

## ABRASION PROTECTION

*PANDUIT* abrasion protection products provide an economical and easy way to insulate, protect, bundle and color-code components and cable. To help assure optimum quality, *PANDUIT* abrasion protection products are designed and manufactured to meet applicable quality standards including International, UL, Military, ISO and Aerospace.



Variety of solutions to bundle and protect wire and cable

Wide variety of sizes and materials

Used in a broad range of applications such as underground, control panels, harness fabrication and coin operated machines

*PANDUIT* abrasion protection products provide quality at the lowest installed cost. With a continued focus on new product development, *PANDUIT* continues to meet customer needs. *PAN-WRAP™* Split Harness Wrap features a patented slot pattern to improve flexibility and abrasion protection. Spiral wrap and heat shrink are offered in the largest variety of colors, materials and sizes to meet a variety of needs. Grommet edging protects wire and cable from damage caused by sharp edges.

Bundle

Route/Protect

Terminate

Identify

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## PAN-WRAP™ Split Harness Wrap

B1. Cable Ties

- Patented slot pattern provides improved flexibility and abrasion protection in any application
- Unique wall design provides for easy cable breakouts
- Innovative design maintains uniform bundle protection in dynamic applications

- Large overlap accommodates a wide range of bundle diameters
- Packaged on a reel for easy handling and dispensing of product
- -40°F to 122°F (-40°C to 50°C) temperature range

B2. Cable Accessories



B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

Part Number	Material	Color	Length Per Reel		Max. Bundle Diameter‡		Min. Bundle Diameter		Nominal I.D.		Std. Pkg. Qty.
			ft	M	In.	mm	In.	mm	In.	mm	
<b>PW50F-T20</b>	Polyethylene	Black	200	61.1	.55	14.0	.43	10.9	.50	12.7	1
PW50F-T	Polyethylene	Natural	200	61.1	.55	14.0	.43	10.9	.50	12.7	1
PW50FR-T	Flame Retardant Polyethylene	Natural	200	61.1	.55	14.0	.43	10.9	.50	12.7	1
<b>PW50FR-T20</b>	Flame Retardant Polyethylene	Black	200	61.1	.55	14.0	.43	10.9	.50	12.7	1
PW75F-C	Polyethylene	Natural	100	30.5	.81	20.6	.55	14.0	.75	19.1	1
<b>PW75F-C20</b>	Polyethylene	Black	100	30.5	.81	20.6	.55	14.0	.75	19.1	1
PW75FR-C	Flame Retardant Polyethylene	Natural	100	30.5	.81	20.6	.55	14.0	.75	19.1	1
<b>PW75FR-C20</b>	Flame Retardant Polyethylene	Black	100	30.5	.81	20.6	.55	14.0	.75	19.1	1
PW100F-C	Polyethylene	Natural	100	30.5	1.13	28.7	.81	20.6	1.00	25.4	1
<b>PW100F-C20</b>	Polyethylene	Black	100	30.5	1.13	28.7	.81	20.6	1.00	25.4	1
PW100FR-C	Flame Retardant Polyethylene	Natural	100	30.5	1.13	28.7	.81	20.6	1.00	25.4	1
<b>PW100FR-C20</b>	Flame Retardant Polyethylene	Black	100	30.5	1.13	28.7	.81	20.6	1.00	25.4	1
PW150F-L	Polyethylene	Natural	50	15.2	1.63	41.4	1.13	28.7	1.50	38.1	1
<b>PW150F-L20</b>	Polyethylene	Black	50	15.2	1.63	41.4	1.13	28.7	1.50	38.1	1
PW150FR-L	Flame Retardant Polyethylene	Natural	50	15.2	1.63	41.4	1.13	28.7	1.50	38.1	1
<b>PW150FR-L20</b>	Flame Retardant Polyethylene	Black	50	15.2	1.63	41.4	1.13	28.7	1.50	38.1	1

‡Diameter can be further reduced with the use of cable ties.

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

## PAN-WRAP™ Installation Tools

E2. Labels

- Patented installation tool with 180° opening allows easy loading of maximum bundle diameters to speed installation, providing the lowest installed cost

E3. Pre-Printed & Write-On Markers



E4. Lockout/Tagout & Safety Solutions

Part Number	Color	For Use With	Std. Pkg. Qty.	Std. Ctn. Qty.
<b>PWT50</b>	White	PW50F*_***	1	10
<b>PWT75</b>	White	PW75F*_***	1	10
<b>PWT100</b>	White	PW100F*_***	1	10
<b>PWT150</b>	White	PW150F*_***	1	10

F. Index

## Part Number System for Spiral Wrap

<b>T</b>	<b>25</b>	<b>F</b>	-	<b>C</b>	<b>16</b>
<b>Type</b>	<b>Outside Diameter</b>	<b>Material</b>		<b>Package Size</b>	<b>Color Suffix</b>
T = Spiral Wrap	12 = 1/8" 25 = 1/4" 38 = 3/8" 50 = 1/2" 62 = 5/8" 75 = 3/4" 100 = 1"	F = Polyethylene R = Fire Resistant Polyethylene FR = Flame Retardant Polyethylene N = Nylon T = TEFLON‡		X = 10' Q = 25' L = 50' C = 100' T = 200' TL = 250' D = 500' M = 1000'	See Table Below

Color	Color Suffix	MATERIAL AVAILABILITY				
		Polyethylene	Fire Resistant Polyethylene	Flame Retardant Polyethylene	Nylon 6.6	TEFLON‡
Natural*	No Suffix will be listed	✓	✓ *	✓ *	✓	✓
Weather Resistant Black	0	✓			✓	
Brown	1	✓				
Red	2	✓				
Orange	3	✓				
Yellow	4	✓				
Green	5	✓				
Blue	6	✓				
Purple	7	✓				
Gray	8	✓				
White	10	✓				
Pink	16	✓				
Black	20	✓	✓	✓		

Blank = Not applicable

‡TEFLON or equivalent fluoropolymer PTFE material is used. TEFLON is a registered trademark of E.I. du Pont de Nemours and Company.

\*Natural can range from transparent, opaque, to white

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## Spiral Wrap

B1. Cable Ties

- Harness multiple cables into a single manageable bundle
- Allows breakouts of single/multiple cables
- Provides protection for cables
- Multiple colors allow easy identification of cable bundles
- Installation tool supplied in each package

B2. Cable Accessories



B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

Part Number	Material	Color	Length Per Reel		Bundle Diameter Range		Outside Diameter		Temperature Range	Wall Thickness		Std. Pkg. Qty.
			ft	M	In.	mm	In.	mm		In	mm	
T12F-C	Polyethylene	Natural	100	30.5	1/16 to 1/2	1.6 to 12.7	.12	3.3	-40°F to 122°F (-40°C to 50°C)	.03	.76	1
T19F-C			100	30.5	1/8 to 1	3.2 to 25.4	.19	4.8		.03	.89	1
T25F-X			10	3.05	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C			100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C1		Brown	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C10		White	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C16		Pink	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C2		Red	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C3		Orange	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C4		Yellow	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C5		Green	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C6		Blue	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C7		Purple	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C8		Gray	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T38F-C		Natural	100	30.5	5/16 to 3	7.9 to 76.2	.38	9.5		.05	1.40	1
T50F-X		Natural	10	3.05	3/8 to 4	9.5 to 101.6	.50	12.7		.06	1.50	1
T50F-C		Natural	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7		.06	1.50	1
T50F-C1		Brown	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7		.06	1.50	1
T50F-C10		White	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7		.06	1.50	1
T50F-C16		Pink	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7		.06	1.50	1
T50F-C2	Red	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7	.06	1.50	1		
T50F-C3	Orange	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7	.06	1.50	1		
T50F-C4	Yellow	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7	.06	1.50	1		
T50F-C5	Green	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7	.06	1.50	1		
T50F-C6	Blue	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7	.06	1.50	1		
T50F-C7	Purple	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7	.06	1.50	1		
T50F-C8	Gray	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7	.06	1.50	1		
T62F-C	Natural	100	30.5	1/2 to 4 1/2	12.7 to 114.3	.62	15.9	.06	1.57	1		
T75F-C		100	30.5	5/8 to 5	15.9 to 127.0	.75	19.1	.06	1.65	1		
T100F-C		100	30.5	7/8 to 6	22.2 to 152.4	1.00	25.4	.07	1.78	1		

Reel packaging may contain splices. Contact Customer Service for further information.

## Spiral Wrap (continued)

Part Number	Material	Color	Length Per Reel		Bundle Diameter Range		Outside Diameter		Temperature Range	Wall Thickness		Std. Pkg. Qty.
			ft	M	In.	mm	In.	mm		In	mm	
T12F-C0	Weather Resistant Polyethylene	Black	100	30.5	1/16 to 1/2	1.6 to 12.7	.12	3.3	-40°F to 122°F (-40°C to 50°C)	.03	.76	1
T19F-C0			100	30.5	1/8 to 1	3.2 to 25.4	.19	4.8		.03	.89	1
T25F-X0			10	3.05	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25F-C0			100	30.5			.25	6.4		.04	1.02	1
T38F-C0			100	30.5	5/16 to 3	7.9 to 76.2	.38	9.5		.05	1.40	1
T50F-X0			10	3.05	3/8 to 4	9.5 to 101.6	.50	12.7		.06	1.50	1
T50F-C0			100	30.5			.50	12.7		.06	1.50	1
T62F-C0			100	30.5	1/2 to 4 1/2	12.7 to 114.3	.62	15.9		.06	1.57	1
T75F-C0			100	30.5	5/8 to 5	15.9 to 127.0	.75	19.1		.06	1.65	1
T100F-C0			100	30.5	7/8 to 6	22.2 to 152.4	1.00	25.4		.07	1.78	1
T12R-C	Fire Resistant Polyethylene	Natural	100	30.5	1/16 to 1/2	1.6 to 12.7	.12	3.3	-40°F to 140°F (-40°C to 60°C)	.03	.76	1
T19R-C			100	30.5	1/8 to 1	3.2 to 25.4	.19	4.8		.03	.89	1
T25R-C			100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25R-C20		Black	100	30.5			.25	6.4		.04	1.02	1
T38R-C		Black	100	30.5	5/16 to 3	7.9 to 76.2	.38	9.5		.05	1.40	1
T50R-C			100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7		.06	1.50	1
T62R-C			100	30.5	1/2 to 4 1/2	12.7 to 114.3	.62	15.9		.06	1.57	1
T75R-C		Natural	100	30.5	5/8 to 5	15.9 to 127.0	.75	19.1		.07	1.65	1
T100R-C			100	30.5	7/8 to 6	22.2 to 152.4	1.00	25.4		.07	1.78	1
T12FR-C			100	30.5	1/16 to 1/2	1.6 to 12.7	.12	3.3		.03	.76	1
T12FR-C20	Flame Retardant Polyethylene*	Black	100	30.5	1/16 to 1/2	1.6 to 12.7	.12	3.3	-40°F to 140°F (-40°C to 60°C)	.03	.76	1
T19FR-C		Natural	100	30.5	1/8 to 1	3.2 to 25.4	.19	4.8		.03	.89	1
T19FR-C20		Black	100	30.5	1/8 to 1	3.2 to 25.4	.19	4.8		.03	.89	1
T25FR-C		Natural	100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.04	1.02	1
T25FR-C20		Black	100	30.5			.25	6.4		.04	1.02	1
T38FR-C		Natural	100	30.5	5/16 to 3	7.9 to 76.2	.38	9.5		.05	1.40	1
T38FR-C20		Black	100	30.5			.38	9.5		.05	1.40	1
T50FR-C		Natural	100	30.5	3/8 to 4	9.5 to 101.6	.50	12.7		.06	1.50	1
T50FR-C20		Black	100	30.5			.50	12.7		.06	1.50	1
T62FR-C		Natural	100	30.5	1/2 to 4 1/2	12.7 to 114.3	.62	15.9		.06	1.57	1
T62FR-C20		Black	100	30.5			.62	15.9		.06	1.57	1
T75FR-C		Natural	100	30.5	5/8 to 5	15.9 to 127.0	.75	19.1		.06	1.65	1
T75FR-C20		Black	100	30.5			.75	19.1		.06	1.65	1
T100FR-C		Natural	100	30.5	7/8 to 6	22.2 to 152.4	1.00	25.4		.07	1.78	1
T100FR-C20		Black	100	30.5			1.00	25.4		.07	1.78	1

\*Flame retardant products are manufactured from a material that is rated UL94V-0. Reel packaging may contain splices. Contact Customer Service for further information.

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

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D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

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F. Index

A. System Overview

## Spiral Wrap (continued)

B1. Cable Ties

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C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

Part Number	Material	Color	Length Per Reel		Bundle Diameter Range		Outside Diameter		Temperature Range	Wall Thickness		Std. Pkg. Qty.		
			ft	M	In.	mm	In.	mm		In	mm			
<b>T12N-C</b>	Nylon 6.6	Natural	100	30.5	1/16 to 1/2	1.6 to 12.7	.12	3.3	-40°F to 149°F (-40°C to 65°C)	.03	.76	1		
<b>T19N-C</b>			100	30.5	1/8 to 1	3.2 to 25.4	.12	4.8		.03	.80	1		
<b>T25N-C</b>			100	30.5	3/16 to 2	4.8 to 50.4	.25	6.4		.40	1.02	1		
<b>T38N-C</b>			100	30.5	5/16 to 3	7.9 to 76.2	.38	9.7		.55	1.40	1		
<b>T50N-C</b>			100	30.5	3/8 to 4	3/8 to 4	.50	12.7		.06	1.50	1		
<b>T62N-C</b>			100	30.5	1/2 to 4 1/2	12.7 to 114.3	.62	15.9		.62	1.57	1		
<b>T75N-C</b>			100	30.5	5/8 to 5	15.9 to 127.0	.75	19.1		.06	1.65	1		
<b>T100N-C</b>			100	30.5	7/8 to 6	22.2 to 152.4	1.00	25.4		.07	1.78	1		
<b>T12N-C0</b>			Weather Resistant Nylon 6.6	Black	100	30.5	1/16 to 1/2	1.6 to 12.7		.12	3.3	.03	.76	1
<b>T25N-C0</b>					100	30.5	3/16 to 2	4.8 to 50.4		.25	6.4	.04	1.02	1
<b>T38N-C0</b>	100	30.5			5/16 to 3	7.9 to 76.2	.38	6.4	.05	1.40	1			
<b>T50N-C0</b>	100	30.5			3/8 to 4	9.5 to 101.6	.50	12.7	.06	1.50	1			
<b>T62N-C0</b>	100	30.5			1/2 to 4 1/2	12.7 to 114.3	.62	15.9	.06	1.50	1			
<b>T75N-C0</b>	100	30.5			5/8 to 5	15.9 to 127.0	.75	19.1	.06	1.65	1			
<b>T100N-C0</b>	100	30.5			7/8 to 6	22.2 to 152.4	1.00	25.4	.07	1.78	1			
<b>T12T-C</b>	TEFLON‡	Natural			100	30.5	1/16 to 1/2	1.6 to 12.7	.12	3.2	-40°F to 365°F (-40°C to 180°C)	.03	.76	1
<b>T19T-C</b>			100	30.5	1/8 to 1	3.2 to 25.4	.19	4.8	.03	.89		1		
<b>T25T-L</b>			50	15.24	3/16 to 2	4.8 to 50.4	.25	6.4	.04	1.02		1		
<b>T50T-Q</b>			25	7.62	3/8 to 4	9.5 to 101.6	.50	12.7	.06	1.50		1		
<b>T62T-Q</b>			25	7.62	1/2 to 4 1/2	12.7 to 114.3	.62	15.9	.06	1.57		1		
<b>T75T-X</b>			10	3.05	5/8 to 5	15.9 to 127.0	.75	19.1	.06	1.65		1		
<b>T100T-X</b>			10	3.05	7/8 to 6	22.2 to 152.4	1.00	25.4	.07	1.78		1		

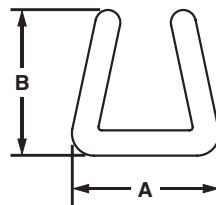
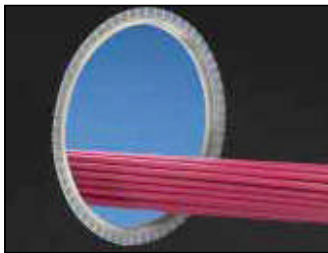
Reel packaging may contain splices. Contact Customer Service for further information.  
 ‡TEFLON is a registered trademark of E. I. du Pont de Nemours and Company.

