
NF 45/50

Insulation Products

Heatshrink Tubing Selection Guide

Use our flow chart to find the correct heatshrink tubing for your particular application.

Begin your search in the flow chart at the START point. You will be guided through Diagrams 1 to 3 to the target according to your heat-shrink tubing requirements. Using the "yes/no" and "either/or" decisions, you will be able to select the correct heatshrink tubing with ease.
Of course, you can always call us whenever you wish on our usual telephone numbers.

Diagram 1

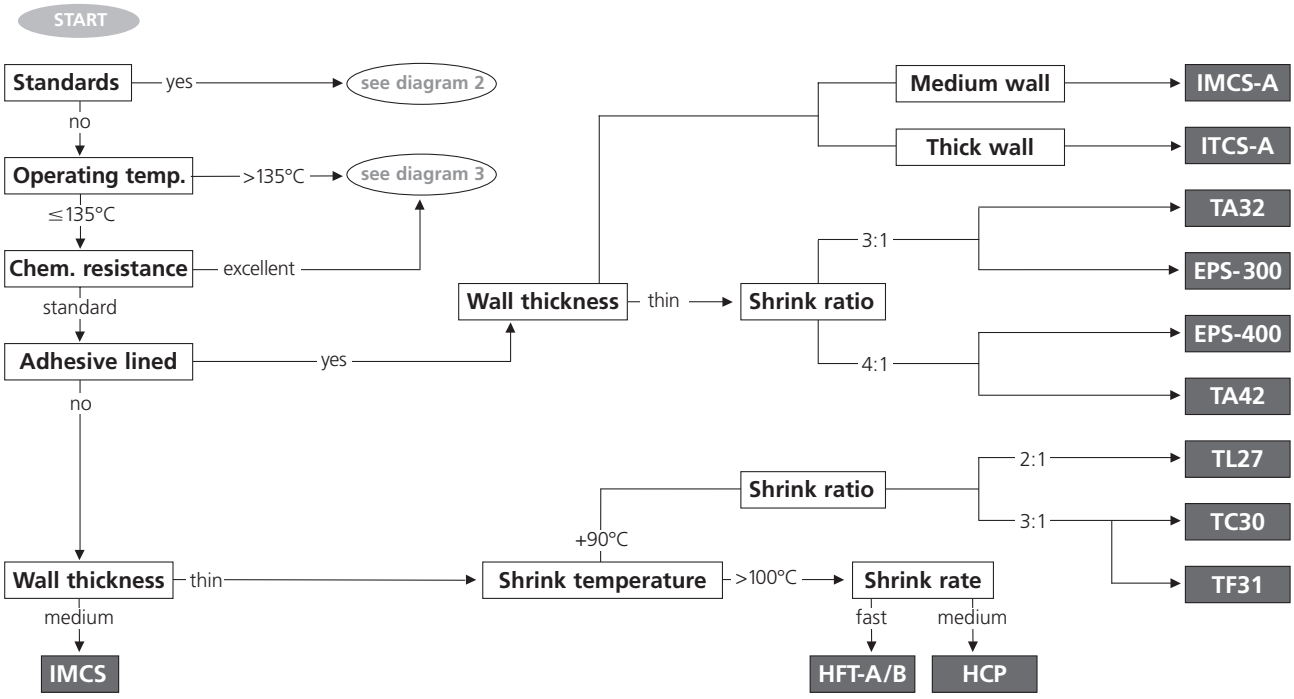


Diagram 2

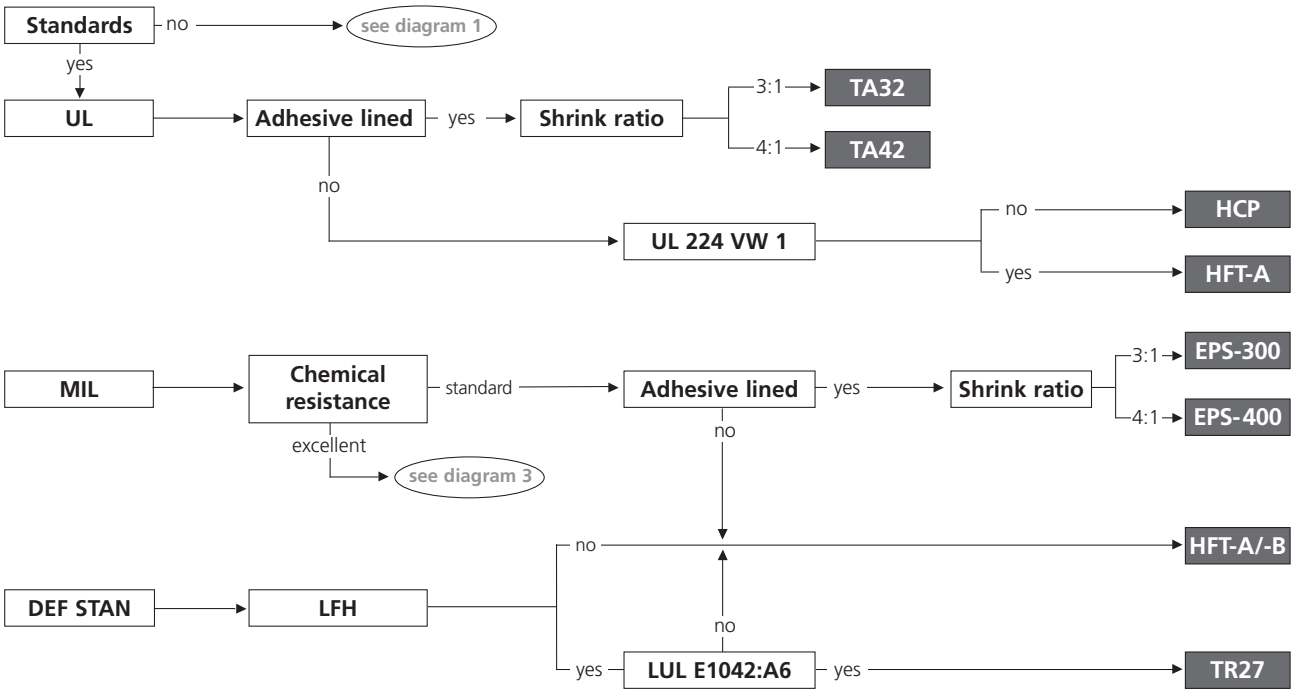
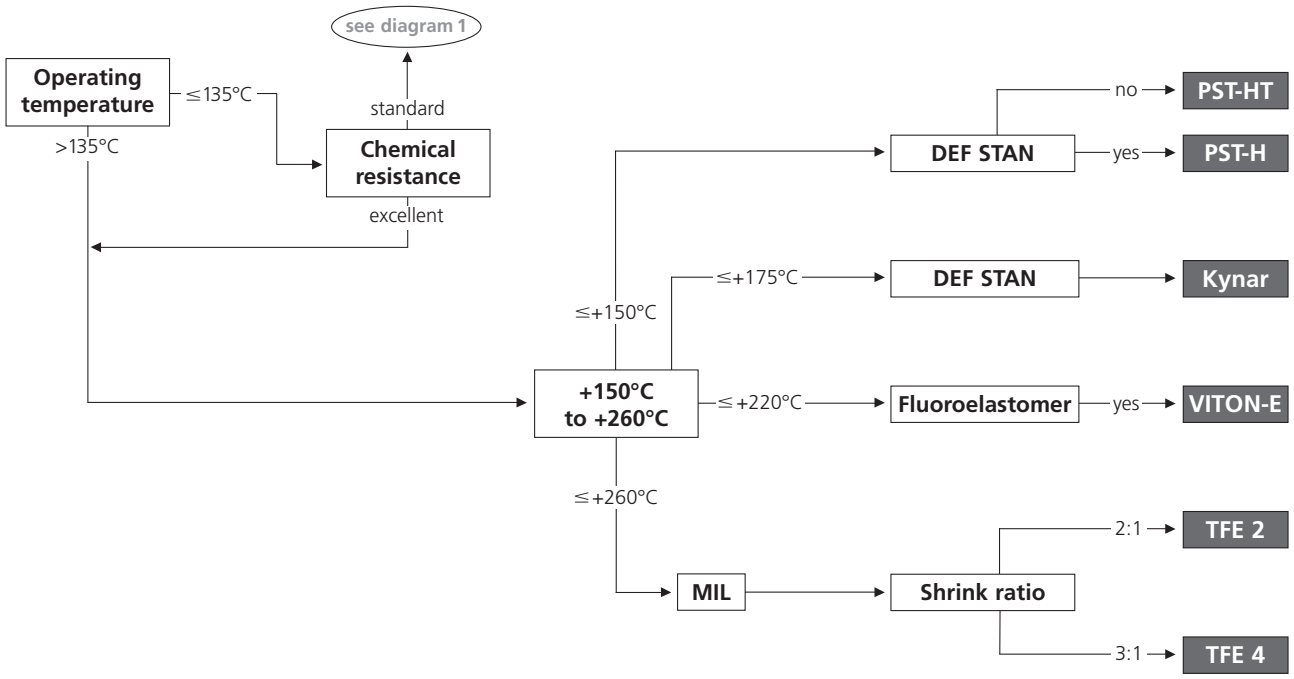


Diagram 3


see diagram 1
Operating temperature
≤135°C
standard
>135°C
Chemical resistance
excellent
no
PST-HT
DEF STAN
yes
PST-H
≤+175°C
DEF STAN
Kynar
≤+150°C
+150°C to +260°C
≤+220°C
Fluoroelastomer
yes
VITON-E
≤+260°C
2:1
TFE 2
MIL
Shrink ratio
3:1
TFE 4

■ suitable
□ of limited suitability
++ very good
+ good
o limited
These details are only rough guide values. They should be regarded as a material specification and are no substitute for a suitablity test. Please see our datasheets for further details.

Typ	Page	Material	Operating Temperature [°C]	Shrink Ratio	Longitudinal change after complete shrinkage [%]
Heatshrink Tubing Kits					
HIS-Pack	150	Polyolefin, Cross-linked (POX)	-55 °C to +135 °C	2:1	-5% max.
HIS-3	148	Polyolefin, Cross-linked (POX)	-55 °C to +125 °C	3:1	-10% max.
HIS-A	148	Polyolefin, Cross-linked (POX)	-55 °C to +110 °C	3:1	-10% max.
Tredux	152	Polyolefin, Cross-linked (POX)	-55 °C to +125 °C	3:1 from 1.5 / 0.5 mm to 24 / 8 mm, 2:1 from 38.1/19.1 mm to 101.6 / 50.8 mm	-10% max.
Heatshrink Tubing PVC					
LVR	156	Flexible Polyvinyl Chloride, cadmium free (PVC)	-30 °C to +105 °C	2:1	+/-10% max.
Heatshrink Tubing, Thin Wall					
HFT-A	160	Polyolefin, Cross-linked (POX)	-55 °C to +135 °C , Intermittent +225 °C	2:1	-5% max.
HFT-B	160	Polyolefin, Cross-linked (POX)	-55 °C to +135 °C , Intermittent +225 °C	2:1	-5% max.
HCP	157	Polyolefin, Cross-linked (POX)	-55 °C to +135 °C	2:1	-5% max.
TC30	158	Polyolefin, Cross-linked (POX)	-55 °C to +125 °C	3:1	-15% max.
TL27	159	Polyolefin, Cross-linked (POX)	-55 °C to +135 °C	2:1	+5%/-15%
TF31	164	Polyolefin, Cross-linked (POX)	-55 °C to +135 °C , Intermittent +225 °C	3:1	+/-5% max.
Heatshrink Tubing, Thin Dual Wall					
TA32	167	Polyolefin, Cross-linked (POX)	-55 °C to +125 °C	3:1	-15% max.
TA42	167	Polyolefin, Cross-linked (POX)	-55 °C to +125 °C	4:1	-15% max.
EPS300, EPS400	166	Polyolefin, Cross-linked (POX)	-55 °C to +110 °C	3:1, 4:1	-10% max.
Heatshrink Tubing, Medium Wall					
IMCS	168	Polyolefin, Cross-linked (POX)	55 °C to 130 °C	up to 4.5:1	-10% max.
Heatshrink Tubing, Medium Dual Wall					
Tredux Medium Wall	153	Polyolefin, Cross-linked (POX)	-55 °C to +125 °C	up to 4:1	-15% max.
IMCS-A	168	Polyolefin, Cross-linked (POX)	-55 °C to +75 °C	up to 4.5:1	-10% max.

*** not for transparent version**

**** only outer sleeve**

Technical data						Resistant properties					Possible applications											Applications				
Dielectric strength [kV/mm]	Self-extinguishing	Silicone-free	Copper compatibility (non-corrosive)	Printable		UV light	Solvents	Fuels	Acids and bases		Harnessmaker	Electronics	Automotive industry	Motor sport	Railway vehicles	Military	Aerospace	Ship building	Repairing underground cables	Energy supply		Electrical insulation	Colour marking	Strain relief	Anti-kinking protection	Protection against moisture
25 kV/mm	Yes	Yes	Yes			+	+	o	+		■											■	■	■		
25 kV/mm	Yes	Yes	Yes			+	+	o	+		■											■	■	■		
15 kV/mm		Yes				+	+	o	+		■											■		■		■
19.7 kV/mm	Yes	Yes	Yes			+	+	o	+		■											■		■		
15 kV/mm	Yes	Yes	Yes			+	o	o	o		■											■		■	■	
20 kV/mm	Yes	Yes	Yes	Yes		+	+	+	+		■				■	■	■					■	■	■		
20 kV/mm		Yes	Yes			+	+	+	+		■					■	■					■		■		
25 kV/mm	Yes	Yes	Yes	Yes		+	+	o	+		■		■									■	■	■		
19.7 kV/mm	Yes	Yes	Yes	Yes		+	+	o	+		■		■									■		■		
22 kV/mm		Yes	Yes			+	+	o	+		■	■	■									■		■		
19.7 kV/mm		Yes	Yes	Yes		+	+	+	+		■					■	■					■	■	■		
15 kV/mm	Yes**	Yes	Yes			+	+	o	+		■		■									■		■		■
15 kV/mm	Yes	Yes	Yes			+	+	o	+		■		■									■		■		■
15 kV/mm		Yes	Yes			+	+	o	+		■		■			■	■					■		■		■
10 kV/mm	Yes	Yes	Yes			+	o	o	+									■		■		■		■	■	
10 kV/mm		Yes	Yes			+	o	o	+		■							■		■		■		■	■	■
10 kV/mm	Yes**	Yes	Yes			+	o	o	+		■							■		■		■		■	■	■

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Typ	Page	Material	Operating Temperature [°C]	Shrink Ratio	Longitudinal change after complete shrinkage [%]
Heatshrink Tubing, Heavy Dual Wall					
Tredux Thick Wall	154	Polyolefin, Cross-linked (POX)	-55 °C to +125 °C	up to 3.5:1	-15% max.
ITCS-A	169	Polyolefin, Cross-linked (POX)	-55 °C to +130°C	up to 4:1	-10% max.
Heatshrink Tubing for Special Purposes					
TFE2, TFE4	173	Polytetrafluoroethylene (PTFE)	-65 °C to +260 °C	2:1	-20% max.
TR27	174	Polyolefin, Cross-linked (POX)	-40 °C to +105 °C	2:1	+5%/-10% max.
SR27	175	Polyolefin, Cross-linked (POX)	-40 °C to +105 °C	2:1	+5%/-10% max.
PST-H	170	Elastomer cross-linked (PES)	-75 °C to +150 °C	2:1	-10% max.
PST-HT	170	Elastomer cross-linked (PES)	-75 °C to +150 °C	2:1	-10% max.
Viton-E®	171	Fluoroelastomer (FPM)	-55 °C to +220 °C	2:1	-10% max.
Kynar®	172	Polyvinylidene Fluoride (PVDF)	-55 °C to +175 °C	2:1	-5% max.

