

+ Shrink-Kon  
+ Bind-It

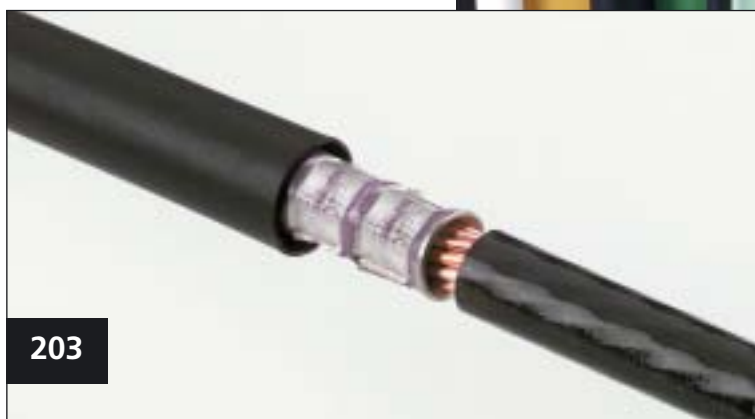
3

three



## 3. Heatshrink Systems

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An aerial view of a large aircraft manufacturing plant. Several commercial jetliners are in various stages of assembly on the floor. The hangar is filled with equipment, including yellow pallet jacks, blue service vehicles, and various tools. The aircraft are primarily white with blue and yellow accents. The text is overlaid on the central part of the image.

**+ Shrink-Kon®**  
***To insulate and  
protect cables***

MPH

EMERGENCY



## 3. Heatshrink systems

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### 3.2 Medium & thick wall heatshrink tubing and accessories **203**



## Overview

### Type PLG / PLG HSB boxes

General purpose, flexible heatshrink tubing for protection, insulation and bundling.  
Shrink ratio 2:1.

### Shrink-Kon® set

A handy carry case comprising PLG heatshrink tubing with or without the T&B hot air tool.  
Shrink ratio 2:1

### Shrink-Kon® pre-cut bags

Type PLG pre-cut strips supplied in Euroslot bags.  
Shrink ratio 2:1

### Type CMP

Dual listed CSA / UR flexible heatshrink tubing.  
Shrink ratio 2:1

### Type MLP

Flexible heatshrink tubing for high specifications. Meets Military standards.  
Shrink ratio 2:1

### Type GYS / GYS HSB boxes

Flexible green and yellow striped heatshrink tubing for the identification and marking of earthing cables and connectors.  
Shrink ratio 2:1

### Type FRH

A very flexible and highly flame retardant heatshrink tubing.  
Shrink ratio 2:1

### Type PIG / PIG HSB Boxes

A flexible heatshrink tubing with a higher shrink ratio for highly contoured components.  
Shrink ratio 3:1

### Type PKG

Semi flexible heatshrink tubing particularly suitable for corrosion and damp protected casing as well as highly contoured components.  
Shrink ratio 3:1 / 4:1

### Type KYN

Rigid transparent heatshrink tubing suitable for areas of high mechanical loads, high temperatures and chemical stress.  
Shrink ratio 2:1

### Type VIT

Highly flexible and flame retardant heatshrink tubing for enhanced protection.  
Shrink ratio 2:1

### Type ZHFR

Zero Halogen and flame retardant flat heatshrink tubing for use in contained areas.  
Shrink ratio 2:1

Select your criteria and you will find the best product for your requirement (in the blue cell)

Figure 1

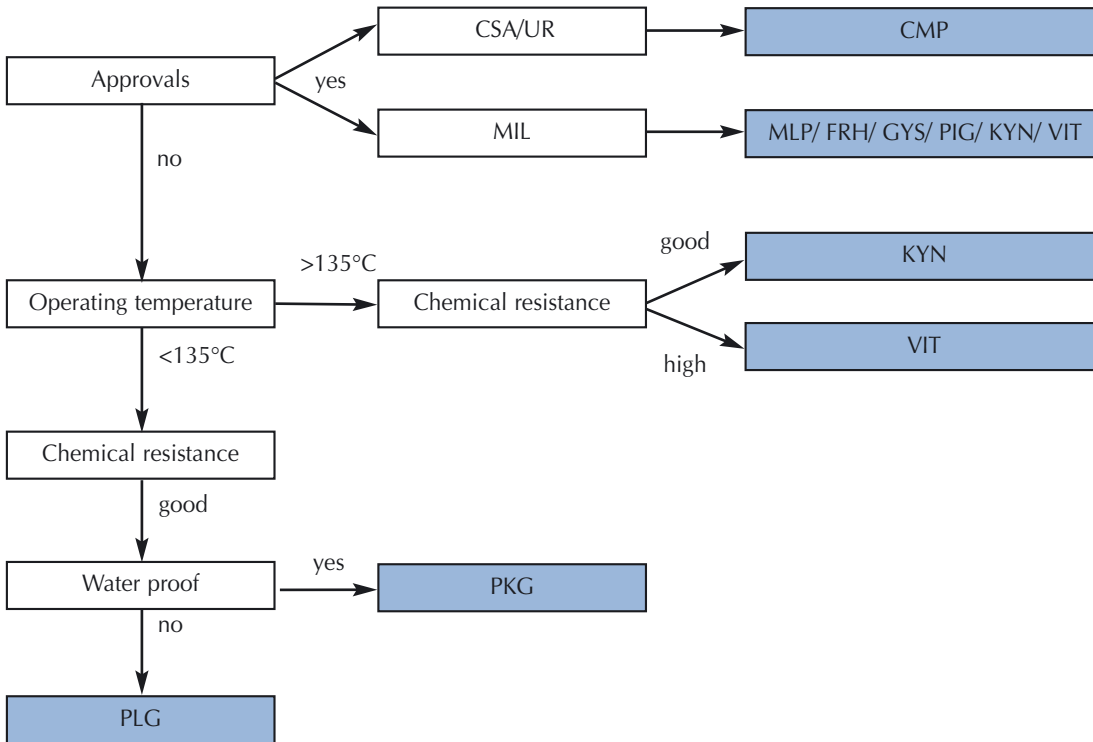
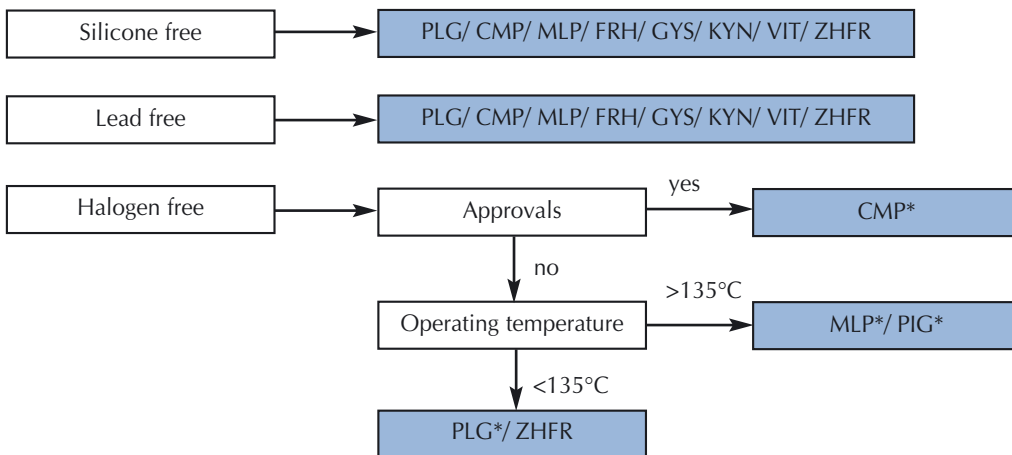


Figure 2



\* Transparent version only

TYPE	PLG	CMP	MLP	FRH	GYS	PIG	PKG	KYN	VIT	ZHFR
<b>SHRINKING TEMPERATURE</b>	from +110°C	from +110°C	from +90°C	from +110°C	from +90°C	from +90°C	from +95°C **	from +175°C	from +175°C	from +115°C
<b>OPERATING TEMPERATURE</b>	-55°C to +125°C	-55°C to +125°C	-55°C to +135°C	-55°C to +135°C	-55°C to +135°C	-55°C to +135°C	-55°C to +85°C	-55°C to +175°C	-55°C to +220°C	-40°C to +105°C
<b>SHRINK RATIO</b>	2:1	2:1	2:1	2:1	2:1	3:1	3:1 / 4:1	2:1	2:1	2:1
<b>DIELECTRIC STRENGTH</b>	20 KV/mm	20 KV/mm	20 KV/mm	24 KV/mm	20 KV/mm	20 KV/mm	10 KV/mm	25 KV/mm	6 KV/mm	24 KV/mm
<b>RESISTIVITY (Ohm-cm)</b>	10 <sup>14</sup>	10 <sup>15</sup>	10 <sup>15</sup>	10 <sup>14</sup>	10 <sup>14</sup>	10 <sup>14</sup>	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>12</sup>	10 <sup>16</sup>
<b>MECH. BEHAVIOUR MATERIAL PROPERTIES</b>	flexible PE Polyolefin	flexible PE Polyolefin	flexible PE Polyolefin	flexible PE Polyolefin	flexible PE Polyolefin	flexible PE Polyolefin	semi-rigid PE Polyolefin	rigid Kynar**** Poly-vinylidene fluoride	highly flexible Viton*** Hexafluor-propylene	flexible PE Polyolefin
<b>FLAMMABILITY</b>	self-extinguishing*	self-extinguishing*	self-extinguishing*	VW-1 *	self-extinguishing	self-extinguishing	self-extinguishing	self-extinguishing	self-extinguishing	self-extinguishing
<b>ELONGATION AT BREAK (MINIMUM VALUES)</b>	200 %	200 %	250 %	200%	200 %	250 %	200 %	200 %	250 %	200%
<b>TENSILE STRENGTH</b>	10 N/mm <sup>2</sup>	14 N/mm <sup>2</sup>	14 N/mm <sup>2</sup>	10 N/mm <sup>2</sup>	14 N/mm <sup>2</sup>	10 N/mm <sup>2</sup>	10 N/mm <sup>2</sup>	35 N/mm <sup>2</sup>	10.5 N/mm <sup>2</sup>	10 N/mm <sup>2</sup>
<b>LONGITUDINAL SHRINKAGE</b>	±10% max.	±10% max.	±10% max.	±10% max.	±5% max.	±10% max.	±15% max.	±10% max.	±10% max.	±10% max.
<b>INNER DIAMETERS BEFORE SHRINKAGE</b>	from 1.2 mm (3/64") to 101.6 mm (4")	from 1.2 mm (3/64") to 25.4 mm (1.0")	from 1.2 mm (3/64") to 25.4 mm (1.0")	from 1.2 mm (3/64") to 50.8 mm (2.0")	from 3.2 mm (1/8") to 25.4 mm (1.0")	from 1.5 mm (3/16") to 40 mm (1 37/64")	from 3.0 mm (1/8") to 40 mm (1 37/64")	from 1.2 mm (3/64") to 25.4 mm (1.0")	from 3.2 mm (1/8") to 50.8 mm (2.0")	from 2.4 mm (3/32") to 25.4 mm (1.0")
<b>WATER ABSORPTION MAX.</b>	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.05%	1%	0.20%
<b>CHEMICAL RESISTANCE</b>	good	very good	very good	good	very good	very good	good	good	very good	good to excellent
<b>SPECIFIC GRAVITY (g/cm<sup>3</sup>)</b>	1.3	1.3	1.3	1.4	1.4	1.3	1.2	1.8	1.9	1.45
<b>DIELECTRIC CONSTANT</b>	max. 2.5	max. 2.5	max. 2.5	max. 2.5	max. 2.5	max. 2.5	max. 2.5	max. 5.5	max. 9.0	max. 2.5
<b>SILICONE FREE</b>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>LEAD / CADMIUM FREE</b>	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
<b>HALOGEN FREE</b>	yes****	yes****	yes****	no	no	yes****	no	no	no	yes

For more detailed technical specifications, please see pages 216 and 217

CMP-tubing: listing acc. to UL 224; file E 79546 (M). MLP-tubing meets MIL-I-23053/5B Class I and II. FRH-tubing: exting. acc. to UL224, VW-1; file E79546

