

## 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 Numbers 2.4, 2.5, ICEA and NEMA insulation thickness requirements
- Continuous operating temperature: -55°C to 110°C
- T&B recommended up to 1 kV

### HS Series Specifications



Property	Test Method	Typical Performances
<b>Physical</b>		
Tensile Strength	ASTM D412, ISO 37	2100 psi (14.5 MPa)
Elongation		600%
Elongation after Heat Aging (168 hrs. at 150°C)	ASTM D2671	500%
Heat Shock (4 hrs. at 225°C)		No cracking or flowing
Longitudinal Change		+1%, -10%
Low Temperature Flexibility (4 hrs. at -55°C)		No cracking
Specific Gravity	ASTM D792	1.1
Hardness (Shore D)	ASTM D2240	50D
<b>Electrical</b>		
Dielectric Strength	ASTM D149	500 V/Mil (20kV/mm)
Dielectric Voltage Withstand (2500 V, 600Hz, 1 Min.)	UL 486D	No Breakdown, 24kV-1 min., 15kV-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 (300mm/min. at 23°C)	ASTM D 1000	35 linear lb./in. 20 linear lb./in.
- to steel, aluminum, P.E. - PVC		
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	Std. Pkg. Qty.
					O.D. (in.)	Length (in.)		
HS16-12	0.35	0.12	0.07	3	0.27	1.00	#14 AWG to #10 AWG	25
HS16-12L				6				
HS16-12-4				48				
HS12-6	0.51	0.16	0.09	3	0.38	1.75	#8 AWG to #6 AWG	25
HS12-6L				6				
HS12-6-4				48				
HS6-1	0.75	0.24	0.09	4	0.63	2.50	#6 AWG to #2 AWG	25
HS6-1L				8				
HS6-1-4				48				
HS4-30	1.10	0.35	0.12	5	0.75	3.25	#1 AWG to 3/0 AWG	20
HS4-30L				9				
HS4-30-4				48				
HS40-400	1.50	0.47	0.16	8	-	-	2/0 kcmil to 350 kcmil	10
HS40-400L				12				
HS40-400-4				48				
HS500-1000	2.00	0.63	0.16	9	-	-	250 kcmil to 500 kcmil	5
HS500-1000L				15				
HS500-1000-4				48				
HS12-30**	3.54	1.18	0.17	12	-	-	800 kcmil to 1250 kcmil	2
HS30-30**				30				
HS30-4**				48				
HS12-40**	4.72	1.57	0.17	12	-	-	1500 kcmil to 2500 kcmil	1
HS30-40**				30				
HS40-4-TB				48				

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	Std. Pkg. Qty.
HS12-6LR	0.51	0.16	6	#8-6 AWG	25
HS6-1LR	0.75	0.24	8	#6-2 AWG	
HS4-30LR	1.10	0.35	9	#1-3/0 AWG	

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.)	Length (in.)	For 2-Way Connector Cable Sizes	Std. Pkg. Qty.
HS16-12-25	0.35	0.12	0.07	#14-10 AWG	1
HS12-6-25	0.51	0.16	0.09	#8-6 AWG	
HS6-1-25	0.75	0.24		#6-#2 AWG	
HS4-30-25	1.10	0.35	0.12	#1-3/0 AWG	
HS40-400-25	1.50	0.47	0.16	2/0-350 kcmil	
HS500-1000-25	2.00	0.63		250-500 kcmil	

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



## Heavy-Wall Heat-Shrinkable Tubing

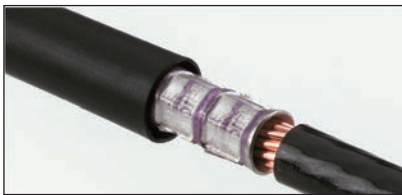
### HSHR Series

**6:1 Shrink Ratio**



#### High Shrink Ratio

- 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	Standard Length (in.)	Std. Pkg. Qty.	
HSHR750-4	0.75	0.13	0.10	#22-#46 AWG	48	25	
HSHR1300-4	1.30	0.22	0.12	#8-700 AWG			
HSHR1750-4	1.75	0.29	0.13	#4-1000 AWG			
HSHR2000-4	2.00	0.33		#2-1250 AWG			
HSHR2750-4	2.75	0.46	0.14	1/0-1500 kcmil			15
HSHR3500-4	3.50	0.58	0.15	3/0-1750 kcmil			10
HSHR4700-4	4.70	0.78		300-2000 kcmil			5

#### HSHR Series Specifications

Property	Test Method	Typical Performances
<b>Physical</b>		
Tensile Strength	ASTM D412, ISO 37	2100 psi (14.5 MPa)
Elongation		600%
Elongation after Heat Aging (168 hrs. at 150°C)		500%
Heat Shock (4 hrs. at 225°C)	ASTM D2671	No cracking or flowing
Longitudinal Change		+1%, -10%
Low Temperature Flexibility (4 hrs. at -55°C)		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 (20kV/mm)
Dielectric Voltage Withstand (2500 V, 60Hz, 1 Min.)	UL 486D	No Breakdown, 15kV-4 hrs.
Volume Resistivity	ASTM D257	1016 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 (300mm/min. at 23°C)	ASTM D 1000	35 linear lb./in.
- to steel, aluminum, P.E. - PVC		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

### HSHR 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 600 V, 90°C continuous use. 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