*** not for transparent version** **** only outer sleeve**

Typ	Page	Material	Operating Temperature [°C]	Shrink Ratio
Shapes				
Series 100-1300-G	195	Polyolefin, Cross-linked (POX)	-75 °C to 150 °C	up to 3:1
Series 100-1300-GW24	195	Polyester elastomer cross-linked (PEEX)	-75 °C to 150 °C	up to 3:1
Series 100-1300-HW21	195	Polyolefin, Cross-linked (POX)	-55 °C to 105 °C	up to 3:1
HEK End Caps	210	Polyolefin, Chemically cross linked (POX)	-55 °C to 70 °C	up to 3:1
HEV Cable Breakout Boots	211	Polyolefin, Chemically cross linked (POX)	-55 °C to 70 °C	up to 3:1
HAC Anode Caps	212	Polyolefin, Chemically cross linked (POX)	-55 °C to 70 °C	2:1
Low Voltage Kits				
Low Voltage Joints	213	Polyolefin, Cross-linked (POX)	-55 °C to +100 °C	up to 4:1
Medium Voltage Kits				
Medium Voltage Cable Terminations 1/C	214	Polyolefin, Cross-linked (POX)	-40 °C to 100 °C	–
Medium Voltage Cable Terminations 3/C	215	Polyolefin, Cross-linked (POX)	-40 °C to 100 °C	–
Medium Voltage Cable Joint 1/C	216	Polyolefin, Cross-linked (POX), Metal	-40 °C to 100 °C	–
Medium Voltage Cable Joint 3/C	217	Polyolefin, Cross-linked (POX), Metal	-40 °C to 100 °C	–
Adhesive				
Helashrink HMT200A	156	Ethylenevinylacetate (EVA)	-55 °C to +105 °C	–
V9500 Exposy Adhesive	203	Epoxy resins (EP)	-75 °C to +150 °C	–

Technical data					Resistant properties				Possible applications										Applications				
Dielectric strength [kV/mm]	Self-extinguishing	Silicone-free	Copper compatibility (non-corrosive)	Printable	UV light	Solvents	Fuels	Acids and bases	Harnessmaker	Electronics	Automotive industry	Motor sport	Railway vehicles	Military	Aerospace	Ship building	Repair of underground cables	Energy supply	Electrical insulation	Colour marking	Strain relief	Anti-kinking protection	Protection against moisture
15 kV/mm		Yes	Yes		+	o	o	+								■		■	■		■	■	■
10 kV/mm		Yes	Yes		+	o	o	+								■		■	■		■	■	■
40 kV/mm	Yes	Yes	Yes		+	++	++	++						■	■				■		■		
15 kV/mm	Yes	Yes	Yes		+	+	+	+					■			■			■		■		
19.7 kV/mm	Yes	Yes	Yes		+	+	+	+					■			■			■		■		
20 kV/mm	Yes	Yes	Yes		+	+	++	+	■			■		■	■				■		■		
20 kV/mm	Yes	Yes	Yes		+	+	++	+	■			■		■	■				■		■		
15 kV/mm	Yes	Yes	Yes		+	++	++	++	■			■		■	■				■		■		
30 kV/mm	Yes	Yes	Yes		+	+	++	+						■	■				■		■	■	

Technical data					Resistant properties				Possible applications										Applications				
Dielectric strength [kV/mm]	Self-extinguishing	Silicone-free	Copper compatibility (non-corrosive)	Printable	UV light	Solvents	Fuels	Acids and bases	Harnessmaker	Electronics	Automotive industry	Motor sport	Railway vehicles	Military	Aerospace	Ship building	Repair of underground cables	Energy supply	Electrical insulation	Colour marking	Strain relief	Anti-kinking protection	Protection against moisture
14 kV/mm	Yes	Yes	Yes	o	++	+	++	+	■	■	■	■	■	■	■				■	□	■	■	
14 kV/mm	Yes	Yes	Yes	o	++	+	++	+	■	■	■	■	■	■	■				■	□	■	■	■
15 kV/mm	Yes	Yes	Yes	o	++	+	+	+	■	■	■		■	■		■			■	□	■	■	■
15 kV/mm	Yes	Yes	Yes	++	++	+	+	+					■	■		■	■	■	■				■
15 kV/mm	Yes	Yes	Yes	++	++	+	+	+					■	■		■	■	■	■				■
15 kV/mm	Yes	Yes	Yes	++	++	+	+	+										■					■
15 kV/mm	Yes	Yes	Yes		++	+	+	++								■	■	■	■				■
–	Yes	Yes	Yes		++	+	+	+								■		■					■
–	Yes	Yes	Yes		++	+	+	+								■		■					■
–	Yes	Yes	Yes		++	+	+	+								■	■	■					■
–	Yes	Yes	Yes		++	+	+	+								■	■	■					■
–						o	o	o	■	■												■	■
–						+	++	+	■	■	■	■	■	■	■							■	■

Heatshrink cross-reference table

Previous name	New name	Description	Page
HXL 2:1	HCP	2:1 Commercial polyolefin	157
ISFS/HFXL	TL27	2:1 Halogen-free low shrink temp polyolefin	159
HCP	HFT-A	2:1 UL approved polyolefin	160
SFM/VFP 2:1	HFT-A	2:1 Miltary grade polyolefin	160
SFM/VFP 2:1 TT	HFT-B	2:1 Miltary grade polyolefin	160
SFM 3:1	TF31	3:1 Miltary grade polyolefin	164
NEW!	TA32	3:1 Adhesive-lined thin-wall polyolefin	167
NEW!	TA42	4:1 Adhesive-lined thin-wall polyolefin	167
HXL 3:1	TC30	3:1 Commercial polyolefin	158
IMCSA	IMCS-A	4.5:1 Adhesive-lined medium-wall polyolefin	168
SHWA	ITCS-A	4:1 Adhesive-lined thick-wall polyolefin	169
Viton SVTE	VITON®-E	2:1 Fluoroelastomer	171
SK	KYNAR®	2:1 thin-wall PVDF	172
SP	TFE2	2:1 thin-wall PTFE	173
SPOE	TFE4	4:1 thin-wall PTFE	173
OHXL (thin wall)	TR27	2:1 LFH thin-wall polyolefin	174
OHXL (medium wall)	SR27	2:1 LFH medium-wall polyolefin	175

As part of a European rationalisation program we have harmonised our heatshrink tubing products. Some ranges have been renamed without any change at all to the product and are highlighted in grey in the above cross-reference table.

The products not highlighted have changed due to product innovations or are the equivalents of those named. We believe that we are now offering a much superior range of heatshrink tubings for any application.

Conversion from imperial to metric

Inch	1/32"	3/64"	1/16"	5/64"	3/32"	1/8"	3/16"	1/4"	3/8"
mm	0.8	1.2	1.6	2.0	2.4	3.2	4.8	6.4	9.5
Inch	1/2"	5/8"	3/4"	1"	1 1/4"	1 1/2"	2"	3"	4"
mm	12.7	15.9	19.1	25.4	31.8	38.1	50.8	76.2	101.6

The ordering system for
Heat shrinkable and non-shrinkable products
corresponding to VG Certifications,
see Appendix page 418.

Overview of applications for heatshrink tubing

When selecting the correct heatshrink tubing size, it is important to bear in mind the 80:20 rule. The heatshrink tubing must shrink by at least 20% and not more than 80% of its complete shrinkage capacity to achieve the right result. In our overview of applications you will find the best heatshrink tube for every cable diameter. The 80:20 rule has of course been taken into account in the table.

Heatshrink tubing with a shrinkage ratio of 3:1

With the optimal shrinkage ratio of 3:1, you can cover a wide range of applications with just a few sizes. This leads to reduced stock expenditure and requires less space. 3:1 heatshrink tubes: HIS-3; HIS-A; TREDUX; TF31; TC30; EPS-300; TA32

Shrink ratio 3:1

Size		Cable / Wire diameter
1.5 / 0.5		0.7 mm
		1.3 mm
	3/1	1.4 mm
		2.6 mm
6 / 2		2.8 mm
		5.2 mm
	12 / 4	5.6 mm
		10.4 mm
24 / 8		11.2 mm
	39/13	18.2 mm
		20.8 mm
		33.8 mm

Heatshrink tubing with a shrink ratio of 2:1

LVR; HCP; TL27; HFT-A, HFT-B, PST-H; PST-HT; VITON-E; Kynar; TFE-2; TR27; SR27

Shrink ratio 2:1

Size		Cable / Wire diameter
1.2 / 0.6		0.7 mm
		1.1 mm
	2.4/1.2	1.4 mm
3.2/1.6		1.9 mm
		2.2 mm
	4.8/2.4	2.9 mm
6.4/3.2		3.8 mm
		4.3 mm
	9.5/4.7	5.7 mm
		5.8 mm
12.7/6.4		7.7 mm
		8.6 mm
	19.1/9.5	11.4 mm
25.4/12.7		15.2 mm
		17.2 mm
	38.1/19.1	22.9 mm
50.8/25.4		30.5 mm
		34.3 mm
	76.2/38.1	45.7 mm
101.6/50.8		61.0 mm
		68.6 mm
		91.4 mm

The right heatshrink tube

The **80:20 rule** means that a heatshrink tube should shrink by a **maximum of 80%** and a **minimum of 20%**.

For example:
A cable with a diameter of 5mm is to be wrapped in heatshrink tubing. In theory both sizes 6/2 and 12/4 would be suitable, since the required diameter of 5mm lies within the shrink range of both tube sizes.

Size 6/2

Maximum shrink (100%)

Maximum shrinkage = 4 mm

Optimum shrinkage max. (80%)

Shrinkage of 3.2 mm

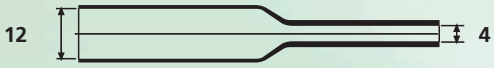
Optimum shrinkage min. (20%)

Shrinkage of 0.8 mm

Size 6/2 has a range of application of between 2.8mm and 5.2mm and is therefore suitable for the cable diameter of 5mm.

Size 12/4

Maximum shrink (100%)

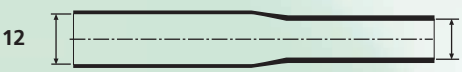


Maximum shrinkage = 8 mm

Optimum shrinkage max. (80%)

Shrinkage of 6.4 mm

Optimum shrinkage min. (20%)



Shrinkage of 1.6 mm

The smallest application diameter of size 12/4 is 5.6mm.
This size is therefore unsuitable for a cable diameter of 5mm.

HIS is a range of two heat shrink tubing types in handy dispenser boxes. The range consists of HIS-3 and HIS-A (a dual wall tubing) with 3:1 shrink ratios. With their ideal shrink ratio of 3:1 these products replace many differently sized tubing solutions by fitting almost any heat shrink task. The handy dispenser boxes allow for proper storage and the tubing can remain dust-free even after breaking open a package.

HIS-3 can fit highly variable substrate dimensions.

HIS-3

Features and Benefits

HIS-3 with 3:1 shrink ratio, unlined tubing is the new generation of tubing in dispenser packs fitting highly variable substrate dimensions.
Another great benefit of HIS-3 is that only 5 sizes cover the same range of diameters from 1mm up to 20mm in 10 sizes of 2:1 shrink ratio tubing, thus reducing the inventory by half. To complete the range sizes 9/3 and 18/6 are also available.

Application

- General purpose electrical insulation
- Coloured Identification
- Protection against corrosion and mechanical abrasion

Material Data

RoHS

Type	**HIS-3**
Material	**Polyolefin, Cross-linked (POX)**
Shrink Ratio	**3:1**
Longitudinal change after shrinkage	**-10% max.**
Minimum Shrink Temperature (Metric)	**+110 °C**
Operating Temperature	**-55 °C to +125 °C**
Dielectric Strength (metric)	**25 kV according to ASTM D 876**
Flammability	**ASTM D2671**

HIS-A

Features and Benefits

HIS-A is dual wall tubing with a 3:1 shrink ratio. The inner wall melts when heated and is forced into gaps. When the tubing cools down the adhesive forms a seal against moisture and protects the components. HIS-A is available in black only and comes in 6 sizes covering a wide range of applications due to its 3:1 shrink ratio.