## Part Number System for Grommet Edging

<b>GEE</b>	<b>36</b>	<b>F</b>	<b>-</b>	<b>A</b>	<b>-</b>	<b>C</b>	<b>0</b>
Type	Max. Panel Thickness	Material		Adhesive		Package Size	Color Suffix
GE = Grommet Edging Strips	36 = .036" thickness	F = Polyethylene		A = Adhesive Lined		Q = 25'	0 = Weather Resistant Black
GEE = Slotted Grommet Edging	62 = .062" thickness	N = Nylon 6.6		Leave Blank = Non-Adhesive		L = 50'	Leave Blank = Natural
GES = Solid Grommet Edging	99 = .099" thickness	FR = Flame Retardant Polyethylene				C = 100'	
	144 = .144" thickness						
	189 = .189" thickness						

## Grommet Edging

- Use product on irregularly shaped and round panel hole
- Provided in .030" (.8mm) thick material making it highly flexible



Part Number	Width A		Height B		Material	Color	Panel Thickness Range		Std. Pkg. Qty.
	In.	mm	In.	mm			In.	mm	
<b>Slotted</b>									
<b>GEE36F-C</b>	.106	2.7	.117	3.0	Polyethylene	Natural	.026 – .036	0.7 – 0.9	1
<b>GEE36F-C0</b>	.106	2.7	.117	3.0	Weather Resistant Polyethylene	Black	.026 – .036	0.7 – 0.9	1
<b>GEE62F-C</b>	.131	3.3	.160	4.1	Polyethylene	Natural	.036 – .062	0.9 – 1.6	1
<b>GEE62F-C0</b>	.131	3.3	.160	4.1	Weather Resistant Polyethylene	Black	.036 – .062	0.9 – 1.6	1
<b>GEE99F-C</b>	.169	4.3	.186	4.7	Polyethylene	Natural	.062 – .099	1.6 – 2.5	1
<b>GEE99F-C0</b>	.169	4.3	.186	4.7	Weather Resistant Polyethylene	Black	.062 – .099	1.6 – 2.5	1
<b>GEE144F-C</b>	.213	5.4	.222	5.6	Polyethylene	Natural	.099 – .144	2.5 – 3.7	1
<b>GEE144F-C0</b>	.222	5.6	.222	5.6	Weather Resistant Polyethylene	Black	.099 – .144	2.5 – 3.7	1
<b>GEE62F-A-C</b>	.131	3.3	.160	4.1	Polyethylene	Natural	.036 – .062	.9 – 1.6	1

A. System Overview

## Grommet Edging (continued)

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

Part Number	Width A		Height B		Material	Color	Panel Thickness Range		Std. Pkg. Qty.
	In.	mm	In.	mm			In.	mm	
<b>GEE62F-A-CO</b>	.131	3.3	.160	4.1	Weather Resistant Polyethylene	Black	.036 – .062	.9 – 1.6	1
<b>GEE99F-A-C</b>	.169	4.3	.186	4.7	Polyethylene	Natural	.062 – .099	1.6 – 2.5	1
<b>GEE99F-A-CO</b>	.169	4.3	.186	4.7	Weather Resistant Polyethylene	Black	.062 – .099	1.6 – 2.5	1
<b>GEE144F-A-C</b>	.213	5.4	.222	5.6	Polyethylene	Natural	.099 – .144	2.5 – 3.7	1
<b>GEE144F-A-CO</b>	.213	5.4	.222	5.6		Black	.099 – .144	2.5 – 3.7	1
<b>GEE36FR-C</b>	.106	2.7	.117	3.0	Flame Retardant Polyethylene	Natural	.026 – .036	.7 – .9	1
<b>GEE62FR-C</b>	.131	3.3	.160	4.1			.036 – .062	.9 – 1.6	1
<b>GEE99FR-C</b>	.169	4.3	.160	3.9			.062 – .099	1.6 – 2.5	1
<b>GEE144FR-C</b>	.213	5.4	.222	5.9			.099 – .144	2.5 – 3.7	1
<b>GEE47N-C</b>	.131	3.3	.14	3.5	Nylon 6.6	Natural	.039 – .055	1.0 – 1.4	1
<b>GEE55N-C</b>	.133	3.4	.14	3.5			.047 – .063	1.2 – 1.6	1
<b>GEE71N-C</b>	.150	3.8	.14	3.5			.063 – .079	1.6 – 2.0	1
<b>GEE98N-C</b>	.180	4.6	.14	3.5			.091 – .106	2.3 – 2.7	1
<b>GEE134N-C</b>	.210	5.3	.14	3.5			.126 – .142	3.2 – 3.6	1
<b>GE318-L</b>	.455	11.3	.255	6.5		Natural	.255 – .318	6.5 – 8.1	50
<b>GE255-L</b>	.385	9.8	.240	6.1		Natural	.192 – .255	4.9 – 6.5	50
<b>Solid</b>									
<b>GES36F-C</b>	.106	2.8	.117	3.1	Polyethylene	Natural	.026 – .036	.7 – .9	1
<b>GES36F-CO</b>	.106	2.8	.117	3.1	Weather Resistant Polyethylene	Black	.026 – .036	.7 – .9	1
<b>GES62F-C</b>	.131	3.3	.160	4.1	Polyethylene	Natural	.036 – .062	.9 – 1.6	1
<b>GES62F-CO</b>	.131	3.3	.160	4.1	Weather Resistant Polyethylene	Black	.036 – .062	.9 – 1.6	1
<b>GES99F-C</b>	.169	4.3	.186	4.8		Natural	.062 – .099	1.6 – 2.5	1
<b>GES99F-CO</b>	.169	4.3	.186	4.8		Black	.062 – .099	1.6 – 2.5	1
<b>GES144F-C</b>	.213	5.4	.222	5.6	Polyethylene	Natural	.099 – .144	2.5 – 3.7	1
<b>GES144F-CO</b>	.213	5.3	.222	5.6	Weather Resistant Polyethylene	Black	.099 – .144	2.5 – 3.7	1
<b>GES189F-C</b>	.30	7.6	.300	7.6	Polyethylene	Natural	.144 – .189	3.7 – 4.8	1
<b>GES189F-CO</b>	.30	7.6	.300	7.6	Weather Resistant Polyethylene	Black	.144 – .189	3.7 – 4.8	1
<b>GES62F-A-C</b>	.131	3.3	.160	4.1	Polyethylene	Natural	.036 – .062	.9 – 1.6	1
<b>GES62F-A-CO</b>	.131	3.3	.160	4.1	Weather Resistant Polyethylene	Black	.036 – .062	.9 – 1.6	1
<b>GES99F-A-C</b>	.169	4.3	.186	4.8	Polyethylene	Natural	.062 – .099	1.6 – 2.5	1
<b>GES99F-A-CO</b>	.169	4.3	.186	4.8		Black	.062 – .099	1.6 – 2.5	1
<b>GES144F-A-C</b>	.213	5.3	.222	5.6		Natural	.099 – .144	2.5 – 3.7	1
<b>GES144F-A-CO</b>	.213	5.3	.222	5.6		Black	.099 – .144	2.5 – 3.7	1
<b>GES36FR-C</b>	.106	2.8	.117	3.1	Flame Retardant Polyethylene	Natural	.026 – .036	.7 – .9	1
<b>GES62FR-C</b>	.131	3.3	.160	4.1			.036 – .062	.9 – 1.6	1
<b>GES99FR-C</b>	.169	4.3	.186	4.8			.062 – .099	1.6 – 2.5	1
<b>GES144FR-C</b>	.213	5.3	.222	5.6			.099 – .144	2.5 – 3.7	1



## Grommet Edging (continued)

Part Number	Width A		Height B		Material	Color	Panel Thickness Range		Std. Pkg. Qty.
	In.	mm	In.	mm			In.	mm	
<b>Military Standard MS21266 in 12 3/4" lengths</b>									
<b>GE52-C</b>	.150	3.8	.155	3.9	Nylon 6.6	Natural	.015 – .052	.4 – 1.3	100
<b>GE52-C69</b>	.150	3.8	.155	3.9	Flame Retardant Nylon 6.6		.015 – .052	.4 – 1.3	100
<b>GE85-C</b>	.175	4.5	.155	3.9	Nylon 6.6		.052 – .085	1.3 – 2.2	100
<b>GE85-C69</b>	.175	4.5	.155	3.9	Flame Retardant Nylon 6.6		.052 – .085	1.3 – 2.2	100
<b>GE128-C</b>	.220	5.6	.155	3.9	Nylon 6.6		.085 – .128	2.2 – 3.3	100
<b>GE128-C69</b>	.220	5.6	.155	3.9	Flame Retardant Nylon 6.6		.085 – .128	2.2 – 3.3	100
<b>GE192-L</b>	.325	8.3	.230	5.8	Nylon 6.6		.128 – .192	3.3 – 4.9	50
<b>GE192-L69</b>	.325	8.3	.230	5.8	Flame Retardant Nylon 6.6		.128 – .192	3.3 – 4.9	50
<b>GE380-Q</b>	.515	13.1	.255	6.5	Nylon 6.6		.318 – .380	8.1 – 9.7	25
<b>GE510-Q</b>	.640	16.3	.255	6.5	Nylon 6.6		.380 – .510	9.7 – 13.0	25

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## PANDUIT Heat Shrink Tubing Heat Shrink Tubing Quick Selection Guide

B1. Cable Ties  
Quick reference for PANDUIT Heat Shrink for specific location applications

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System




E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

### CHARACTERISTICS

												
	HSTT	HSTTV	HSTTN	HSTTK	HSTTT	HSTTP	HSTTV	HSTTR	HSTA	HST	HSEC	HSECFR
U.L. Listed										X		
UL Recognized	X‡	X		X		X						
CSA Certified	X‡	X				X				X**		
VW-1-Rated		X		X		X						
Very Flexible		X	X									
Flexible	X					X	X		X			
Semi-Rigid				X	X			X		X		
Thin Wall	X	X	X	X	X	X	X	X	X			
Thick Wall										X	X	X
Cross-Linked Material	X	X	X	X		X	X	X	X	X	X	X
Colors Available	X	X								X*		
High Shrink Ratio	2:1	2:1	2:1	2:1	2:1	2:1	2:1	2:5:1	3:1	3:1	3:1	3:1
Flame Retardant	X‡	X	X	X	X	X	X	X	X	X		X
Adhesive Lined (Dual Wall)							X	X	X	X	X	X
Meets Military Specifications	X	X	X	X	X		X	X	X	X		
Below Ground Application										X		
High Temp Applications (>250°F)				X	X							
Highly Chemical Resistant			X	X	X							
Low Coefficient of Friction					X							
Custom Cut Lengths	X	X	X	X	X	X	X	X	X	X		
Standard 6" pieces	X	X					X		X			
Standard 4" lengths	X	X		X	X		X	X	X	X		
Small 25' Reels	X	X	X			X						
Large Reels	X	X	X			X						
IP Rating	62	62	62	62	—	62	66	66	66	68	68	68
Found on Page... (Prefix 'C')	3.11 — 3.14	3.15 — 3.17	3.19	3.20	3.19 — 3.20	3.18	3.21	3.22	3.21	3.22	3.24	3.24

\*Black/Red  
\*\*Except red  
‡Except Clear

## Part Number System for Thin Wall Heat Shrink

### HSTT

#### Type

HSTT = Thin Wall  
 HSTTV = Thin Wall VW-1  
 HSTTN = Thin Wall Neoprene  
 HSTTK = Thin Wall PVDF KYNAR ▲  
 HSTTT = Thin Wall TFE TEFLON ‡  
 HSTTP = Thin Wall PVC  
 HSTTVA = Flexible Adhesive Lined  
 HSTTRA = Semi-Rigid Adhesive Lined  
 HSTTA = Thin Wall Adhesive Lined  
 HST = Thick Wall Adhesive Lined  
 HSEC = Heat Shrink End Caps  
 Adhesive Lined  
 HSECFR = Heat Shrink End Caps  
 Flame Retardant  
 Adhesive Lined

### 12

#### Expanded Diameter

05 = 3/64" (1.2mm)  
 06 = 1/16" (1.6mm)  
 09 = 3/32" (2.4mm)  
 12 = 1/8" (3.2mm)  
 19 = 3/16" (4.8mm)  
 25 = 1/4" (6.4mm)  
 38 = 3/8" (9.5mm)  
 50 = 1/2" (12.7mm)  
 75 = 3/4" (19.0mm)  
 100 = 1" (25.4mm)  
 150 = 1 1/2" (38.1mm)  
 200 = 2" (50.5mm)  
 300 = 3" (76.2mm)  
 400 = 4" (10.16mm)  
 0.4 = .40" (10.1mm)  
 0.5 = .47" (11.9mm)  
 0.8 = .80" (20.3mm)  
 1.0 = 1.0" (25.4mm)  
 1.1 = 1.1" (27.9mm)  
 1.5 = 1.5" (38.1mm)  
 2.0 = 2.0" (50.5mm)  
 3.0 = 3.0" (76.2mm)  
 4.0 = 4.0" (101.6mm)

### 48

#### Tube Length

3 = 3" (76.2mm)  
 6 = 6" (152.4mm)  
 9 = 9" (228.6mm)  
 12 = 12" (304.8mm)  
 48" = (1.2M)  
 NONE = REEL

### Q

#### Package Quantity

(If Tube Length Specified)  
 1 = 1 pc.  
 2 = 2 Pcs.  
 3 = 3 Pcs.  
 5 = 5 Pcs.  
 X = 10 Pcs.  
 Q = 25 Pcs.  
 LQ = 75 Pcs.  
 CQ = 125 Pcs.  
 T = 200 Pcs.  
 TL = 250 Pcs.  
 Y = 6" Pcs.

#### Reels

(If No Tube Length Specified)  
 Q = 25' (7.6M)  
 L = 50' (15.2M)  
 C = 100' (30.5M)  
 T = 200' (61.0M)  
 D = 500' (152.4M)  
 M = 1000' (304.8M)

### 10

#### Color

NONE = Black  
 C = Clear  
 2 = Red  
 4 = Yellow  
 5 = Green  
 6 = Blue  
 10 = White  
 45 = Yellow/Green

For Standard Packages containing 6" (152.4mm) lengths, refer to individual pages for complete part number offering.

Note: The above information is to be used as a guide. For specific part number offerings review individual pages for verification.

▲KYNAR is a registered trademark of Atofina Chemicals, Inc.

‡TEFLON is a registered trademark of E.I. du Pont de Nemours and Company.

## SP® HSTT Heat Shrink 4 ft. (1.2M) Pieces and Reels

- Applications include insulating, protecting, and color coding wires and cables



- Voltage: 600V
- Shrink ratio: 2:1
- Flammability: Flame Retardant EXCEPT Clear
- UL Recognized, CSA Certified
- Mil Spec: AMS-DTL-23053/5 Class 1 (Colors) Class 2 (Clear)
- Temperature range: -67°F to 275°F (-55°C to 135°C)
- For dry locations
- Material: Black cross-linked Polyolefin



Part Number	Length		Nominal Diameter / Size		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Std. Pkg. Qty.	Std. Ctn. Qty.
	ft	M	In.	mm	In.	mm	In.	mm	In.	mm		
<b>HSTT05-48-Q</b>	4	1.2	3/64	1.2	.046	1.2	.023	.6	.016	.4	25	—
HSTT05-48-TL	4	1.2	3/64	1.2	.046	1.2	.023	.6	.016	.4	250	—
HSTT05-C	100	30.5	3/64	1.2	.046	1.2	.023	.6	.016	.4	1	10
HSTT05-M	1000	304.8	3/64	1.2	.046	1.2	.023	.6	.016	.4	1	2
<b>HSTT06-48-Q</b>	4	1.2	1/16	1.6	.063	1.6	.031	.8	.017	.4	25	—
HSTT06-48-TL	4	1.2	1/16	1.6	.063	1.6	.031	.8	.017	.4	250	—
<b>HSTT06-C</b>	100	30.5	1/16	1.6	.063	1.6	.031	.8	.017	.4	1	10
<b>HSTT06-M</b>	1000	304.8	1/16	1.6	.063	1.6	.031	.8	.017	.4	1	2

\*For colors, add C (Clear), 2 (Red), 4 (Yellow), 45 (Yellow/Green), 5 (Green), 6 (Blue), and 10 (White) to end of part number.