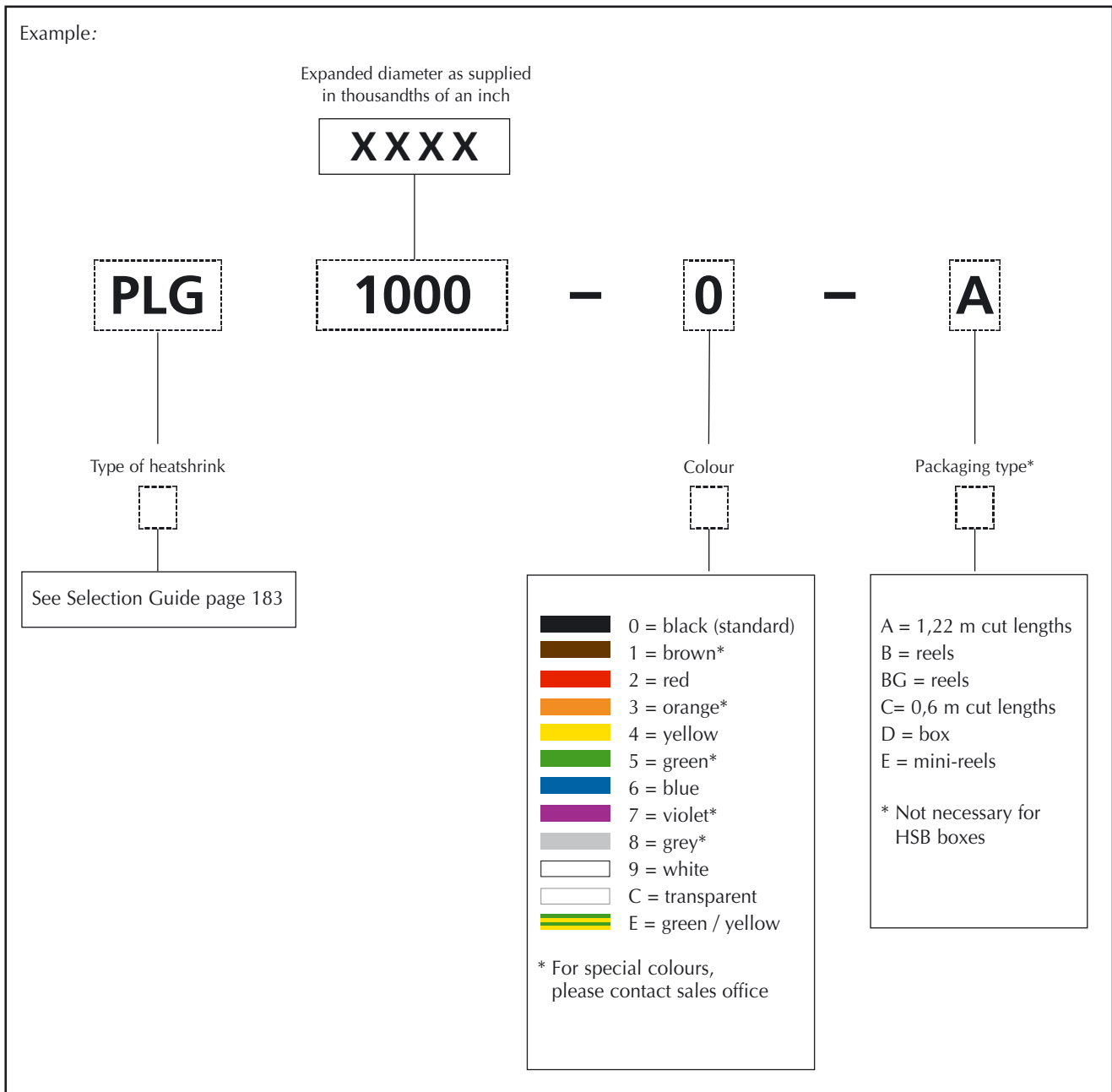
\* Transparent, not self-extinguishing

\*\* Melting point of the inner adhesive is +85°C

\*\*\* Viton is a registered trademark of DuPont

\*\*\*\* Transparent version only

\*\*\*\*\* Kynar is a registered trademark of ATOFINA





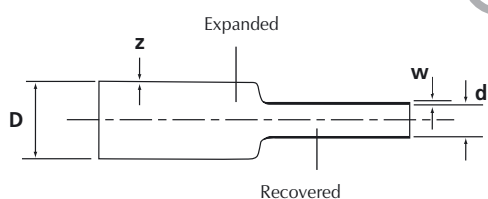
## Thin wall heatshrink tubing

## Type PLG - flexible

- Multi-purpose use for insulation, bundling, identification, strain relief and much more
- Heatshrink tubing with 14 nominal diameters to enclose components from Ø 1.2 mm to Ø 101.6 mm
- Flame retardant
- Flexible, rapid shrinkage, non-melting for effective electrical insulation
- Available colours: Black, Red, Yellow, Blue, White, Transparent (see page 185 for product reference structure)
- Special colours available on request



2:1



### Technical Information

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +125°C
Shrinking temperature	+110°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Black
Other properties	Silicone, Cadmium and Lead free Transparent version: Halogen free

### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER	
	AS SUPPLIED					REEL [m]	MINI-REEL [m]
	D [inch]	D [mm]					
PLG46-0-E	3/64	1.2	0.6	0.20	0.4	-	150
PLG63-0-E	1/16	1.6	0.8	0.20	0.4	-	150
PLG93-0-E	3/32	2.4	1.2	0.25	0.5	-	150
PLG125-0-E	1/8	3.2	1.6	0.25	0.5	-	150
PLG187-0-B	3/16	4.7	2.4	0.25	0.5	300	-
PLG187-0-E	3/16	4.7	2.4	0.25	0.5	-	75
PLG250-0-B	1/4	6.4	3.2	0.30	0.6	300	-
PLG250-0-E	1/4	6.4	3.2	0.30	0.6	-	75
PLG375-0-B	3/8	9.5	4.8	0.30	0.6	150	-
PLG375-0-E	3/8	9.5	4.8	0.30	0.6	-	75
PLG500-0-B	1/2	12.7	6.4	0.40	0.7	100	-
PLG500-0-E	1/2	12.7	6.4	0.40	0.7	-	50
PLG750-0-B	3/4	19.1	9.5	0.40	0.7	50	-
PLG750-0-E	3/4	19.1	9.5	0.40	0.7	-	30
PLG1000-0-B	1	25.4	12.7	0.45	0.8	50	-
PLG1000-0-E	1	25.4	12.7	0.45	0.8	-	30
PLG1500-0-B	1 1/2	38.1	19.0	0.50	1.0	50	-
PLG1500-0-E	1 1/2	38.1	19.0	0.50	1.0	-	30
PLG2000-0-B	2	50.8	25.4	0.55	1.1	50	-
PLG2000-0-E	2	50.8	25.4	0.55	1.1	-	30
PLG3000-0-B	3	76.2	38.1	0.65	1.3	25	-
PLG4000-0-B	4	101.6	50.8	0.70	1.4	25	-

For other colours add colour suffix to Product Reference:

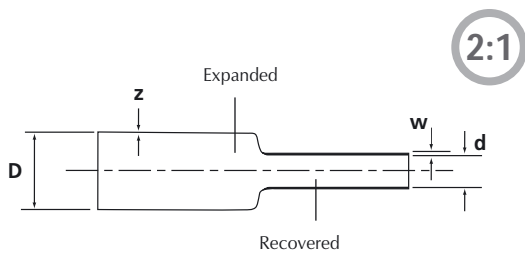
0 = black, 2 = red, 4 = yellow, 6 = blue, 9 = white and C = transparent



- Multi-purpose use for insulation, bundling, identification, strain relief and much more
- Heatshrink tubing with 14 nominal diameters to enclose components from Ø 1.2 mm to Ø 101.6 mm
- Flame retardant
- Flexible, rapid shrinkage, non melting for effective electrical insulation
- Available colours: Black, Red, Yellow, Blue, White, Transparent (see page 185 for product reference structure)
- Special colours available on request

### Technical Information

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +125°C
Shrinking temperature	+110°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Black
Other properties	Silicone, Cadmium and Lead free Transparent version: Halogen free



### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER $d$ [mm]	WALL THICKNESS BEFORE SHRINKING $z$ [mm]	WALL THICKNESS AFTER SHRINKING $w$ [mm]	TOTAL LENGTH PER BOX [m]	QUANTITY PER BOX [pieces 1.22m]
	$D$						
	[inch]	[mm]					
PLG46-0-A	3/64	1.2	0.6	0.20	0.4	30.5	25
PLG63-0-A	1/16	1.6	0.8	0.20	0.4	30.5	25
PLG93-0-A	3/32	2.4	1.2	0.25	0.5	30.5	25
PLG125-0-A	1/8	3.2	1.6	0.25	0.5	30.5	25
PLG187-0-A	3/16	4.7	2.4	0.25	0.5	30.5	25
PLG250-0-A	1/4	6.4	3.2	0.30	0.6	30.5	25
PLG375-0-A	3/8	9.5	4.8	0.30	0.6	30.5	25
PLG500-0-A	1/2	12.7	6.4	0.40	0.7	30.5	25
PLG750-0-A	3/4	19.1	9.5	0.40	0.7	12.2	10
PLG1000-0-A	1	25.4	12.7	0.45	0.8	12.2	10
PLG1500-0-A	1 1/2	38.0	19.0	0.50	1.0	6.1	5
PLG2000-0-A	2	50.8	25.4	0.55	1.1	6.1	5
PLG3000-0-A	3	76.2	38.1	0.65	1.3	2.4	2
PLG4000-0-A	4	101.6	50.8	0.70	1.4	1.2	1

For other colours add colour suffix to Product Reference:

0 = black, 2 = red, 4 = yellow, 6 = blue, 9 = white and C = transparent



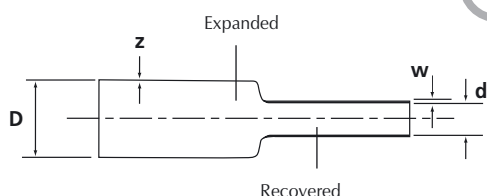
## Thin wall heatshrink tubing

### Type PLG - HSB boxes

- PLG heatshrink tubing in a compact, handy sized box used for electrical maintenance and repair
- Convenient amount of heatshrink, for small users
- Offered in 10 sizes to cover a heatshrink range from Ø 1.2 mm to Ø 25.4 mm
- Stackable boxes for easy storage
- Flexible, rapid shrinkage, non-melting for effective electrical insulation
- Flame retardant
- Available colours: Black, Red, Yellow, Blue, White, Transparent (see page 185 for product reference structure)



2:1



### Technical Information

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +125°C
Shrinking temperature	+110°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Black
Other properties	Silicone, Cadmium and Lead free Transparent version: Halogen free

### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER BOX [m]
	AS SUPPLIED					
	D [inch]	D [mm]				
HSB46	3/64	1.2	0.6	0.20	0.4	12.0
HSB63	1/16	1.6	0.8	0.20	0.4	12.0
HSB93	3/32	2.4	1.2	0.25	0.5	11.5
HSB125	1/8	3.2	1.6	0.25	0.5	11.5
HSB187	3/16	4.7	2.4	0.25	0.5	9.5
HSB250	1/4	6.4	3.2	0.30	0.6	7.5
HSB375	3/8	9.5	4.7	0.30	0.6	6.5
HSB500	1/2	12.7	6.4	0.30	0.7	6.0
HSB750	3/4	19.1	9.5	0.40	0.7	5.0
HSB1000	1	25.4	12.7	0.45	0.8	3.3

For other colours add colour suffix to Product Reference:

0 = black, 2 = red, 4 = yellow, 6 = blue, 9 = white and C = transparent





# Shrink-Kon®

## Thin wall heatshrink tubing

### Shrink-Kon® Set

- A kit comprising PLG heatshrink with or without hot air tool in a handy carry case
- Maintenance and repair, research and development, small series manufacture and much more
- 9 different expanded diameters
- 6 different colours
- 23 types
- Flame retardant
- Case made from shock-resistant plastic
- All types available in refill packages

### Ordering Information

- Product Ref. with hot air tool  
**SK-1400GTC** (with GR121)  
**SK-1400GTC-UK** (with GR321)
- Product Ref. without hot air tool  
**SK-1400G**

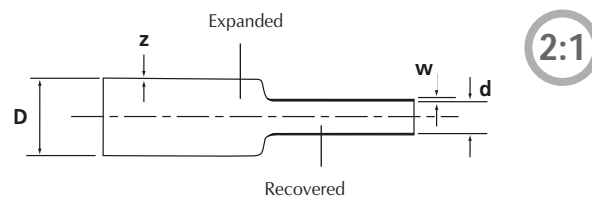
See page 215 for tooling specifications



3.1

### Technical Information

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +125°C
Shrinking temperature	+110°C
Material	Crosslinked polyolefin
IP rating	IP60
Other properties	Silicone, Cadmium and Lead free Transparent version: Halogen free