Application

- Forms a seal against moisture
- Protection against corrosion and mechanical abrasion

Material Data

RoHS

Type	**HIS-A**
Material	**Polyolefin, Cross-linked (POX)**
Shrink Ratio	**3:1**
Longitudinal change after shrinkage	**-10% max.**
Minimum Shrink Temperature (Metric)	**+120 °C**
Operating Temperature	**-55 °C to +110 °C**
Dielectric Strength (metric)	**15 kV/mm according to IEC 684 P2**
Flammability	**ASTM D2671 (outer layer only)**

HIS-3

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Pack Cont. m	Colour
308-30150	**HIS-3-1,5/0,5**	1.5	0.5	0.5	10	Black (BK)
308-30152	**HIS-3-1,5/0,5**	1.5	0.5	0.5	10	Red (RD)
308-30153	**HIS-3-1,5/0,5**	1.5	0.5	0.5	10	Transparent (CL)
308-30156	**HIS-3-1,5/0,5**	1.5	0.5	0.5	10	Blue (BU)
308-30300	**HIS-3-3/1**	3.0	1.0	0.6	10	Black (BK)
308-30302	**HIS-3-3/1**	3.0	1.0	0.6	10	Red (RD)
308-30303	**HIS-3-3/1**	3.0	1.0	0.6	10	Transparent (CL)
308-30306	**HIS-3-3/1**	3.0	1.0	0.6	10	Blue (BU)
308-30307	**HIS-3-3/1**	3.0	1.0	0.6	10	Green-Yellow (GNYE)
308-30600	**HIS-3-6/2**	6.0	2.0	0.7	5	Black (BK)
308-30602	**HIS-3-6/2**	6.0	2.0	0.7	5	Red (RD)
308-30603	**HIS-3-6/2**	6.0	2.0	0.7	5	Transparent (CL)
308-30606	**HIS-3-6/2**	6.0	2.0	0.7	5	Blue (BU)
308-30607	**HIS-3-6/2**	6.0	2.0	0.7	5	Green-Yellow (GNYE)
308-30900	**HIS-3-9/3**	9.0	3.0	0.8	5	Black (BK)
308-30902	**HIS-3-9/3**	9.0	3.0	0.8	5	Red (RD)
308-30903	**HIS-3-9/3**	9.0	3.0	0.8	5	Transparent (CL)
308-30906	**HIS-3-9/3**	9.0	3.0	0.8	5	Blue (BU)
308-30907	**HIS-3-9/3**	9.0	3.0	0.8	5	Green-Yellow (GNYE)
308-31200	**HIS-3-12/4**	12.0	4.0	0.85	5	Black (BK)
308-31202	**HIS-3-12/4**	12.0	4.0	0.85	5	Red (RD)
308-31203	**HIS-3-12/4**	12.0	4.0	0.85	5	Transparent (CL)
308-31206	**HIS-3-12/4**	12.0	4.0	0.85	5	Blue (BU)
308-31207	**HIS-3-12/4**	12.0	4.0	0.85	5	Green-Yellow (GNYE)
308-31800	**HIS-3-18/6**	18.0	6.0	1.0	4	Black (BK)
308-31802	**HIS-3-18/6**	18.0	6.0	1.0	4	Red (RD)
308-31803	**HIS-3-18/6**	18.0	6.0	1.0	4	Transparent (CL)
308-31806	**HIS-3-18/6**	18.0	6.0	1.0	4	Blue (BU)
308-31807	**HIS-3-18/6**	18.0	6.0	1.0	4	Green-Yellow (GNYE)
308-32400	**HIS-3-24/8**	24.0	8.0	1.2	3	Black (BK)
308-32402	**HIS-3-24/8**	24.0	8.0	1.2	3	Red (RD)
308-32403	**HIS-3-24/8**	24.0	8.0	1.2	3	Transparent (CL)
308-32406	**HIS-3-24/8**	24.0	8.0	1.2	3	Blue (BU)
308-32407	**HIS-3-24/8**	24.0	8.0	1.2	3	Green-Yellow (GNYE)

All Dimensions in mm. Subject to technical changes.

HIS-A

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Pack Cont. m	Colour
308-10300	**HIS-A-3/1**	3.0	1.0	1.0	10	Black (BK)
308-10600	**HIS-A-6/2**	6.0	2.0	1.2	5	Black (BK)
308-10900	**HIS-A-9/3**	9.0	3.0	1.3	5	Black (BK)
308-11200	**HIS-A-12/4**	12.0	4.0	1.4	5	Black (BK)
308-11800	**HIS-A-18/6**	18.0	6.0	2.2	4	Black (BK)
308-12400	**HIS-A-24/8**	24.0	8.0	2.5	3	Black (BK)

All Dimensions in mm. Subject to technical changes.

HIS-Service Station

This sturdy Service Station contains up to 5 dispensers. It can be put on a bench or mounted to a wall. A special cutter is included and makes it easy to cut the tubing length as desired

HIS-Service Station contains 5 dispensers and a special cutter.

Technical Table

Article-No.	Description
365-30100	**HIS-Service Station incl. cutter**, contents: 5 dispensers **HIS-3** (shrink ratio: 3:1), black, sizes are as follows: HIS-3/1, HIS-6/2, HIS-12/4 (2 pcs.), HIS-24/8
365-20000	**HIS-Service Station incl. cutter**, contents: 5 dispensers **HIS-Pack** (shrink ratio: 2:1), black, sizes are as follows: HIS-1/8, HIS-3/16, HIS-1/4, HIS-3/8, HIS 1/2 and one RiteOn Starter Pack
300-30000	**HIS-Service Station incl. cutter, empty**

HIS-Pack

Features and Benefits

- E-beam Crosslinked Polyolefin, thin-wall and flexible
- Shrink ratio 2:1
- Available in colours: black, red, blue, transparent and yellow/green.
- 10 sizes from 1,2 mm to 25,4 mm
- Handy dispenser box including table with full range of applications

Application

- General purpose electrical insulation
- Protection against corrosion and mechanical abrasion

HIS-A.

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Shrink Ratio	**2:1**
Longitudinal change after shrinkage	**-5% max.**
Minimum Shrink Temperature (Metric)	**+120 °C**
Operating Temperature	**-55 °C to +135 °C**
Dielectric Strength (metric)	**25 kV/mm according to IEC 684 P2**
Flammability	**ASTM D2671**

HIS-Pack

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Pack Cont. m	Colour
300-30120	**HIS-3/64**	1.2	0.6	0.4	10	Black (BK)
300-30122	**HIS-3/64**	1.2	0.6	0.4	10	Red (RD)
300-30123	**HIS-3/64**	1.2	0.6	0.4	10	Transparent (CL)
300-30126	**HIS-3/64**	1.2	0.6	0.4	10	Blue (BU)
300-30160	**HIS-1/16**	1.6	0.8	0.4	10	Black (BK)
300-30162	**HIS-1/16**	1.6	0.8	0.4	10	Red (RD)
300-30163	**HIS-1/16**	1.6	0.8	0.4	10	Transparent (CL)
300-30166	**HIS-1/16**	1.6	0.8	0.4	10	Blue (BU)
300-30240	**HIS-3/32**	2.4	1.2	0.5	10	Black (BK)
300-30242	**HIS-3/32**	2.4	1.2	0.5	10	Red (RD)
300-30243	**HIS-3/32**	2.4	1.2	0.5	10	Transparent (CL)
300-30246	**HIS-3/32**	2.4	1.2	0.5	10	Blue (BU)
300-30320	**HIS-1/8**	3.2	1.6	0.5	10	Black (BK)
300-30322	**HIS-1/8**	3.2	1.6	0.5	10	Red (RD)
300-30323	**HIS-1/8**	3.2	1.6	0.5	10	Transparent (CL)
300-30326	**HIS-1/8**	3.2	1.6	0.5	10	Blue (BU)
300-30327	**HIS-1/8**	3.2	1.6	0.5	10	Green-Yellow (GNYE)
300-30480	**HIS-3/16**	4.8	2.4	0.5	10	Black (BK)
300-30482	**HIS-3/16**	4.8	2.4	0.5	10	Red (RD)
300-30483	**HIS-3/16**	4.8	2.4	0.5	10	Transparent (CL)
300-30486	**HIS-3/16**	4.8	2.4	0.5	10	Blue (BU)
300-30487	**HIS-3/16**	4.8	2.4	0.5	10	Green-Yellow (GNYE)
300-30640	**HIS-1/4**	6.4	3.2	0.6	5	Black (BK)
300-30642	**HIS-1/4**	6.4	3.2	0.6	5	Red (RD)
300-30643	**HIS-1/4**	6.4	3.2	0.6	5	Transparent (CL)
300-30646	**HIS-1/4**	6.4	3.2	0.6	5	Blue (BU)
300-30647	**HIS-1/4**	6.4	3.2	0.6	5	Green-Yellow (GNYE)
300-30950	**HIS-3/8**	9.5	4.7	0.6	5	Black (BK)
300-30952	**HIS-3/8**	9.5	4.7	0.6	5	Red (RD)
300-30953	**HIS-3/8**	9.5	4.7	0.6	5	Transparent (CL)
300-30956	**HIS-3/8**	9.5	4.7	0.6	5	Blue (BU)
300-30957	**HIS-3/8**	9.5	4.7	0.6	5	Green-Yellow (GNYE)
300-31270	**HIS-1/2**	12.7	6.4	0.6	5	Black (BK)
300-31272	**HIS-1/2**	12.7	6.4	0.6	5	Red (RD)
300-31273	**HIS-1/2**	12.7	6.4	0.6	5	Transparent (CL)
300-31276	**HIS-1/2**	12.7	6.4	0.6	5	Blue (BU)
300-31277	**HIS-1/2**	12.7	6.4	0.6	5	Green-Yellow (GNYE)
300-31900	**HIS-3/4**	19.1	9.5	0.8	5	Black (BK)
300-31902	**HIS-3/4**	19.1	9.5	0.8	5	Red (RD)
300-31903	**HIS-3/4**	19.1	9.5	0.8	5	Transparent (CL)
300-31906	**HIS-3/4**	19.1	9.5	0.8	5	Blue (BU)
300-31907	**HIS-3/4**	19.1	9.5	0.8	5	Green-Yellow (GNYE)
300-32540	**HIS-1**	25.4	12.7	0.9	5	Black (BK)
300-32542	**HIS-1**	25.4	12.7	0.9	5	Red (RD)
300-32543	**HIS-1**	25.4	12.7	0.9	5	Transparent (CL)
300-32546	**HIS-1**	25.4	12.7	0.9	5	Blue (BU)
300-32547	**HIS-1**	25.4	12.7	0.9	5	Green-Yellow (GNYE)

All Dimensions in mm. Subject to technical changes.

TREDUX thin wall

With TREDUX HellermannTyton has set a new standard in heat shrink tubing: TREDUX offers a complete range of thin, medium and thick wall tubing. All TREDUX tubing is offered in practical 1metre lengths. Securely packed in display boxes, they can be removed individually for occasional use in smaller quantities.

The shrink ratio 3:1 conforms very well to highly variable substrates and replaces many different sized tubing solutions by fitting almost any heat shrink task. This reduces stock cost, and saves space.

Features and Benefits

TREDUX is a thin wall, flexible tubing with a shrink ratio of 3:1 and is made from cross-linked polyolefin. It is available in 1m lengths, 9 sizes from 1.5mm to 101.6mm and colours black and yellow/green. All 1m lengths are delivered in a display carton.

Application

TREDUX thin wall heatshrink tubing is used for general electrical insulation and mechanical protection of cables and wires.

TREDUX shrinks a maximum of 3:1.

Material Data

RoHS

Material	**Polyolefin, Cross-linked (POX)**
Minimum Shrink Temperature (Metric)	**+90 °C**
Operating Temperature	**-55 °C to +125 °C**
Dielectric Strength (metric)	**19.7 kV/mm according to IEC 684 P2**
Voltage range	**600 V**
Flammability	**ASTM D2671**
Copper corrosion	**tested according to UL 224**
Shrink Ratio	**3:1 from 1.5 / 0.5 mm to 24 / 8 mm, 2:1 from 38.1/19.1 mm to 101.6 / 50.8 mm**

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Pack Cont. (piece)	Colour
319-00150	**TREDUX 1,5/0,5**	1.5	0.5	0.50	10	Black (BK)
319-00157	**TREDUX 1,5/0,5-GNYE**	1.5	0.5	0.50	10	Green-Yellow (GNYE)
319-00300	**TREDUX 3/1**	3.0	1.0	0.60	10	Black (BK)
319-00307	**TREDUX 3/1-GNYE**	3.0	1.0	0.60	10	Green-Yellow (GNYE)
319-00600	**TREDUX 6/2**	6.0	2.0	0.70	10	Black (BK)
319-00607	**TREDUX 6/2-GNYE**	6.0	2.0	0.70	10	Green-Yellow (GNYE)
319-01200	**TREDUX 12/4**	12.0	4.0	0.85	10	Black (BK)
319-01207	**TREDUX 12/4-GNYE**	12.0	4.0	0.85	10	Green-Yellow (GNYE)
319-02400	**TREDUX 24/8**	24.0	8.0	1.20	10	Black (BK)
319-02407	**TREDUX 24/8-GNYE**	24.0	8.0	1.20	3	Green-Yellow (GNYE)
319-03800	**TREDUX 38,1/19,1**	38.1	19.1	1.02	2	Black (BK)
319-03807	**TREDUX 38,1/19,1-GNYE**	38.1	19.1	1.02	2	Green-Yellow (GNYE)
319-05100	**TREDUX 50,8/25,4**	50.8	25.4	1.14	1	Black (BK)
319-07600	**TREDUX 76,2/38,1**	76.2	38.1	1.27	1	Black (BK)
319-10200	**TREDUX 101,6/50,8**	101.6	50.8	1.40	1	Black (BK)

All Dimensions in mm. Subject to technical changes.

Shrink ratio 3:1 (white) or 2:1 (grey).

TREDUX medium wall (MA47) adhesive lined

Features and Benefits

TREDUX MA47 medium wall heatshrink tubing with a shrink ratio of 4:1 is resistant to solvents, acids and alkaline solutions. It offers excellent mechanical strength. The thermoplastic adhesive liner provides good moisture sealing and weathering protection.

TREDUX tubings are cut to lengths of 1 metre. Securely packed in display boxes, they can be removed individually for occasional use in smaller quantities. TREDUX MA47 is available in black and 10 sizes from 12 mm to 140 mm.

Medium wall tubing MA47 with shrink ratio 4:1 and adhesive liner.

Application

Suitable for insulation and protection of low voltage cable joints and terminations.

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Minimum Shrink Temperature (Metric)	**+125 °C**
Operating Temperature	**-55 °C to +125 °C**
Dielectric Strength (metric)	**15 kV/mm according to IEC 684 P2**
Longitudinal change after shrinkage	**-15% max.**
Shrink Ratio	**up to 4:1**

RoHS

HF (halogenfree)

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Pack Cont. (piece)	Colour
323-50120	**TREDUX MA47 - 12/3**	12.0	3.0	1.5	5	Black (BK)
323-50190	**TREDUX MA47 - 19/6**	19.0	6.0	1.5	5	Black (BK)
323-50300	**TREDUX MA47 - 30/8**	30.0	8.0	2.0	4	Black (BK)
323-50400	**TREDUX MA47 - 40/12**	40.0	12.0	2.0	3	Black (BK)
323-50500	**TREDUX MA47 - 50/16**	50.0	16.0	2.0	2	Black (BK)
323-50630	**TREDUX MA47 - 63/19**	63.0	19.0	2.5	2	Black (BK)
323-50750	**TREDUX MA47 - 75/22**	75.0	22.0	3.0	1	Black (BK)
323-50950	**TREDUX MA47 - 95/30**	95.0	30.0	3.3	1	Black (BK)
323-51150	**TREDUX MA47 - 115/34**	115.0	34.0	3.3	4	Black (BK)
323-51400	**TREDUX MA47 - 140/42**	140.0	42.0	3.5	4	Black (BK)

All Dimensions in mm. Subject to technical changes.