A. System Overview

## HSTT Heat Shrink 4 ft. (1.2M) Pieces and Reels (continued)



B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

Part Number	Length		Nominal Diameter / Size		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Std. Pkg. Qty.	Std. Ctn. Qty.
	ft	M	In.	mm	In.	mm	In.	mm	In.	mm		
<b>HSTT09-48-Q</b>	4	1.2	3/32	2.4	.093	2.4	.046	1.2	.020	.5	25	—
HSTT09-48-TL	4	1.2	3/32	2.4	.093	2.4	.046	1.2	.020	.5	250	—
<b>HSTT09-C</b>	100	30.5	3/32	2.4	.093	2.4	.046	1.2	.020	.5	1	10
<b>HSTT09-M</b>	1000	304.8	3/32	2.4	.093	2.4	.046	1.2	.020	.5	1	2
<b>HSTT12-48-Q</b>	4	1.2	1/8	3.2	.125	3.2	.062	1.6	.020	.5	25	—
HSTT12-48-TL	4	1.2	1/8	3.2	.125	3.2	.062	1.6	.020	.5	250	—
<b>HSTT12-C</b>	100	30.5	1/8	3.2	.125	3.2	.062	1.6	.020	.5	1	10
<b>HSTT12-M</b>	1000	304.8	1/8	3.2	.125	3.2	.062	1.6	.020	.5	1	2
<b>HSTT19-48-Q</b>	4	1.2	3/16	4.8	.187	4.8	.093	2.4	.020	.5	25	—
HSTT19-48-TL	4	1.2	3/16	4.8	.187	4.8	.093	2.4	.020	.5	250	—
<b>HSTT19-C</b>	100	30.5	3/16	4.8	.187	4.8	.093	2.4	.020	.5	1	10
<b>HSTT19-M</b>	1000	304.8	3/16	4.8	.187	4.8	.093	2.4	.020	.5	1	2
<b>HSTT25-48-Q</b>	4	1.2	1/4	6.4	.250	6.4	.125	3.2	.025	.6	25	—
HSTT25-48-TL	4	1.2	1/4	6.4	.250	6.4	.125	3.2	.025	.6	250	—
<b>HSTT25-C</b>	100	30.5	1/4	6.4	.250	6.4	.125	3.2	.025	.6	1	10
<b>HSTT25-D</b>	500	152.4	1/4	6.4	.250	6.4	.125	3.2	.025	.6	1	2
<b>HSTT38-48-Q</b>	4	1.2	3/8	9.5	.375	9.5	.187	4.8	.025	.6	25	—
HSTT38-48-TL	4	1.2	3/8	9.5	.375	9.5	.187	4.8	.025	.6	250	—
<b>HSTT38-C</b>	100	30.5	3/8	9.5	.375	9.5	.187	4.8	.025	.6	1	10
<b>HSTT38-T</b>	200	61.1	3/8	9.5	.375	9.5	.187	4.8	.025	.6	1	2
<b>HSTT50-48-Q</b>	4	1.2	1/2	12.7	.500	12.7	.250	6.4	.025	.6	25	—
HSTT50-48-T	4	1.2	1/2	12.7	.500	12.7	.250	6.4	.025	.6	200	—
<b>HSTT50-C</b>	100	30.5	1/2	12.7	.500	12.7	.250	6.4	.025	.6	1	10
<b>HSTT50-T</b>	200	61.1	1/2	12.7	.500	12.7	.250	6.4	.025	.6	1	2
<b>HSTT75-48-5</b>	4	1.2	3/4	19.0	.750	19.0	.375	9.5	.030	.8	5	—
HSTT75-48-CQ	4	1.2	3/4	19.0	.750	19.0	.375	9.5	.030	.8	125	—
<b>HSTT75-T</b>	200	61.1	3/4	19.0	.750	19.0	.375	9.5	.030	.8	1	2
<b>HSTT100-48-5</b>	4	1.2	1	25.4	1.00	25.4	.500	12.7	.035	.9	5	—
HSTT100-48-LQ	4	1.2	1	25.4	1.00	25.4	.500	12.7	.035	.9	75	—
<b>HSTT100-C</b>	100	30.5	1	25.4	1.00	25.4	.500	12.7	.035	.9	1	2
<b>HSTT150-48-5</b>	4	1.2	1 1/2	38.1	1.50	38.1	.750	19.0	.040	1.0	5	—
<b>HSTT150-C</b>	100	30.5	1 1/2	38.1	1.50	38.1	.750	19.0	.040	1.0	1	2
<b>HSTT200-48-5</b>	4	1.2	2	50.8	2.00	50.8	1.00	25.4	.045	1.1	5	—
<b>HSTT200-L</b>	50	15.2	2	50.8	2.00	50.8	1.00	25.4	.045	1.1	1	2
HSTT300-48-2	4	1.2	3	76.2	3.00	76.2	1.50	38.1	.050	1.3	2	—
HSTT300-L	50	15.2	3	76.2	3.00	76.2	1.50	38.1	.050	1.3	1	1
<b>HSTT400-48-2</b>	4	1.2	4	101.6	4.00	101.6	2.00	50.8	.055	1.4	2	—
<b>HSTT400-L</b>	50	15.2	4	101.6	4.00	101.6	2.00	50.8	.055	1.4	1	1

\*For colors, add C (Clear), 2 (Red), 4 (Yellow), 45 (Yellow/Green), 5 (Green), 6 (Blue), and 10 (White) to end of part number.

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

## SP® RU® HSTT Heat Shrink on 25 ft. Reels

- Applications include insulating, protecting, and color coding wires and cables
- Voltage: 600V
- Shrink ratio: 2:1
- Flammability: Flame Retardant EXCEPT Clear
- UL Recognized, CSA Certified
- Mil Spec: AMS-DTL-23053/5 Class 1 (Colors) Class 2 (Clear)
- Temperature range: -67°F to 27°F (-55°C to 135°C)
- For dry locations
- Material: Black cross-linked Polyolefin



Part Number*	Nominal Diameter		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm		
<b>HSTT05-Q</b>	3/64	1.2	.046	1.2	.023	.6	.016	.4	1	10
<b>HSTT06-Q</b>	1/16	1.6	.063	1.6	.031	.8	.017	.4	1	10
<b>HSTT09-Q</b>	3/32	2.4	.093	2.4	.046	1.2	.020	.5	1	10
<b>HSTT12-Q</b>	1/8	3.2	.125	3.2	.062	1.6	.020	.5	1	10
<b>HSTT19-Q</b>	3/16	4.8	.187	4.8	.093	2.4	.020	.5	1	10
<b>HSTT25-Q</b>	1/4	6.4	.250	6.4	.125	3.2	.025	.6	1	10
<b>HSTT38-Q</b>	3/8	9.5	.375	9.5	.187	4.8	.025	.6	1	10
<b>HSTT50-Q</b>	1/2	12.7	.500	12.7	.250	6.4	.025	.6	1	10
<b>HSTT75-Q</b>	3/4	19.0	.750	19.0	.375	9.5	.030	.8	1	10

\*For Clear add C to end of part number.

## SP® RU® Heat Shrink in 6 In. Pieces; Single Color, Single Diameter

- Applications include insulating, protecting, and color coding wires and cables
- Voltage: 600V
- Shrink ratio: 2:1
- Flammability: Flame Retardant EXCEPT Clear
- UL Recognized, CSA Certified
- Mil Spec: AMS-DTL-23053/5 Class 1 (Colors) Class 2 (Clear)
- Temperature range: -67°F to 275°F (-55°C to 135°C)
- For dry locations
- Material: Cross-linked Polyolefin



Part Number	Nominal Diameter		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm		
<b>HSTT06-Y</b>	1/16	1.6	.063	1.6	.031	.8	.017	.4	1	10
<b>HSTT09-Y</b>	3/32	2.4	.093	2.4	.046	1.2	.020	.5	1	10
<b>HSTT12-Y</b>	1/8	3.2	.125	3.2	.062	1.6	.020	.5	1	10
<b>HSTT19-Y</b>	3/16	4.8	.187	4.8	.093	2.4	.020	.5	1	10
<b>HSTT25-Y</b>	1/4	6.4	.250	6.4	.125	3.2	.025	.6	1	10
<b>HSTT38-Y</b>	3/8	9.5	.375	9.5	.187	4.8	.025	.6	1	10
<b>HSTT50-Y</b>	1/2	12.7	.500	12.7	.250	6.4	.025	.6	1	10
<b>HSTT75-Y</b>	3/4	19.0	.750	19.0	.375	9.5	.030	.8	1	10
<b>HSTT100-Y</b>	1	25.4	1.00	25.4	.500	12.7	.035	.9	1	10

A. System Overview

## Heat Shrink in 6 In. Pieces; Multi-Color, Single Diameter

B1. Cable Ties

- Applications include insulating, protecting, and color coding wires and cables
- Voltage: 600V
- Shrink ratio: 2:1
- Flammability: Flame Retardant EXCEPT Clear
- UL Recognized, CSA Certified
- Mil Spec: AMS-DTL-23053/5 Class 1 (Colors) Class 2 (Clear)
- Temperature range: -67°F to 275°F (-55°C to 135°C)
- For dry locations
- Material: Cross-linked Polyolefin
- Colors include: Clear, red, yellow, green, blue and white

B2. Cable Accessories



B3. Stainless Steel



Part Number	Nominal Diameter		Min. Expanded I.D.		Max. Recovered I.D.		Black No. of pieces	Each Color No. of pieces	Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm				
<b>HSTT06-YK1</b>	1/16	1.6	.063	1.6	.031	.8	8	3	1	10
<b>HSTT09-YK1</b>	3/32	2.4	.093	2.4	.046	1.2	6	3	1	10
<b>HSTT12-YK1</b>	1/8	3.2	.125	3.2	.062	1.6	2	3	1	10
<b>HSTT19-YK1</b>	3/16	4.8	.187	4.8	.093	2.4	6	2	1	10
<b>HSTT25-YK1</b>	1/4	6.4	.250	6.4	.125	3.2	2	2	1	10
<b>HSTT38-YK1</b>	3/8	9.5	.375	9.5	.187	4.8	6	1	1	10
<b>HSTT50-YK1</b>	1/2	12.7	.500	12.7	.250	6.4	4	1	1	10
<b>HSTT75-YK1</b>	3/4	19.0	.750	19.0	.375	9.5	2	1	1	10
<b>HSTT100-YK1</b>	1	25.4	1.00	25.4	.500	12.7	1	1	1	10

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

## Heat Shrink in 6 In. Pieces; Black, Multiple Diameters

- Applications include insulating, protecting, and color coding wires and cables
- Voltage: 600V
- Shrink ratio: 2:1
- Flammability: Flame Retardant EXCEPT Clear
- UL Recognized, CSA Certified
- Mil Spec: AMS-DTL-23053/5 Class 1 (Colors) Class 2 (Clear)
- Temperature range: -67°F to 275°F (-55°C to 135°C)
- For dry locations
- Material: Cross-linked Polyolefin

D1. Terminals



Part Number	Nominal Diameter	No. of pieces by Diameter	Std. Pkg. Qty.	Std. Ctn. Qty.
<b>HSTT-YK1</b>	Various – Smaller Range	Two pcs. each 1/8", 1/16", 3/16", 3/32", 1/4", 1/2", 3/8"	1	10
<b>HSTT-YK2</b>	Various – Larger Range	Two pcs. each 3/8", 1/2", 3/4", 1"	1	10

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

## Heat Shrink in 6 In. Pieces; Yellow/Green Stripe, Multiple Diameters

- Applications include insulating, protecting, and color coding wires and cables
- Voltage: 600V
- Shrink ratio: 2:1
- Flammability: Flame Retardant
- UL Recognized, CSA Certified
- Mil Spec: AMS-DTL-23053/5 Class 1
- Temperature range: -67°F to 275°F (-55°C to 135°C)
- For dry locations
- Material: Cross-linked Polyolefin

E3. Pre-Printed & Write-On Markers



Part Number	Nominal Diameter	No. of pieces by Diameter	Std. Pkg. Qty.	Std. Ctn. Qty.
<b>HSTT-YK1-45</b>	Various – Smaller Range	Two pcs. each 1/8", 3/16", 1/4", 3/8"	1	10
<b>HSTT-YK2-45</b>	Various – Larger Range	Two pcs. each 3/8", 1/2", 3/4"	1	10

E4. Lockout/Tagout & Safety Solutions

F. Index

## HSTTV Heat Shrink 4 ft. Pieces and Reels

- Applications include insulating, protecting, and color coding wires and cables
- Fast shrink time
- Voltage: 600V
- Shrink ratio: 2:1
- Flammability: Meets UL 224 VW-1
- UL Recognized, CSA Certified
- Mil Spec: AMS-DTL-23053/5 Class 3
- Temperature range: -67°F to 275°F (-55°C to 135°C)
- For dry locations
- Material: Black cross-linked Polyolefin



Part Number	Length		Nominal Diameter		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Std. Pkg. Qty.
	ft	M	In.	mm	In.	mm	In.	mm	In.	mm	
HSTTV05-48-Q	4	1.2	3/64	1.2	.046	1.2	.023	.6	.016	.4	25
HSTTV05-48-TL	4	1.2	3/64	1.2	.046	1.2	.023	.6	.016	.4	250
HSTTV06-48-Q	4	1.2	1/16	1.6	.063	1.6	.031	.8	.017	.4	25
HSTTV06-48-TL	4	1.2	1/16	1.6	.063	1.6	.031	.8	.017	.4	250
HSTTV09-48-Q	4	1.2	3/32	2.4	.093	2.4	.046	1.2	.020	.5	25
HSTTV09-48-TL	4	1.2	3/32	2.4	.093	2.4	.046	1.2	.020	.5	250
HSTTV12-48-Q	4	1.2	1/8	3.2	.125	3.2	.062	1.6	.020	.5	25
HSTTV12-48-TL	4	1.2	1/8	3.2	.125	3.2	.062	1.6	.020	.5	250
HSTTV19-48-Q	4	1.2	3/16	4.8	.187	4.8	.093	2.4	.020	.5	25
HSTTV19-48-TL	4	1.2	3/16	4.8	.187	4.8	.093	2.4	.020	.5	250
<b>HSTTV25-48-Q</b>	4	1.2	1/4	6.4	.250	6.4	.125	3.2	.025	.6	25
HSTTV25-48-TL	4	1.2	1/4	6.4	.250	6.4	.125	3.2	.025	.6	250
HSTTV38-48-Q	4	1.2	3/8	9.5	.375	9.5	.187	4.8	.025	.6	25
HSTTV38-48-TL	4	1.2	3/8	9.5	.375	9.5	.187	4.8	.025	.6	250
HSTTV50-48-Q	4	1.2	1/2	12.7	.500	12.7	.250	6.4	.025	.6	25
HSTTV50-48-T	4	1.2	1/2	12.7	.500	12.7	.250	6.4	.025	.6	200
HSTTV75-48-5	4	1.2	3/4	19.0	.75	19.0	.375	9.5	.030	.8	5
HSTTV75-48-CQ	4	1.2	3/4	19.0	.75	19.0	.375	9.5	.030	.8	125
HSTTV100-48-5	4	1.2	1	25.4	1.00	25.4	.500	12.7	.035	.9	5
HSTTV100-48-LQ	4	1.2	1	25.4	1.00	25.4	.500	12.7	.035	.9	75
HSTTV150-48-5	4	1.2	1 1/2	38.1	1.50	38.1	.750	19.0	.040	1.0	5
HSTTV05-C	100	30.5	3/64	1.2	.046	1.2	.023	.6	.016	.4	1
HSTTV06-C	100	30.5	1/16	1.6	.063	1.6	.031	.8	.017	.4	1
HSTTV09-C	100	30.5	3/32	2.4	.093	2.4	.046	1.2	.020	.5	1
HSTTV12-C	100	30.5	1/8	3.2	.125	3.2	.062	1.6	.020	.5	1
HSTTV19-C	100	30.5	3/16	4.8	.187	4.8	.093	2.4	.020	.5	1
HSTTV25-C	100	30.5	1/4	6.4	.250	6.4	.125	3.2	.025	.6	1
HSTTV38-C	100	30.5	3/8	9.5	.375	9.5	.187	4.8	.025	.6	1
HSTTV50-C	100	30.5	1/2	12.7	.500	12.7	.250	6.4	.025	.6	1
HSTTV75-C	100	30.5	3/4	19.0	.750	19.0	.375	9.5	.030	.8	1
HSTTV100-C	100	30.5	1	25.4	1.00	25.4	.500	12.7	.035	.9	1
HSTTV150-C	100	30.5	1 1/2	38.1	1.50	38.1	.750	19.0	.040	1.0	1

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

## HSTTV Heat Shrink on Bulk Reels

- Applications include insulating, protecting, and color coding wires and cables
- Fast shrink time
- Voltage: 600V
- Shrink ratio: 2:1
- Flammability: Meets UL 224 VW-1
- UL Recognized, CSA Certified
- Mil Spec: AMS-DTL-23053/5 Class 3
- Temperature range: -67°F to 275°F (-55°C to 135°C)
- For dry locations
- Material: Cross-linked Polyolefin