### Heatshrink set contents information

PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	COLOUR	LENGTH [cm]	QUANTITY [pieces]
	D [inch]	[mm]						
PLG63-0	1/16	1.6	0.8	0.20	0.4	black	5	20
PLG63-C	1/16	1.6	0.8	0.20	0.4	transparent	5	20
PLG93-C	3/32	2.4	1.2	0.25	0.5	transparent	5	20
PLG93-0	3/32	2.4	1.2	0.25	0.5	black	10	15
PLG125-C	1/8	3.2	1.6	0.25	0.5	transparent	10	15
PLG125-4	1/8	3.2	1.6	0.25	0.5	yellow	10	10
PLG125-9	1/8	3.2	1.6	0.25	0.5	white	10	10
PLG125-0	1/8	3.2	1.6	0.25	0.5	black	10	12
PLG187-C	3/16	4.8	2.4	0.25	0.5	transparent	5	10
PLG187-4	3/16	4.8	2.4	0.25	0.5	yellow	5	10
PLG187-6	3/16	4.8	2.4	0.25	0.5	blue	5	20
PLG187-0	3/16	4.8	2.4	0.25	0.5	black	10	12
PLG250-4	1/4	6.4	3.2	0.30	0.6	yellow	5	16
PLG250-6	1/4	6.4	3.2	0.30	0.6	blue	10	12
PLG250-9	1/4	6.4	3.2	0.30	0.6	white	5	16
PLG250-0	1/4	6.4	3.2	0.30	0.6	black	10	10
PLG375-6	3/8	9.5	4.8	0.30	0.6	blue	10	10
PLG375-0	3/8	9.5	4.8	0.30	0.6	black	18	4
PLG500-2	1/2	12.7	6.4	0.40	0.7	red	10	6
PLG500-0	1/2	12.7	6.4	0.40	0.7	black	18	4
PLG750-6	3/4	19.1	9.5	0.40	0.7	blue	10	4
PLG750-0	3/4	19.1	9.5	0.40	0.7	black	18	4
PLG1000-0	1	25.4	12.7	0.45	0.8	black	18	3

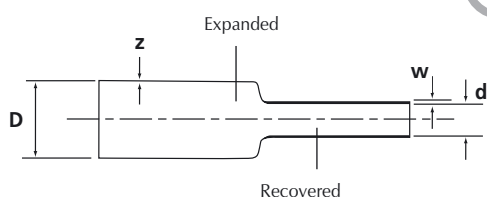
## Thin wall heatshrink tubing

## Type PLG - Pre-cut bags

- The Shrink-Kon® Pre-cut packs of PLG heatshrink are available to replenish the Shrink-Kon® Set or for use on displays
- 9 different expanded diameters
- 6 different colours
- Packed in small quantities
- Flexible, rapid shrinkage, non-melting for effective electrical insulation
- Flame retardant
- Available colours: Black, Red, Yellow, Blue, White, Transparent (see page 185 for product reference structure)



2:1



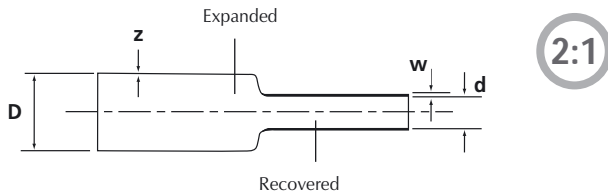
## Technical Information

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +125°C
Shrinking temperature	+110°C
Material	Crosslinked polyolefin
IP rating	IP60
Other properties	Silicone, Cadmium and Lead free Transparent version: Halogen free

## Ordering Information

PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	COLOUR	LENGTH [cm]	QUANTITY [pieces]
	D							
	[inch]	[mm]						
PLG063-0-05R	1/16	1.6	0.8	0.20	0.4	black	5	50
PLG063-C-05R	1/16	1.6	0.8	0.20	0.4	transparent	5	50
PLG093-0-05R	3/32	2.4	1.2	0.25	0.5	black	5	50
PLG093-C-05R	3/32	2.4	1.2	0.25	0.5	transparent	5	50
PLG125-9-10R	1/8	3.2	1.6	0.25	0.5	white	10	25
PLG125-4-10R	1/8	3.2	1.6	0.25	0.5	yellow	10	25
PLG125-C-10R	1/8	3.2	1.6	0.25	0.5	transparent	10	25
PLG125-0-10R	1/8	3.2	1.6	0.25	0.5	black	10	25
PLG187-0-10R	3/16	4.8	2.4	0.25	0.5	black	10	25
PLG187-6-05R	3/16	4.8	2.4	0.25	0.5	blue	5	40
PLG187-4-05R	3/16	4.8	2.4	0.25	0.5	yellow	5	40
PLG187-C-05R	3/16	4.8	2.4	0.25	0.5	transparent	5	40
PLG250-6-10R	1/4	6.4	3.2	0.30	0.6	blue	10	20
PLG250-0-10R	1/4	6.4	3.2	0.30	0.6	black	10	20
PLG250-9-05R	1/4	6.4	3.2	0.30	0.6	white	5	40
PLG250-4-05R	1/4	6.4	3.2	0.30	0.6	yellow	5	40
PLG375-0-10R	3/8	9.5	4.7	0.30	0.6	black	10	15
PLG375-6-10R	3/8	9.5	4.7	0.30	0.6	blue	10	15
PLG500-2-10R	1/2	12.7	6.4	0.40	0.7	red	10	15
PLG500-0-18R	1/2	12.7	6.4	0.40	0.7	black	18	8
PLG750-6-10R	3/4	19.1	9.5	0.40	0.7	blue	10	10
PLG750-0-18R	3/4	19.1	9.5	0.40	0.7	black	18	6
PLG1000-0-18R	1	25.4	12.7	0.45	0.8	black	18	3

- Typical applications are mechanical and electrical insulation, corrosion protection, bundling, mechanical protection and much more
- Internal diameters from 1.2 mm to 51 mm
- Flame retardant
- Flammability per UL 224
- The tubing is marked
- Available colours: Black, Red, Yellow, Blue, White, Transparent (see page 185 for product reference structure)



### Technical Information

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +125°C
Shrinking temperature	+110°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Black
Other properties	Silicon, Cadmium and Lead free Transparent version: Halogen free

### Approvals



E79546

### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER REEL [m]	TOTAL LENGTH PER BOX [m]	QUANTITY PER BOX [pieces 1.22m]
	AS SUPPLIED							
	D [inch]	[mm]						
CMP46-0-A	3/64	1.2	0.6	0.20	0.4	-	30.5	25
CMP46-0-BG	3/64	1.2	0.6	0.20	0.4	300	-	-
CMP63-0-A	1/16	1.6	0.8	0.20	0.4	-	30.5	25
CMP63-0-BG	1/16	1.6	0.8	0.20	0.4	300	-	-
CMP93-0-A	3/32	2.4	1.2	0.25	0.5	-	30.5	25
CMP93-0-BG	3/32	2.4	1.2	0.25	0.5	300	-	-
CMP125-0-A	1/8	3.2	1.6	0.25	0.5	-	30.5	25
CMP125-0-BG	1/8	3.2	1.6	0.25	0.5	300	-	-
CMP187-0-A	3/16	4.7	2.4	0.25	0.5	-	30.5	25
CMP187-0-BG	3/16	4.7	2.4	0.25	0.5	300	-	-
CMP250-0-A	1/4	6.4	3.2	0.30	0.6	-	30.5	25
CMP250-0-BG	1/4	6.4	3.2	0.30	0.6	300	-	-
CMP375-0-A	3/8	9.5	4.8	0.30	0.6	-	30.5	25
CMP375-0-BG	3/8	9.5	4.8	0.30	0.6	150	-	-
CMP500-0-A	1/2	12.7	6.4	0.30	0.7	-	30.5	25
CMP500-0-BG	1/2	12.7	6.4	0.30	0.7	100	-	-
CMP750-0-A	3/4	19.1	9.5	0.40	0.7	-	12.2	10
CMP750-0-BG	3/4	19.1	9.5	0.40	0.7	50	-	-
CMP1000-0-A	1	25.4	12.7	0.45	0.8	-	12.2	10
CMP1000-0-BG	1	25.4	12.7	0.45	0.8	50	-	-
CMP1500-0-BG	1 1/2	38.0	19.0	0.50	1.0	50	-	-
CMP2000-0-BG	2	51.0	25.4	0.55	1.1	50	-	-

Transparent version not UL recognized

For other colours add colour suffix to Product Reference:

0 = black, 2 = red, 4 = yellow, 6 = blue, 9 = white and C = transparent

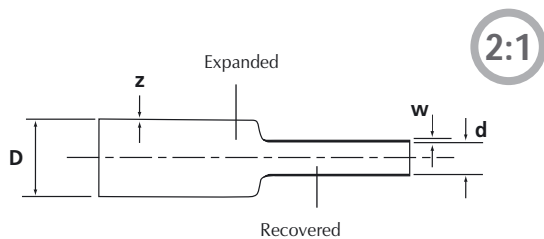




## Thin wall heatshrink tubing

Type MLP - flexible for high specifications

- Typical applications are insulation, corrosion protection, component strain relief and connections in applications requiring the highest specifications (e.g. aeronautical and military applications)
- Internal diameters from 1.2 mm to 25.4 mm
- Meets MIL-DTL-23053/5 requirements, Class 1 and Class 2
- Weather UV-resistant
- Good chemical resistance
- Flame retardant
- Available colours: Black, Red, Yellow, Blue, White, Transparent (see page 185 for product reference structure)

**Technical Information**

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +135°C
Shrinking temperature	+90°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Black
Other properties	Silicone, Cadmium and Lead free Transparent version: Halogen free

**Ordering Information**

PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER REEL [m]	TOTAL LENGTH PER BOX [m]	QUANTITY PER BOX [pieces 1.22m]
	D [inch]	[mm]						
	MLP46-0-A	3/64						
MLP46-0-BG	3/64	1.2	0.6	0.20	0.4	300	-	-
MLP63-0-A	1/16	1.6	0.8	0.20	0.4	-	30.5	25
MLP63-0-BG	1/16	1.6	0.8	0.20	0.4	300	-	-
MLP93-0-A	3/32	2.4	1.2	0.25	0.5	-	30.5	25
MLP93-0-BG	3/32	2.4	1.2	0.25	0.5	300	-	-
MLP125-0-A	1/8	3.2	1.6	0.25	0.5	-	30.5	25
MLP125-0-BG	1/8	3.2	1.6	0.25	0.5	300	-	-
MLP187-0-A	3/16	4.7	2.4	0.25	0.5	-	30.5	25
MLP187-0-BG	3/16	4.7	2.4	0.25	0.5	300	-	-
MLP250-0-A	1/4	6.4	3.2	0.30	0.6	-	30.5	25
MLP250-0-BG	1/4	6.4	3.2	0.30	0.6	300	-	-
MLP375-0-A	3/8	9.5	4.8	0.30	0.6	-	30.5	25
MLP375-0-BG	3/8	9.5	4.8	0.30	0.6	150	-	-
MLP500-0-A	1/2	12.7	6.4	0.30	0.7	-	30.5	25
MLP500-0-BG	1/2	12.7	6.4	0.30	0.7	100	-	-
MLP750-0-A	3/4	19.1	9.5	0.40	0.7	-	12.2	10
MLP750-0-BG	3/4	19.1	9.5	0.40	0.7	50	-	-
MLP1000-0-A	1	25.4	12.7	0.45	0.8	-	12.2	10
MLP1000-0-BG	1	25.4	12.7	0.45	0.8	50	-	-

For other colours add colour suffix to Product Reference:

0 = black, 2 = red, 4 = yellow, 6 = blue, 9 = white and C = transparent

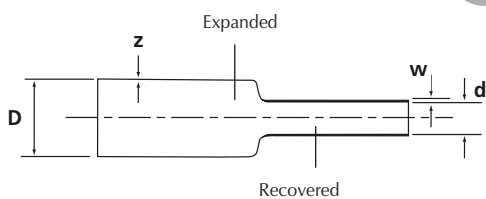


## Thin wall heatshrink tubing Type GYS - flexible green and yellow

- For identifying and marking earthing connectors and cables
- Mechanical and electrical insulation, corrosion protection
- Internal diameters from 3.2 mm to 25.4 mm
- Flame retardant
- Meets MIL-DTL-23053/5 requirements, Class 1 and Class 2  
(see page 185 for product reference structure)



2:1



### Technical Information

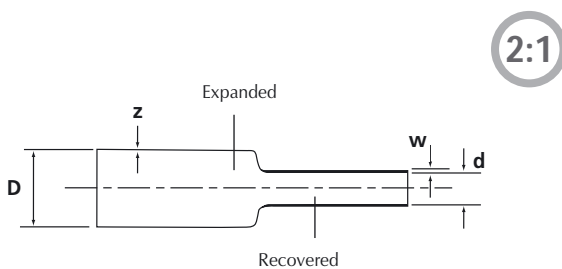
Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +135°C
Shrinking temperature	+90°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Green / Yellow striped
Other properties	Silicone, Cadmium and Lead free

### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER MINI-REEL [m]	TOTAL LENGTH PER BOX [m]	QUANTITY PER BOX [pieces 1.22m]
	D							
	[inch]	[mm]						
GYS125-E-A	1/8	3.2	1.6	0.25	0.51	-	30.5	25
GYS125-E-E	1/8	3.2	1.6	0.25	0.51	150	-	-
GYS187-E-A	3/16	4.8	2.4	0.25	0.51	-	30.5	25
GYS187-E-E	3/16	4.8	2.4	0.25	0.51	75	-	-
GYS250-E-A	1/4	6.4	3.2	0.32	0.64	-	30.5	25
GYS250-E-E	1/4	6.4	3.2	0.32	0.64	75	-	-
GYS375-E-A	3/8	9.5	4.8	0.32	0.64	-	30.5	25
GYS375-E-E	3/8	9.5	4.8	0.32	0.64	75	-	-
GYS500-E-A	1/2	12.7	6.4	0.32	0.64	-	30.5	25
GYS500-E-E	1/2	12.7	6.4	0.32	0.64	50	-	-
GYS750-E-A	3/4	19.1	9.5	0.38	0.76	-	12.2	10
GYS750-E-E	3/4	19.1	9.5	0.38	0.76	30	-	-
GYS1000-E-A	1	25.4	12.7	0.45	0.89	-	12.2	10
GYS1000-E-E	1	25.4	12.7	0.45	0.89	30	-	-

**Thin wall heatshrink tubing****Type GYS - HSB boxes**

- For identifying and marking earthing connectors and cables
- GYS heatshrink in a compact, handy sized box
- Convenient amount of heatshrink, for small users
- Offered in 7 sizes to cover a heatshrink range from 3.2 mm to 25.4 mm diameters
- Stackable boxes for easy storage
- Flame retardant
- Meets MIL-DTL-23053/5 requirements, Class 1 and Class 2
- Mechanical and electrical insulation, corrosion protection (see page 185 for product reference structure)

**Technical Information**

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +135°C
Shrinking temperature	+90°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Green / Yellow striped
Other properties	Silicone, Cadmium and Lead free

**Ordering Information**

PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER BOX [m]
	D					
	[inch]	[mm]				
GYS125-E-D	1/8	3.2	1.6	0.25	0.51	11.5
GYS187-E-D	3/16	4.8	2.4	0.25	0.51	9.5
GYS250-E-D	1/4	6.4	3.2	0.32	0.64	7.5
GYS375-E-D	3/8	9.5	4.8	0.32	0.64	6.5
GYS500-E-D	1/2	12.7	6.4	0.32	0.64	6.0
GYS750-E-D	3/4	19.1	9.5	0.38	0.76	5.0
GYS1000-E-D	1	25.4	12.7	0.45	0.89	3.3

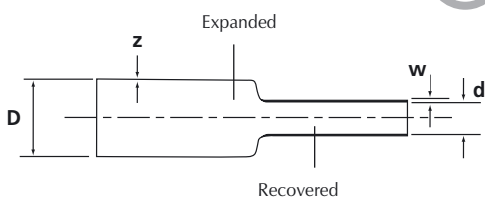


## Thin wall heatshrink tubing Type FRH - very flexible, flame retardant

- Mechanical and electrical insulation where UL 224, class VW-1 is required
- Internal diameters from Ø 1.2 mm to Ø 51 mm
- Listed per UL 224, class VW-1, CSA OFT
- High flame retardancy
- Resistant to common fluids and solvents  
(see page 185 for product reference structure)



2:1



### Technical Information

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +135°C
Shrinking temperature	+110°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Black
Other properties	Silicone, Cadmium and Lead free

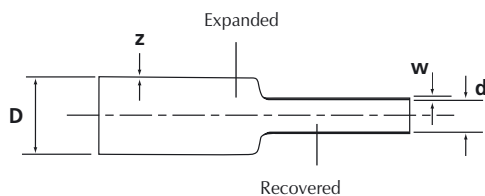
### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER REEL [m]
	D					
	[inch]	[mm]				
FRH46-0	3/64	1.2	0.6	0.22	0.45	150
FRH63-0	1/16	1.6	0.8	0.22	0.45	150
FRH93-0	3/32	2.4	1.2	0.25	0.51	150
FRH125-0	1/8	3.2	1.6	0.25	0.51	150
FRH187-0	3/16	4.8	2.4	0.32	0.51	75
FRH250-0	1/4	6.4	3.2	0.32	0.64	75
FRH375-0	3/8	9.5	4.8	0.32	0.64	75
FRH500-0	1/2	12.7	6.4	0.32	0.64	75
FRH750-0	3/4	19.1	9.5	0.38	0.76	75
FRH1000-0	1	25.4	12.7	0.45	0.89	30
FRH1500-0	1 1/2	38.1	19.0	0.45	0.89	30
FRH2000-0	2	51.0	25.4	0.57	1.14	30

# Shrink-Kon®

Thin wall heatshrink tubing  
Type PIG - flexible for highly contoured components

- Heatshrink tubing to enclose highly contoured components with large diameter variations. Provides mechanical and electrical protection
- Meets UL 224 requirements
- Internal diameters from 1.6 mm to 40 mm
- Excellent mechanical strength
- Resistant to common fluids and solvents
- Flame retardant (*except transparent version*)
- Meets MIL-DTL-23053/5 requirements, Class 1 and Class 2
- Available colours: Black, Red, Yellow, Blue, White, Transparent, Green / Yellow striped (see page 185 for product reference structure)



## Technical Information

Wall thickness	Thin
Shrink ratio	3:1
Tube characteristics	Single wall
Temperature range	-55°C to +135°C
Shrinking temperature	+90°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Black
Other properties	Silicone, Cadmium and Lead free Transparent version: Halogen free

## Ordering Information

PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER REEL [m]
	D					
	[inch]	[mm]				
PIG0150-0-B*	1/16	1.6	0.5	0.15	0.45	300
PIG0301-0-B*	1/8	3.2	1.0	0.18	0.55	300
PIG0451-0-B	3/16	4.5	1.5	0.20	0.60	300
PIG0602-0-B	1/4	6.4	2.0	0.22	0.65	300
PIG0903-0-B	3/8	9.5	3.0	0.25	0.75	150
PIG1204-0-B	1/2	12.7	4.0	0.25	0.75	100
PIG1806-0-B	3/4	19.0	6.0	0.27	0.80	50
PIG2408-0-B	1	25.4	8.0	0.33	1.00	50
PIG4013-0-B	1 1/2	40.0	13.0	0.38	1.15	50

\* Not available in green / yellow

For other colours add colour suffix to Product Reference:

0 = black, 2 = red, 4 = yellow, 6 = blue, 9 = white, C = transparent and E = green / yellow striped



# Shrink-Kon<sup>®</sup>

## Thin wall heatshrink tubing

### Type PIG - HSB boxes

- PIG heatshrink in a compact, handy sized box
- Workshop, installation, laboratory and much more
- Heatshrink tubing to enclose highly contoured components with large diameter variations. Provides mechanical and electrical protection
- Convenient amount of heatshrink, for small users
- Offered in 8 sizes to cover a heatshrink range from Ø 1.6 mm to Ø 25.4 mm
- Stackable boxes for easy storage
- Meets UL 224 requirements
- Excellent mechanical strength
- Resistant to common fluids and solvents
- Flame retardant (*except transparent version*)
- Meets MIL-DTL-23053/5 requirements, Class 1 and Class 2 (except green / yellow version)
- Available colours: Black, Red, Yellow, Blue, White, Transparent, Green / Yellow striped (see page 185 for product reference structure)

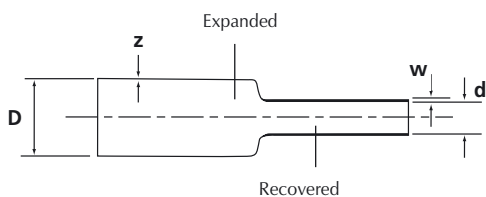


3.1

### Technical Information

Wall thickness	Thin
Shrink ratio	3:1
Tube characteristics	Single wall
Temperature range	-55°C to +135°C
Shrinking temperature	+90°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Black
Other properties	Silicone, Cadmium and Lead free Transparent version: Halogen free

3:1



### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER		FULLY RECOVERED DIAMETER	WALL THICKNESS BEFORE SHRINKING	WALL THICKNESS AFTER SHRINKING	LENGTH PER BOX
	AS SUPPLIED					
	D	D				
	[inch]	[mm]	d	z	w	[m]
PIG0150-0-D*	1/16	1.6	0.5	0.15	0.45	10.5
PIG0301-0-D*	1/8	3.2	1.0	0.18	0.55	10.0
PIG0451-0-D	3/16	4.5	1.5	0.20	0.60	9.0
PIG0602-0-D	1/4	6.4	2.0	0.22	0.65	7.0
PIG0903-0-D	3/8	9.5	3.0	0.25	0.75	6.0
PIG1204-0-D	1/2	12.7	4.0	0.25	0.75	5.5
PIG1806-0-D	3/4	19.0	6.0	0.27	0.80	4.5
PIG2408-0-D	1	25.4	8.0	0.33	1.00	3.3

\* Not available in green/yellow

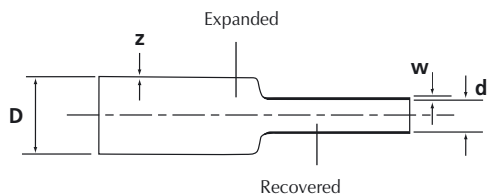
For other colours add colour suffix to Product Reference:

0 = black, 2 = red, 4 = yellow, 6 = blue, 9 = white, C = transparent and E = green / yellow striped



## Thin wall heatshrink tubing Type PKG - semi-flexible for moist environments

- Crosslinked modified Polyolefin with thermoplastic adhesive lining
- Particularly suitable for corrosion and damp protected casings as well as highly contoured components
- Flame retardant
- Moisture resistant
- Good chemical resistance
- High mechanical stability
- The high shrink ratio and flexibility of this range allows the user maximum coverage with minimal parts
- The adhesive lining bonds to plastic, rubber, neoprene, steel and polyethylene  
(see page 185 for product reference structure)



3:1 4:1



### Technical Information

Wall thickness	Thin
Shrink ratio	3:1, 4:1
Tube characteristics	Dual wall
Temperature range	-55°C to +110°C (adhesive +85°C)
Shrinking temperature	+95°C
Material	Crosslinked polyolefin with adhesive lining
IP rating	IP65
Standard colour	Black
Other properties	Silicone, Cadmium and Lead free

### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER	SHRINK RATIO	FULLY RECOVERED DIAMETER	WALL THICKNESS	WALL THICKNESS	LENGTH PER REEL	TOTAL LENGTH PER BOX	QUANTITY PER BOX
	AS SUPPLIED			BEFORE SHRINKING	AFTER SHRINKING			
	D [mm]			z [mm]	w [mm]			
PKG0301-0-B	3.0	3:1	1.0	0.4	1.0	300	-	-
PKG0301-0-C	3.0	3:1	1.0	0.4	1.0	-	12.0	20
PKG0401-0-B	4.0	4:1	1.0	0.4	1.0	300	-	-
PKG0401-0-C	4.0	4:1	1.0	0.4	1.0	-	12.0	20
PKG0602-0-B	6.0	3:1	2.0	0.5	1.0	300	-	-
PKG0602-0-C	6.0	3:1	2.0	0.5	1.0	-	9.0	15
PKG0802-0-B	8.0	4:1	2.0	0.5	1.0	150	-	-
PKG0802-0-C	8.0	4:1	2.0	0.5	1.0	-	9.0	15
PKG0903-0-B	9.0	3:1	3.0	0.5	1.4	150	-	-
PKG0903-0-C	9.0	3:1	3.0	0.5	1.4	-	6.0	10
PKG1203-0-B	12.0	4:1	3.0	0.5	1.4	100	-	-
PKG1203-0-C	12.0	4:1	3.0	0.5	1.4	-	6.0	10
PKG1204-0-B	12.0	3:1	4.0	0.5	1.8	100	-	-
PKG1204-0-C	12.0	3:1	4.0	0.5	1.8	-	5.4	9
PKG1604-0-B	16.0	4:1	4.0	0.5	1.7	50	-	-
PKG1604-0-C	16.0	4:1	4.0	0.5	1.7	-	5.4	9
PKG1806-0-B	18.0	3:1	6.0	0.6	2.2	50	-	-
PKG1806-0-C	18.0	3:1	6.0	0.6	2.2	-	3.6	6
PKG2406-0-B	24.0	4:1	6.0	0.6	2.1	50	-	-
PKG2406-0-C	24.0	4:1	6.0	0.6	2.1	-	3.0	5
PKG2408-0-B	24.0	3:1	8.0	0.7	2.5	50	-	-
PKG2408-0-C	24.0	3:1	8.0	0.7	2.5	-	3.0	5
PKG3208-0-B	32.0	4:1	8.0	0.7	2.4	50	-	-
PKG3208-0-C	32.0	4:1	8.0	0.7	2.4	-	3.0	5
PKG4013-0-B	40.0	3:1	13.0	0.7	2.5	30	-	-
PKG4013-0-C	40.0	3:1	13.0	0.7	2.5	-	2.4	4
PKG5213-0-B	52.0	4:1	13.0	0.7	2.4	30	-	-
PKG5213-0-C	52.0	4:1	13.0	0.7	2.4	-	1.8	3