TREDUX thick wall (HA47) adhesive lined

Features and Benefits

TREDUX HA47 is a thick-walled polyolefin adhesive lined tubing for low and medium voltage power applications. All tubings are cut to lengths of 1m. Securely packed in a display carton, they can be removed individually for occasional use in smaller quantities.

Application

The toughness and the weatherability of TREDUX thick wall tubing makes it suitable for exposed applications and underground cable joints.

TREDUX HA47 - application below ground.

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Pack Cont. (piece)	Colour
321-50130	**TREDUX HA47 - 13/4**	13.0	4.0	2.4	5	Black (BK)
321-50190	**TREDUX HA47 - 19/6**	19.0	6.0	2.4	5	Black (BK)
321-50330	**TREDUX HA47 - 33/8**	33.0	8.0	3.0	4	Black (BK)
321-50450	**TREDUX HA47 - 45/12**	45.0	12.0	4.1	2	Black (BK)
321-50510	**TREDUX HA47 - 51/16**	51.0	16.0	4.1	2	Black (BK)
321-50680	**TREDUX HA47 - 68/22**	68.0	22.0	4.1	1	Black (BK)
321-50850	**TREDUX HA47 - 85/25**	85.0	25.0	4.1	1	Black (BK)
321-51050	**TREDUX HA47 - 105/30**	105.0	30.0	4.1	4	Black (BK)
321-51300	**TREDUX HA47 - 130/36**	130.0	36.0	4.2	4	Black (BK)
321-51650	**TREDUX HA47 - 165/50**	165.0	50.0	4.5	3	Black (BK)
321-51850	**TREDUX HA47 - 185/50**	185.0	50.0	4.5	3	Black (BK)

All Dimensions in mm. Subject to technical changes.

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Minimum Shrink Temperature (Metric)	**+120 °C**
Operating Temperature	**-55 °C to +125 °C**
Dielectric Strength (metric)	**15 kV/mm according to IEC 684 P2**
Longitudinal change after shrinkage	**-15% max.**
Shrink Ratio	**up to 3.5:1**

RoHS

HF (halogenfree)

TREDUX display

Features and Benefits

TREDUX offers a complete range of thin, medium and thick-wall heatshrink tubing. They are cut into 1 metre lengths and can easily be picked from the user friendly high quality sales display.

All tubings are sold in single 1 metre lengths or entire carton. The carton can be opened easily at the pre-perforated top and provides a clear presentation of the heatshrink range.

The display allows quick and individual selection of type, colour and size of the requested tubing.

The TREDUX display.

An optimal assortment
for the
TREDUX-Display.

The optimal assortement of the TREDUX-Display

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Pack Cont. (piece)	Colour
319-00150	**TREDUX 1,5/0,5**	1.5	0.5	0.50	10	Black (BK)
319-00300	**TREDUX 3/1**	3.0	1.0	0.60	10	Black (BK)
319-00600	**TREDUX 6/2**	6.0	2.0	0.70	10	Black (BK)
319-01200	**TREDUX 12/4**	12.0	4.0	0.85	10	Black (BK)
319-02400	**TREDUX 24/8**	24.0	8.0	1.20	10	Black (BK)
319-00307	**TREDUX 3/1-GNYE**	3.0	1.0	0.60	10	Green-Yellow (GNYE)
319-00607	**TREDUX 6/2-GNYE**	6.0	2.0	0.70	10	Green-Yellow (GNYE)
319-01207	**TREDUX 12/4-GNYE**	12.0	4.0	0.85	10	Green-Yellow (GNYE)
323-50120	**TREDUX MA47 - 12/3**	12.0	3.0	1.5	5	Black (BK)
323-50190	**TREDUX MA47 - 19/6**	19.0	6.0	1.5	5	Black (BK)
323-50300	**TREDUX MA47 - 30/8**	30.0	8.0	2.0	4	Black (BK)
323-50400	**TREDUX MA47 - 40/12**	40.0	12.0	2.0	3	Black (BK)
321-50130	**TREDUX HA47 - 13/4**	13.0	4.0	2.4	5	Black (BK)
321-50190	**TREDUX HA47 - 19/6**	19.0	6.0	2.4	5	Black (BK)
321-50330	**TREDUX HA47 - 33/8**	33.0	8.0	3.0	4	Black (BK)
321-50450	**TREDUX HA47 - 45/12**	45.0	12.0	4.1	2	Black (BK)

All Dimensions in mm. Subject to technical changes.

Helashrink HMT200A

Features and Benefits

The hot melt tape flows when heated and provides permanent air and water tight seals.

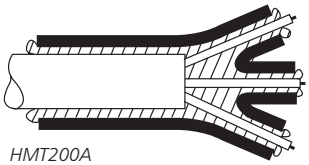
Application

Designed for use with heat shrink sleeving and mouldings.

Application Method

1. Clean and preheat the part to be protected.
2. Wrap the tape around the part and overlap.
3. Put the tubing or heatshrinkable shape over the tape and shrink down.

Adhesive tape HMT200A for sealing against humidity.



HMT200A

Material Data

Material	**Ethylenevinylacetate (EVA)**
Colour	**Transparent (CL)**
Operating Temperature	**-50 °C to +105 °C**
Melting Point (Metric)	**Starting from +95 °C**

HF (halogenfree)

Technical Table

Article-No.	Type	Thickness (T)	Width (W)	Reel Length
354-02259	**HMT200A**	0.25	25	50 m

All Dimensions in mm. Subject to technical changes.

Isolvin® LVR

Features and Benefits

LVR is a self extinguishing PVC heat shrink tubing. It has good dielectric strength, good chemical resistance and provides mechanical protection.

Application

LVR can be used for cable joints, low voltage bus bars and batteries.

Material Data

Material	**Flexible Polyvinyl Chloride, cadmium free (PVC)**
Colour	**Black (BK)**
Shrink Ratio	**2:1**
Longitudinal change after shrinkage	**+/-10% max.**
Minimum Shrink Temperature (Metric)	**+135 °C**
Operating Temperature	**-30 °C to +105 °C**
Dielectric Strength (metric)	**15 kV/mm according to IEC 243**
Stocking Temperature	**+25 °C max.**
Shelf life	**12 Months max.**
Flammability	**ASTM D2671**
Specification	**UL224**

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.
344-10100	**LVR 1.2/0.6**	1.2	0.6	0.4
344-10201	**LVR 1.6/0.8**	1.6	0.8	0.4
344-10301	**LVR 2.4/1.2**	2.4	1.2	0.4
344-10401	**LVR 3.2/1.6**	3.2	1.6	0.4
344-10501	**LVR 4.8/2.4**	4.8	2.4	0.5
344-10601	**LVR 6.4/3.2**	6.4	3.2	0.6
344-10802	**LVR 9.5/4.8**	9.5	4.8	0.6
344-10902	**LVR 12.7/6.4**	12.7	6.4	0.7
344-11002	**LVR 15.9/7.9**	15.9	7.9	0.8
344-11100	**LVR 19.0/9.5**	19.0	9.5	0.8
344-11201	**LVR 25.4/12.7**	25.4	12.7	1.0

All Dimensions in mm. Subject to technical changes.

LVR

LVR used for mechanical protection.

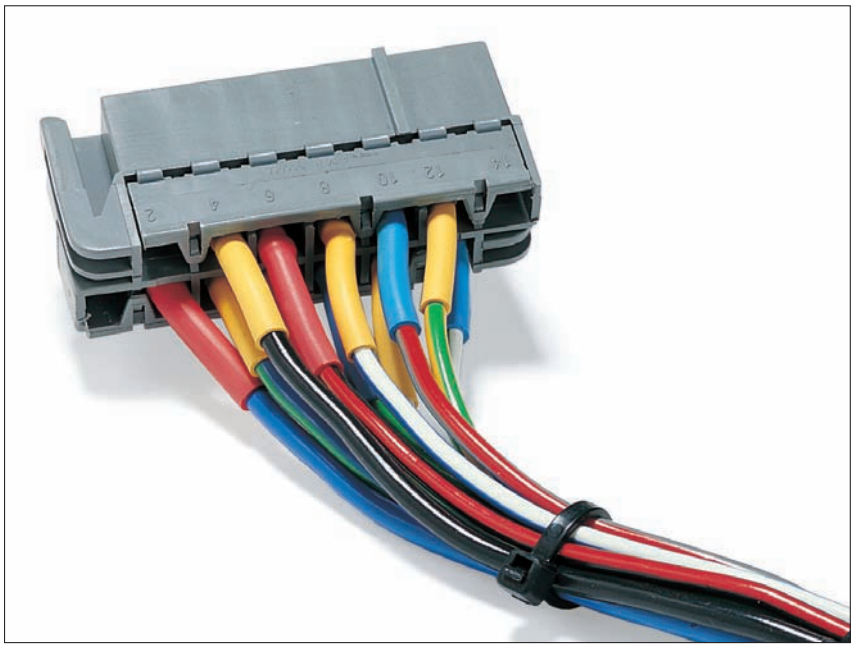
Isolvin® HCP

Features and Benefits

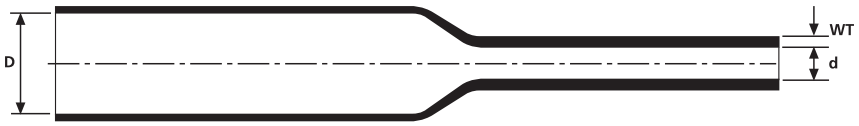
HCP is a self-extinguishing heat shrink tubing which has a flexible thin wall. It is available in black and has good mechanical strength in addition to good solvent and chemical resistance.

Application

HCP is used for the protection of components against mechanical and electrical stress, as well as protection against corrosion. It is also used for the colour coding of squeezed and soldered connections, wires, terminals and clamps. HCP can also be used for the identification of non-electrical parts.



Heat shrink tubing HCP.



HCP

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Shrink Ratio	**2:1**
Longitudinal change	**-5% max.**
Minimum Shrink	**+120 °C**
Operating Temperature	**-55 °C to +135 °C**
Insulation Class	**B (VDE 0530)**
Dielectric Strength (metric)	**25 kV/mm according to IEC 684 P2**
Specification	**UL224**
Flammability	**UL224**

Technical Table

Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.
HCP 1.2/0.6	1.2	0.6	0.4
HCP 1.6/0.8	1.6	0.8	0.4
HCP 2.4/1.2	2.4	1.2	0.5
HCP 3.2/1.6	3.2	1.6	0.5
HCP 4.8/2.4	4.8	2.4	0.5
HCP 6.4/3.2	6.4	3.2	0.6
HCP 9.5/4.7	9.5	4.7	0.6
HCP 12.7/6.4	12.7	6.4	0.6
HCP 19.1/9.5	19.1	9.5	0.8
HCP 25.4/12.7	25.4	12.7	0.9
HCP 38.0/19.0	38.0	19.0	1.0
HCP 50.8/25.4	50.8	25.4	1.1

Technical Table

Article-No.	Type	Colour
300-10120	**HCP 1.2/0.6**	Black (BK)
300-10160	**HCP 1.6/0.8**	Black (BK)
300-10240	**HCP 2.4/1.2**	Black (BK)
300-10320	**HCP 3.2/1.6**	Black (BK)
300-10480	**HCP 4.8/2.4**	Black (BK)
300-10640	**HCP 6.4/3.2**	Black (BK)
300-10950	**HCP 9.5/4.7**	Black (BK)
300-11270	**HCP 12.7/6.4**	Black (BK)
300-11900	**HCP 19.1/9.5**	Black (BK)
300-12540	**HCP 25.4/12.7**	Black (BK)
300-13810	**HCP 38.0/19.0**	Black (BK)
300-15080	**HCP 50.8/25.4**	Black (BK)

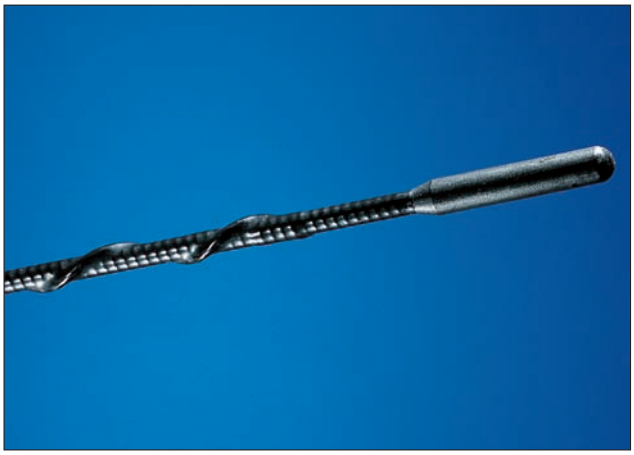
All Dimensions in mm. Subject to technical changes.

TC30

TC30 is a general purpose polyolefin thin-wall tubing. It can cover components with highly variable diameters due to it's high shrink ratio (3:1). It is suitable for many applications where a low-cost solution is required.

With a high shrink ratio inventory can be kept to a minimum as more applications can be covered with the same diameter tubing.

Securely insulated battery cable using TC30.



Based on the low wall thickness TC30 is ideal for antenna protection.

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Colour	**Black (BK)**
Shrink Ratio	**3:1**
Longitudinal change after shrinkage	**-15% max.**
Minimum Shrink Temperature (Metric)	**+90 °C**
Flammability	**ASTM D2671**
Operating Temperature	**-55 °C to +125 °C**
Dielectric Strength (metric)	**19.7 kV/mm**

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.
311-10300	**TC30 3-1**	3.0	1.0	0.60
311-10600	**TC30 6-2**	6.0	2.0	0.70
311-10900	**TC30 9-3**	9.0	3.0	0.80
311-11200	**TC30 12-4**	12.0	4.0	0.85
311-11800	**TC30 18-6**	18.0	6.0	1.00
311-12400	**TC30 24-8**	24.0	8.0	1.20

All Dimensions in mm. Subject to technical changes.