Part Number	Nominal Diameter / Size		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Length		Color	Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm	ft	m			
HSTTV05-M	3/64	1.2	.046	1.2	.023	.6	.016	.4	1000	304.8	Black	1	2
HSTTV05-M2	3/64	1.2	.046	1.2	.023	.6	.016	.4	1000	304.8	Red	1	2
HSTTV05-M4	3/64	1.2	.046	1.2	.023	.6	.016	.4	1000	304.8	Yellow	1	2
HSTTV05-M6	3/64	1.2	.046	1.2	.023	.6	.016	.4	1000	304.8	Blue	1	2
HSTTV06-M	1/16	1.6	.063	1.6	.031	.8	.017	.4	1000	304.8	Black	1	2
HSTTV06-M2	1/16	1.6	.063	1.6	.031	.8	.017	.4	1000	304.8	Red	1	2
HSTTV06-M4	1/16	1.6	.063	1.6	.031	.8	.017	.4	1000	304.8	Yellow	1	2
HSTTV06-M6	1/16	1.6	.063	1.6	.031	.8	.017	.4	1000	304.8	Blue	1	2
HSTTV09-M	3/32	2.4	.093	2.4	.046	1.2	.02	.5	1000	304.8	Black	1	2
HSTTV09-M2	3/32	2.4	.093	2.4	.046	1.2	.02	.5	1000	304.8	Red	1	2
HSTTV09-M4	3/32	2.4	.093	2.4	.046	1.2	.02	.5	1000	304.8	Yellow	1	2
HSTTV09-M6	3/32	2.4	.093	2.4	.046	1.2	.02	.5	1000	304.8	Blue	1	2
HSTTV12-M	1/8	3.2	.125	3.2	.062	1.6	.02	.5	1000	304.8	Black	1	2
HSTTV12-M2	1/8	3.2	.125	3.2	.062	1.6	.02	.5	1000	304.8	Red	1	2
HSTTV12-M4	1/8	3.2	.125	3.2	.062	1.6	.02	.5	1000	304.8	Yellow	1	2
HSTTV12-M6	1/8	3.2	.125	3.2	.062	1.6	.02	.5	1000	304.8	Blue	1	2
HSTTV19-M	3/16	4.8	.187	4.8	.093	2.4	.02	.5	1000	304.8	Black	1	2
HSTTV19-M2	3/16	4.8	.187	4.8	.093	2.4	.02	.5	1000	304.8	Red	1	2
HSTTV19-M4	3/16	4.8	.187	4.8	.093	2.4	.02	.5	1000	304.8	Yellow	1	2
HSTTV19-M6	3/16	4.8	.187	4.8	.093	2.4	.02	.5	1000	304.8	Blue	1	2
<b>HSTTV25-D</b>	1/4	6.4	.250	6.4	.125	3.2	.025	.6	500	152.4	Black	1	2
HSTTV25-D2	1/4	6.4	.250	6.4	.125	3.2	.025	.6	500	152.4	Red	1	2
HSTTV25-D4	1/4	6.4	.250	6.4	.125	3.2	.025	.6	500	152.4	Yellow	1	2
HSTTV25-D6	1/4	6.4	.250	6.4	.125	3.2	.025	.6	500	152.4	Blue	1	2
<b>HSTTV38-T</b>	3/8	9.5	.375	9.5	.187	4.8	.025	.6	200	61.0	Black	1	2
HSTTV38-T2	3/8	9.5	.375	9.5	.187	4.8	.025	.6	200	61.0	Red	1	2
HSTTV38-T4	3/8	9.5	.375	9.5	.187	4.8	.025	.6	200	61.0	Yellow	1	2
HSTTV38-T6	3/8	9.5	.375	9.5	.187	4.8	.025	.6	200	61.0	Blue	1	2
<b>HSTTV50-T</b>	1/2	12.7	.500	12.7	.250	6.4	.025	.6	200	61.0	Black	1	2
HSTTV50-T2	1/2	12.7	.500	12.7	.250	6.4	.025	.6	200	61.0	Red	1	2
HSTTV50-T4	1/2	12.7	.500	12.7	.250	6.4	.025	.6	200	61.0	Yellow	1	2
HSTTV50-T6	1/2	12.7	.500	12.7	.250	6.4	.025	.6	200	61.0	Blue	1	2
<b>HSTTV75-T</b>	3/4	19.0	.750	19.0	.375	9.5	.03	.8	200	61.0	Black	1	2
HSTTV75-T2	3/4	19.0	.750	19.0	.375	9.5	.03	.8	200	61.0	Red	1	2
HSTTV75-T4	3/4	19.0	.750	19.0	.375	9.5	.03	.8	200	61.0	Yellow	1	2
HSTTV75-T6	3/4	19.0	.750	19.0	.375	9.5	.03	.8	200	61.0	Blue	1	2



## HSTTV Heat Shrink on 25 ft. Reels

- Applications include insulating, protecting, and color coding wires and cables
- Fast shrink time
- Voltage: 600V
- Shrink ratio: 2:1
- Flammability: Meets UL 224 VW-1

- UL Recognized, CSA Certified
- Mil Spec: AMS-DTL-23053/5 Class 3
- Temperature range: -67°F to 275°F (-55°C to 135°C)
- For dry locations
- Material: Black cross-linked Polyolefin



Part Number	Nominal Diameter		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm		
HSTTV05-Q	3/64	1.2	.046	1.2	.023	.6	.016	.4	1	10
HSTTV06-Q	1/16	1.6	.063	1.6	.031	.8	.017	.4	1	10
HSTTV09-Q	3/32	2.4	.093	2.4	.046	1.2	.020	.5	1	10
HSTTV12-Q	1/8	3.2	.125	3.2	.062	1.6	.020	.5	1	10
HSTTV19-Q	3/16	4.8	.187	4.8	.093	2.4	.020	.5	1	10
<b>HSTTV25-Q</b>	1/4	6.4	.250	6.4	.125	3.2	.025	.6	1	10
HSTTV38-Q	3/8	9.5	.375	9.5	.187	4.8	.025	.6	1	10
<b>HSTTV50-Q</b>	1/2	12.7	.500	12.7	.250	6.4	.025	.6	1	10
HSTTV75-Q	3/4	19.0	.750	19.0	.375	9.5	.030	.8	1	10
HSTTV100-Q	1	25.4	1.00	25.4	.500	12.7	.035	.9	1	2

## HSTTV Heat Shrink 6 In. Pieces

- Applications include insulating, protecting, and color coding wires and cables
- Fast shrink time
- Voltage: 600V
- Shrink ratio: 2:1

- Flammability: Meets UL 224 VW-1
- UL Recognized, CSA Certified
- Mil Spec: AMS-DTL-23053/5 Class 3
- Temperature range: -67°F to 275°F (-55°C to 135°C)
- For dry locations
- Material: Black cross-linked Polyolefin



Part Number	Nominal Diameter / Size		Min. Expanded I.D.		Max. Recovered I.D.		Pieces per Package	Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm			
HSTTV05-Y	3/64	1.2	.046	1.2	.023	.6	26	1	10
HSTTV06-Y	1/16	1.6	.063	1.6	.031	.8	26	1	10
HSTTV09-Y	3/32	2.4	.093	2.4	.046	1.2	24	1	10
HSTTV12-Y	1/8	3.2	.125	3.2	.062	1.6	20	1	10
HSTTV19-Y	3/16	4.8	.187	4.8	.093	2.4	18	1	10
HSTTV25-Y	1/4	6.4	.250	6.4	.125	3.2	14	1	10
HSTTV38-Y	3/8	9.5	.375	9.5	.187	4.8	12	1	10
HSTTV50-Y	1/2	12.7	.500	12.7	.250	6.4	10	1	10
HSTTV75-Y	3/4	19.0	.750	19.0	.375	9.5	8	1	10
HSTTV100-Y	1	25.4	1.00	25.4	.500	12.7	6	1	10

A. System Overview

## HSTTP PVC Heat Shrink Reels

B1. Cable Ties

- Applications include insulating, protecting, and color coding wires and cables
- Good resistance to most fuels and oils
- Voltage: 600V
- Shrink ratio: 2:1
- Flammability: Meets UL224 VW-1
- UL Recognized, CSA Certified
- Temperature range: -4°F to 221°F (-20°C to 105°C)
- For dry locations
- Material: Black cross-linked Polyvinyl Chloride

B2. Cable Accessories



B3. Stainless Steel



C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

Part Number	Nominal Diameter/Size		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Length		Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm	ft	m		
HSTTP05-Q	3/64	1.2	.046	1.2	.023	.6	.020	.5	25	7.5	1	10
HSTTP05-C	3/64	1.2	.046	1.2	.023	.6	.020	.5	100	30.5	1	2
HSTTP05-M	3/64	1.2	.046	1.2	.023	.6	.020	.5	1000	304.8	1	2
HSTTP06-Q	1/16	1.6	.063	1.6	.031	.8	.020	.5	25	7.5	1	10
<b>HSTTP06-C</b>	1/16	1.6	.063	1.6	.031	.8	.020	.5	100	30.5	1	2
HSTTP06-M	1/16	1.6	.063	1.6	.031	.8	.020	.5	1000	304.8	1	2
HSTTP09-Q	3/32	2.4	.093	2.4	.046	1.2	.025	.6	25	7.5	1	10
HSTTP09-C	3/32	2.4	.093	2.4	.046	1.2	.025	.6	100	30.5	1	2
HSTTP09-M	3/32	2.4	.093	2.4	.046	1.2	.025	.6	1000	304.8	1	2
<b>HSTTP12-Q</b>	1/8	3.2	.125	3.2	.062	1.6	.025	.6	25	7.5	1	10
<b>HSTTP12-C</b>	1/8	3.2	.125	3.2	.062	1.6	.025	.6	100	30.5	1	2
HSTTP12-M	1/8	3.2	.125	3.2	.062	1.6	.025	.6	1000	304.8	1	2
<b>HSTTP19-Q</b>	3/16	4.8	.187	4.8	.093	2.4	.025	.6	25	7.5	1	10
<b>HSTTP19-C</b>	3/16	4.8	.187	4.8	.093	2.4	.025	.6	100	30.5	1	2
HSTTP19-M	3/16	4.8	.187	4.8	.093	2.4	.025	.6	1000	304.8	1	2
<b>HSTTP25-Q</b>	1/4	6.4	.250	6.4	.125	3.2	.025	.6	25	7.5	1	10
<b>HSTTP25-C</b>	1/4	6.4	.250	6.4	.125	3.2	.025	.6	100	30.5	1	2
HSTTP25-D	1/4	6.4	.250	6.4	.125	3.2	.025	.6	500	500	1	2
<b>HSTTP38-Q</b>	3/8	9.5	.375	9.5	.187	4.8	.030	.8	25	7.5	1	10
<b>HSTTP38-C</b>	3/8	9.5	.375	9.5	.187	4.8	.030	.8	100	30.5	1	2
HSTTP38-T	3/8	9.5	.375	9.5	.187	4.8	.030	.8	200	60.9	1	2
<b>HSTTP50-Q</b>	1/2	12.7	.500	12.7	.250	6.4	.030	.8	25	7.5	1	10
<b>HSTTP50-C</b>	1/2	12.7	.500	12.7	.250	6.4	.030	.8	100	30.5	1	2
<b>HSTTP75-Q</b>	3/4	19.0	.750	19.0	.375	9.5	.035	.9	25	7.5	1	10
HSTTP75-C	3/4	19.0	.750	19.0	.375	9.5	.035	.9	100	30.5	1	2
<b>HSTTP100-Q</b>	1	25.4	1.00	25.4	.500	12.7	.040	1.0	25	7.5	1	2
HSTTP100-C	1	25.4	1.00	25.4	.500	12.7	.040	1.0	100	30.5	1	2
HSTTP150-Q	1 1/2	38.1	1.50	38.1	.750	19.0	.045	1.1	25	7.5	1	2
HSTTP150-C	1 1/2	38.1	1.50	38.1	.750	19.0	.045	1.1	100	30.5	1	2
HSTTP200-Q	2	50.8	2.00	50.8	1.00	25.4	.050	1.3	25	7.5	1	2

## HSTTN Neoprene Heat Shrink Reels

- Applications include insulating, protecting, and color coding wires and cables
- Excellent chemical resistance especially to fuels and oils
- Voltage: 600V
- Shrink ratio: 2:1
- Mil Spec: AMS-DTL-23053/1 Class 2
- Temperature range: -94°F to 250°F (-70°C to 121°C)
- For dry locations
- Material: Black cross-linked Neoprene



Part Number	Nominal Diameter		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Length		Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm	ft	m		
HSTTN25-C	1/4	6.4	.250	6.4	.143	3.6	.035	.9	100	30.5	1	2
HSTTN38-C	3/8	9.5	.375	9.5	.211	5.4	.040	1.0	100	30.5	1	2
HSTTN50-C	1/2	12.7	.500	12.7	.286	7.3	.048	1.2	100	30.5	1	2
HSTTN63-C	5/8	15.9	.625	15.9	.357	9.1	.052	1.3	100	30.5	1	2
HSTTN75-C	3/4	19.0	.750	19.0	.428	10.9	.057	1.5	100	30.5	1	2
HSTTN88-C	7/8	22.2	.875	22.2	.500	12.7	.065	1.7	100	30.5	1	2
HSTTN100-C	1	25.4	1.00	25.4	.570	14.5	.070	1.8	100	30.5	1	2
HSTTN125-C	1 1/4	31.8	1.25	31.8	.714	18.1	.087	2.2	100	30.5	1	2
HSTTN150-C	1 1/2	38.1	1.50	38.1	.875	21.8	.095	2.4	100	30.5	1	2
HSTTN200-Q	2	50.8	2.00	50.8	1.14	29.0	.110	2.8	25	7.5	1	2
HSTTN300-Q	3	76.2	3.00	76.2	1.71	43.4	.125	3.8	25	7.5	1	2

## HSTTT TEFLON† Heat Shrink 4 ft. pieces

- Applications include insulating, protecting, and color coding wires and cables
- Voltage: 600V
- Shrink ratio: 2:1
- Mil Spec: AMS-DTL-23053/12 Class 3
- Temperature range: -400°F to 500°F (-240°C to 260°C)
- Color: Opaque
- For dry locations
- Material: Polytetrafluoroethylene (PTFE)



Part Number	Nominal Diameter		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Length		Std. Pkg. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm	ft	M	
HSTTT03-48-Q	30 AWG	.051	.034	.9	.015	.4	.009	.2	4	1.2	25
HSTTT04-48-Q	28 AWG	.081	.038	1.0	.018	.5	.009	.2	4	1.2	25
HSTTT046-48-Q	26 AWG	.13	.046	1.2	.022	.5	.010	.3	4	1.2	25
HSTTT05-48-Q	24 AWG	.21	.050	1.3	.027	.7	.010	.3	4	1.2	25
HSTTT055-48-Q	22 AWG	.33	.055	1.4	.032	.8	.012	.3	4	1.2	25
HSTTT06-48-Q	20 AWG	.52	.060	1.5	.039	1.0	.012	.3	4	1.2	25
HSTTT08-48-Q	18 AWG	.82	.076	1.9	.049	1.2	.012	.3	4	1.2	25

†TEFLON is a registered trademark of E.I. du Pont de Nemours and Company.

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## HSTTT TEFLON‡ Heat Shrink 4 ft. pieces (continued)

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

Part Number	Nominal Diameter		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Length		Std. Pkg. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm	ft	M	
HSTTT09-48-Q	16 AWG	1.31	.093	2.3	.061	1.6	.012	.3	4	1.2	25
HSTTT12-48-Q	14 AWG	2.08	.120	3.0	.072	1.8	.012	.3	4	1.2	25
HSTTT15-48-Q	12 AWG	3.31	.150	3.8	.089	2.3	.012	.3	4	1.2	25
HSTTT19-48-Q	10 AWG	5.26	.191	4.9	.112	2.8	.012	.3	4	1.2	25
HSTTT24-48-Q	8 AWG	8.36	.240	6.0	.141	3.6	.015	.4	4	1.2	25
HSTTT30-48-Q	6 AWG	13.3	.302	7.7	.178	4.5	.015	.4	4	1.2	25
HSTTT37-48-Q	4 AWG	21.1	.370	9.4	.224	5.7	.015	.4	4	1.2	25
HSTTT43-48-Q	2 AWG	33.6	.430	10.9	.278	7.0	.015	.4	4	1.2	25
HSTTT47-48-Q	0 AWG	53.5	.470	11.9	.347	8.8	.015	.4	4	1.2	25
HSTTT56-48-5	9/16	14.2	.560	14.2	.399	10.1	.015	.4	4	1.2	5
HSTTT66-48-5	5/8	15.9	.655	16.6	.462	11.7	.018	.5	4	1.2	5
HSTTT75-48-5	3/4	19.0	.750	19.0	.524	13.3	.018	.5	4	1.2	5
HSTTT93-48-5	15/16	23.6	.930	23.6	.655	16.6	.020	.5	4	1.2	5
HSTTT112-48-5	1 1/8	28.6	1.12	26.6	.786	20.0	.025	.6	4	1.2	5
HSTTT131-48-2	1 5/16	33.3	1.310	33.3	.911	23.1	.030	.8	4	1.2	2
HSTTT150-48-2	1 1/2	38.1	1.500	38.1	1.036	26.3	.030	.8	4	1.2	2

‡TEFLON is a registered trademark of E.I. du Pont de Nemours and Company.