# Shrink-Kon®

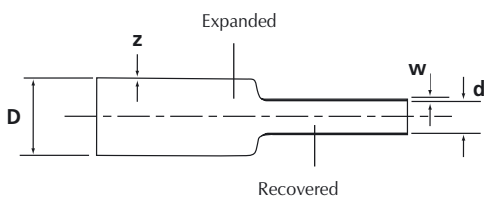
## Thin wall heatshrink tubing Type KYN - rigid transparent

- In areas of heavy mechanical loads, high temperatures and chemical stress. Insulation in densely packed wiring, in heating elements and much more
- Internal diameters from 1.2 mm to 25.4 mm
- High mechanical strength
- Excellent electrical insulation performance
- High flame retardancy
- Highly abrasion and cut resistant
- Resistant to Diesel
- Very good resistance against chemicals and solvents
- Meets MIL-DTL-23053/8 requirements



3.1

2:1



### Technical Information

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +175°C
Shrinking temperature	+175°C
Material	Crosslinked and rigid Polyvinylidene Fluoride (Kynar®*)
IP rating	IP60
Standard colour	Transparent
Other properties	Silicone, Cadmium, Lead and Halogen free

\* registered trademark of ATOFINA

### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER BOX [m]	QUANTITY PER BOX [pieces 1.22m]
	D						
	[inch]	[mm]					
KYN46-C-A	3/64	1.2	0.6	0.12	0.25	30.5	25
KYN63-C-A	1/16	1.6	0.8	0.12	0.25	30.5	25
KYN93-C-A	3/32	2.4	1.2	0.12	0.25	30.5	25
KYN125-C-A	1/8	3.2	1.6	0.12	0.25	30.5	25
KYN187-C-A	3/16	4.8	2.4	0.12	0.25	30.5	25
KYN250-C-A	1/4	6.4	3.2	0.15	0.30	12.2	10
KYN375-C-A	3/8	9.5	4.8	0.15	0.30	12.2	10
KYN500-C-A	1/2	12.7	6.0	0.15	0.30	12.2	10
KYN750-C-A	3/4	19.1	9.5	0.20	0.40	12.2	10
KYN1000-C-A	1	25.4	12.7	0.25	0.50	12.2	10

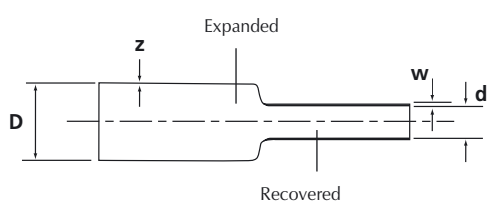


**Shrink-Kon®**
**Thin wall heatshrink tubing**  
**Type VIT - highly flexible, flame retardant**

- High flexibility makes it suitable even under heavy-duty conditions e.g. sensors in vehicle engine compartments
- Excellent strength and resistance against corrosive fluids even at high temperatures
- Internal diameters from 3.2 mm to 50.8 mm
- Offers excellent resistance to aggressive fuels and chemicals
- High flame retardancy
- Meets MIL-DTL-23053/13 requirements



2:1


**Technical Information**


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Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Single wall
Temperature range	-55°C to +220°C*
Shrinking temperature	+175°C
Material	Viton*, Crosslinked fluoroelastomer
IP rating	IP60
Standard colour	Black
Other properties	Silicone, Cadmium and Lead free

\*Viton is a registered trademark of DuPont.

**Ordering Information**


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PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS BEFORE SHRINKING z [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER BOX [m]	QUANTITY PER BOX [pieces 0.6m]
	D						
	[inch]	[mm]					
VIT125-0-C	1/8	3.2	1.6	0.40	0.8	6.0	10
VIT187-0-C	3/16	4.8	2.4	0.45	0.9	6.0	10
VIT250-0-C	1/4	6.4	3.2	0.45	0.9	6.0	10
VIT375-0-C	3/8	9.5	4.8	0.45	0.9	4.8	8
VIT500-0-C	1/2	12.7	6.4	0.45	0.9	4.2	7
VIT750-0-C	3/4	19.1	9.5	0.55	1.3	3.6	6
VIT1000-0-C	1	25.4	12.7	0.70	1.4	2.4	4
VIT1500-0-C	1 1/2	38.1	19.0	0.80	1.9	1.8	3
VIT2000-0-C	2	50.8	25.4	0.80	1.6	1.2	2

# Shrink-Kon<sup>®</sup>

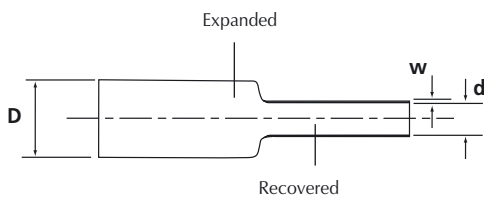
Thin wall heatshrink tubing  
Type ZHFR - flexible, Halogen free & flame retardant

- Flattened tube
- Flexible
- Low smoke generation when burnt
- Halogen free
- Flame retardant
- Particularly recommended for use in contained areas and with Halogen free wires and cables
- Meets DEF STAN 59-97, issue 3, type 8



3.1

2:1



## Technical Information

Wall thickness	Thin
Shrink ratio	2:1
Tube characteristics	Flat - Single wall
Temperature range	-40°C to +105°C
Shrinking temperature	+115°C
Material	Crosslinked polyolefin
IP rating	IP60
Standard colour	Black
Other properties	Silicone, Cadmium, Lead and Halogen free

## Ordering Information

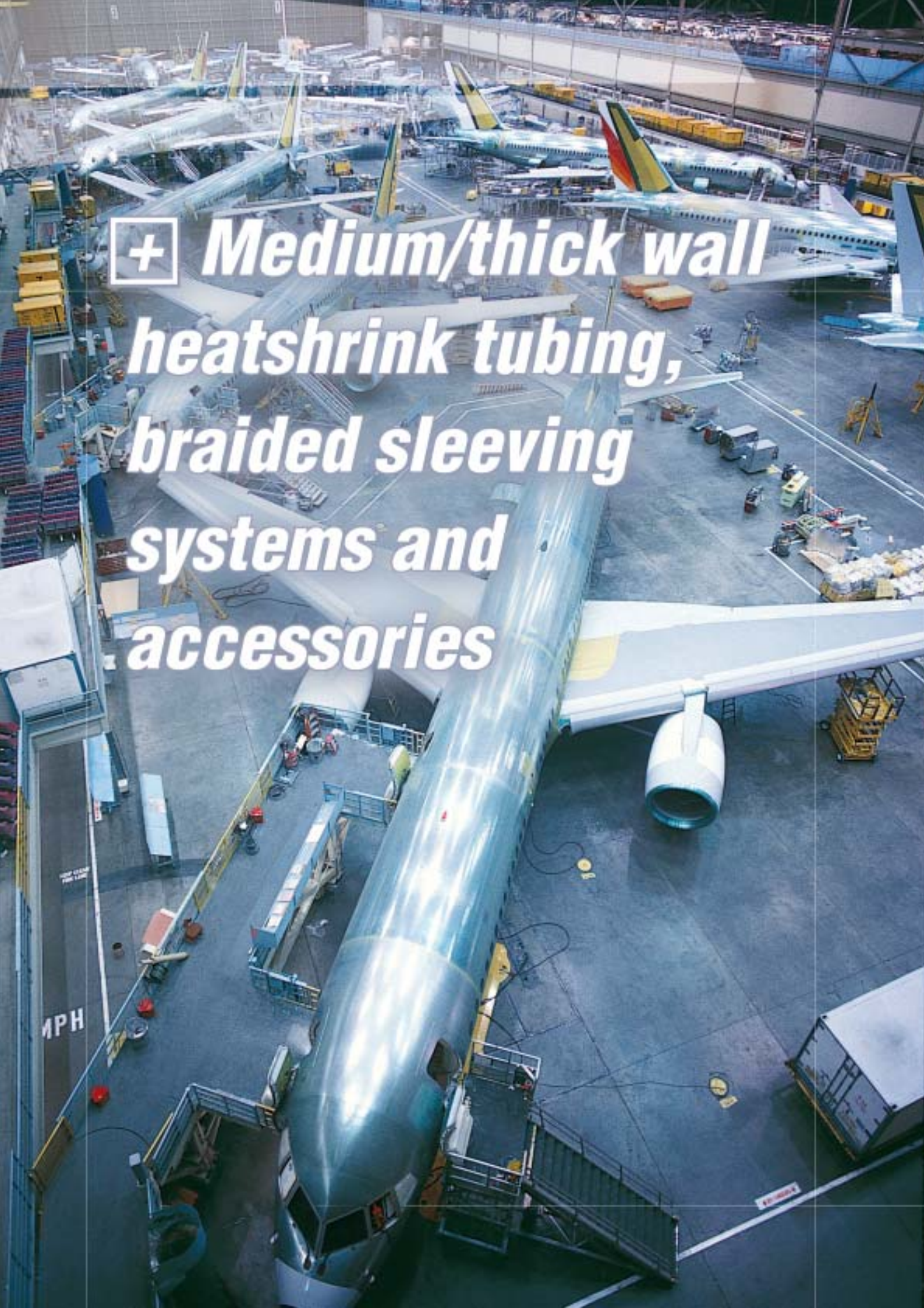
PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED		FULLY RECOVERED DIAMETER d [mm]	WALL THICKNESS AFTER SHRINKING w [mm]	LENGTH PER MINI-REEL [m]
	D [inch]	D [mm]			
ZHFR93-0-E	3/32	2.4	0.8	0.45	135
ZHFR125-0-E	1/8	3.2	1.6	0.51	135
ZHFR187-0-E	3/16	4.8	2.4	0.51	70
ZHFR250-0-E	1/4	6.4	3.2	0.64	70
ZHFR375-0-E	3/8	9.5	4.8	0.64	70
ZHFR500-0-E	1/2	12.7	6.4	0.64	45
ZHFR750-0-E	3/4	19.1	9.5	0.76	25
ZHFR1000-0-E	1	25.4	12.7	0.89	25

For other colours add colour suffix to Product Reference:

0 = black, 4 = yellow, 9 = white





An aerial view of a large aircraft assembly plant. Several commercial aircraft are in various stages of assembly on the floor. The main aircraft in the foreground is a large jet with a white and blue livery. The floor is marked with yellow lines and has various ground support equipment like forklifts and service vehicles. The hangar structure is visible in the background.

**+ Medium/thick wall  
heatshrink tubing,  
braided sleeving  
systems and  
accessories**



## 3. Heatshrink systems

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## Medium and thick wall heatshrink tubing Selection guide

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### **Type TBM and TBW**

Medium and Thick wall, heatshrink tubing ideal for the protection of cable joints and terminations in low voltage power applications.

Rated for 600V, 90°C continuous use.

Shrink ratio 3:1

### **Low Voltage Kits up to 600V**

VMS medium and thick wall cable jointing kit for polymeric insulated cables.

Shrink ratio 3:1

### **Type TBCHR**

Semi rigid thick wall heatshrink tubing for submerged and underground installations

Shrink ratio 3:1

### **Type TEB**

Medium and thick wall adhesive lined heatshrink cable breakouts for insulating and sealing of cable crutches.

### **Type TEC**

Medium and thick wall adhesive lined heatshrink end caps to seal and protect cable-ends against the ingress of moisture and contamination.

Shrink ratio >2:1

### **TBTA-ZH**

Self Amalgamating tape which provides a thick insulating layer with flawless electrical stability and a long term resistance to moisture penetration.

Stretch ratio 3:1

### **Type CPS - Flame retardant**

Flame retardant polyester braided sleeving for protecting and bundling cables and wires inside cabinets and enclosures.

### **Type CPS - Non-flame retardant**

Non-flame resistant polyester braided sleeving for protecting and bundling cables and wires inside cabinets and enclosures.

### **Bind-It™**

Open and wraparound sleeving to protect cable assemblies against abrasion.