#### Heavy-Wall Heat-Shrinkable Tubing

Cat. No.	Min. Expanded I.D. (in.)	Max. Recovered I.D. (in.)	Nominal Recovered Wall (in.)	Code Cable Size	Standard Length (in.)	Std. Pkg. Qty.
HSFR16-12-4	0.35	0.12	0.07	#14-#10 AWG	48	25
HSFR12-6-4	0.51	0.16	0.09	#8-#6 AWG		
HSFR6-1-4	0.75	0.24		#6-#2 AWG		
HSFR4-30-4	1.10	0.35	0.12	#1-3/0 AWG		
HSFR40-400-4	1.50	0.47	0.16	2/0-350 kcmil		
HSFR500-1000-4	2.00	0.63		250-500 kcmil		

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

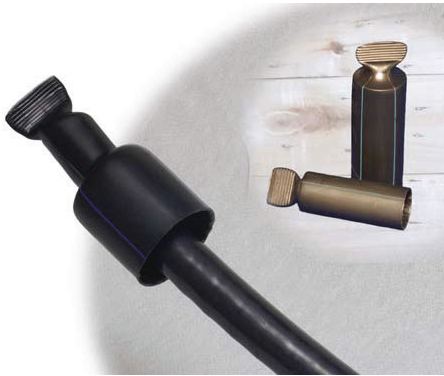
#### HSFR Series Specifications

Property	Test Method	Typical Performances
<b>Physical</b>		
Tensile Strength	ASTM D412, ISO 37	2100 psi (14.5 MPa)
Elongation		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)		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 (20kV/mm)
Dielectric Voltage Withstand (2500 V, 60Hz, 1 Min.)	UL 486D	No Breakdown, 24kV-4hrs, 15kV-4 hrs.
Volume Resistivity	ASTM D257	1016 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	90oC±5°C
Adhesive Peel Strength (300mm/min. at 23°C) – to steel, aluminum, P.E. – PVC	ASTM D 1000	35 linear lb./in. 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

**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 600/1000 V, 90 degrees 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	Nom. Length (in.)	Std. Pkg. Qty.
HSC8-4	0.51	0.16	0.09	#8-#6 AWG	2.50	100
HSC2-20	0.75	0.24		#6-#2 AWG		
HSC30-250	1.10	0.35	0.12	#1-3/0 AWG	3.00	50
HSC300-600	1.50	0.47	0.16	2/0-350 kcmil	3.25	
HSC700-1000	2.00	0.63		250-500 kcmil	3.50	10
HSC750	2.70	0.87		600-1000 kcmil	4.00	
HSC300	3.50	1.18	0.17	800-1250 kcmil	4.50	5
HSC500	4.70	1.57		1500-2500 kcmil	5.50	

Order multiple is std. pkg.

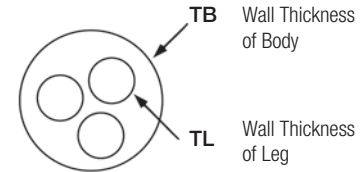
### HSC Series Specifications

Property	Test Method	Typical Performances
<b>Physical</b>		
Tensile Strength		2100 psi (14.5 MPa)
Elongation	ASTM D412, ISO 37	550%
Elongation after Heat Aging (168 hrs. at 150°C)		500%
Heat Shock (4 hrs. at 225°C)		No cracking or flowing
Longitudinal Change on Recovery	ASTM D2671	+1%, -10%
Low Temperature Flexibility (4 hrs. at -55°C)		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 (20kV/mm)
Dielectric Voltage Withstand (2500 V, 60Hz, 1 Min.)	UL 486D	No Breakdown, 15kV-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)	ASTM D 1000 (mod.)	35 linear lb./in. 20 linear lb./in.
- to steel, aluminum, P.E. - PVC		
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	
Burst Pressure		100 psi (0.70 MPa)

## Heavy-Wall Heat-Shrinkable Tubing

### HSB Series – Heat-Shrinkable Breakout Boots

- Boots for 2-, 3- and 4-way 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 Recovered Length (nom.) (in.)	TB Wall Thickness of body (nom.) (in.)	TL Wall Thickness of legs (nom.) (in.)	Application Legs 600V 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	
HSB170-82-3		2.20	0.89	1.20	0.35	7.09	0.12	0.12	#1–600	
HSB240-112-3		2.83	1.38	1.46	0.69	7.01	0.16	0.12	300–1000	
HSB125-50-4	4	1.83	0.47	0.59	0.12	3.74	0.10	0.08	#12–2/0	
HSB175-82-4		2.36	0.90	1.18	0.25	7.95	0.16	0.13	#4–600	
HSB265-120-4		3.10	1.40	1.50	0.49	9.45	0.13		3/0–1000	
HSB350-138-3	3	3.54	1.34	1.38	0.55	7.87	0.12	0.08	4/0–1000	5
HSB430-157-3		4.33	1.38	1.57	0.69	7.01	0.16	0.12	300–1000	
HSB490-200-3		4.92	2.32	2.00	1.00	11.14	0.15	0.15	450–1000	
HSB520-135-4	4	5.25	3.00	1.35	0.55	10.02	0.13	0.16	4/0–1000	

### HSB Series Specifications

Property	Test Method	Typical Performances
<b>Physical</b>		
Tensile Strength	ASTM D412, ISO 540	2100 psi (14.5 MPa)
Ultimate Elongation		600%
Elongation after Heat Aging (168 hrs. at 175°C)		520%
Heat Shock (4 hrs. at 225°C)	ASTM2671	No dripping, cracking, flowing
Low Temperature Flexibility (-55°C)		No cracking
Flammability	ASTM D630	Self ext. within 1.97 sec.
<b>Electrical</b>		
Dielectric Strength	ASTM D2671	280 V/Mil (11kV/mm)
<b>Chemical</b>		
Water Absorption	ASTM D570	0.03%