## HSTTK KYNAR▲ Heat Shrink 4 ft. pieces

D1. Terminals

- Applications include insulating, protecting, and color coding wires and cables

- Flammability: Meets UL224 VW-1

D2. Power & Grounding Connectors

- Excellent chemical and abrasion resistance
- Use in high temperature or solvent rich environment
- Voltage: 600V
- Shrink ratio: 2:1

- Mil Spec: AMS-DTL-23053/8

- Temperature range: -67°F to 347°F (-55°C to 175°C)

- For dry locations

- Material: Cross-linked Polyvinylidene Fluoride (PVDF)



E1. Labeling System



E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

Part Number	Nominal Diameter		Min. Expanded I.D.		Nominal Recovered Wall Thickness		Length		Std. Pkg. Qty.
	In.	mm	In.	mm	In.	mm	ft	M	
HSTTK05-48-Q	3/64	1.2	.046	1.2	.010	.3	4	1.2	25
HSTTK06-48-Q	1/16	1.6	.063	1.6	.010	.3	4	1.2	25
HSTTK09-48-Q	3/32	2.4	.093	2.4	.010	.3	4	1.2	25
HSTTK12-48-Q	1/8	3.2	.125	3.2	.010	.3	4	1.2	25
HSTTK19-48-Q	3/16	4.8	.187	4.8	.010	.3	4	1.2	25
HSTTK25-48-Q	1/4	6.4	.250	6.4	.010	.3	4	1.2	25
HSTTK38-48-Q	3/8	9.5	.375	9.5	.012	.3	4	1.2	25
HSTTK50-48-5	1/2	12.7	.500	12.7	.012	.3	4	1.2	5
HSTTK75-48-5	3/4	19.0	.750	19.0	.017	.4	4	1.2	5
HSTTK100-48-5	1	25.4	1.00	25.4	.019	.5	4	1.2	5

▲KYNAR is a registered trademark of Atofina Chemicals, Inc.

## HSTTVA Heat Shrink 4 ft. Pieces

- Applications include insulating, protecting, and color coding wires and cables
- Flexible tubing with an adhesive inner wall which seals and protects components from moisture and corrosion
- Voltage rating: 600V
- Shrink ratio: 2:1

- Flammability: Highly flame retardant outer wall meets UL224 VW-1
- Mil Spec: AMS-DTL-23053/4 Class 2
- Temperature range: -67°F to 230°F (-55°C to 110°C)
- For damp locations
- Material: Adhesive lined black cross-linked Polyolefin



Part Number	Nominal Diameter		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Std. Pkg. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm	
<b>HSTTVA12-48-Q</b>	1/8	3.2	.125	3.2	.062	1.6	.020	.5	25
<b>HSTTVA19-48-Q</b>	3/16	4.8	.187	4.8	.093	2.4	.022	.6	25
<b>HSTTVA25-48-Q</b>	1/4	6.4	.250	6.4	.125	3.2	.030	.8	25
<b>HSTTVA38-48-Q</b>	3/8	9.5	.375	9.5	.187	4.8	.031	.8	25
<b>HSTTVA50-48-5</b>	1/2	12.7	.500	12.7	.250	6.4	.032	.8	5
<b>HSTTVA75-48-5</b>	3/4	19.0	.750	19.0	.375	9.5	.037	.9	5
<b>HSTTVA100-48-5</b>	1	25.4	1.00	25.4	.500	12.7	.046	1.2	5
<b>HSTTVA150-48-5</b>	1 1/2	38.1	1.50	38.1	.750	19.0	.049	1.2	5

## HSTTA Heat Shrink 6 In. Pieces

- Applications include insulating, protecting, and color coding wires and cables
- Flexible tubing with an adhesive inner wall which seals and protects components from moisture and corrosion
- Voltage rating: 600V
- Shrink ratio: 3:1

- Flammability: Outer wall flame retardant
- Mil Spec: AMS-DTL-23053/4 Class 3
- Temperature range: -67°F to 230°F (-55°C to 110°C)
- For damp locations
- Material: Adhesive lined black cross-linked Polyolefin



Part Number	Nominal Diameter/Size		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm		
<b>HSTTA19-Y</b>	3/16	4.8	.187	4.8	.062	1.6	.040	1.0	1	10
<b>HSTTA25-Y</b>	1/4	6.4	.250	6.4	.080	2.0	.040	1.0	1	10
<b>HSTTA38-Y</b>	3/8	9.5	.375	9.5	.120	3.0	.055	1.4	1	10
<b>HSTTA50-Y</b>	1/2	12.7	.500	12.7	.160	4.1	.070	1.8	1	10
<b>HSTTA75-Y</b>	3/4	19.0	.750	19.0	.250	6.4	.085	2.2	1	10
<b>HSTTA100-Y</b>	1	25.4	1.00	25.4	.320	8.1	.100	2.5	1	10
<b>HSTTA150-Y</b>	1 1/2	38.1	1.50	38.1	.510	12.9	.100	2.5	1	10

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## HSTTRA Heat Shrink 4 ft. pieces

B1. Cable Ties

- Applications include insulating, protecting, and color coding wires and cables
- Semi-rigid tubing with an adhesive inner wall seals and protects components from moisture and corrosion
- Voltage rating: 600V
- Shrink ratio: 2.5:1

- Mil Spec: AMS-DTL-23053/4 Class 1
- Temperature range: -67°F to 230°F (-55°C to 110°C)
- For damp locations
- Material: Adhesive lined black cross-linked Polyolefin

B2. Cable Accessories



B3. Stainless Steel



Part Number	Nominal Diameter		Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Std. Pkg. Qty.
	In.	mm	In.	mm	In.	mm	In.	mm	
<b>HSTTRA12-48-Q</b>	1/8	3.2	.125	3.2	.023	.6	.038	1.0	25
<b>HSTTRA19-48-Q</b>	3/16	4.8	.187	4.8	.060	1.5	.043	1.1	25
<b>HSTTRA25-48-Q</b>	1/4	6.4	.250	6.4	.080	2.0	.047	1.2	25
<b>HSTTRA38-48-Q</b>	3/8	9.5	.375	9.5	.135	3.4	.050	1.3	25
<b>HSTTRA50-48-5</b>	1/2	12.7	.500	12.7	.195	5.0	.059	1.5	5
<b>HSTTRA75-48-5</b>	3/4	19.0	.750	19.0	.313	8.0	.065	1.7	5
<b>HSTTRA100-48-5</b>	1	25.4	1.00	25.4	.400	10.6	.075	1.9	5

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

### HST Thick Wall Polyolefin Heat Shrink

D1. Terminals

- Applications include insulating, protecting, and color coding wires and cables
- Adhesive-lined inner wall seals and protects against moisture
- Thick wall suitable for direct burial according to UL 486D and provides excellent protection
- Voltage rating: 600V
- Shrink ratio: 3:1

- Flammability: Flame retardant outer wall meets UL224 VW-1
- UL Listed (Except HST3.0), CSA Certified
- Mil Spec: AMS-DTL-23053/15
- Temperature range: -85°F to 230°F (-65°C to 110°C)
- For wet locations
- Material: Adhesive lined black cross-linked Polyolefin

D2. Power & Grounding Connectors



E1. Labeling System



E2. Labels

Part Number	Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Copper Conductor Size Range		Min. Cable O.D.		Max. Connector O.D.		Length		Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm	AWG/MCM	mm²	In.	mm	In.	mm	In.	mm		
<b>HST0.4-3-Q*</b>	.40	10.1	.15	3.8	.090	2.3	#12 – #6 AWG	4 – 10	.170	4.3	.350	8.9	3.00	76.2	25	100
<b>HST0.4-6-3</b>	.40	10.1	.15	3.8	.090	2.3	#12 – #6 AWG	4 – 10	.170	4.3	.350	8.9	6.00	152.4	3	30
<b>HST0.4-6-X*</b>	.40	10.1	.15	3.8	.090	2.3	#12 – #6 AWG	4 – 10	.170	4.3	.350	8.9	6.00	152.4	10	100
<b>HST0.4-48-5*</b>	.40	10.1	.15	3.8	.090	2.3	#12 – #6 AWG	4 – 10	.170	4.3	.350	8.9	48.00	1200.0	5	20

\*For color, add 2 (Red) to end of part number.

F. Index

**HST Thick Wall Polyolefin Heat Shrink (continued)**

Part Number	Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Copper Conductor Size Range		Min. Cable O.D.		Max. Connector O.D.		Length		Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm	AWG/MCM	mm <sup>2</sup>	In.	mm	In.	mm	In.	mm		
<b>HST0.8-6-3</b>	.80	20.3	.26	6.4	.110	2.8	#8 – #1/0 AWG	10 – 50	.240	6.1	.650	16.5	6.00	152.4	3	30
<b>HST0.8-6-X*</b>	.80	20.3	.26	6.4	.110	2.8	#8 – #1/0 AWG	10 – 50	.240	6.1	.650	16.5	6.00	152.4	10	100
<b>HST0.8-9-X*</b>	.80	20.3	.26	6.4	.110	2.8	#8 – #1/0 AWG	10 – 50	.240	6.1	.650	16.5	9.00	228.6	10	100
<b>HST0.8-12-5*</b>	.80	20.3	.26	6.4	.110	2.8	#8 – #1/0 AWG	10 – 50	.240	6.1	.650	16.5	12.00	304.8	5	50
<b>HST0.8-48-5*</b>	.80	20.3	.26	6.4	.110	2.8	#8 – #1/0 AWG	10 – 50	.240	6.1	.650	16.5	48.00	1200.0	5	20
<b>HST1.1-6-3</b>	1.10	27.9	.37	9.4	.120	3.0	#2 – #4/0 AWG	35 – 95	.400	10.1	.875	22.2	6.00	152.4	3	30
<b>HST1.1-6-X*</b>	1.10	27.9	.37	9.4	.120	3.0	#2 – #4/0 AWG	35 – 95	.400	10.1	.875	22.2	6.00	152.4	10	100
<b>HST1.1-9-2</b>	1.10	27.9	.37	9.4	.120	3.0	#2 – #4/0 AWG	35 – 95	.400	10.1	.875	22.2	9.00	228.6	2	20
<b>HST1.1-9-X*</b>	1.10	27.9	.37	9.4	.120	3.0	#2 – #4/0 AWG	35 – 95	.400	10.1	.875	22.2	9.00	228.6	10	100
<b>HST1.1-12-5*</b>	1.10	27.9	.37	9.4	.120	3.0	#2 – #4/0 AWG	35 – 95	.400	10.1	.875	22.2	12.00	304.8	5	50
<b>HST1.1-48-5*</b>	1.10	27.9	.37	9.4	.120	3.0	#2 – #4/0 AWG	35 – 95	.400	10.1	.875	22.2	48.00	1200.0	5	20
<b>HST1.5-9-X</b>	1.50	38.1	.50	12.7	.170	4.3	#3/0 – #400 MCM	95 – 185	.600	15.2	1.190	30.2	9.00	228.6	10	100
<b>HST1.5-12-1</b>	1.50	38.1	.50	12.7	.170	4.3	#3/0 – #400 MCM	95 – 185	.600	15.2	1.190	30.2	12.00	304.8	1	10
<b>HST1.5-12-5</b>	1.50	38.1	.50	12.7	.170	4.3	#3/0 – #400 MCM	95 – 185	.600	15.2	1.190	30.2	12.00	304.8	5	50
<b>HST1.5-48-5</b>	1.50	38.1	.50	12.7	.170	4.3	#250 – #750 MCM	240 – 500	.600	15.2	1.190	30.2	48.00	1200.0	5	15
<b>HST2.0-9-5</b>	2.00	50.8	.67	16.9	.170	4.3	#250 – #750 MCM	240 – 500	.750	19.1	1.600	40.6	9.00	228.6	5	50
<b>HST2.0-12-2</b>	2.00	50.8	.67	16.9	.170	4.3	#250 – #750 MCM	240 – 500	.750	19.1	1.600	40.6	12.00	304.8	2	20
<b>HST2.0-48-2</b>	2.00	50.8	.67	16.9	.170	4.3	#600 – #1250 MCM	300 – 625	.75	19.1	1.600	40.6	48.00	1200.0	2	8
<b>HST3.0-12-2</b>	3.00	76.2	1.00	25.4	.170	4.3	#600 – #1250 MCM	300 – 625	1.200	30.5	2.250	57.2	12.00	304.8	2	20
<b>HST3.0-48-2</b>	3.00	76.2	1.00	25.4	.170	4.3	#600 – #1250 MCM	300 – 625	1.20	30.5	2.250	57.2	48.00	1200.0	2	8

\*For color, add 2 (Red) to end of part number.

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## Heat Shrink End Caps

B1. Cable Ties

- Applications include insulating, protecting, and color coding wires and cables
- Adhesive lined inner wall seals and provides excellent protection against moisture
- Voltage rating of 600V

- Shrink ratio: 3:1
- Temperature range: -67°F to 230°F (-55°C to 110°C)
- For wet locations
- Material: Adhesive lined black cross-linked Polyolefin

B2. Cable Accessories



B3. Stainless Steel



C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

Part Number	Min. Expanded I.D.		Max. Recovered I.D.		Nominal Recovered Wall Thickness		Copper Conductor Size Range	Cap Length		Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm	In.	mm		In.	mm		
<b>HSEC0.5-X</b>	.47	11.9	.18	4.6	.100	2.5	#8 – #4 AWG	1.4	35.1	10	100
<b>HSEC0.8-X</b>	.79	20.1	.30	7.6	.100	2.5	#4 – #3/0 AWG	2.1	54.1	10	100
<b>HSEC1.0-X</b>	1.02	25.9	.45	11.4	.100	2.5	#2 – #4/0 AWG	3.2	82.0	10	100
<b>HSEC1.5-5</b>	1.58	40.1	.68	17.3	.110	2.8	#250 – #500 MCM	3.8	98.0	5	50
<b>HSEC2.0-5</b>	2.25	57.2	.87	22.1	.150	3.8	#600 – #1000 MCM	5.5	140.2	5	50
<b>HSEC4.0-2</b>	4.14	105.2	1.78	45.2	.150	3.8	#1500 – #2000 MCM	6.9	175.3	2	10
<b>HSECFR0.5-X</b>	.51	13.0	.16	4.1	.090	2.4	#8 – #6 AWG	3.00	76.2	10	100
<b>HSECFR0.8-X</b>	.75	19.0	.24	6.1	.090	2.4	#6 – #2 AWG	3.50	88.9	10	100
<b>HSECFR1.0-X</b>	1.10	27.9	.35	8.9	.120	3.0	#1 – #3/0 MCM	4.00	101.6	10	100
<b>HSECFR1.5-5</b>	1.50	38.1	.47	11.9	.160	4.1	#2/0 – #350 MCM	4.50	114.3	5	50
<b>HSECFR2.0-5</b>	2.00	50.8	.63	16.0	.160	4.1	#250 – #500 MCM	4.50	114.3	5	50

## Plastic Heat Shrink Tubing Kit Boxes



E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

Part Number	Contents	Std. Pkg. Qty.
<b>KP-HSTT1</b>	35 ea. of 3/32", 1/8" 21 ea. of 3/16", 1/4" 7 ea. of 3/8", 1/2"	1
<b>KP-HSTT2</b>	35 ea (5 ea. color) 3/32", 1/8" 21 ea (3 ea. color) 3/16", 1/4" 7 ea (1 ea. color) 3/8", 1/2"	1
<b>KP-HSTTA</b>	14 ea. 3/16" 12 ea. 1/4" 10 ea. 3/8" 6 ea. 1/2" 3 ea. 3/4" 2 ea. 1"	1



**Heat Shrink Tools and Accessories**



Part Number	Part Description	Std. Pkg. Qty.	Std. Ctn. Qty.
<b>HSG-115V-650</b>	Heat gun with temperature range of 650°F (344°C) to 900°F (482°C).	1	—
<b>HSG-A1</b>	Shrink tube reflector for tubing up to 3/4" inside diameter. Directs heat around tubing to reduce shrink time.	1	10
<b>HSG-A2</b>	Shrink tube reflector for tubing up to 1-1/2" inside diameter. Directs heat around tubing to reduce shrink time.	1	10
<b>HSG-A3</b>	Shrink tube concentrator. Directs heat toward tubing and away from heat sensitive items.	1	10
<b>HSG-A4</b>	Black polyethylene case stores heat gun, stand and all three accessories.	1	—
<b>HSG-P1</b>	Replacement Brush/Spring Kit.	1	5
<b>HSG-P2</b>	Replacement Switch 20 AMP.	1	5
<b>HSG-P3</b>	Replacement Bearing Kit.	1	5
<b>HSG-P7</b>	Replacement Heat Element 650°F.	1	—

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## Heat Shrink Installation Instructions

B1. Cable Ties

### General Instructions

Position heat shrink over the object to be covered. Using a heat gun, soft yellow flame torch, infrared heat source or oven, evenly heat the tubing until it has fully recovered and conforms to the object. Use caution not to char or burn the tubing.

B2. Cable Accessories

### Special Instructions for HSTTT

TFE Heat Shrink is the most difficult to recover due to its high shrink temperature. TFE shrink tubing must be heated to the gel state 621°F (327°C) to completely recover. This can be recognized when the tubing changes from milky white to clear. Because of the unique characteristics of this material, a controlled temperature oven will achieve the most reliable results – it is difficult to consistently recover this product using a high-temp heat gun or similar heat source. These methods have a tendency to overheat the tube in one area while other areas remain cool.