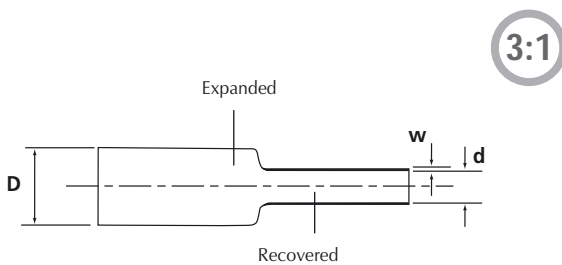




# Shrink-Kon<sup>®</sup>

Thick wall heatshrink tubing  
Type TBW - rated for 600V,  
90°C continuous use

- TBW is an excellent product for sealing and insulating cable splices, connections, terminations and jacket repairs. The tubing is designed to withstand the severe mechanical requirements of submersible and direct-buried installations
- Low voltage power applications 600V
- High resistance to abrasion, corrosion and chemicals
- Excellent weatherability
- Cut sleeves and non-standard lengths are available upon request
- 9 standard sizes in thick wall: internal diameters from 9 mm to 120 mm
- Meets requirements of ESI 09-11



## Technical Information

Wall thickness	Thick
Shrink ratio	3:1
Tube characteristics	Dual wall
Temperature range	-55°C to +110°C (Jacket only +105°C)
Shrinking temperature	+120°C
Material	Crosslinked polyolefin with thermoplastic adhesive liner
IP rating	IP67
Standard colour	Black
Other properties	Silicone and Halogen free

## Ordering Information

PRODUCT REF.	EXPANDED DIAMETER	FULLY RECOVERED	WALL THICKNESS	LENGTH	QUANTITY
	AS SUPPLIED	DIAMETER	AFTER SHRINKING	PER BOX	PER BOX
	D [mm]	d [mm]	w [mm]	[m]	[pieces 1.22m]
TBW0350	8.9	3.0	1.8	122.0	100
TBW0500	13.0	4.1	2.4	85.4	70
TBW0750	19.1	6.1	2.4	42.7	35
TBW1100	27.9	8.9	3.0	91.5	75
TBW1500	38.1	11.9	4.1	48.8	40
TBW2000	50.8	16.0	4.1	30.5	25
TBW2700	68.1	22.1	4.1	18.3	15
TBW3500	89.9	30.0	4.1	12.2	10
TBW4700	119.9	39.9	4.3	6.1	5

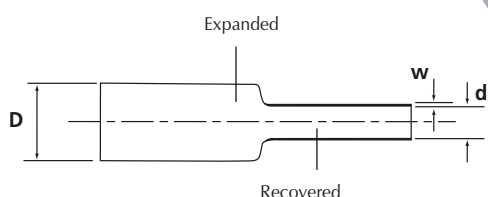
Supplied with adhesive as standard

For non-adhesive versions, please contact your Sales Office

## Medium wall heatshrink tubing Type TBM - rated for 600V, 90°C continuous use

- TBM an excellent product for sealing and insulating cable splices, connections, terminations and jacket repairs where light weight and high flexibility are required
- High resistance to abrasion, corrosion and chemicals
- Excellent weatherability
- Cut sleeves and non-standard lengths are available upon request
- 12 standard sizes in medium wall: internal diameters from 10 mm to 229 mm
- Meets requirements of ESI 09-11

3:1



### Technical Information

Wall thickness	Medium
Shrink ratio	3:1
Tube characteristics	Dual wall
Temperature range	-55°C to +110°C (Jacket only +105°C)
Shrinking temperature	+120°C
Material	Crosslinked polyolefin with thermoplastic adhesive liner
IP rating	IP67
Standard colour	Black
Other properties	Silicone and Halogen free

### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER		FULLY RECOVERED		WALL THICKNESS AFTER SHRINKING	LENGTH PER BOX	QUANTITY PER BOX
	AS SUPPLIED		DIAMETER				
	D	d	w				
	[mm]	[mm]	[mm]	[mm]	[m]	[pieces 1.22m]	
TBM0400	10.2	3.8	2.0	91.5	75		
TBM0750	19.1	5.6	2.0	42.7	35		
TBM1100	27.9	10.2	2.0	91.5	75		
TBM1300	33.0	10.2	2.0	61.0	50		
TBM1500	38.1	12.7	2.0	48.8	40		
TBM1700	43.2	12.7	2.0	30.5	25		
TBM2050	52.1	19.1	2.0	30.5	25		
TBM2750	69.9	25.4	2.0	24.4	20		
TBM3500	88.9	30.0	2.4	12.2	10		
TBM4700	119.4	39.9	2.7	12.2	10		
TBM6700	170.2	58.4	2.8	6.1	5		
TBM9000	228.6	77.0	3.0	6.1	5		

Supplied with adhesive as standard

For non-adhesive versions, please contact your Sales Office

## Medium and Thick wall heatshrink tubing Low voltage kits up to 600V

- VMS heatshrinkable sleeves (TBM and TBW) are suitable for joining multi-core, polymeric insulated energy cables in the low voltage range
- Quick, simple installation
- Exceptionally good electrical insulation and environmental protection
- Good mechanical load-bearing ability
- No maintenance time necessary
- Unlimited storage life
- Tested to DIN 47632 / VDE 0278 Part 1 and 3

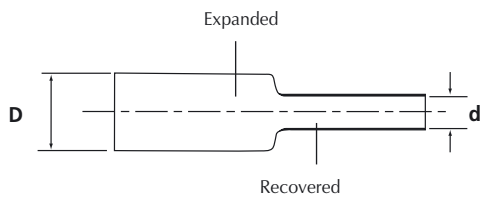
### Standard Content

- 1 Outer sleeve (TBW)
- 5 Inner sleeves (TBM)
- Cleaning cloths
- Abrasive cloth
- Installation instructions



### Technical Information

Wall thickness	Medium (TBM) and thick (TBW)
Shrink ratio	3:1
Tube characteristics	Dual wall
Temperature range	-55°C to +110°C
Shrinking temperature	+120°C
Material	Crosslinked polyolefin with thermoplastic adhesive liner
IP rating	IP67
Standard colour	Black
Other properties	Silicone and Halogen free



### Ordering Information

PRODUCT REF.	WIRE RANGE	CONTENT PER KIT							
		INNER SLEEVES	SHRINKAGE		LENGTH	OUTER SLEEVE	SHRINKAGE		LENGTH
			EXPANDED D	RECOVERED d			EXPANDED D	RECOVERED d	
[mm <sup>2</sup> ]	[pieces]	[mm]	[mm]	[mm]	[pieces]	[mm]	[mm]	[mm]	
VMS1	1.5 - 6	5	12	3	50	1	30	10	200
VMS2	2.5 - 16	5	12	3	125	1	40	12	500
VMS3	6 - 35	5	20	6	125	1	54	18	500
VMS6	16 - 50	5	20	6	250	1	70	25	700
VMS7	35 - 150	5	30	10	300	1	90	30	800
VMS8	120 - 240	5	40	12	300	1	90	30	800
VMS9	185 - 300	5	54	18	300	1	120	40	900

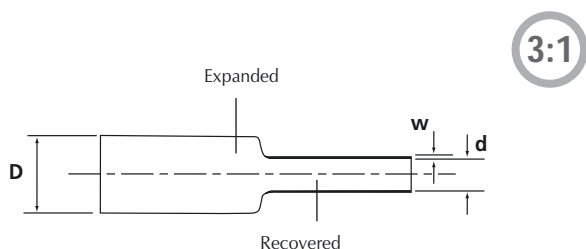
## Thick wall heatshrink tubing Type TBCHR - semi rigid - for submerged and underground installations

- TBCHR is a reliable thick wall heat shrinkable tubing suitable for applications where extraordinary insulating and sealing characteristics are required
- The interior of the tubing is coated with an effective thermo-plastic covering, which provides excellent adhesion and corrosion protection, acting as a valuable insulating resin
- Ideal for a variety of applications including the insulation of electrical connections, the repair of damaged earthing conductors and cable sheathing.
- As a result of the high shrink ratio of this product, only a few sizes of shrinkable tubing are required
- Internal diameters from 19 mm to 120 mm



### Technical Information

Wall thickness	Thick
Shrink ratio	3:1
Tube characteristics	Dual wall
Temperature range	-55°C to +110°C (+125°C for non-adhesive version)
Shrinking temperature	+120°C
Material	Crosslinked polyolefin with thermoplastic adhesive liner
IP rating	IP67
Standard colour	Black
Other properties	Silicone, Halogen, Cadmium and Lead free



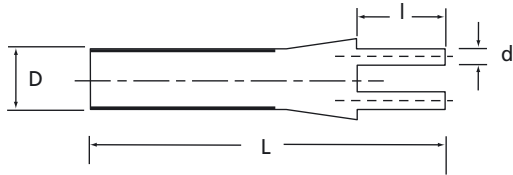
### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER	FULLY RECOVERED	WALL THICKNESS	LENGTH	QUANTITY
	AS SUPPLIED	DIAMETER	AFTER SHRINKING	PER BOX	PER BOX
	D [mm]	d [mm]	w [mm]	[m]	[pieces 1.22m]
TBCHR0750	19	6	2.4	1.2	1
TBCHR1100	28	9	3.0	1.2	1
TBCHR1500	38	12	4.1	1.2	1
TBCHR2000	51	16	4.1	1.2	1
TBCHR2700	68	22	4.1	1.2	1
TBCHR3500	90	30	4.1	1.2	1
TBCHR4700	120	40	4.2	1.2	1

The nominal wall thickness depends on the condition of the shrinking  
The wall thickness is decreased in the case where it is shrunk excessively  
Non-standard Ref. sizes and lengths available on request

## Medium and Thick wall heatshrink tubing Type TEB - cable breakouts

- Cable Breakouts are designed for the insulation and sealing of cable crutches
- They offer extreme strain relief and mechanical protection
- Adhesive line provides complete sealing
- UV-resistant
- They also provide good insulation and resistance to common fluids and solvents



### Technical Information

Wall thickness	Medium and thick
Shrink ratio	Various
Tube characteristics	Dual wall
Temperature range	-55°C to +100°C
Shrinking temperature	+135°C
Material	Crosslinked polyolefin with thermoplastic adhesive liner
IP rating	IP67
Standard colour	Black
Other properties	Silicone, Halogen, Cadmium and Lead free

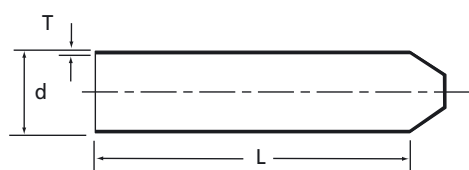
### Ordering Information

PRODUCT REF.	BREAKOUT MAIN Ø		FINGER Ø		RECOVERED FULL LENGTH L [mm]	RECOVERED FINGER LENGTH l [mm]	NUMBER OF BREAKOUTS	QUANTITY [pieces]
	EXPANDED	RECOVERED	EXPANDED	RECOVERED				
	D [mm]	[mm]	d [mm]	[mm]				
<b>TEB 2-BREAKOUTS</b>								
TEB2-30/15	30	9.4	15	4.1	84.6	27.0	2	10
TEB2-50/21	50	24.0	21	7.0	107.1	30.6	2	10
<b>TEB-3 BREAKOUTS</b>								
TEB3-38/11	38	14.0	11	4.0	110.0	20.0	3	10
TEB3-60/24	60	22.0	24	8.0	185.0	45.0	3	10
TEB3-80/36	80	33.0	36	16.0	210.0	50.0	3	10
TEB3-110/48	110	47.0	48	20.0	260.0	75.0	3	10
TEB3-125/55	125	47.0	55	20.0	260.0	75.0	3	10
<b>TEB-4 BREAKOUTS</b>								
TEB4-38/11	38	14.0	11	4.0	110.0	20.0	4	10
TEB4-55/20	55	22.0	20	8.5	190.0	45.0	4	10
TEB4-72/25	72	22.0	25	8.5	190.0	45.0	4	10
TEB4-100/35	100	33.0	35	14.0	215.0	50.0	4	10
TEB4-125/54	125	47.0	54	22.0	245.0	72.0	4	10



## Medium and Thick wall heatshrink tubing Type TEC - end caps

- End Caps are designed to seal and to protect cable-ends against the ingress of moisture and contamination.
- They offer extreme strain relief and mechanical protection
- Adhesive line provides complete sealing
- They also provide optimal sealing and resistance to chemicals and solvents
- UV-resistant



### Technical Information

Wall thickness	Medium and thick
Shrink ratio	> 2:1
Tube characteristics	Dual wall
Temperature range	-55°C to +100°C
Shrinking temperature	+120°C
Material	Crosslinked polyolefin with thermoplastic adhesive liner
IP rating	IP67
Standard colour	Black
Other properties	Silicone, Halogen, Cadmium and Lead free