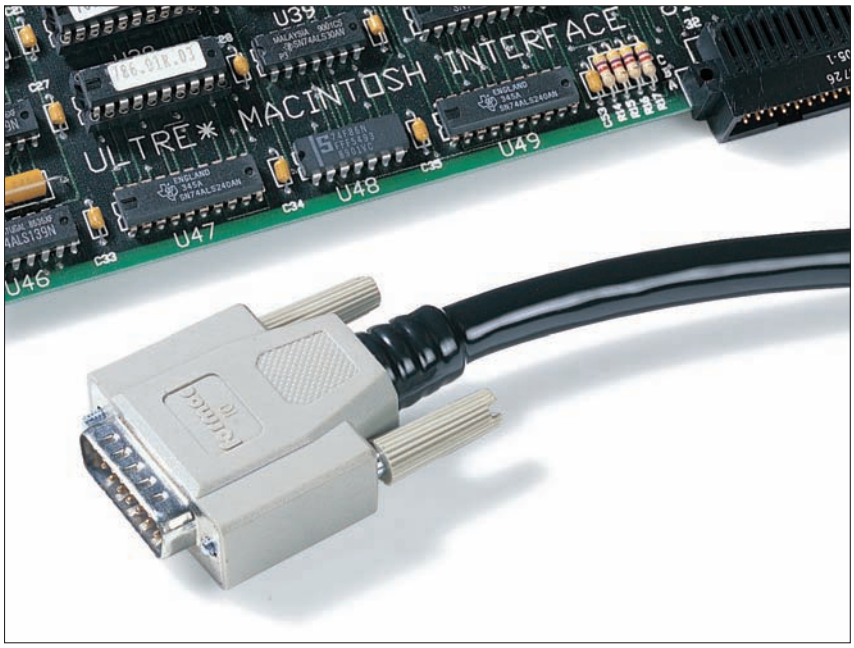
TL27

Features and Benefits

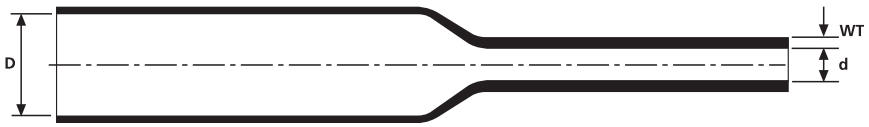
TL27 is halogen free, very flexible, light-weight polyolefin tubing. TL27 has been designed for automotive applications like covering pipes in cars and trucks.

Application

The product has a low shrink temperature which offers very fast recovery. Application fields include covering of heat sensitive parts, mechanical protection and cosmetic covering.



TL27 – a very flexible tubing for automotive or applications where halogens cannot be accepted.



TL27

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Colour	**Black (BK)**
Shrink Ratio	**2:1**
Operating Temperature	**-55 °C to +135 °C**
Minimum Shrink Temperature (Metric)	**+90 °C**
Flammability	**FMVSS-302**
Longitudinal change after shrinkage	**+5%/-15%**

RoHS

HF (halogenfree)

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.
302-20120	**TL27-1.2/0.6**	1.2	0.6	0.31
302-20160	**TL27-1.6/0.8**	1.6	0.8	0.33
302-20240	**TL27-2.4/1.2**	2.4	1.2	0.36
302-20320	**TL27-3.2/1.6**	3.2	1.6	0.39
302-20480	**TL27-4.8/2.4**	4.8	2.4	0.42
302-20640	**TL27-6.4/3.2**	6.4	3.2	0.45
302-20950	**TL27-9.5/4.8**	9.5	4.8	0.48
302-21270	**TL27-12.7/6.4**	12.7	6.4	0.52
302-21900	**TL27-19.1/9.5**	19.1	9.5	0.58
302-22540	**TL27-25.4/12.7**	25.4	12.7	0.67
302-23810	**TL27-38.1/19.1**	38.1	19.1	0.76
302-25080	**TL27-50.8/25.4**	50.8	25.4	0.85

All Dimensions in mm. Subject to technical changes.

Insultite HFT-A, HFT-B

Features and Benefits

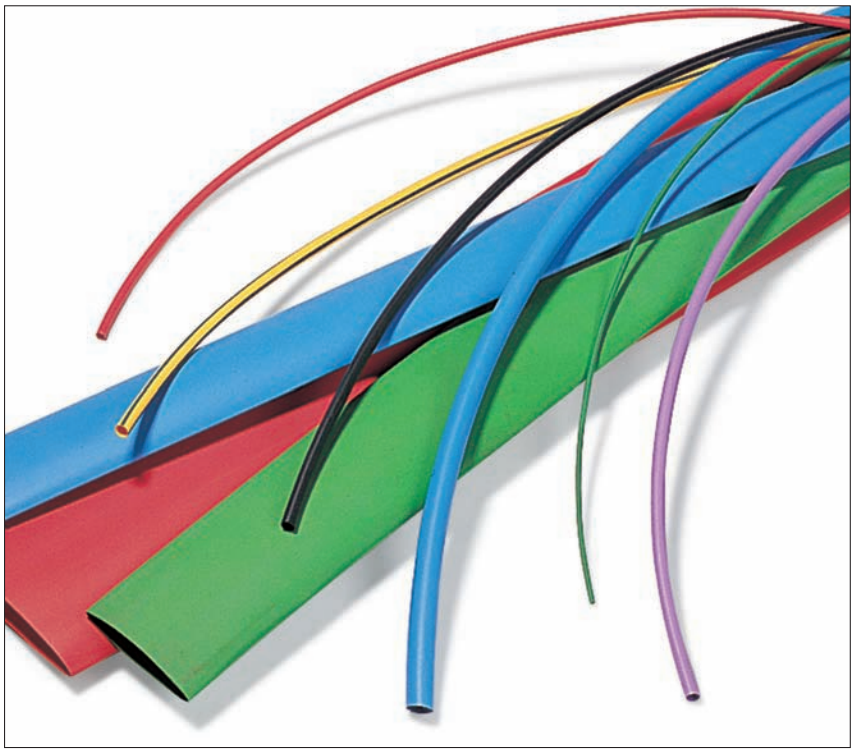
This flexible heat shrink tubing has many excellent properties including fast shrinking, easy handling, good mechanical strength and resistance against chemicals and solvents. It is UL-224 and CSA approved, easy to print on and available in a wide range of colours and internal diameters up to 4 inches (101.6mm).

HFT-A is coloured and self extinguishing.
HFT-B is transparent and halogen free.

Application

This high performance thin wall tubing is used extensively for electrical and mechanical protection. It is also well proven for sleeve marking to identify wiring circuits. It shrinks uniformly to form a permanent insulation covering.

The transparent version is used for bundling and cable protection where visual inspection is required. It is often used as a see through protective sleeve over cable markers.



HFT-A conforms to major standards used in all Defence industries.

HFT-A, HFT-B

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Shrink Ratio	**2:1**
Longitudinal change after shrinkage	**-5% max.**
Minimum Shrink Temperature (Metric)	**+100 °C**
Operating Temperature	**-55 °C to +135 °C , Intermittent +225 °C**
Insulation Class	**B (VDE 0530)**
Dielectric Strength (metric)	**20 kV/mm according to IEC 684 P2**
Flammability	**Self extinguishing**
Specification	**DEF STAN 59-97/3, CUL, Only HFT-A: UL224, MIL-DTL-23053/5C, SAE - AMS - DTL-23053 / 5C, CSA**

Technical Table

Type	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.
HFT-A 1.2/0.6	**HFT-B 1.2/0.6**	1.2	0.6	0.4
HFT-A 1.6/0.8	**HFT-B 1.6/0.8**	1.6	0.8	0.4
HFT-A 2.4/1.2	**HFT-B 2.4/1.2**	2.4	1.2	0.5
HFT-A 3.2/1.6	**HFT-B 3.2/1.6**	3.2	1.6	0.5
HFT-A 4.8/2.4	**HFT-B 4.8/2.4**	4.8	2.4	0.5
HFT-A 6.4/3.2	**HFT-B 6.4/3.2**	6.4	3.2	0.6
HFT-A 9.5/4.8	**HFT-B 9.5/4.8**	9.5	4.8	0.6
HFT-A 12.7/6.4	**HFT-B 12.7/6.4**	12.7	6.4	0.6
HFT-A 19.0/9.5	**HFT-B 19.0/9.5**	19.0	9.5	0.8
HFT-A 25.4/12.7	**HFT-B 25.4/12.7**	25.4	12.7	0.9
HFT-A 38.0/19.0	**HFT-B 38.0/19.0**	38.0	19.0	1.0
HFT-A 50.8/25.4	**HFT-B 50.8/25.4**	50.8	25.4	1.1
HFT-A 76.0/38.0	**HFT-B 76.0/38.0**	76.0	38.0	1.3
HFT-A 101.6/50.8	**HFT-B 101.6/50.8**	101.6	50.8	1.4

All Dimensions in mm. Subject to technical changes.

Detailed Information about
Heatguns
please refer to page 400.

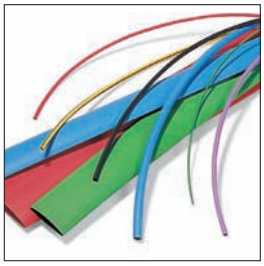
MIL VG DEF STAN SAE

Please Note for Product Specific Approvals please refer to Chapter 7.3

Insultite HFT-A, HFT-B

Technical Table

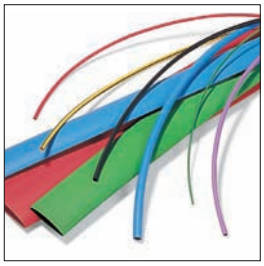
Article-No.	Type	Colour	Designation as per VG-Norm
305-01200	**HFT-A 1.2/0.6**	Black (BK)	VG 95343 T05 A 001A
305-01201	**HFT-A 1.2/0.6**	Brown (BN)	VG 95343 T05 A 001 B
305-01202	**HFT-A 1.2/0.6**	Red (RD)	VG 95343 T05 A 001 C
305-01204	**HFT-A 1.2/0.6**	Yellow (YE)	VG 95343 T05 A 001 E
305-01205	**HFT-A 1.2/0.6**	Green (GN)	VG 95343 T05 A 001 F
305-01206	**HFT-A 1.2/0.6**	Blue (BU)	VG 95343 T05 A 001 G
305-01208	**HFT-A 1.2/0.6**	Grey (GY)	VG 95343 T05 A001 K
305-01209	**HFT-A 1.2/0.6**	White (WH)	VG 95343 T05 A 001 L
305-01219	**HFT-B 1.2/0.6**	Transparent (CL)	VG 95343 T05 B 001 M
305-01600	**HFT-A 1.6/0.8**	Black (BK)	VG 95343 T05 A 002 A
305-01601	**HFT-A 1.6/0.8**	Brown (BN)	VG 95343 T05 A 002 B
305-01602	**HFT-A 1.6/0.8**	Red (RD)	VG 95343 T05 A 002 C
305-01604	**HFT-A 1.6/0.8**	Yellow (YE)	VG 95343 T05 A 002 E
305-01605	**HFT-A 1.6/0.8**	Green (GN)	VG 95343 T05 A 002 F
305-01606	**HFT-A 1.6/0.8**	Blue (BU)	VG 95343 T05 A 002 G
305-01608	**HFT-A 1.6/0.8**	Grey (GY)	VG 95343 T05 A 002 K
305-01609	**HFT-A 1.6/0.8**	White (WH)	VG 95343 T05 A 002 L
305-01619	**HFT-B 1.6/0.8**	Transparent (CL)	VG 95343 T05 B 002 M
305-02400	**HFT-A 2.4/1.2**	Black (BK)	VG 95343 T05 A 003 A
305-02401	**HFT-A 2.4/1.2**	Brown (BN)	VG 95343 T05 A 003 B
305-02402	**HFT-A 2.4/1.2**	Red (RD)	VG 95343 T05 A 003 C
305-02404	**HFT-A 2.4/1.2**	Yellow (YE)	VG 95343 T05 A 003 E
305-02405	**HFT-A 2.4/1.2**	Green (GN)	VG 95343 T05 A 003 F
305-02406	**HFT-A 2.4/1.2**	Blue (BU)	VG 95343 T05 A 003 G
305-02408	**HFT-A 2.4/1.2**	Grey (GY)	VG 95343 T05 A 003 K
305-02409	**HFT-A 2.4/1.2**	White (WH)	VG 95343 T05 A 003 L
305-02419	**HFT-B 2.4/1.2**	Transparent (CL)	VG 95343 T05 B 003 M
305-03200	**HFT-A 3.2/1.6**	Black (BK)	VG 95343 T05 A 004 A
305-03201	**HFT-A 3.2/1.6**	Brown (BN)	VG 95343 T05 A 004 B
305-03202	**HFT-A 3.2/1.6**	Red (RD)	VG 95343 T05 A 004 C
305-03204	**HFT-A 3.2/1.6**	Yellow (YE)	VG 95343 T05 A 004 E
305-03205	**HFT-A 3.2/1.6**	Green (GN)	VG 95343 T05 A 004 F
305-03206	**HFT-A 3.2/1.6**	Blue (BU)	VG 95343 T05 A 004 G
305-03208	**HFT-A 3.2/1.6**	Grey (GY)	VG 95343 T05 A 004 K
305-03209	**HFT-A 3.2/1.6**	White (WH)	VG 95343 T05 A 004 L
305-03219	**HFT-B 3.2/1.6**	Transparent (CL)	VG 95343 T05 B 004 M
305-03245	**HFT-A 3.2/1.6**	Green-Yellow (GNYE)	VG 95343 T05 A 004 N
305-04800	**HFT-A 4.8/2.4**	Black (BK)	VG 95343 T05 A 005 A
305-04801	**HFT-A 4.8/2.4**	Brown (BN)	VG 95343 T05 A 005 B
305-04802	**HFT-A 4.8/2.4**	Red (RD)	VG 95343 T05 A 005 C
305-04804	**HFT-A 4.8/2.4**	Yellow (YE)	VG 95343 T05 A 005 E
305-04805	**HFT-A 4.8/2.4**	Green (GN)	VG 95343 T05 A 005 F
305-04806	**HFT-A 4.8/2.4**	Blue (BU)	VG 95343 T05 A 005 G
305-04808	**HFT-A 4.8/2.4**	Grey (GY)	VG 95343 T05 A 005 K