B3. Stainless Steel

C1. Wiring Duct

When recovering onto objects, use a temperature controlled oven set at 660 – 680°F (349 – 360°C) for approximately 10 minutes is recommended. It is best to place the product on a fiberglass mat or suspend as opposed to contacting the oven rack. Do NOT heat the product above 700°F (371°C), or degradation damage to the TFE polymer will occur.

C2. Surface Raceway

### Size Selection for Heat Shrink Tubing

Generally, the largest tube that shrinks down tightly onto an object should be chosen. This allows the heat shrink tubing maximum stress relief and this will yield the longest service life.

C3. Abrasion Protection

#### Example:

A multi-conductor cable needs to be covered with HSTT Type *DRY-SHRINK™* Heat Shrink. The area to be covered has a measured outside diameter of .700" (17.8mm). The two possibilities are HSTT75-48-5 and HSTT100-48-5.

C4. Cable Management

Part Number	Expanded I.D in. (mm)	Recovered I.D. in (mm)
HSTT75-48-5	.750 (19.0)	.375 (9.5)
HSTT100-48-5	1.00 (25.4)	.500 (12.7)

D1. Terminals

The proper choice is HSTT100-48-5 since the tube will recover more than HSTT75-48-5. The HSTT75-48-5 will fit over the .700" (17.8mm) outside diameter; however, this is not the proper choice since it is smaller than the HSTT100-48-5. In general, heat shrink should recover at least 10-20% to reduce stress and yield the longest service life.

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

## Recommended Tubing Size for Common Wire Types Based on Location For Insulated Wire, Non-Insulated Wire and Insulated Wire with Copper Connectors

### Instructions for Tube Selection:

1) Determine location type.

#### LOCATION:

**DRY – IP62:** A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction.

**DAMP – IP66:** Partially protected locations under canopies, marquees, roofed open porches, and like locations, and interior locations subject to moderate degrees of moisture, such as some basements, some barns and some cold-storage warehouses.

**WET – IP68:** Installations underground or in concrete slabs or masonry in direct contact with the earth, and locations subject to saturation with water or other liquids, such as vehicle washing areas, and locations exposed to weather and unprotected.

- 2) Match wire size to location type under required application – insulated wire, non-insulated wire, or insulated wire with copper connectors.
- 3) Read corresponding part number.
- 4) Part numbers with “-Y” are packages containing 6” pieces. Part numbers with “-48” are 48” pieces.
- 5) Part numbers shown below are for black heat shrink.

Wire Size	Insulated Wire			Uninsulated Wire			Insulated Wire with Copper Connector		
	DRY-SHRINK™	DAMP-SHRINK™	WET-SHRINK™	DRY-SHRINK™	DAMP-SHRINK™	WET-SHRINK™	DRY-SHRINK™	DAMP-SHRINK™	WET-SHRINK™
24	HSTT12-Y	HSTTA19-Y	—	—	—	—	HSTT12-Y	—	—
22	HSTT12-Y	HSTTA19-Y	—	—	—	—	HSTT12-Y	—	—
20	HSTT12-Y	HSTTA19-Y	—	HSTT06-Y	—	—	HSTT19-Y	HSTTA19-Y	—
18	HSTT19-Y	HSTTA19-Y	—	HSTT06-Y	—	—	HSTT19-Y	HSTTA19-Y	—
16	HSTT19-Y	HSTTA25-Y	—	HSTT06-Y	—	—	HSTT19-Y	HSTTA25-Y	—
14	HSTT19-Y	HSTTA25-Y	—	HSTT12-Y	HSTTA19-Y	—	HSTT19-Y	HSTTA25-Y	—
12	HSTT25-Y	HSTTA38-Y	HST0.4-48-5	HSTT12-Y	HSTTA19-Y	—	HSTT25-Y	HSTTA38-Y	HST0.4-48-5
10	HSTT25-Y	HSTTA38-Y	HST0.4-48-5	HSTT19-Y	HSTTA25-Y	—	HSTT25-Y	HSTTA38-Y	HST0.4-48-5
8	HSTT38-Y	HSTTA50-Y	HST0.4-48-5	HSTT25-Y	HSTTA25-Y	—	HSTT38-Y	HSTTA50-Y	HST0.4-48-5
6	HSTT50-Y	HSTTA50-Y	HST0.8-48-5	HSTT25-Y	HSTTA38-Y	HST0.4-48-5	HSTT50-Y	HSTTA50-Y	HST0.8-48-5
4	HSTT50-Y	HSTTA75-Y	HST0.8-48-5	HSTT38-Y	HSTTA38-Y	HST0.4-48-5	HSTT50-Y	HSTTA75-Y	HST0.8-48-5
3	HSTT50-Y	HSTTA75-Y	HST0.8-48-5	HSTT38-Y	HSTTA50-Y	HST0.4-48-5	HSTT50-Y	HSTTA75-Y	HST0.8-48-5
2	HSTT75-Y	HSTTA100-Y	HST0.8-48-5	HSTT50-Y	HSTTA50-Y	HST0.8-48-5	HSTT75-Y	HSTTA100-Y	HST0.8-48-5
1	HSTT75-Y	HSTTA100-Y	HST0.8-48-5	HSTT50-Y	HSTTA50-Y	HST0.8-48-5	HSTT75-Y	HSTTA100-Y	HST1.1-48-5
1/0	HSTT75-Y	HSTTA100-Y	HST1.1-48-5	HSTT50-Y	HSTTA75-Y	HST0.8-48-5	HSTT75-Y	HSTTA100-Y	HST1.1-48-5
2/0	HSTT100-Y	HSTTA100-Y	HST1.1-48-5	HSTT50-Y	HSTTA75-Y	HST0.8-48-5	HSTT100-Y	HSTTA100-Y	HST1.1-48-5
3/0	HSTT100-Y	HSTTA150-Y	HST1.1-48-5	HSTT75-Y	HSTTA100-Y	HST0.8-48-5	HSTT100-Y	HSTTA150-Y	HST1.5-48-5
4/0	HSTT100-Y	HSTTA150-Y	HST1.5-48-5	HSTT75-Y	HSTTA100-Y	HST1.1-48-5	HSTT100-Y	HSTTA150-Y	HST1.5-48-5
250	HSTT100-Y	HSTTA150-Y	HST1.5-48-5	HSTT100-Y	HSTTA100-Y	HST1.1-48-5	HSTT100-Y	HSTTA150-Y	HST1.5-48-5
300	HSTT150-48-5	HSTTA150-Y	HST1.5-48-5	HSTT100-Y	HSTTA100-Y	HST1.1-48-5	HSTT100-Y	HSTTA150-Y	HST1.5-48-5
350	HSTT150-48-5	HSTTA150-Y	HST1.5-48-5	HSTT100-Y	HSTTA150-Y	HST1.5-48-5	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2
400	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2	HSTT100-Y	HSTTA150-Y	HST1.5-48-5	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2
500	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2	HSTT100-Y	HSTTA150-Y	HST1.5-48-5	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2
600	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2
700	HSTT200-48-5	HSTTA150-Y	HST2.0-48-2	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2	HSTT200-48-5	—	HST2.0-48-2
750	HSTT200-48-5	HSTTA150-Y	HST3.0-48-2	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2	HSTT200-48-5	—	HST3.0-48-2
800	HSTT200-48-5	—	HST3.0-48-2	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2	HSTT200-48-5	—	HST3.0-48-2
900	HSTT200-48-5	—	HST3.0-48-2	HSTT150-48-5	HSTTA150-Y	HST2.0-48-2	HSTT200-48-5	—	HST3.0-48-2
1000	HSTT200-48-5	—	HST3.0-48-2	HSTT200-48-5	HSTTA150-Y	HST2.0-48-2	HSTT200-48-5	—	HST3.0-48-2
1250	HSTT300-48-2	—	HST3.0-48-2	HSTT200-48-5	HSTTA150-Y	HST2.0-48-2	—	—	HST3.0-48-2
1500	HSTT300-48-2	—	HST3.0-48-2	HSTT200-48-5	—	HST3.0-48-2	—	—	—
1750	HSTT300-48-2	—	HST3.0-48-2	HSTT200-48-5	—	HST3.0-48-2	—	—	—
2000	HSTT300-48-2	—	HST3.0-48-2	HSTT200-48-5	—	HST3.0-48-2	—	—	—

Sizing information is based on the following wire types: MTW, THHN, THWN, TFN, THW, TW, TF, RHW, RH, RHH AND UL1015.

THHN is the most common wire type.

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A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## IP (Ingress Protection) as defined by the International Standard IEC 529

B1. Cable Ties

The IEC 529 international standard describes a system for classifying the degrees of protection provided by the enclosures of electrical equipment and is a recognized standard around the world. An independent test laboratory has tested *PANDUIT* Heat Shrink Tubing to the IEC 529 standard. The following information exhibits the IP ratings for *PANDUIT* Heat Shrink tubing and how each of the IP ratings relates to the USA.

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

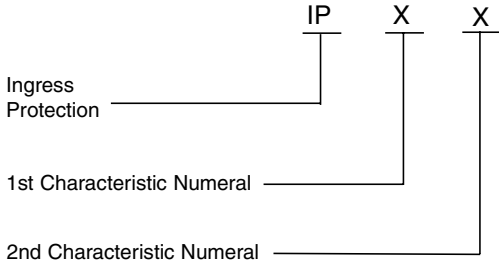
E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index



The first characteristic numeral indicates the level of protection against the ingress of solid foreign objects.

The second characteristic numeral indicates the level of protection against the ingress of water.

1st Characteristic Numeral	
Ingress Protection (IP)	Meaning for Protection
Against ingress of solid object	
0	Non-Protected
1	50mm diameter
2	12.5mm diameter
3	2.5mm diameter
4	1.0mm diameter
5	Dust Protected
<i>DRY-SHRINK™</i> , <i>DAMP-SHRINK™</i> and <i>WET-SHRINK™</i> Heat Shrink Tubing	Dust Tight

2nd Characteristic Numeral		
<i>PANDUIT</i> Heat Shrink	Ingress Protection (IP)	Meaning for Protection
	Against ingress of water	
	0	Non-Protected
	1	Vertically Dripping
<i>DRY-SHRINK™</i> Heat Shrink Tubing	2	Dripping (15° tilted)
	3	Spraying
	4	Splashing
	5	Jetting
<i>DAMP-SHRINK™</i> Heat Shrink Tubing	6	Powerful Jetting
	7	Temporary Immersion
<i>WET-SHRINK™</i> Heat Shrink Tubing	8	Continuous Immersion

	Intended Application Location	Ingress Protection Rating	Description
	<b>DRY</b> Locations not normally subject to moisture	<b>IP62</b>	Protected against the ingress of dust but not protected against the ingress of water
	<b>DAMP</b> Locations subjected to moderate degrees of water and moisture	<b>IP66</b>	Protected against the ingress of dust and protected against the ingress of power jet of water
	<b>WET</b> Locations are defined as underground burial or immersion in water	<b>IP68</b>	Protected against the ingress of dust and protected against the ingress of water to a depth of 10 meters

*DRY-SHRINK™* Heat Shrink has been tested in accordance with EN 60529 paragraph 13.4 thereby providing *PANDUIT®* *DRY-SHRINK™* Heat Shrink with an ingress protection rating of IP62.

*DAMP-SHRINK™* Heat Shrink has been tested in accordance with EN 60529 paragraph 13.4 and with paragraph 14.2.6 thereby providing *PANDUIT®* *DAMP-SHRINK™* with an ingress protection rating of IP66.

*WET-SHRINK™* Heat Shrink has been tested in accordance with EN 60529 paragraph 13.4, paragraph 14.2.6 and with paragraph 14.2.7 thereby providing *WET-SHRINK™* Heat Shrink with an ingress protection rating of IP68. *PANDUIT®* *WET-SHRINK™* Heat Shrink has passed EN 60529 paragraph 14.2.7 at depth of 10 meters.

## DRY-SHRINK™, DAMP-SHRINK™ & WET-SHRINK™ Heat Shrink Tubing

### Technical Data

#### General Information

Product Type	Typical Applications	Specific Gravity	Flammability	Water Absorption	Dielectric Strength
HSTT	Economical and easy way to insulate, protect, harness and identify electrical and electronic components in a wide variety of applications. Black is U.V. Resistant.	Class 1, 1.35 Class 2, 1.0 ASTM D792	Class 1 Self Extinguishing Class 2 N/A ASTM D2671 Procedure B	.5% MAX. ASTM D570	500 V/MIL. (19.7 Kv/mm)min. ASTM D2671
HSTTV	Use where UL recognition with VW-1 rating is required. Use where the wire component cannot tolerate higher shrink temperatures, reduces application time to insulate, protect, identify, etc. Black is U.V. Resistant.	1.50 ASTM D792	Self Extinguishing ASTM D2671 Procedure C	.5% MAX. ASTM D570	500 V/MIL. (19.7 Kv/mm)min. ASTM D2671
HSTTVA	Seals and protects components from moisture and corrosion. Use where a flexible tubing is needed. Suitable for damp locations.	N/A	Self Extinguishing ASTM D2671 Procedure B	.5% MAX. ASTM D570	500 V/MIL. (19.7 Kv/mm)min. ASTM D2671
HSTTRA	Environmentally seals and protects components forming a rugged and heavy duty covering. The 2.5:1 shrink ratio is a benefit when working with connector to cable transitions. Suitable for damp locations.	N/A	N/A	.5% MAX. ASTM D570	500 V/MIL. (19.7Kv/mm)min. ASTM D2671
HSTTA	Environmentally seals and protects components. The 3:1 shrink ratio is a benefit when working with connector to cable transitions. Suitable for damp locations.	N/A	Self Extinguishing ASTM D2671 Procedure B	1.0% MAX. ASTM D570	300 V/MIL. (11.8 Kv/mm)min. ASTM D2671
HST	Seals and protects electrical connections and splices above or below ground, 3:1 shrink ratio. Suitable for outdoor and wet locations.	1.2 MAX.	Self Extinguishing ASTM D2671 Procedure C	.5% MAX. ASTM D570	200 V/MIL. (7.9 Kv/mm)min. ASTM D2671
HSTTP	Ripple free conformance around sharp bends as in appliance handles and bus bars. Good cut through and solder-iron resistance. Black is U.V. Resistant.	1.35 MAX.	Self Extinguishing ASTM D876	1.0% MAX. ASTM D570	400 V/MIL. (15.8 Kv/mm)min. ASTM D2671
HSTTN	Insulation and abrasion resistance, extensive military uses on vehicles and ship-board. Excellent chemical resistance especially to fuels and oils. Black is U.V. Resistant.	1.30 ASTM D792	Self Extinguishing ASTM D876	1.0% MAX. ASTM D570	300 V/MIL. (11.8 Kv/mm)min. ASTM D2671
HSTTK	Protection and strain relief for wires or connectors in a high temperature or solvent rich environment. Insulation of heater leads.	1.8 MAX. ASTM D792	Pass MIL-DTL-23053/8B 4.6.15.3	.5% MAX. ASTM D570	Size to (12.7mm) 800 V/MIL. (31.5Kv/mm)min Over (12.7mm) 600 V/MIL. (23.6Kv/mm)min ASTM D2671
HSTTT	High insulation and abrasion resistance. High temperature, strain relief, resists corrosive atmosphere, self lubrication and non-wetting. Can be used with fiber optics and as a strain relief for high density connectors. U.V. Resistant	2.2 MAX. ASTM D792	N/A Non-flammable	.01% MAX. ASTM D570	800 V/MIL. (31.5 Kv/mm)min. ASTM D2671

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## Part Number System for Corrugated Loom Tubing

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

CLT	100	N	-	C	630
Type	Bundle Diameter	Material		Package Size	Color Suffix
CLT = Slit Wall CLTS = Solid Wall	25 = 1/4" 35 = 5/16" 38 = 3/8" 50 = 1/2" 62 = 5/8" 75 = 3/4" 100 = 1" 125 = 1 1/4" 150 = 1 1/2" 188 = 1 7/8"	N = Heat Stabilized Nylon F = Polyethylene		X = 10' L = 50' C = 100' T = 200' D = 500'	630 = Heat Stabilized Black Nylon 6 20 = Black Polyethylene 3 = Orange Polyethylene 4 = Yellow Polyethylene

## Corrugated Loom Tubing

- Provides protection for cables
- Packaged on a reel for easy handling and dispensing of product
- For indoor use only



Part Number	Material	Color	Length Per Reel		Inside Diameter		Outside Diameter		Temperature Range	Std. Pkg. Qty.
			ft	M	In.	mm	In.	mm		
<b>Slit Wall</b>										
CLT25F-C3	Polyethylene	Orange	100	30.5	.27	6.7	.39	9.9	-40°F to 122°F (-40°C to 50°C)	1
<b>CLT25F-C20</b>	Polyethylene	Black	100	30.5	.27	6.7	.39	9.9		1
CLT38F-C3	Polyethylene	Orange	100	30.5	.41	10.5	.56	14.2		1
<b>CLT38F-C20</b>	Polyethylene	Black	100	30.5	.41	10.5	.56	14.2		1
<b>CLT50F-C3</b>	Polyethylene	Orange	100	30.5	.51	12.8	.67	17.0		1
CLT50F-C20	Polyethylene	Black	100	30.5	.51	12.8	.67	17.0		1
<b>CLT75F-C3</b>	Polyethylene	Orange	100	30.5	.76	19.3	.94	23.8		1
CLT75F-C20	Polyethylene	Black	100	30.5	.76	19.3	.94	23.8		1
<b>CLT100F-C3</b>	Polyethylene	Orange	100	30.5	.92	23.2	1.09	27.7		1
CLT100F-C20	Polyethylene	Black	100	30.5	.92	23.2	1.09	27.7		1
<b>CLT125F-L3</b>	Polyethylene	Orange	50	15.2	1.29	32.8	1.50	38.1		1
CLT125F-L4	Polyethylene	Yellow	50	15.2	1.29	32.8	1.50	38.1		1
CLT125F-L20	Polyethylene	Black	50	15.2	1.29	32.8	1.50	38.1		1
CLT150F-T3	Polyethylene	Orange	200	61.0	1.55	39.1	1.86	47.2		1
CLT150F-T4	Polyethylene	Yellow	200	61.0	1.55	39.1	1.86	47.2		1
CLT150F-T20	Polyethylene	Black	200	61.0	1.55	39.1	1.86	47.2		1
CLT150F-X3	Polyethylene	Orange	10	3.0	1.55	39.1	1.86	47.2		1
<b>CLT150F-X4</b>	Polyethylene	Yellow	10	3.0	1.55	39.1	1.86	47.2		1
<b>CLT150F-X20</b>	Polyethylene	Black	10	3.0	1.55	39.1	1.86	47.2		1
CLT188F-X3	Polyethylene	Orange	10	3.0	1.88	47.8	2.17	55.1		1
CLT188F-X4	Polyethylene	Yellow	10	3.0	1.88	47.8	2.17	55.1	1	
CLT188F-X20	Polyethylene	Black	10	3.0	1.88	47.8	2.17	55.1	1	

Reel packaging may contain splices.  
Contact Customer Service for further information.