### Ordering Information

PRODUCT REF.	EXPANDED DIAMETER AS SUPPLIED	RECOVERED DIAMETER	RECOVERED LENGTH	WALL THICKNESS AFTER SHRINKING	CABLE DIAMETER	QUANTITY
	[mm]	d [mm]	L [mm]	T [mm]	[mm²]	[pieces]
TEC15/4.5	15.0	4.5	44.0	1.0	5 - 12	100
TEC25/9	25.0	9.0	69.0	2.7	10 - 22	50
TEC36/15	36.0	15.0	93.0	2.8	17 - 30	10
TEC55/25	55.0	25.0	107.0	3.3	28 - 47	10
TEC80/40	80.0	40.0	127.0	3.6	45 - 70	10
TEC102/60	102.0	60.0	152.0	3.6	68 - 90	5
TEC124/60	124.0	60.0	152.0	3.6	75 - 110	5
TEC148/57	148.0	57.0	152.0	4.5	80 - 135	5

## TBTA-ZH - self amalgamating tape

- Self amalgamating tape
- Thomas & Betts TBTA-ZH tape provides a thick insulating layer with flawless electrical stability and a long term resistance to moisture penetration, which demands waterproofing
- To repair and maintain cable sleeving up to 65 Kv
- For installations, where open flame and heat may not be used
- Excellent resistance to UV rays and Ozone
- Easy to apply - no tools or heating required
- Excellent protection at low temperatures

3:1



### Technical Information

Stretch ratio	3:1
Temperature range	-55°C to +105°C
Material	EPR based tape
IP rating	IP67
Standard colour	Black
Other properties	Silicone, Halogen, Cadmium and Lead free

### Ordering Information

PRODUCT REF.	ROLL LENGTH	WIDTH	THICKNESS
	[m]	[mm]	[mm]
TBTA-ZH-19	9.0	19	0.76
TBTA-ZH-25	9.0	25	0.76
TBTA-ZH-38	9.0	38	0.76
TBTA-ZH-51	9.0	51	0.76

TBTA-ZH must be stretched on application for the self-adhesive properties to be activated. TBTA-ZH has a stretch ratio of more than 3:1.

### Installation notes

1. The surface of the connection and the cable entry must be clean
2. TBTA-ZH should be used under high tension as the stretching process activates the adhesive
3. By wrapping the TBTA-ZH tape around the cable, a sealed casing is created
4. If a cable or pipe needs protection, the TBTA-ZH tape should be wrapped around itself twice at the beginning point and then should overlap throughout by 50%. This means that the tape will also stretch when the cable is under tension
5. Finally, the surface (see point 4) should be covered once more using 100% tape overlap
6. At the end, the tape should be held at the overlap point and torn off
7. To conclude the installation, the ripped off end should be pressed firmly to close.

## Cable protection systems CPS Series - Braided Sleeving Flame retardant

- Standard colour – black with grey identification yarn
- Flame-retardant polyester, rated at UL 94V-0
- Available in nominal diameters from 3 to 50 mm to cover bundle diameters of 2 mm to 60 mm, giving flexibility when adding to or removing cables from wire looms
- For use in temperature ranges from -50°C to +150°C
- Good chemical resistance
- Excellent abrasion resistance
- For protecting and bundling cables and wires inside cabinets and enclosures

To stop the ends of the sleeving fraying it is necessary to heat seal the ends using a “hotwire” device. (see Product Ref. WTHSG)



### Ordering Information

PRODUCT REF.	NOMINAL DIAMETER AS SUPPLIED [mm]	EXPANDABLE DIAMETER RANGE [mm]	LENGTH PER MINI-REEL [m]
CPS3B-100-V0	3	2 - 5	100
CPS4B-100-V0	4	3 - 7	100
CPS5B-100-V0	5	4 - 9	100
CPS6B-100-V0	6	5 - 11	100
CPS8B-100-V0	8	7 - 13	100
CPS10B-50-V0	10	9 - 15	50
CPS12B-50-V0	12	11 - 17	50
CPS15B-50-V0	15	13 - 20	50
CPS20B-50-V0	20	18 - 25	50
CPS25B-50-V0	25	22 - 30	50
CPS30B-50-V0	30	27 - 40	50
CPS40B-50-V0	40	35 - 50	50
CPS50B-50-V0	50	45 - 60	50

Grey sleeving and other lengths available to special order, please contact your Sales Office



Product Ref. WTHSG



# Shrink-Kon<sup>®</sup>

## Cable protection systems CPS Series - Braided Sleeving Non-flame retardant

- Standard colour – black or grey
- Polyester rated at UL 94 V-2
- Available in nominal diameters from 3 to 50 mm to cover bundle diameters of 1 to 66 mm, giving flexibility when adding to or removing cables from wire looms
- For use in temperature ranges from -50°C to +150°C
- Good chemical resistance
- Halogen free
- For protecting and bundling cables and wires inside cabinets and enclosures



3.2

To stop the ends of the sleeving fraying it is necessary to heat seal the ends using a "hotwire" device. (see Product Ref. WTHSG)

1:2

### Ordering Information

PRODUCT REF. BLACK	PRODUCT REF. GREY	NOMINAL DIAMETER AS SUPPLIED [mm]	EXPANDABLE DIAMETER RANGE [mm]	LENGTH PER MINI-REEL [m]
CPS3B-100	CPS3G-100	3	1 - 5	100
CPS4B-100	CPS4G-100	4	2 - 7	100
CPS5B-100	CPS5G-100	5	3 - 9	100
CPS6B-100	CPS6G-100	6	4 - 11	100
CPS8B-100	CPS8G-100	8	5 - 12	100
CPS10B-100	CPS10G-100	10	7 - 15	100
CPS12B-50	CPS12G-50	12	8 - 17	50
CPS15B-50	CPS15G-50	15	10 - 20	50
CPS20B-25	CPS20G-25	20	14 - 26	25
CPS25B-25	CPS25G-25	25	18 - 34	25
CPS30B-25	CPS30G-25	30	20 - 40	25
CPS40B-25	CPS40G-25	40	30 - 50	25
CPS50B-25	CPS50G-25	50	40 - 66	25

- Offers excellent protection for cable assemblies against abrasion
- No heat is required to seal the ends of this product as with traditional braided sleeving
- With its wraparound design, it can be installed on assemblies where the wires are already terminated or wires need to be broken-out
- Bind-It™ is available in nominal sizes from 5 mm to 38 mm
- A professional assembly tool is supplied on request for the 5 mm, 8 mm and 13 mm nominal sizes
- Product is supplied black as standard with a white version available on request
- For a UL version please contact your Sales Office



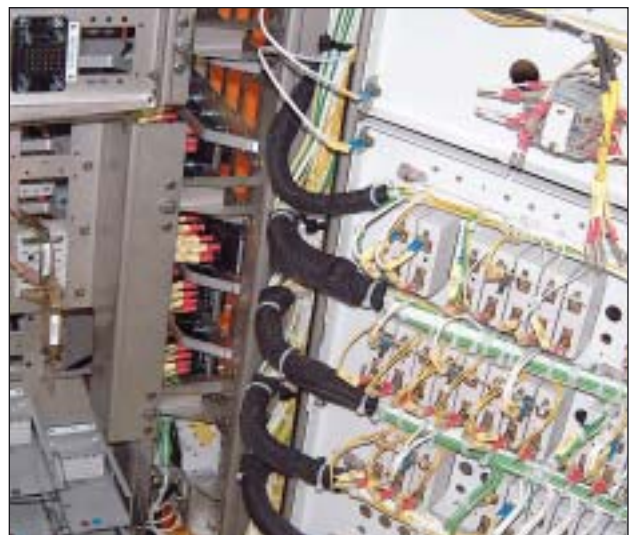
### Technical Information

Property	Test method	Typical performance
Operating temperature range		-70°C to +125°C
Melt temperature	ASTM D276	+256°C
Low temperature flexibility	MIL-DTL-23053E	-70°C
Smoke density	ASTM E-1354	Pending
Fire resistance	FMVSS-302 Test method D45 1333	Self-extinguishing, type B
Hard Vacuum	ASTM E-595	
• TML (Mass)		0.63 %
• CVCN (Condensation)		0.16 %
• WVR (Steam)		0.06 %
Copper corrosivity	MIL-I-23053	No effect
Fluid resistance	MIL-I-23053	Tensile retention
• Jet fuel: JP-41		100 %
• Hydraulic fluid: (MIL-H-5606)		100 %
• Lube oil: (MIL-I-7808)		100 %
• De-icing fluid: (MIL-A08243)		100 %
• Salt Water: (O-S-1926)		100 %

### Ordering Information

PRODUCT REF.	NOMINAL SIZE* [mm]	LENGTH PER MINI-REEL [m]
CPS05W-150	5	150
CPS08W-100	8	100
CPS13W-50	13	50
CPS19W-25	19	25
CPS25W-25	25	25
CPS29W-25	29	25
CPS32W-15	32	15
CPS38W-15	38	15

\* Nominal size is determined by wrapping the product around a mandrel of a given size to obtain 90 degrees of overlap (average value)





The Hot Air Tool from Thomas & Betts achieves a rapid shrink action. This tool is ideal for industrial and military applications.



### Ordering Information

PRODUCT REF.	DESCRIPTION
GR121	Hot Air Tool (European Plug and WT993GR nozzle)
GR321	Hot Air Tool (UK Plug and WT993GR nozzle)
WT992GR	Wide slot nozzle
WT993GR	Reflector nozzle
WT994GR	Reduction nozzle Ø 20mm
WT995GR	Welding nozzle
WT996GR	Overlap welding nozzle
WT998GR	Solder sleeve reflector nozzle
WT999GR	Glass protection nozzle

### Technical Information

Property	Typical performance
Power Consumption	1400W
Temperature	+350°C to +500°C
Air Flow	350 / 500 l/min
Static pressure max.	1250 Pa
Weight	570 g
Electronics	Flicker-conformity



WT992GR



WT993GR



WT994GR



WT995GR



WT996GR



WT998GR



WT999GR

### Hot Air Tool - GR500

- Self contained refillable Industrial Torch
- Max. temperature: approx +850°C
- Uses butane gas
- Working time: 25 minutes per gas refill
- Auto ignition
- Adjustable flame
- Ideal for medium and thick wall heatshrink applications
- Supplied with attractive leather case for belt attachment