Insultite HFT-A, HFT-B

Technical Table

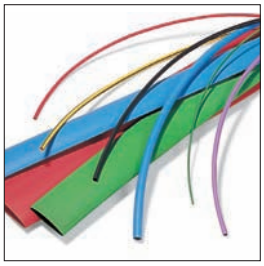
Article-No.	Type	Colour	Designation as per VG-Norm
305-04809	**HFT-A 4.8/2.4**	White (WH)	VG 95343 T05 A 005 L
305-04819	**HFT-B 4.8/2.4**	Transparent (CL)	VG 95343 T05 B 005 M
305-04845	**HFT-A 4.8/2.4**	Green-Yellow (GNYE)	VG 95343 T05 A 005 N
305-06400	**HFT-A 6.4/3.2**	Black (BK)	VG 95343 T05 A 006 A
305-06401	**HFT-A 6.4/3.2**	Brown (BN)	VG 95343 T05 A 006 B
305-06402	**HFT-A 6.4/3.2**	Red (RD)	VG 95343 T05 A 006 C
305-06404	**HFT-A 6.4/3.2**	Yellow (YE)	VG 95343 T05 A 006 E
305-06405	**HFT-A 6.4/3.2**	Green (GN)	VG 95343 T05 A 006 F
305-06406	**HFT-A 6.4/3.2**	Blue (BU)	VG 95343 T05 A 006 G
305-06408	**HFT-A 6.4/3.2**	Grey (GY)	VG 95343 T05 A 006 K
305-06409	**HFT-A 6.4/3.2**	White (WH)	VG 95343 T05 A 006 L
305-06419	**HFT-B 6.4/3.2**	Transparent (CL)	VG 95343 T05 B 006 M
305-06445	**HFT-A 6.4/3.2**	Green-Yellow (GNYE)	VG 95343 T05 A 006 N
305-09500	**HFT-A 9.5/4.8**	Black (BK)	VG 95343 T05 A007 A
305-09501	**HFT-A 9.5/4.8**	Brown (BN)	VG 95343 T05 A007 B
305-09502	**HFT-A 9.5/4.8**	Red (RD)	VG 95343 T05 A007 C
305-09504	**HFT-A 9.5/4.8**	Yellow (YE)	VG 95343 T05 A007 E
305-09505	**HFT-A 9.5/4.8**	Green (GN)	VG 95343 T05 A007 F
305-09506	**HFT-A 9.5/4.8**	Blue (BU)	VG 95343 T05 A007 G
305-09508	**HFT-A 9.5/4.8**	Grey (GY)	VG 95343 T05 A007 K
305-09509	**HFT-A 9.5/4.8**	White (WH)	VG 95343 T05 A007 L
305-09519	**HFT-B 9.5/4.8**	Transparent (CL)	VG 95343 T05 B 007 M
305-09545	**HFT-A 9.5/4.8**	Green-Yellow (GNYE)	VG 95343 T05 A007 N
305-12700	**HFT-A 12.7/6.4**	Black (BK)	VG 95343 T05 A 008 A
305-12701	**HFT-A 12.7/6.4**	Brown (BN)	VG 95343 T05 A 008 B
305-12702	**HFT-A 12.7/6.4**	Red (RD)	VG 95343 T05 A 008 C
305-12704	**HFT-A 12.7/6.4**	Yellow (YE)	VG 95343 T05 A 008 E
305-12705	**HFT-A 12.7/6.4**	Green (GN)	VG 95343 T05 A 008 F
305-12706	**HFT-A 12.7/6.4**	Blue (BU)	VG 95343 T05 A 008 G
305-12708	**HFT-A 12.7/6.4**	Grey (GY)	VG 95343 T05 A 008 K
305-12709	**HFT-A 12.7/6.4**	White (WH)	VG 95343 T05 A 008 L
305-12719	**HFT-B 12.7/6.4**	Transparent (CL)	VG 95343 T05 B 008 M
305-12745	**HFT-A 12.7/6.4**	Green-Yellow (GNYE)	VG 95343 T05 A 008 N
305-19000	**HFT-A 19.0/9.5**	Black (BK)	VG 95343 T05 A 009 A
305-19001	**HFT-A 19.0/9.5**	Brown (BN)	VG 95343 T05 A 009 B
305-19002	**HFT-A 19.0/9.5**	Red (RD)	VG 95343 T05 A 009 C
305-19004	**HFT-A 19.0/9.5**	Yellow (YE)	VG 95343 T05 A 009 E
305-19005	**HFT-A 19.0/9.5**	Green (GN)	VG 95343 T05 A 009 F
305-19006	**HFT-A 19.0/9.5**	Blue (BU)	VG 95343 T05 A 009 G
305-19008	**HFT-A 19.0/9.5**	Grey (GY)	VG 95343 T05 A 009 K
305-19009	**HFT-A 19.0/9.5**	White (WH)	VG 95343 T05 A 009 L
305-19019	**HFT-B 19.0/9.5**	Transparent (CL)	VG 95343 T05 B 009 M
305-19045	**HFT-A 19.0/9.5**	Green-Yellow (GNYE)	VG 95343 T05 A 009 N
305-25400	**HFT-A 25.4/12.7**	Black (BK)	VG 95343 T05 A 010 A
305-25401	**HFT-A 25.4/12.7**	Brown (BN)	VG 95343 T05 A 010 B
305-25402	**HFT-A 25.4/12.7**	Red (RD)	VG 95343 T05 A 010 C



Insultite HFT-A, HFT-B

Technical Table

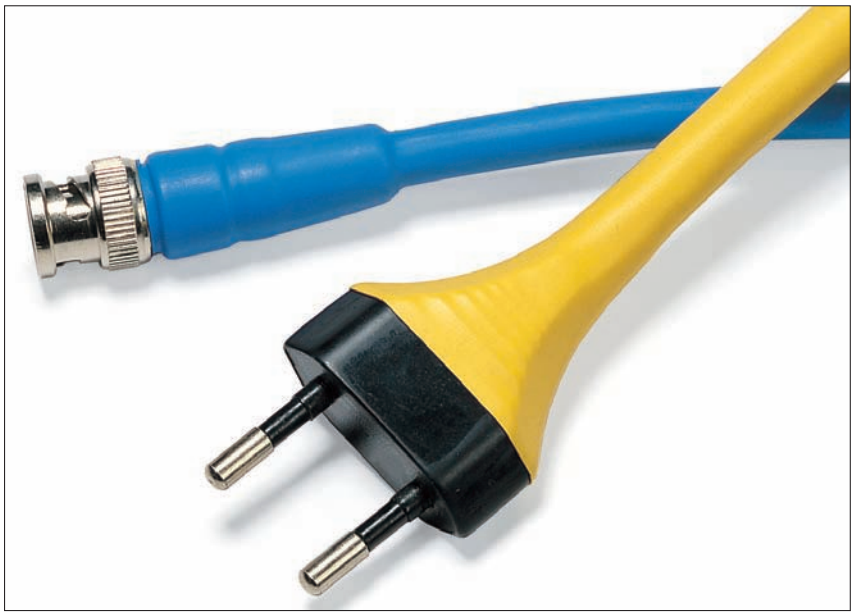
Article-No.	Type	Colour	Designation as per VG-Norm
305-25404	**HFT-A 25.4/12.7**	Yellow (YE)	VG 95343 T05 A 010 E
305-25405	**HFT-A 25.4/12.7**	Green (GN)	VG 95343 T05 A 010 F
305-25406	**HFT-A 25.4/12.7**	Blue (BU)	VG 95343 T05 A 010 G
305-25408	**HFT-A 25.4/12.7**	Grey (GY)	VG 95343 T05 A 010 K
305-25409	**HFT-A 25.4/12.7**	White (WH)	VG 95343 T05 A 010 L
305-25419	**HFT-B 25.4/12.7**	Transparent (CL)	VG 95343 T05 B 010 M
305-25445	**HFT-A 25.4/12.7**	Green-Yellow (GNYE)	VG 95343 T05 A 010 N
305-38100	**HFT-A 38.0/19.0**	Black (BK)	VG 95343 T05 A 011 A
305-38101	**HFT-A 38.0/19.0**	Brown (BN)	VG 95343 T05 A 011 B
305-38102	**HFT-A 38.0/19.0**	Red (RD)	VG 95343 T05 A 011 C
305-38104	**HFT-A 38.0/19.0**	Yellow (YE)	VG 95343 T05 A 011 E
305-38105	**HFT-A 38.0/19.0**	Green (GN)	VG 95343 T05 A 011 F
305-38106	**HFT-A 38.0/19.0**	Blue (BU)	VG 95343 T05 A 011 G
305-38108	**HFT-A 38.0/19.0**	Grey (GY)	VG 95343 T05 A 011 K
305-38109	**HFT-A 38.0/19.0**	White (WH)	VG 95343 T05 A 011 L
305-38119	**HFT-B 38.0/19.0**	Transparent (CL)	VG 95343 T05 B 011 M
305-38145	**HFT-A 38.0/19.0**	Green-Yellow (GNYE)	VG 95343 T05 A 011 N
305-50800	**HFT-A 50.8/25.4**	Black (BK)	VG 95343 T05 A 012 A
305-50801	**HFT-A 50.8/25.4**	Brown (BN)	VG 95343 T05 A 012 B
305-50802	**HFT-A 50.8/25.4**	Red (RD)	VG 95343 T05 A 012 C
305-50804	**HFT-A 50.8/25.4**	Yellow (YE)	VG 95343 T05 A 012 E
305-50805	**HFT-A 50.8/25.4**	Green (GN)	VG 95343 T05 A 012 F
305-50806	**HFT-A 50.8/25.4**	Blue (BU)	VG 95343 T05 A 012 G
305-50808	**HFT-A 50.8/25.4**	Grey (GY)	VG 95343 T05 A 012 K
305-50809	**HFT-A 50.8/25.4**	White (WH)	VG 95343 T05 A 012 L
305-50819	**HFT-B 50.8/25.4**	Transparent (CL)	VG 95343 T05 B 012 M
305-76200	**HFT-A 76.0/38.0**	Black (BK)	VG 95343 T05 A 013 A
305-76201	**HFT-A 76.0/38.0**	Brown (BN)	VG 95343 T05 A 013 B
305-76202	**HFT-A 76.0/38.0**	Red (RD)	VG 95343 T05 A 013 C
305-76204	**HFT-A 76.0/38.0**	Yellow (YE)	VG 95343 T05 A 013 E
305-76205	**HFT-A 76.0/38.0**	Green (GN)	VG 95343 T05 A 013 F
305-76206	**HFT-A 76.0/38.0**	Blue (BU)	VG 95343 T05 A 013 G
305-76208	**HFT-A 76.0/38.0**	Grey (GY)	VG 95343 T05 A 013 K
305-76209	**HFT-A 76.0/38.0**	White (WH)	VG 95343 T05 A 013 L
305-76219	**HFT-B 76.0/38.0**	Transparent (CL)	VG 95343 T05 B 013 M
305-91600	**HFT-A 101.6/50.8**	Black (BK)	VG 95343 T05 A 014 A
305-91601	**HFT-A 101.6/50.8**	Brown (BN)	VG 95343 T05 A 014 B
305-91602	**HFT-A 101.6/50.8**	Red (RD)	VG 95343 T05 A 014 C
305-91604	**HFT-A 101.6/50.8**	Yellow (YE)	VG 95343 T05 A 014 E
305-91605	**HFT-A 101.6/50.8**	Green (GN)	VG 95343 T05 A 014 F
305-91606	**HFT-A 101.6/50.8**	Blue (BU)	VG 95343 T05 A 014 G
305-91608	**HFT-A 101.6/50.8**	Grey (GY)	VG 95343 T05 A 014 K
305-91609	**HFT-A 101.6/50.8**	White (WH)	VG 95343 T05 A014 L
305-91619	**HFT-B 101.6/50.8**	Transparent (CL)	VG 95343 T05 B 014 M



TF31

Features and Benefits

With its high shrink ratio TF31 can easily cope with varying substrates. Typical TF31 applications are for example: insulation and identification of wires, cables and light duty harnesses. Inventory can be reduced significantly as only a few sizes cover a wide range of diameters.



TF31 with 3:1 shrink ratio allowing for a wider range of application.

Technical Table

Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.
TF31 1,5-0,5	1.5	0.5	0.50
TF31 3-1	3.0	1.0	0.60
TF31 6-2	6.0	2.0	0.70
TF31 9-3	9.0	3.0	0.80
TF31 12-4	12.0	4.0	0.85
TF31 18-6	18.0	6.0	1.00
TF31 24-8	24.0	8.0	1.20
TF31 40-13	40.0	13.0	1.25

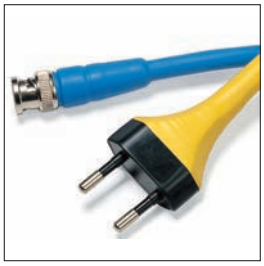
All Dimensions in mm. Subject to technical changes.

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Shrink Ratio	**3:1**
Operating Temperature	**-55 °C to +135 °C , Intermittent +225 °C**
Minimum Shrink Temperature (Metric)	**+90 °C**
Flammability	**ASTM D876**
Longitudinal change after shrinkage	**+/-5% max.**
Dielectric Strength (metric)	**19.7 kV/mm**
Specification	**UL 224 VW1**

Technical Table

Article-No.	Type	Colour	Pack Cont.
333-20150	**TF31 1,5-0,5**	Black (BK)	300
333-20152	**TF31 1,5-0,5**	Red (RD)	300
333-20154	**TF31 1,5-0,5**	Yellow (YE)	300
333-20155	**TF31 1,5-0,5**	Green (GN)	300
333-20156	**TF31 1,5-0,5**	Blue (BU)	300
333-20157	**TF31 1,5-0,5**	Green-Yellow (GNYE)	300
333-20159	**TF31 1,5-0,5**	White (WH)	300
333-20300	**TF31 3-1**	Black (BK)	300
333-20302	**TF31 3-1**	Red (RD)	300
333-20304	**TF31 3-1**	Yellow (YE)	300
333-20305	**TF31 3-1**	Green (GN)	300
333-20306	**TF31 3-1**	Blue (BU)	300
333-20307	**TF31 3-1**	Green-Yellow (GNYE)	300
333-20309	**TF31 3-1**	White (WH)	300
333-20600	**TF31 6-2**	Black (BK)	300
333-20602	**TF31 6-2**	Red (RD)	300
333-20604	**TF31 6-2**	Yellow (YE)	300
333-20605	**TF31 6-2**	Green (GN)	300
333-20606	**TF31 6-2**	Blue (BU)	300
333-20607	**TF31 6-2**	Green-Yellow (GNYE)	300
333-20609	**TF31 6-2**	White (WH)	300
333-20610	**TF31 6-2**	Green (GN), Yellow (YE)	80
333-20900	**TF31 9-3**	Black (BK)	150
333-20902	**TF31 9-3**	Red (RD)	150
333-20904	**TF31 9-3**	Yellow (YE)	150
333-20905	**TF31 9-3**	Green (GN)	150
333-20906	**TF31 9-3**	Blue (BU)	150
333-20909	**TF31 9-3**	White (WH)	150
333-21200	**TF31 12-4**	Black (BK)	100
333-21202	**TF31 12-4**	Red (RD)	100
333-21204	**TF31 12-4**	Yellow (YE)	100
333-21205	**TF31 12-4**	Green (GN)	100
333-21206	**TF31 12-4**	Blue (BU)	100
333-21207	**TF31 12-4**	Green-Yellow (GNYE)	100
333-21209	**TF31 12-4**	White (WH)	100
333-21800	**TF31 18-6**	Black (BK)	50
333-21802	**TF31 18-6**	Red (RD)	50
333-21804	**TF31 18-6**	Yellow (YE)	50
333-21805	**TF31 18-6**	Green (GN)	50
333-21806	**TF31 18-6**	Blue (BU)	50
333-21807	**TF31 18-6**	Green-Yellow (GNYE)	50
333-21809	**TF31 18-6**	White (WH)	50
333-22400	**TF31 24-8**	Black (BK)	50
333-22402	**TF31 24-8**	Red (RD)	50
333-22404	**TF31 24-8**	Yellow (YE)	50
333-22405	**TF31 24-8**	Green (GN)	50
333-22406	**TF31 24-8**	Blue (BU)	50
333-22407	**TF31 24-8**	Green-Yellow (GNYE)	50
333-22409	**TF31 24-8**	White (WH)	50
333-24000	**TF31 40-13**	Black (BK)	60
333-24002	**TF31 40-13**	Red (RD)	60
333-24004	**TF31 40-13**	Yellow (YE)	60
333-24005	**TF31 40-13**	Green (GN)	60
333-24006	**TF31 40-13**	Blue (BU)	60
333-24007	**TF31 40-13**	Green-Yellow (GNYE)	60
333-24009	**TF31 40-13**	White (WH)	60



Insultite EPS-300, EPS-400

Features and Benefits

EPS-300 is a flexible and thin walled heat shrink tubing with a co-extruded hot melt adhesive inner wall. The adhesive flows well to provide an environmental sealing of complex parts and protect against moisture.