## Corrugated Loom Tubing (continued)

Part Number	Material	Color	Length Per Reel		Inside Diameter		Outside Diameter		Temperature Range	Std. Pkg. Qty.
			ft	M	In.	mm	In.	mm		
<b>Solid Wall</b>										
CLTS25F-C3	Polyethylene	Orange	100	30.5	.28	7.0	.39	9.9	-40°F to 122°F (-40°C to 50°C)	1
CLTS25F-C	Polyethylene	Black	100	30.5	.28	7.0	.39	9.9		1
CLTS38F-C3	Polyethylene	Orange	100	30.5	.42	10.5	.56	14.1		1
CLTS38F-C	Polyethylene	Black	100	30.5	.42	10.5	.56	14.1		1
CLTS50F-C3	Polyethylene	Orange	100	30.5	.51	12.8	.67	17.0		1
<b>CLTS50F-C</b>	Polyethylene	Black	100	30.5	.51	12.8	.67	17.0		1
CLTS75F-C3	Polyethylene	Orange	100	30.5	.76	19.3	.94	23.8		1
CLTS75F-C	Polyethylene	Black	100	30.5	.76	19.3	.94	23.8		1
CLTS100F-C3	Polyethylene	Orange	100	30.5	.92	23.2	1.09	27.7		1
CLTS100F-C	Polyethylene	Black	100	30.5	.92	23.2	1.09	27.7		1
CLTS125F-L3	Polyethylene	Orange	50	15.2	1.29	32.8	1.50	38.1		1
CLTS125F-L	Polyethylene	Black	50	15.2	1.29	32.8	1.50	38.1		1
CLTS150F-D3	Polyethylene	Orange	500	152.4	1.48	37.6	1.73	43.9		1
<b>Nylon</b>										
<b>CLT25N-C630</b>	Heat Stabilized Nylon 6.6	Black	100	30.5	.27	6.7	.39	9.9	-40°F to 230°F (-40°C to 110°C)	1
<b>CLT35N-C630</b>	Heat Stabilized Nylon 6.6	Black	100	30.5	.35	8.9	.50	12.7		1
<b>CLT38N-C630</b>	Heat Stabilized Nylon 6.6	Black	100	30.5	.41	10.5	.56	14.2		1
<b>CLT50N-C630</b>	Heat Stabilized Nylon 6.6	Black	100	30.5	.51	12.8	.67	17.0		1
<b>CLT62N-C630</b>	Heat Stabilized Nylon 6.6	Black	100	30.5	.67	16.9	.83	21.1		1
<b>CLT75N-C630</b>	Heat Stabilized Nylon 6.6	Black	100	30.5	.76	19.3	.94	23.8		1
<b>CLT100N-C630</b>	Heat Stabilized Nylon 6.6	Black	100	30.5	.92	23.2	1.09	27.7		1
<b>CLT125N-L630</b>	Heat Stabilized Nylon 6.6	Black	50	15.2	1.29	32.8	1.50	38.1		1
CLT150N-D630	Heat Stabilized Nylon 6.6	Black	500	152.4	1.55	39.1	1.86	47.2		1
CLT188N-6C630	Heat Stabilized Nylon 6.6	Black	6,000	183.0	1.88	47.8	2.17	55.1		1

Reel packaging may contain splices.  
Contact Customer Service for further information.

## Corrugated Loom Tubing Fittings

- Provide a secure way to join CLT at junctions and breakouts while improving the appearance of wire harnesses
- Color: Black
- Material: Polyethylene



Part Number	Branch Diameter		Trunk Diameter		Std. Pkg. Qty.	Std. Ctn. Qty.
	In.	mm	In.	mm		
CF382538F-Q	.38	9.5	.25	6.35	25	100
CF502550F-Q	.50	12.7	.25	6.34	25	100
CF503850F-Q	.50	12.7	.38	9.5	25	100
CF752575F-Q	.75	19.0	.25	6.4	25	100
CF753875F-Q	.75	19.0	.38	9.5	25	100

A. System Overview

## Part Number System for Braided Expandable Sleeving

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

<u>SE</u>	<u>25</u>	<u>PFR</u>	-	<u>M</u>	<u>R</u>	<u>0</u>
Type	Nominal I.D. Size	Material		Package Size	R = Reel	Color Suffix
SE = Sleeving Expandable	12 = 1/8" (3.2mm) 25 = 1/4" (6.4mm) 38 = 3/8" (9.5mm) 50 = 1/2" (12.7mm) 75 = 3/4" (19.1mm) 125 = 1 1/4" (31.8mm) 150 = 1 1/2" (38.1mm) 175 = 1 3/4" (44.5mm)	P = Polyethylene Terephthalate (PET) PFR = Polyethylene Terephthalate (PET) Flame Retardant		L = 50' (15.2M) C = 100' (30.5M) T = 200' (61.0M) D = 500' (152.4M) M = 1000' (304.8M)		0 = Black 8 = Gray 10 = White

## Braided Expandable Sleeving – Polyethylene Terephthalate

- Provides continuous abrasion protection for wires, cables, hoses, and tubing
- Highly flexible open weave will not trap heat or humidity
- Allows for use with irregular shapes



Part Number	Color	Nominal I.D.		Nominal Diameter Range		Length		Std. Pkg. Qty.	Std. Ctn. Qty.
		In	mm	In	mm	ft	M		
SE12P-TR0	Black	.12	3.2	.094 to .250	2.4 to 6.4	200	61.0	1	4
SE12P-TR8	Gray	.12	3.2	.094 to .250	2.4 to 6.4	200	61.0	1	4
SE12P-MR0	Black	.12	3.2	.094 to .250	2.4 to 6.4	1000	304.8	1	2
SE12P-MR8	Gray	.12	3.2	.094 to .250	2.4 to 6.4	1000	304.8	1	2
SE12P-MR10	White	.12	3.2	.094 to .250	2.4 to 6.4	1000	304.8	1	2
SE25P-TR0	Black	.25	6.4	.125 to .375	3.2 to 9.5	200	61.0	1	4
SE25P-TR8	Gray	.25	6.4	.125 to .375	3.2 to 9.5	200	61.0	1	4
SE25P-MR0	Black	.25	6.4	.125 to .375	3.2 to 9.5	1000	304.8	1	2
SE25P-MR8	Gray	.25	6.4	.125 to .375	3.2 to 9.5	1000	304.8	1	2
SE25P-MR10	White	.25	6.4	.125 to .375	3.2 to 9.5	1000	304.8	1	2
SE38P-TR0	Black	.38	9.5	.188 to .625	4.7 to 15.9	200	61.0	1	4
SE38P-TR8	Gray	.37	9.5	.188 to .625	4.7 to 15.9	200	61.0	1	4
SE38P-MR0	Black	.37	9.5	.188 to .625	4.7 to 15.9	1000	304.8	1	2
SE38P-MR8	Gray	.37	9.5	.188 to .625	4.7 to 15.9	1000	304.8	1	2
SE38P-MR10	White	.37	9.5	.188 to .625	4.7 to 15.9	1000	304.8	1	2
SE50P-CR0	Black	.50	12.7	.250 to .750	6.4 to 19.1	100	30.5	1	4
SE50P-CR8	Gray	.50	12.7	.250 to .750	6.4 to 19.1	100	30.5	1	4
SE50P-DR0	Black	.50	12.7	.250 to .750	6.4 to 19.1	500	500.0	1	2
SE50P-DR8	Gray	.50	12.7	.250 to .750	6.4 to 19.1	500	500.0	1	2
SE50P-DR10	White	.50	12.7	.250 to .750	6.4 to 19.1	500	500.0	1	2
SE75P-CR0	Black	.75	19.1	.500 to 1.25	12.7 to 31.8	100	30.5	1	4
SE75P-CR8	Gray	.75	19.1	.500 to 1.25	12.7 to 31.8	100	30.5	1	4
SE75P-DR0	Black	.75	19.1	.500 to 1.25	12.7 to 31.8	500	500.0	1	2
SE75P-DR8	Gray	.75	19.1	.500 to 1.25	12.7 to 31.8	500	500.0	1	2
SE75P-DR10	White	.75	19.1	.500 to 1.25	12.7 to 31.8	500	500.0	1	2
SE125P-LR0	Black	1.25	31.8	.750 to 1.50	19.1 to 38.1	50	15.2	1	4
SE125P-LR8	Gray	1.25	31.8	.750 to 1.50	19.1 to 38.1	50	15.2	1	4
SE125P-TR0	Black	1.25	31.8	.750 to 1.50	19.1 to 38.1	200	61.0	1	2
SE125P-TR8	Gray	1.25	31.8	.750 to 1.50	19.1 to 38.1	200	61.0	1	2
SE125P-TR10	White	1.25	31.8	.750 to 1.50	19.1 to 38.1	200	61.0	1	2
SE150P-LR0	Black	1.50	38.1	1.00 to 2.25	25.4 to 57.2	50	15.2	1	4
SE150P-LR8	Gray	1.50	38.1	1.00 to 2.25	25.4 to 57.2	50	15.2	1	4
SE150P-TR0	Black	1.50	38.1	1.00 to 2.25	25.4 to 57.2	200	61.0	1	2
SE150P-TR8	Gray	1.50	38.1	1.00 to 2.25	25.4 to 57.2	200	61.0	1	2
SE150P-TR10	White	1.50	38.1	1.00 to 2.25	25.4 to 57.2	200	61.0	1	2
SE175P-TR0	Black	1.75	44.5	1.25 to 2.75	31.8 to 69.8	200	61.0	1	2

Reel packaging may contain splices. Contact Customer Service for further information.



## Braided Expandable Sleeving – Flame Retardant Polyethylene Terephthalate

- Provides continuous abrasion protection for wires, cables, hoses, and tubing
- Highly flexible open weave will not trap heat or humidity
- Rated for use up to 257°F (125°C)
- Allows for use with irregular shapes
- Flammability: Meets UL224 VW-1



Part Number	Color	Nominal I.D.		Nominal Diameter Range		Length		Std. Pkg. Qty.	Std. Ctn. Qty.
		In.	mm	In.	mm	ft	M		
<b>SE12PFR-TR0</b>	Black	.12	3.2	.094 to .250	2.4 to 6.4	200	61.0	1	4
<b>SE12PFR-MR0</b>	Black	.12	3.2	.094 to .250	2.4 to 6.4	1000	304.8	1	2
SE12PFR-TR8	Gray	.12	3.2	.094 to .250	2.4 to 6.4	200	61.0	1	4
SE12PFR-MR8	Gray	.12	3.2	.094 to .250	2.4 to 6.4	1000	304.8	1	2
SE12PFR-MR10	White	.12	3.2	.094 to .250	2.4 to 6.4	1000	304.8	1	2
<b>SE25PFR-TR0</b>	Black	.25	6.4	.125 to .375	3.2 to 9.5	200	61.0	1	4
<b>SE25PFR-MR0</b>	Black	.25	6.4	.125 to .375	3.2 to 9.5	1000	304.8	1	2
SE25PFR-TR8	Gray	.25	6.4	.125 to .375	3.2 to 9.5	200	61.0	1	4
SE25PFR-MR8	Gray	.25	6.4	.125 to .375	3.2 to 9.5	1000	304.8	1	2
SE25PFR-MR10	White	.25	6.4	.125 to .375	3.2 to 9.5	1000	304.8	1	2
SE38PFR-MR8	Gray	.37	9.5	.188 to .625	4.7 to 15.9	1000	304.8	1	2
SE38PFR-MR10	White	.37	9.5	.188 to .625	4.7 to 15.9	1000	304.8	1	2
<b>SE50PFR-CR0</b>	Black	.50	12.7	.250 to .750	6.4 to 19.1	100	30.5	1	4
SE50PFR-CR8	Gray	.50	12.7	.250 to .750	6.4 to 19.1	100	30.5	1	4
<b>SE50PFR-DR0</b>	Black	.50	12.7	.250 to .750	6.4 to 19.1	500	152.4	1	2
SE50PFR-DR8	Gray	.50	12.7	.250 to .750	6.4 to 19.1	500	152.4	1	2
SE50PFR-DR10	White	.50	12.7	.250 to .750	6.4 to 19.1	500	152.4	1	2
<b>SE75PFR-CR0</b>	Black	.75	19.1	.500 to 1.25	12.7 to 31.8	100	30.5	1	4
SE75PFR-CR8	Gray	.75	19.1	.500 to 1.25	12.7 to 31.8	100	30.5	1	4
<b>SE75PFR-DR0</b>	Black	.75	19.1	.500 to 1.25	12.7 to 31.8	500	152.4	1	2
SE75PFR-DR8	Gray	.75	19.1	.500 to 1.25	12.7 to 31.8	500	152.4	1	2
SE75PFR-DR10	White	.75	19.1	.500 to 1.25	12.7 to 31.8	500	152.4	1	2
<b>SE125PFR-LR0</b>	Black	1.25	31.8	.750 to 1.50	19.1 to 38.1	50	15.2	1	4
<b>SE125PFR-TR0</b>	Black	1.25	31.8	.750 to 1.50	19.1 to 38.1	200	61.0	1	2
SE125PFR-LR8	Gray	1.25	31.8	.750 to 1.50	19.1 to 38.1	50	15.2	1	4
SE125PFR-TR8	Gray	1.25	31.8	.750 to 1.50	19.1 to 38.1	200	61.0	1	2
SE125PFR-TR10	White	1.25	31.8	.750 to 1.50	19.1 to 38.1	200	61.0	1	2
SE150PFR-LR0	Black	1.50	38.1	1.00 to 2.25	25.4 to 57.2	50	15.2	1	4
SE150PFR-LR8	Gray	1.50	38.1	1.00 to 2.25	25.4 to 57.2	50	15.2	1	4
SE150PFR-TR0	Black	1.50	38.1	1.00 to 2.25	25.4 to 57.2	200	61.0	1	2
SE150PFR-TR8	Gray	1.50	38.1	1.00 to 2.25	25.4 to 57.2	200	61.0	1	2
SE150PFR-TR10	White	1.50	38.1	1.00 to 2.25	25.4 to 57.2	200	61.0	1	2
SE175PFR-TR0	Black	1.75	44.5	1.25 to 2.75	31.8 to 69.8	200	61.0	1	2

Reel packaging may contain splices. Contact Customer Service for further information.

