Conductor size (AWG)	Conductor material	Packaging unit
D65 U	#14–#6	Copper	20

\*Fuse not included with kit. Do NOT use glass fuses.

Max. overall length, installed, 7<sup>1</sup>/<sub>4</sub> in. diameter 2<sup>1</sup>/<sub>8</sub> in.



## Break-away connector kits

### Installation instructions for 65 and D65 fused connector kit

Contents:

1. Line side (female) rubber housing
2. Load side (male) housing
3. Metal fuse sockets (4 in D65 kits)
4. Fuse (not provided)

- Assembly dowel
- Lubricant
- Wiper

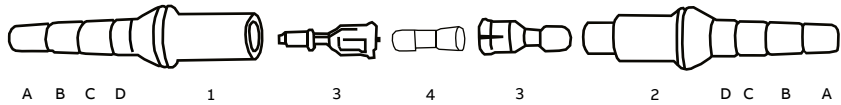


Table 1 — outside diameter

	Cable OD (in.)
A	0.120–0.205
B	0.195–0.260
C	0.250–0.330
D	0.320–0.430

Table 2 — Universal contact



Crimp area	Conductor size in AWG		Recommended crimp tools and dies	
	Stranded	Solid		
A	14	12, 14	ABB No. WT111M	“C” cavity
A	10, 12	8, 10	ABB No. WT111M	“C” cavity
B	6	6	ABB No. TBM41E/45S	“Blue” cavity
B	6	4	ABB No. TBM41E/45S	“Blue” cavity

- |   |   |
|---|---|
| <p><b>Step 1</b> Measure cable diameter and from Table 1, select corresponding section on molded sleeve. Cut off remaining sections of housing to size required. Example: If cable OD is 0.270 in., it falls within the “C” range – cut between “B” and “C”.</p> <p><b>Step 2</b> Thoroughly clean approximately 8 in. of the line side cable to be inserted using the wiper provided. Apply lubricant to cable and small hole in line side (receptacle) housing.</p> <p><b>Step 3</b> Insert cable through the small hole in the housing, and push through sufficiently to allow for stripping of insulation.</p> <p><b>Step 4</b> Strip wires ¾ in. for wire 14 AWG through 10 AWG, ⅝ in. for wire sizes 8 AWG through 4 AWG. (do not pencil insulation). Crimp on line side socket. (Refer to Table 2 for suggested tool and die.)</p> <p><b>Step 5</b> Apply lubricant lightly to the outside of the metal fuse socket.</p> | <p><b>Step 6</b> Place wooden dowel in the socket. Place the free end of the dowel against a firm surface and push the housing forward until it snaps into a locking position. Wipe off any excess lubricant.</p> <p><b>Step 7</b> Repeat the above steps with the load housing.</p> <p><b>Step 8</b> Insert a 1<sup>3</sup>/<sub>32</sub> in. by 1-½ in. HRC fuse, 600 V 30 A max. (Bussmann KTK series or equivalent), in the load side housing. Caution: When the fuse is fully seated, not more than ⅛ in. of the fuse barrel will be visible between the fuse end cap and the housing. Do not apply lubricant on the fuse.</p> <p><b>Step 9</b> Plug the load side and line side housings together. Caution: When properly mated, the seam between the housings should not exceed ⅜ in.</p> <p><b>Step 10</b> The connection is now complete. For best results, anchor the line side wire, so that if the load side wire is pulled (perhaps someone has knocked over a pole), the kit will come apart.</p> |
|---|---|