Application

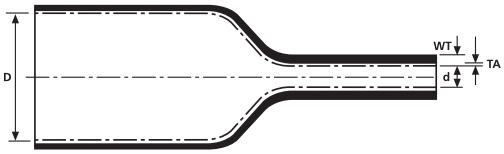
EPS-300 seals and protect a wide variety of electrical applications like back end connector sealing, connector-to-cable transitions and splices.

EPS-300 and EPS-400 offer high shrink ratios and protection against humidity.

Material Data

RoHS

Material	**Polyolefin, Cross-linked (POX)**
Colour	**Black (BK)**
Shrink Ratio	**3:1, 4:1**
Longitudinal change after shrinkage	**-10% max.**
Minimum Shrink Temperature (Metric)	**+120 °C**
Operating Temperature	**-55 °C to +110 °C**
Dielectric Strength (metric)	**15 kV/mm according to IEC 684 P2**
Flammability	**ASTM D2671 (outer layer only)**
Specification	**MIL-DTL-23053 / 4, SAE - AMS - DTL-23053 / 4**



EPS-300, EPS-400

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Thickness of Adhesive (TA) nom.
EPS-300					
340-03010	**EPS-300 3/1**	3	1	1.0	0.5
340-06020	**EPS-300 6/2**	6	2	1.0	0.5
340-09030	**EPS-300 9/3**	9	3	1.4	0.6
340-12040	**EPS-300 12/4**	12	4	1.8	0.5
340-19060	**EPS-300 19/6**	19	6	2.2	0.8
340-24080	**EPS-300 24/8**	24	8	2.5	1.0
340-40130	**EPS-300 40/13**	40	13	2.5	1.0
EPS-400					
341-04010	**EPS400-4/1**	4.0	1.0	1.00	0.5
341-08020	**EPS400-8/2**	8.0	2.0	1.00	0.5
341-12030	**EPS400-12/3**	12.0	3.0	1.40	0.6
341-16040	**EPS400-16/4**	16.0	4.0	1.80	0.8
341-24060	**EPS400-24/6**	24.0	6.0	2.20	0.8
341-32080	**EPS400-32/8**	32.0	8.0	2.50	1.0

All Dimensions in mm. Subject to technical changes.

Detailed information about
Heatguns
please refer to page 400.

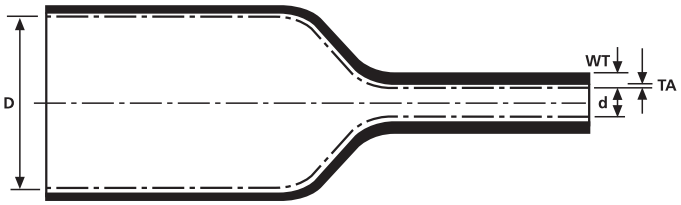
MIL SAE Please Note for Product Specific Approvals please refer to Chapter 7.3

TA32 and TA42

Features and Benefits

TA32 and TA42 are thin walled adhesive lined heat shrink tubings. Both TA32 and TA42 have an outer wall that is highly flame retardant and are UL224 approved. They have high shrink ratios making them ideal for varaible substrates. The adhesive lining ensures that a good environmental seal can be maintained.

TA32 and TA42 are UL224 listed adhesive lined tubing. Available in 3:1 and 4:1 shrink ratio.



TA32, TA42

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Colour	**Black (BK)**
Shrink Ratio	**3:1**
Operating Temperature	**-55 °C to +125 °C**
Minimum Shrink Temperature (Metric)	**+110 °C**
Flammability	**UL224**
Longitudinal change after shrinkage	**-15% max.**
Dielectric Strength (metric)	**15 kV/mm according to IEC 684 P2**
Specification	**UL224 125 °C 600V**

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Length (L)
318-30300	**TA32 3/1**	3.2	0.6	0.95	1.2 m
318-30450	**TA32 4.5/1.5**	4.5	1.5	1.10	1.2 m
318-30600	**TA32 6/2**	6.0	2.0	1.20	1.2 m
318-30900	**TA32 9/3**	9.0	3.0	1.30	1.2 m
318-31200	**TA32 12/4**	12.0	4.0	1.40	1.2 m
318-31900	**TA32 19/6**	19.0	6.0	1.80	1.2 m
318-32400	**TA32 24/8**	24.0	8.0	2.5	1.2 m
318-34000	**TA32 40/13**	40.0	13.0	2.5	1.2 m

All Dimensions in mm. Subject to technical changes.

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Colour	**Black (BK)**
Shrink Ratio	**4:1**
Operating Temperature	**-55 °C to +125 °C**
Minimum Shrink Temperature (Metric)	**+110 °C**
Flammability	**UL224**
Longitudinal change after shrinkage	**-15% max.**
Dielectric Strength (metric)	**15 kV/mm according to IEC 684 P2**
Specification	**UL224 125 °C 600V**

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Length (L)
318-40400	**TA42 4/1**	4.0	1.0	1.00	1.2 m
318-40800	**TA42 8/2**	8.0	2.0	1.20	1.2 m
318-41200	**TA42 12/3**	12.0	3.0	1.40	1.2 m
318-41600	**TA42 16/4**	16.0	4.0	1.80	1.2 m
318-42400	**TA42 24/6**	24.0	6.0	2.25	1.2 m
318-43200	**TA42 32/8**	32.0	8.0	2.55	1.2 m
318-45200	**TA42 52/13**	52.0	13.0	2.55	1.2 m

All Dimensions in mm. Subject to technical changes.

Insultite IMCS, IMCS-A

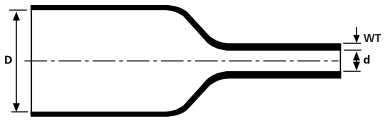
Features and Benefits

This medium wall tubing is flexible yet has robust insulation characteristics. It has a good resistance against solvents, acids, and other chemical substances. IMCS-A tubing is coated with a thermoplastic adhesive on the inside, which protects against humidity and other kinds of environmental impacts after shrinking. The specially designed adhesive has excellent sealing properties.

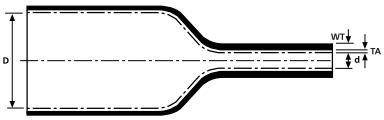
Application

IMCS has been designed to protect cable joints and terminations in low voltage applications.

IMCS heat shrinking tubing with a high (up to 4:1) shrink ratio.



IMCS-A



IMCS

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Colour	**Black (BK)**
Shrink Ratio	**up to 4.5:1**
Longitudinal change after shrinkage	**-10% max.**
Minimum Shrink Temperature (Metric)	**+135 °C**
Operating Temperature	**-55 °C to +130 °C (IMCS-A +75 °C)**
Dielectric Strength (metric)	**10 kV/mm according to IEC 684 P2**
Flammability	**ASTM D876 (IMCS-A outer layer only)**
Specification	**Germanischer Lloyd, Det Norske Veritas (IMCS F471 / IMCS-A F471)***

**on request*

HF (halogenfree)

Technical Table

IMCS without adhesive	IMCS-A adhesive	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Wall (WT)	Thickness of Adhesive (TA) nom.
324-01210	324-01260	**IMCS-A 12/3**	12.0	3.0	2.0	2.7	0.7
324-01910	324-01960	**IMCS-A 19/6**	19.0	6	2.5	3.3	0.8
324-02710	324-02760	**IMCS-A 27/8**	27.0	8.0	2.5	3.3	0.8
324-03210	324-03260	**IMCS-A 32/7.5**	32.0	7.5	2.5	3.3	0.8
324-03810	324-03860	**IMCS-A 38/12**	38.0	12.0	2.5	3.3	0.8
324-05010	324-05060	**IMCS-A 50/18**	50.0	18.0	2.5	3.3	0.8
324-07010	324-07060	**IMCS-A 70/26**	70.0	26.0	2.5	3.3	0.8
324-09010	324-09060	**IMCS-A 90/36**	90.0	36.0	2.5	3.3	0.8
324-12010	324-12060	**IMCS-A 120/40**	120.0	40.0	2.5	3.3	0.8

All Dimensions in mm. Subject to technical changes.

Please Note for Product Specific Approvals please refer to Chapter 7.3

ITCS-A

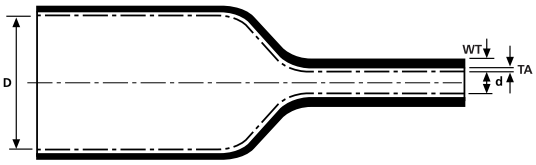
Features and Benefits

ITCS-A is a thick walled polyolefin adhesive lined sleeving used for low voltage power applications.
ITCS-A is coated with thermoplastic adhesive liner that provides good moisture sealing and weathering protection.

Application

The toughness and wheatherability makes it well suited for exposed applications and underground cable joints and cable terminations.

ITCS-A ideal for protection of underground cable joints and cable terminattions.



ITCS-A

Detailed information about
Heatguns
please refer to page 400.

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Colour	**Black (BK)**
Shrink Ratio	**up to 4:1**
Longitudinal change after shrinkage	**-10% max.**
Minimum Shrink Temperature (Metric)	**+135 °C**
Operating Temperature	**-55 °C to +130°C**
Dielectric Strength (metric)	**10 kV/mm according to IEC 684 P2**
Flammability	**ASTM D876, (ITCS-A outer layer only)**
Specification	**Germanischer Lloyd**

Technical Table

ITCS-A adhesive	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT)	Thickness of Adhesive (TA) nom.
322-01220	ITCS-A 12/3	12.0	3.0	3.2	0.7
322-01920	ITCS-A- 19-6	19.0	6.0	3.3	0.8
322-03010	ITCS-A 30/8	30.0	8.0	4.8	0.8
322-03810	ITCS-A 38/12	38.0	12.0	4.8	0.8
322-04810	ITCS-A 48/15	48.0	15.0	4.8	0.8
322-08510	ITCS-A 85/26	85.0	26.0	4.8	0.8
322-11510	ITCS-A 115/38	115.0	38.0	4.8	0.8

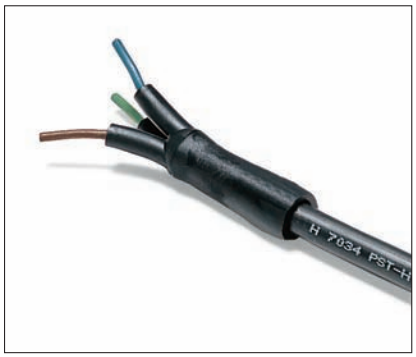
All Dimensions in mm. Subject to technical changes. Supplied in lengths of 1.00 m.

Please Note for Product Specific Approvals please refer to Chapter 7.3

Insultite PST-H

Features and Benefits

PST-H is a flexible, high performance elastomeric tubing. This tubing is used in aerospace, defence, railway and automotive applications. PST-H is resistant to diesel, aviation and hydraulic fluids. It provides a reliable protection against abrasion and mechanical damage and is suitable for protecting cables and wire harnesses.



PST-H tubing with a break out boot.

Thin wall PST-HT tubing with a boot.

Insultite PST-HT

Features and Benefits

The benefit of the thin walled and very flexible PST-HT tubing is in its lighter weight. It is used when in areas where weight is a key factor, for example in aerospace applications.

Application

PST-HT is used for long-term protection of cables and wire harnesses in military equipment, motorsport and aviation.

Material Data

RoHS

Material	**Elastomer cross-linked (PES)**
Colour	**Black (BK)**
Shrink Ratio	**2:1**
Longitudinal change after shrinkage	**-10% max.**
Minimum Shrink Temperature (Metric)	**+135 °C**
Operating Temperature	**-75 °C to +150 °C**
Dielectric Strength (metric)	**20 kV/mm according to IEC 684 P2**
Flammability	**Self extinguishing**
Specification	**DEF STAN 59-97/3, VG 95343**

PST-H, PST-HT

Technical Table

Article-No.	Type	Designation as per VG-Norm	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Length (L)
Insultite PST-H						
342-20320	**PST-H 3.2/1.6**	VG 95343 T 05 D 001 A	3.2	1.6	0.7	400 m
342-20480	**PST-H 4.8/2.4**	VG 95343 T 05 D 002 A	4.8	2.4	0.8	300 m
342-20640	**PST-H 6.4/3.2**	VG 95343 T 05 D 003 A	6.4	3.2	0.9	300 m
342-20950	**PST-H 9.5/4.8**	VG 95343 T 05 D 004 A	9.5	4.8	1.0	100 m
342-21270	**PST-H 12.7/6.4**	VG 95343 T 05 D 005 A	12.7	6.4	1.2	100 m
342-21900	**PST-H 19.0/9.5**	VG 95343 T 05 D 006 A	19.0	9.5	1.4	50 m
342-22540	**PST-H 25.4/12.7**	VG 95343 T 05 D 007 A	25.4	12.7	1.8	50 m
342-23810	**PST-H 38.0/19.0**	VG 95343 T 05 D 008 A	38.0	19.0	2.4	30 m
342-25080	**PST-H 51.0/25.4**	VG 95343 T 05 D 009 A	51.0	25.4	2.8	20 m
342-27620	**PST-H 76.0/38.0**	VG 95343 T 05 D 010 A	76.0	38.0	3.2	15 m
342-29160	**PST-H 102.0/51.0**	VG 95343 T 05 D 011 A	102.0	51.0	3.5	15 m
Insultite PST-HT						
342-30320	**PST-HT 3.2/1.6**	VG 95343 T 05 D 013 A	3.2	1.6	0.5	400 m
342-30480	**PST-HT 4.8/2.4**	VG 95343 T 05 D 014 A	4.8	2.4	0.5	300 m
342-30640	**PST-HT 6.4/3.2**	VG 95343 T 05 D 015 A	6.4	3.2	0.6	300 m
342-30950	**PST-HT 9.5/4.8**	VG 95343 T 05 D 016 A	9.5	4.8	0.6	150 m
342-31270	**PST-HT 12.7/6.4**	VG 95343 T 05 D 017 A	12.7	6.4	0.6	100 m
342-31900	**PST-HT 19.0/9.5**	VG 95343 T 05 D 018 A	19.0	9.5	0.8	50 m
342-32540	**PST-HT 25.4/12.7**	VG 95343 T 05 D 019 A	25.4	12.7	0.9	50 m
342-33810	**PST-HT 38.0/19.0**	VG 95343 T 05 D 020 A	38.0	19.0	1.0	30 m
342-35080	**PST-HT 51.0/25.4**	VG 95343 T 05 D 022 A	51.0	25.4	1.2	20 m

All Dimensions in mm. Subject to technical changes.