PRODUCT NAME	DESCRIPTION	MECHANICAL BEHAVIOUR	OPERATING TEMP	SHRINK RATIO	EXPANDED DIAMETER BEFORE SHRINKAGE	SILICON- FREE & LEAD-FREE	CADMIUM & HALOGEN	NON HALOGEN	SPECIFIC GRAVITY	LONGITUDINAL SHRINKAGE (MAX.)	TENSILE STRENGTH AFTER HEAT SHOCK	ELONGATION AFTER HEAT SHOCK	ELONGATION	ULTIMATE ELONGATION	TENSILE STRENGTH	SECANT MODULUS
ACCORDING TO																
TEST METHOD																
ASTM-D792																
IEC 811-1-2																
IEC 60684-2																
ASTM-D 882																
PLG	PE Polyolefin	Flexible	-55°C to +125°C	2:1	1.2 mm - 3/64" - 4"	yes	yes	no*	1.25 g/cm <sup>3</sup>	-10%	13 MPa 4h / 200°C	280% 4h / 200°C	400%	15 MPa max.	87 MPa	
CMP	PE Polyolefin	Flexible	-55°C to +135°C	2:1	1.2 mm - 3/64" - 4"	yes	yes	no*	1.3 g/cm <sup>3</sup>	-5%	18MPa 4h / 250°C	No cracking or flowing 4h / 250°C	500%	17 MPa max.	90 MPa	
MLP	PE Polyolefin	Flexible	-55°C to +135°C	2:1	1.2 mm - 3/64" - 25.4 mm - 1"	yes	yes	no*	1.3 g/cm <sup>3</sup>	-5%	19 MPa 4h / 250°C	400% 4h / 200°C	500%	17 MPa max.	90 MPa	
FRH	PE Polyolefin	Flexible	-55°C to +135°C	2:1	1.2 mm - 3/64" - 50.8 mm - 2"	yes	yes	no	1.4g/cm <sup>3</sup>	-5%	12 MPa 4h / 200°C	No dripping, flowing or ripping, 4h / 250°C	400%	17 MPa max.	85MPa	
GYS	PE Polyolefin	Flexible	-55°C to +135°C	2:1	3.2 mm - 1/8" - 25.4 mm - 1"	yes	yes	no	1.3 g/cm <sup>3</sup>	-5%	14MPa 4h / 200°C	350% 4h / 200°C	450%	15 MPa max.	90 MPa	
PIG coloured	PE Polyolefin	Flexible	-55°C to +135°C	3:1	1.6 mm - 1/16" - 39 mm - 1 1/2"	yes	yes	no*	1.3 g/cm <sup>3</sup>	-10%	13 MPa 4h / 200°C	No cracking or flowing 4h / 250°C	500%	17 MPa max.	90 MPa	
PIG transparent	PE Polyolefin	Flexible	-55°C to +135°C	3:1	1.6 mm - 1/16" - 39 mm - 1 1/2"	yes	yes	no*	1 g/cm <sup>3</sup>	-10%	15 MPa 4h / 200°C	No cracking or flowing 4h / 250°C	550%	20 MPa max.	80 MPa	
PKG	PE Polyolefin	Semi-flexible	-55°C to +110°C outer jacket	3:1/4:1	3.2 mm - 1/8" - 39 mm - 1 1/2"	yes	yes	no	1.25 g/cm <sup>3</sup>	3:1 = -12% 4:1 = -17%	14 MPa 4h / 200°C	350% 4h / 200°C	400%	15 MPa max.	175 MP	
KYN	Kynar® Polyvinylidene fluoride	Rigid	-55°C to +175°C	2:1	1.2 mm - 3/64" - 25.4 mm - 1"	yes	yes	no*	1.8 g/cm <sup>3</sup>	-6%	48 MPa 4h / 250°C	300% 4h / 250°C	350%	50 MPa max.	725 MPa	
VIT	Viton® Vinylidene fluoride	Highly flexible	-55°C to +220°C	2:1	3.2 mm - 1/8" - 50.8 mm - 2"	yes	yes	no	1.9 g/cm <sup>3</sup>	-10%	17 MPa 4h / 300°C	250% 4h / 300°C	520%	18 MPa max.	55 MPa	
ZHFR	PE Polyolefin	Very flexible	-40°C to +105°C	2:1	2.4 mm - 3/32" - 25.4 mm - 1"	yes	yes	yes	1.4 g/cm <sup>3</sup>	-10%	13 MPa 4h / 150°C	100% min, 4h / 150°C	200%	14 MPa max.	54MPa	
TEST METHOD																
ISO 37																
ISO/R1183 ASTM D2671																
TBW	PE Polyolefin	Semi-rigid	-55°C to +110°C	3:1	8.9 mm - 119.9 mm	yes	yes	yes	1.1 g/cm <sup>3</sup> max	+1% to -10%	14.5 MPa 4h / 225°C	No cracking or flowing 4h / 225°C	600%	14 MPa max.	175 MPa	
TBM	PE Polyolefin	Semi-rigid	-55°C to +110°C	3:1	10.2 mm - 228.6 mm	yes	yes	yes	1.1 g/cm <sup>3</sup> max	+1% to -10%	14 MPa 4h / 225°C	No cracking or flowing 4h / 225°C	550%	14 MPa max.	175 MPa	
LV- Kit	PE Polyolefin	Semi-rigid	-55°C to +125°C	3:1	1.5 - 400 mm <sup>2</sup>	yes	yes	yes	1.1 g/cm <sup>3</sup> max	10% max	14 MPa 4h / 225°C	No cracking or flowing 4h / 225°C	300% min	14 MPa max.	175 MPa	
TEST METHOD																
ISO/R1183																
ASTM D638																
TEC	PE Polyolefin	Semi-rigid	-55°C to +100°C	>2:1	15 mm - 148 mm	yes	yes	yes	1.1 g/cm <sup>3</sup> max	+1% to -10%	12 MPa min, 4h / 150°C	No cracking or flowing 4h / 150°C	300% min	12 MPa max.	175 MPa	
TEB 3&4 breakouts	PE Polyolefin	Semi-rigid	-55°C to +100°C	various ratios	38 mm - 125 mm	yes	yes	yes	1.1 g/cm <sup>3</sup> max	+1% to -10%	10 MPa 4h / 150°C	No cracking or flowing 4h / 150°C	300% min	10 MPa max.	175 MPa	
TEB 2 breakouts	PE Polyolefin	Semi-rigid	-55°C to +100°C	various ratios	33 mm - 87 mm	yes	yes	yes	1.1 g/cm <sup>3</sup> max	+1% to -10%	10 MPa 4h / 150°C	No cracking or flowing 4h / 150°C	300% min	10 MPa max.	175 MPa	
TEST METHOD																
EPR-tape																
TBTA-ZH	EPR-tape	Very flexible	-55°C to +105°C	stretch 3:1		yes	yes	yes			2.5 MPa min		750% min			
TEST METHOD																
NONE																
ASTM D2671																
ISO 37																
TBCHR	PE Polyolefin	Flexible	-55°C to +110°C	6:1	19 mm - 119.9 mm	yes	yes	yes	1.1 g/cm <sup>3</sup> max	10%	14 MPa min	No cracking or flowing 4h / 225°C	400% min	14 MPa max.	175 MPa	

\* Transparent version is Halogen free  
Viton® is a registered trademark of DuPont  
Kynar is a registered trademark of ATOFINA

Current values and other information available on request  
Transparent and adhesive versions not self extinguishing

PRODUCT NAME	ABRASION RESISTANCE	TENSILE STRENGTH AFTER HEAT AGING	ELONGATION AFTER HEAT AGING	LOW TEMPERATURE FLEXIBILITY	COMBUSTION BEHAVIOUR	SHRINK TEMP	STORAGE TEMP	RESISTANCE AGAINST CHEMICALS	WATER ABSORPTION (MAX.)	RESISTANCE TO FUNGUS	SHORE HARDNESS	DIELECTRIC STRENGTH		SPECIFIC VOLUME RESISTANCE
												DIELECTRIC CONSTANT	WALL THICKNESS DEPENDENT	
<b>TEST METHOD</b>	<b>VG 95343</b>	<b>IEC 811-1-1</b>	<b>IEC 811-1-1</b>	<b>ASTM D2671-C</b>	<b>ASTM D2671</b>			<b>VG 95343</b>	<b>VDE O472</b>	<b>ISO 846</b>	<b>ASTM D2240</b>	<b>VDE 0303 PART 2</b>	<b>DIN53483 BL2+3</b>	<b>VDE 0303 PART 3</b>
PLG	>1000 cycles passed	12 Mpa 168h / 158°C	290% 168h / 158°C	does not break at -55°C	ASTM 2671 self-extinguishing**	+110°C	+30°C max	Good	0,30%	Very good	39 Shore D	22 KV/mm	2.5 max	10 <sup>15</sup> Ohm x cm
CMP	>1000 cycles passed	13 MPa 168h / 175°C	300% 168h / 175°C	does not break at -55°C	ASTM 2671 self-extinguishing**	+90°C	+30°C max	Good	0,20%	Very good	39 Shore D	24 KV/mm	2.5 max	10 <sup>16</sup> Ohm x cm
MLP	>1000 cycles passed	12 Mpa 168h / 158°C	300% 168h / 158°C	does not break at -55°C	ASTM 2671 self-extinguishing**	+110°C	+30°C max	Good	0,20%	Very good	39 Shore D	24 KV/mm	2.5 max	10 <sup>15</sup> Ohm x cm
FRH	>1000 cycles passed	13 Mpa 168h / 175°C	400% 168h / 175°C	does not break at -55°C	VW-1, ASTM 2671 self-extinguishing**	+110°C	+30°C max	Good	0,50%	Very good	37 Shore D	20 KV/mm	2.5 max	10 <sup>16</sup> Ohm x cm
GYS	>1000 cycles passed	12 MPa 168h / 175°C	300% 168h / 175°C	does not break at -55°C	ASTM 2671 self-extinguishing**	+90°C	+30°C max	Good	0,20%	Very good	39 Shore D	24 KV/mm	2.5 max	10 <sup>16</sup> Ohm x cm
PIG coloured	>1000 cycles passed	13 MPa 168h / 175°C	300% 168h / 175°C	does not break at -55°C	ASTM 2671 self-extinguishing**	+90°C	+30°C max	Good	0,20%	Very good	38 Shore D	24 KV/mm	2.5 max	10 <sup>16</sup> Ohm x cm
PIG transparent	>1000 cycles passed	18 MPa 168h / 175°C	500% 168h / 175°C	does not break at -55°C	ASTM 2671 self-extinguishing**	+90°C	+30°C max	Good	0,20%	Very good	36 Shore D	24 KV/mm	2.5 max	10 <sup>16</sup> Ohm x cm
PKG	>1000 cycles passed	14 MPa 168h / 150°C	300% 168h / 150°C	does not break at -55°C	Jacket self-extinguishing**	+95°C	+30°C max	Good	0,17%	Very good	36 Shore D	23 KV/mm	2.5 max	10 <sup>14</sup> Ohm x cm
KYN	>1000 cycles passed	40 MPa 168h / 200°C	230% 168h / 200°C	does not break at -55°C	VW-1, ASTM 2671 self-extinguishing	+175°C	+30°C max	Very good	0,07%	Very good	65 Shore D	31.5 KV/mm	5.5 max	10 <sup>13</sup> Ohm x cm
VIT	>1000 cycles passed	14 MPa 168h / 250°C	220% 168h / 250°C	does not break at -55°C	ASTM 2671 self-extinguishing	+175°C	+30°C max	Very good	0,20%	Very good	30 Shore D	16 KV/mm	9 max	10 <sup>13</sup> Ohm x cm
ZHR	>1000 cycles passed	12 MPa 168h / 135°C	150% 168h / 135°C	does not break at -40°C	flame retardant	+115°C	+30°C max	Good to excellent	0,20%	Very good	36 Shore D	24 KV/mm	2.5 max	10 <sup>16</sup> Ohm x cm
<b>TEST METHOD</b>	<b>ISO 37</b>	<b>ISO 37</b>	<b>ISO 37</b>	<b>ASTM D2671</b>				<b>ASTM D570</b>	<b>ASTM D570</b>			<b>IEC 243</b>	<b>IEC 250</b>	<b>IEC 93</b>
TBW	>1000 cycles passed	9 MPa min 168h / 150°C	500% 168h / 150°C	does not break at -55°C	Not self-extinguishing	+120°C	+30°C max	Good	0,10%	Very good	45 Shore D min	20 KV/mm	5 max	10 <sup>16</sup> Ohm x cm
TBM	>1000 cycles passed	9 MPa min 168h / 120°C	500% 168h / 150°C	does not break at -55°C	Not self-extinguishing	+120°C	+30°C max	Good	0,10%	Very good	45 Shore D min	20 KV/mm	5 max	10 <sup>16</sup> Ohm x cm
LV-Kit	>1000 cycles passed	9 MPa min 168h / 120°C	250% min 168h / 150°C	4 hours at -55°C no cracking or splitting	Not self-extinguishing	+120°C	+30°C max	Good	0,50% max	Very good	45 Shore D min	20 KV/mm	5 max	10 <sup>16</sup> Ohm x cm
<b>TEST METHOD</b>	<b>ISO 188</b>	<b>ISO 188</b>	<b>ISO 188</b>		<b>ESI 09-11</b>			<b>ISO 62</b>	<b>ISO 62</b>			<b>IEC 243</b>	<b>IEC 250</b>	<b>IEC 93</b>
TEC	>1000 cycles passed	10 MPa min 168h / 120°C	250% 168h / 120°C	4 hours at -55°C no cracking or splitting	Self-extinguishing	+120°C	+30°C max	Good	0,20%	Very good	45 Shore D min	12 KV/mm	5 max	10 <sup>11</sup> Ohm x cm
TEB 3&4 breakouts	>1000 cycles passed	9 MPa min 168h / 120°C	Min. 250% 168h / 120°C	4 hours at -55°C no cracking or splitting	Self-extinguishing	+135°C	+30°C max	Good	0,20%	Very good	40 Shore D min	12 KV/mm	5 max	10 <sup>12</sup> Ohm x cm
TEB 2 breakouts	>1000 cycles passed	9 MPa min 168h / 120°C	Min. 520% 168h / 120°C	4 hours at -55°C no cracking or splitting	Self-extinguishing	+130°C	+30°C max	Good	0,20%	Very good	40 Shore D min	12 KV/mm	5 max	10 <sup>12</sup> Ohm x cm
<b>TEST METHOD</b>	<b>TBTA-ZH</b>				Flame retardant			Good	0,06%	Very good		<b>ASTM D150</b>	<b>ASTM D150</b>	
												30 KV/mm min	2,7	24h/23°C
<b>TEST METHOD</b>	<b>ISO 37</b>	<b>ISO 37</b>	<b>ISO 37</b>					<b>ASTM D570</b>	<b>ASTM D570</b>					
TBCHR	>1000 cycles passed	9 MPa min 168h / 150°C	Min. 250% 168h / 155°C	4 hours at -55°C no cracking or splitting	Not flame retardant	+120°C	+30°C max	Good	0,05%	Very good	45 Shore D	20 KV/mm	5 max	10 <sup>16</sup> Ohm x cm

\*\* Except transparent version

Current values and other information available on request  
Transparent version and adhesive not self-extinguishing