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## Part Number System for Non-Shrink PVC Tubing

B1. Cable Ties

**TV105**

—

**12**

**M**

**Type**

**Nominal Size**

**Package Quantity**

TV105 = PVC Tubing

1 = 1 AWG  
 12 = 12 AWG  
 6 = 6 AWG  
 .38 = 3/8"  
 .50 = 1/2"  
 .75 = 3/4"  
 1.0 = 1"

C = 100' (30.5M)  
 TL = 250' (76.2M)  
 D = 500' (152.4M)  
 M = 1000' (304.8M)

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

## Non-Shrink PVC Tubing

- Provides insulation and protection for lead wires, wire harness assemblies, soldered joints, and components in electrical and electronic equipment
- All purpose flexible and non-shrinkable
- Resistant to heat and moisture
- UL Recognized, CSA Certified

- Flammability: Meets UL224 VW-1
- Voltage rating: 300V and 600V
- ASTM D-922 Grade CFR
- MIL-I-631 Type F, Form U, Grade C- Class 1 Category 1
- Material: Polyvinyl chloride (PVC)

C2. Surface Raceway

C3. Abrasion Protection



C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

Part Number	Color	Nominal Size	Length		Max. Inside Diameter		Wall Thickness		Max. Voltage Rating	Std. Pkg. Qty.	Std. Ctn. Qty.
			ft	M	In.	mm	In.	mm			
<b>TV105-12MY</b>	Clear	12 AWG	1000	304.8	.089	2.26	.016	.41	300V	1	2
<b>TV105-12M20Y</b>	Black	12 AWG	1000	304.8	.089	2.26	.016	.41	300V	1	2
<b>TV105-6MY</b>	Clear	6 AWG	1000	304.8	.178	4.52	.020	.51	300V	1	2
<b>TV105-6M20Y</b>	Black	6 AWG	1000	304.8	.178	4.52	.020	.51	300V	1	2
<b>TV105-1MY</b>	Clear	1 AWG	1000	304.8	.311	7.89	.020	.51	300V	1	—
<b>TV105-1M20Y</b>	Black	1 AWG	1000	304.8	.311	7.89	.020	.51	300V	1	—
<b>TV105-.38DY</b>	Clear	3/8	500	152.4	.399	10.13	.025	.64	600V	1	—
<b>TV105-.38D20Y</b>	Black	3/8	500	152.4	.399	10.13	.025	.64	600V	1	—
<b>TV105-.50D20Y</b>	Black	1/2	500	152.4	.524	13.30	.025	.64	600V	1	—
<b>TV105-.75TLY</b>	Clear	3/4	250	76.2	.786	19.96	.035	.89	600V	1	—
<b>TV105-.75TL20Y</b>	Black	3/4	250	76.2	.786	19.96	.035	.89	600V	1	—
<b>TV105-1.0CY</b>	Clear	1	100	30.5	1.036	26.31	.035	.89	600V	1	2
<b>TV105-1.0C20Y</b>	Black	1	100	30.5	1.036	26.31	.035	.89	600V	1	2

## Flammability Tests and Classification

### Abrasion Protection Products Flammability Tests and Classifications



- A number of test procedures have been developed which can be used for the evaluation and comparison of various materials to support combustion
- Review the following classifications to find which category is designed to suit your abrasion and protection applications

### UL94 Vertical Burning Test

Test samples of material, with dimension  $125 \pm 5\text{mm}$  by  $13.0 \pm 5\text{mm}$  and provided in the minimum and maximum thickness of the intended end use product, are tested in an unconditioned (as manufactured) state and in a conditioned state (7 days at  $168\text{F}^\circ$ ,  $75^\circ\text{C}$ ). The test requires the placement of a precisely controlled flame under a vertically supported specimen for a 10 second period. The flame is removed and the duration of flaming is recorded. If the flame extinguishes, the specimen is immediately subjected to a second 10 second ignition period. Duration of flaming is again recorded. A piece of 100% cotton is placed under the specimen. Also observed and documented is if the sample drips flaming particles that ignite the cotton indicator below.

#### Materials Classification

Criteria Conditions	V-0	V-1	V-2
Afterflame time for each individual specimen $t_1$ or $t_2$	$\leq 10\text{s}$	$\leq 30\text{s}$	$\leq 30\text{s}$
Total afterflame time for any condition set ( $t_1$ plus $t_2$ for the 5 specimens)	$\leq 50\text{s}$	$\leq 250\text{s}$	$\leq 250\text{s}$
Afterflame plus afterglow time for each individual specimen after the second flame application ( $t_2 + t_3$ )	$\leq 30\text{s}$	$\leq 60\text{s}$	$\leq 60\text{s}$
Afterflame or afterglow of any specimen up to the holding clamp	No	No	No
Cotton indicator ignited by flaming particles or drops	No	No	Yes

$t_1$	After flame time after first flame application
$t_2$	After flame time after flame application
$t_3$	After glow time after second flame application

### MATERIALS CLASSIFIED UL-94 HB

- Specimens shall have a maximum burn rate of  $<1.5 \text{ in./min}$  over 3 inches of thickness of  $.120''$  to  $.5''$
- Specimens shall have a maximum burn rate of  $<30 \text{ in./min}$  over 3 inches for a thickness less than  $.120''$

### UL224 VERTICAL WIRE FLAME TEST

Samples of fully recovered tubing are placed over a length of fine spring steel music wire. The test requires the precise placement of a controlled flame that contacts the heat shrink tubing. The flame is applied in five fifteen second intervals with a time period between applications. If the flame extinguishes immediately after the first flame removal, subsequent flame applications are made to the tubing. Duration of specimen flaming is noted. A piece of surgical cotton is placed under the specimen. If a flaming or glowing piece of tubing drips and ignites the cotton, this is also noted.

### MATERIALS CLASSIFIED AS VW-1 SHALL:

- Not flame or glow longer than 60 seconds following any of the five applications of the flame
- Not ignite or damage more than 25% of kraft paper flag that is placed around the top of the tubing
- Not have any specimens which drip flaming particles and ignite the surgical cotton located  $9 \frac{1}{2}$  inches below the test specimen

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

## Abrasion Protection Materials Technical Data

		Ratings and Approvals			Physical Properties				Chemical Resistance																		
		UL Temperature Index	Flammability (UL94)	Melting Temperature	Abrasion Resistance (Lower number is better)	Specific Gravity (D792)	Minimum Tensile @23°C (psi)	Water Absorption (Max. 24 hrs.)	Organic Solvents	Alkalies	Acids	Petro-Chemicals															
A. System Overview	B1. Cable Ties	B2. Cable Accessories	B3. Stainless Steel	C1. Wiring Duct	C2. Surface Raceway	C3. Abrasion Protection	C4. Cable Management	D1. Terminals	D2. Power & Grounding Connectors	E1. Labeling System	E2. Labels	E3. Pre-Printed & Write-On Markers	E4. Lockout/Tagout & Safety Solutions	F. Index	<b>Natural Polyethylene</b> Lowest cost material for indoor use. Natural is available in all sizes.	-40°F (-40°C) to 122°F (50°C)	HB	239°F (115°C)	22 mg	.91-.93	1400 (D368)	.01%	Resistant below 140°F (60°C) except to chlorinated solvents	Resistant	Resistant except to oxidizing acids	Some Discoloration	
																<b>Weather Resistant Polyethylene</b> This material has the same properties as natural polyethylene, and also has additives which allow it to resist the effects of ultraviolet light and acid rain in an outdoor environment.	-40°F (-40°C) to 122°F (50°C)	HB	239°F (115°C)	20 mg	.93-1.09	2000 (D368)	.03%	Resistant below 140°F (60°C) except to chlorinated solvents	Resistant	Resistant except to oxidizing acids	No Discoloration
																<b>Fire Resistant Polyethylene</b> UL94-V2 Rating This material is self extinguishing and passes the UL 94 flame retardant test with V2 rating.	-40°F (-40°C) to 122°F (50°C)	V-2	239°F (115°C)	27 mg	1.00-1.30	1400 (D368)	.02%	Resistant below 140°F (60°C) except to chlorinated solvents	Resistant	Resistant except to oxidizing acids	Some Discoloration
																<b>Flame Retardant Polyethylene</b> UL94-V0 Rating. This material is self extinguishing and passes the UL94 flame retardant test with a V0 rating.	-40°F (-40°C) to 194°F (90°C)	V-0	270°F (132°C)	22 mg	1.23-1.37	1500 (D368)	.02%	Resistant except to halogenated hydrocarbons	Resistant	Resistant	Resistant Some Discoloration
																<b>Nylon 6.6</b> Nylon is strong, durable, self-extinguishing material for indoor use up to 149°F. It offers a combination of lightweight, wide temperature range, and high abrasion resistance. This material is suitable for applications where heavy vibration or stress exists on the wiring or tubing.	-40°F (-40°C) to 149°F (65°C)	V-2	505°F (263°C)	7 mg	1.13-1.15	12,400 (D368)	1.2%	Resistant except to halogenated hydrocarbons	Resistant	Not recommended	Resistant No Discoloration
																<b>Weather Resistant Nylon</b> This material has the same properties as natural Nylon and also has additives which allow it to resist the effects of ultraviolet light in an outdoor environment. This product is available in black only.	-40°F (-40°C) to 149°F (65°C)	V-2	505°F (263°C)	7 mg	1.13-1.15	12,000 (D368)	1.2%	Resistant except to halogenated hydrocarbons	Resistant	Not recommended	Resistant No Discoloration
																<b>TEFLON‡</b> This material is a non-flammable, fluorocarbon resin material. Suitable for use in any application (including nuclear containment). It is rated up to 356°F. Color: Opaque to Translucent	-400°F (-240°C) to 500°F (260°C)	V-0	648°F (342°C)	7 mg	2.13-2.22	3000 (D876)	.01%	Resistant	Resistant	Resistant	Resistant No Discoloration
																<b>Natural Polyethylene</b> Lowest cost material for indoor use up to 50°C. Natural is available in all sizes.	-40°F (-40°C) to 122°F (50°C)	HB	115°C	22 mg	.91-.93	1400 (D638)	.01%	Resistant below 60°C except to chlorinated solvents	Resistant	Resistant except to oxidizing acids	Some Discoloration
																<b>Flame Retardant Polyethylene</b> UL94-V0 Rating. This material is self extinguishing and passes the UL94 flame retardant test with a V0 rating.	-40°F (-40°C) to 194°F (90°C)	V-0	132°C	22 mg	1.15	1500 (D638)	.02%	Resistant except to halogenated hydrocarbons	Resistant	Resistant	Resistant Some Discoloration
																<b>Polyethylene Terephthalate (PET)</b> This material is a thermoplastic polyester material designed for indoor applications. It is rated for use up to 257°F and will tolerate short-term exposure up to 446°F. Colors: Black, White and Gray	-94°F (-70°C) to 257°F (125°C)	HB	500°F (260°C)	—	1.31	100,000 (D876)	.08%	Resistant to some solvents	Resistant to most weak bases	Resistant	Resistant No Discoloration
<b>Flame Ret. Polyethylene Terephthalate (PET)</b> This material is a self-extinguishing thermoplastic polyester that can be used indoors. It is also rated for use up to 257°F and will tolerate short term exposure up to 446°F. It is provided with tracers to identify the flame retardant material.	-94°F (-70°C) to 257°F (125°C)	UL224 VW-1	608°F (320°C)	—	1.39	100,000 (D876)	.08%	Resistant to some solvents	Resistant to most weak bases	Resistant	Resistant No Discoloration																

NOTE: Typical operating temperature ranges are extended based on end use application and specific environment tests.  
 ‡TEFLON or equivalent fluorocarbon PTFE is used. TEFLON is a registered trademark of E.I. du Pont de Nemours and Company.

## Abrasion Protection Materials Technical Data (continued)

		Ratings and Approvals			Physical Properties			Chemical Resistance				
		UL Temperature Index	Flammability (UL94)	Melting Temperature	Abrasion Resistance (Lower number is better)	Specific Gravity (D792)	Minimum Tensile @ 23°C (psi)	Water Absorption (Max. 24 hrs.)	Organic Solvents	Alkalies	Acids	Petro-Chemicals
CLT	<b>Black Polyethylene</b> Lowest cost material is for use up to 122°F. Other colors may be available.	-40°F (-40°C) to 122°F (50°C)	HB	—	—	.926-.940	1500 (D638)	—	Resistant except to halogenated hydrocarbons	Resistant	Resistant	Resistant No Discoloration
	<b>Nylon 6</b> Nylon is a strong, impact modified, heat stabilized, durable high abrasion resistant material.	-40°F (-40°C) to 230°F (110°C)	V-2	410°F (211°C)	—	1.06-1.16	8000 (D638)	1.3%	Resistant except to halogenated hydrocarbons	Resistant	Not recommended	Resistant No Discoloration
PVC	<b>PVC Non-Shrink Tubing</b> This material provides insulation and protection for continuous use at temperature -4°F (-20°C) to 221°F (105°C)	-4°F (-20°C) to 221°F (105°C)	UL224 VW-1	—	—	1.35	2500 (D876)	—	Resistant except to aromatic hydrocarbons, ketones and esters	Resistant	Resistant	Resistant No Discoloration
CLT FITTINGS	<b>Black Polyethylene</b> Lowest cost material is for use up to 65°F.	—	UL94 HB	—	—	1.04	3,900 (D638)	.02-.03%	Resistant except to halogenated hydrocarbons	Resistant	Resistant except to oxidizing acids	Resistant Some Discoloration
GROMMET EDGING	<b>Natural Polyethylene</b> Lowest cost material for indoor use up to 122° F. Natural is available in all sizes.	-40°F (-40°C) to 122°F (50°C)	HB	239°F (115°C)	22 mg	.91-.93	1400 (D638)	—	Resistant below 140°F (60°C) except to chlorinated solvents	Resistant	Resistant except to oxidizing acids	Some Discoloration
	<b>Weather Resistant Polyethylene</b> This material has the same properties as natural polyethylene, and also has additives which allow it to resist the effects of ultraviolet light and acid rain in an outdoor environment. This product is available only.	-40°F (-40°C) to 122°F (50°C)	HB	239°F (115°C)	20 mg	.93-1.09	2000 (D638)	.03%	Resistant below 140°F (60°C) except to chlorinated solvents	Resistant	Resistant except to oxidizing acids	No Discoloration
	<b>Flame Retardant Polyethylene</b> UL94-V0 Rating This material is self extinguishing and passes the UL94 flame retardant test with a V0 rating.	-40°F (-40°C) to 140°F (60°C)	V-0	270°F (132°C)	22 mg	1.23-1.37	1200	.02%	Resistant below 140°F (60°C) except to chlorinated solvents	Resistant	Resistant except to oxidizing acids	Some Discoloration
	<b>Nylon</b> Nylon is strong, durable, self-extinguishing material for indoor use up to 149°F. It offers a combination of lightweight, wide temperature range, and high abrasion resistance. This material is suitable for applications where heavy vibration or stress exists on the wiring or tubing.	-40°F (-40°C) to 149°F (65°C)	V-2	491°F (255°C)	7 mg	1.03-1.15	12,400 (D638)	1.5%	Resistant except to phenols and formic acid	Resistant	Resistant to most weak acids	No Discoloration

NOTE: Typical operating temperature ranges are extended based on end use application and specific environment tests.

A. System Overview

B1. Cable Ties

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

A. System Overview

## Bulk Packaging Part Numbers

B1. Cable Ties

The following is an alpha-numeric cross reference of Standard package Wiring Abrasion Protection parts with the corresponding Bulk Packaging part numbers.

B2. Cable Accessories

B3. Stainless Steel

C1. Wiring Duct

C2. Surface Raceway

C3. Abrasion Protection

C4. Cable Management

D1. Terminals

D2. Power & Grounding Connectors

E1. Labeling System

E2. Labels

E3. Pre-Printed & Write-On Markers

E4. Lockout/Tagout & Safety Solutions

F. Index

Standard Part No.	Bulk Part No.
<b>Corrugated Loom Tubing</b>	
CLT25N-C630	CLT25N-10M630
CLT38F-C20	CLT38F-5M20
CLT38N-C630	CLT38N-5M630
CLT50F-C20	CLT50F-4M20
CLT50N-C630	CLT50N-4M630
CLT62N-C630	CLT62N-2.5M630
CLT75F-C20	CLT75F-2M20
CLT75N-C630	CLT75N-2M630
CLT100F-C20	CLT100F-125M20
CLT100N-630	CLT100N-125M630
CLT125F-L20	CLT125F-.75M20
CLT125N-L630	CLT125N-.75M630
<b>Spiral Wrap</b>	
T12F-C	T12F-D
T12N-C	T12N-D
T19N-C	T19N-M
T25F-C	T25F-M
T25F-C0	T25F-MO
T25FR-C	T25FR-M
T25FR-C20	T25FR-M20

Standard Part No.	Bulk Part No.
T25N-C	T25N-M
T25N-C0	T25N-MO
T25R-C	T25R-M
T25R-C20	T25R-M20
T38F-CO	T38F-TLO
T38FR-C	T38FR-TL
T38N-C	T38N-TL
T38R-C	T38R-TL
T50F-C	T50F-TL
T50F-C0	T50F-TL0
T50F-C4	T50F-TL4
T50FR-C	T50FR-TL
T50N-C	T50N-TL
T50N-C0	T50N-TL0
T50R-C	T50R-TL
T62F-C	T62F-TL
T62F-C0	T62F-TL0
T75F-C	T75F-TL
T75F-C0	T75F-TL0
T75FR-C	T75FR-TL
T75N-C	T75N-TL