DEF STAN VG Please Note for Product Specific Approvals please refer to Chapter 7.3

Insultite Viton®-E

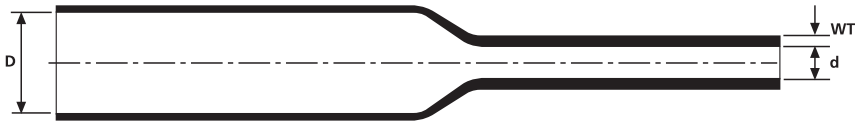
Features and Benefits

Viton®-E is a fluoroelastomeric heat shrink tubing. It remains flexible even at very low temperatures. It has extremely high resistance to chemicals and maintains its excellent mechanical strength and flexibility even after long term exposure to high temperatures. Viton-E tubing is approved to VG 95343/5E.

Application

Viton®-E is used for reliable protection against aggressive chemicals in high temperature environments like engine compartments and turbines. It is also used when protective tubings are required to remain flexible at low temperatures.

Viton®-E for flexibility and protection against aggressive chemicals.



Viton®-E

Detailed information about
Heat guns
please refer to page 400.

Material Data

Material	**Fluoroelastomer (FPM)**
Colour	**Black (BK)**
Shrink Ratio	**2:1**
Longitudinal change after shrinkage	**-10% max.**
Minimum Shrink Temperature (Metric)	**+175 °C**
Operating Temperature	**-55 °C to +220 °C**
Dielectric Strength (metric)	**15 kV/mm according to IEC 684 P2**
Flammability	**VG 95343**
Specification	**VG 95343**

Technical Table

Article-No.	Type	Designation as per VG-Norm	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Length (L)
330-00320	**VITON®-E 3,2/1,6**	VG 95343 T 05 E 001 A	3.2	1.6	0.7	50 m
330-00480	**VITON®-E 4,8/2,4**	VG 95343 T 05 E 002 A	4.8	2.4	0.8	50 m
330-00640	**VITON®-E 6,4/3,2**	VG 95343 T 05 E 003 A	6.4	3.2	0.9	50 m
330-00950	**VITON®-E 9,5/4,8**	VG 95343 T 05 E 004 A	9.5	4.8	1.0	25 m
330-01270	**VITON®-E 12,7/6,4**	VG 95343 T 05 E 005 A	12.7	6.4	1.2	25 m
330-01900	**VITON®-E 19,0/9,5**	VG 95343 T 05 E 006 A	19.0	9.5	1.4	25 m
330-02540	**VITON®-E 25,4/12,7**	VG 95343 T 05 E 007 A	25.4	12.7	1.8	25 m
330-03810	**VITON®-E 38,0/19,0**	VG 95343 T 05 E 008 A	38.0	19.0	2.4	15 m
330-05080	**VITON®-E 50,8/25,4**	VG 95343 T 05 E 009 A	50.8	25.4	2.8	15 m

All Dimensions in mm. Subject to technical changes.

Viton® is a registered trademark of DuPont.

VG Please Note for Product Specific Approvals please refer to Chapter 7.3

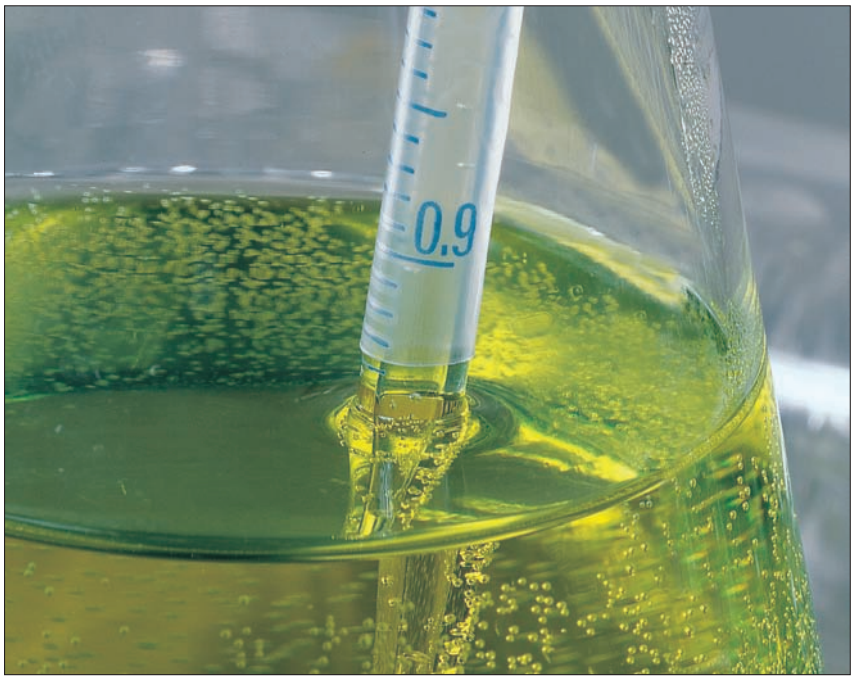
Insultite KYNAR®

Features and Benefits

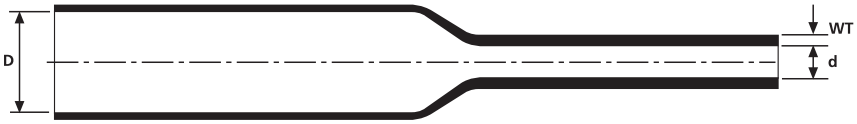
This semi-rigid transparent heat shrink tubing has high chemical and puncture resistance. KYNAR® is extra thin wall tubing with a high temperature performance. It is self extinguishing and has very good electrical and mechanical qualities. The transparent material allows visual inspection of covered components.

Application

For electrical insulation and strain relief of connectors, solder joints, resistors, thermoswitches and many other parts.



KYNAR® used in a chemical laboratory.



KYNAR®

Material Data

Material	**Polyvinylidene Fluoride (PVDF)**
Colour	**Transparent (CL)**
Shrink Ratio	**2:1**
Longitudinal change after shrinkage	**-5% max.**
Minimum Shrink Temperature (Metric)	**+175 °C**
Operating Temperature	**-55 °C to +175 °C**
Dielectric Strength (metric)	**30 kV/mm according to IEC 684 P2**
Flammability	**UL224 VW1**
Specification	**DEF STAN 59-97/3, UL224 VW-1, MIL-DTL-23053 / 8, VG 95343**

Detailed information about
Heatguns
please refer to page 400.

Technical Table

Article-No.	Type	Designation as per VG-Norm	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.
332-00129	**KYNAR® 3/64**	VG 95343 T 05 F 001 M	1.2	0.6	0.25
332-00169	**KYNAR® 1/16**	VG 95343 T 05 F 001 M	1.6	0.8	0.25
332-00249	**KYNAR® 3/32**	VG 95343 T 05 F 003 M	2.4	1.2	0.25
332-00329	**KYNAR® 1/8**	VG 95343 T 05 F 004 M	3.2	1.6	0.25
332-00489	**KYNAR® 3/16**	VG 95343 T 05 F 005 M	4.8	2.4	0.25
332-00649	**KYNAR® 1/4**	VG 95343 T 05 F 006 M	6.4	3.2	0.30
332-00959	**KYNAR® 3/8**	VG 95343 T 05 F 007 M	9.5	4.8	0.30
332-01279	**KYNAR® 1/2**	VG 95343 T 05 F 008 M	12.7	6.4	0.30
332-01909	**KYNAR® 3/4**	VG 95343 T 05 F 009 M	19.0	9.5	0.43
332-02549	**KYNAR® 1**	VG 95343 T 05 F 010 M	25.4	12.7	0.48
332-03819	**KYNAR® 1 1/2**	–	38.0	19.0	0.51

All Dimensions in mm. Subject to technical changes. Supplied in lengths of 1.22 m.

DEF STAN VG MIL

Please Note for Product Specific Approvals please refer to Chapter 7.3

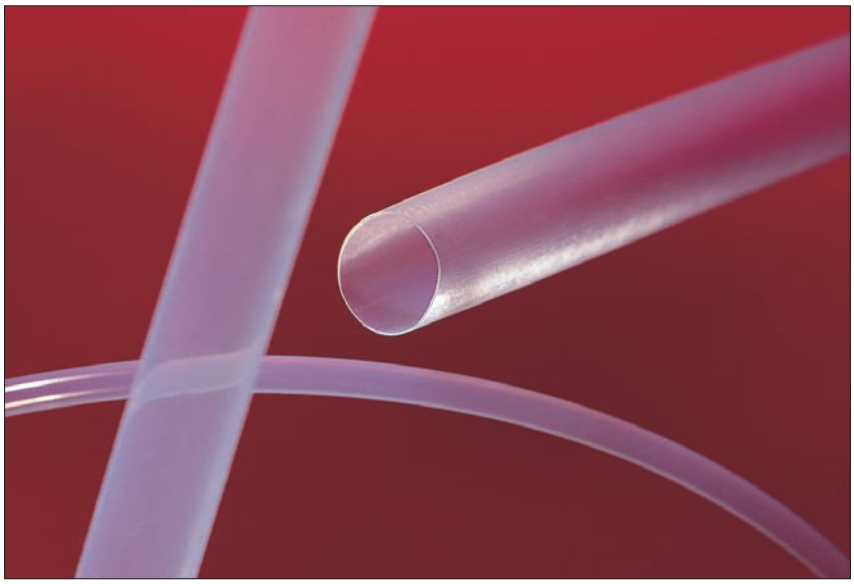
TFE2, TFE4

Features and Benefits

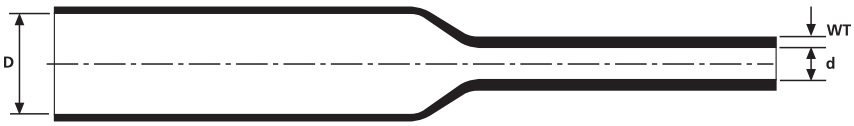
TFE heat shrink tubing is specified predominantly because of its very high temperature resistance. It is an extra thin walled transparent tubing that has both high abrasion resistance and good resistance against aggressive chemicals. TFE is available in either 2:1 (TFE2) or 4:1 (TFE4) shrink ratios.

Application

TFE is ideal for high temperature applications, where resistance to aggressive fluids s required or a very thin walled tubing is needed, for example in pH-measuring instruments. TFE tubing is also used to reduce movement due to friction, covering cylinders for example.



TFE is available in either 2:1 or 4:1 shrink ratios.



TFE2, TFE4

SAE MIL

Please Note for Product Specific Approvals please refer to Chapter 7.3

Material Data

RoHS

Material	**Polytetrafluoroethylene PTFE)**
Colour	**Transparent (CL)**
Shrink Ratio	**2:1**
Operating Temperature	**-65 °C to +260 °C**
Minimum Shrink Temperature (Metric)	**+330 °C**
Flammability	**Non burning**
Longitudinal change after shrinkage	**-20% max.**
Dielectric Strength (metric)	**40 kV/mm according to DIN 53481**
Specification	**SAE - AMS - DTL-23053 / 12, MIL-DTL-23053 / 12**

Material Data

RoHS

Material	**Polytetrafluoroethylene (PTFE)**
Colour	**Transparent (CL)**
Shrink Ratio	**4:1**
Operating Temperature	**-65 °C to +260 °C**
Minimum Shrink Temperature (Metric)	**+330 °C**
Flammability	**Non burning**
Longitudinal change after shrinkage	**-20% max.**
Dielectric Strength (metric)	**40 kV/mm according to DIN 53481**
Specification	**SAE - AMS - DTL-23053 / 12, MIL-DTL-23053 / 12**

Technical Table

Article-No.	Type	Wire Size (AWG)	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Length (L)
336-00079	**TFE2-30**	30	0.86	0.38	0.23	1,22 m
336-00099	**TFE2-28**	28	0.96	0.46	0.23	1,22 m
336-00109	**TFE2-26**	26	1.17	0.56	0.23	1,22 m
336-00139	**TFE2-24**	24	1.27	0.69	0.25	1,22 m
336-00149	**TFE2-22**	22	1.39	0.82	0.25	1,22 m
336-00159	**TFE2-20**	20	1.52	0.99	0.30	1,22 m
336-00199	**TFE2-18**	18	1.93	1.25	0.30	1,22 m
336-00249	**TFE2-16**	16	2.36	1.55	0.30	1,22 m
336-00319	**TFE2-14**	14	3.05	1.83	0.30	1,22 m
336-00399	**TFE2-12**	12	3.81	2.26	0.30	1,22 m
336-00489	**TFE2-10**	10	4.85	2.85	0.30	1,22 m
336-00619	**TFE2-8**	8	6.10	3.58	0.38	1,22 m
336-00779	**TFE2-6**	6	7.67	4.52	0.38	1,22 m
336-00949	**TFE2-4**	4	9.4	5.69	0.38	1,22 m
336-01109	**TFE2-2**	2	10.92	7.06	0.38	1,22 m
336-01209	**TFE2-0**	0	11.94	8.81	0.38	1,22 m
		Size Inches				
339-00209	**TFE4-5/64**	5/64	1.98	0.64	0.22	1,22 m
339-00329	**TFE4-1/8**	1/8	3.17	0.94	0.25	1,22 m
339-00649	**TFE4-1/4**	1/4	6.35	1.60	0.30	1,22 m
339-00959	**TFE4-3/8**	3/8	9.52	2.44	0.30	1,22 m
339-01279	**TFE4-1/2**	1/2	12.7	3.66	0.38	1,22 m
339-01599	**TFE4-5/8**	5/8	15.87	4.52	0.38	1,22 m
339-01909	**TFE4-3/4**	3/4	19.05	5.69	0.38	1,22 m
339-02549	**TFE4-1**	1	25.4	7.06	0.38	1,22 m
339-03189	**TFE4-1 1/4**	11/4	31.75	8.82	0.38	1,22 m

All Dimensions in mm. Subject to technical changes.

AWG *American Wire Gauge*

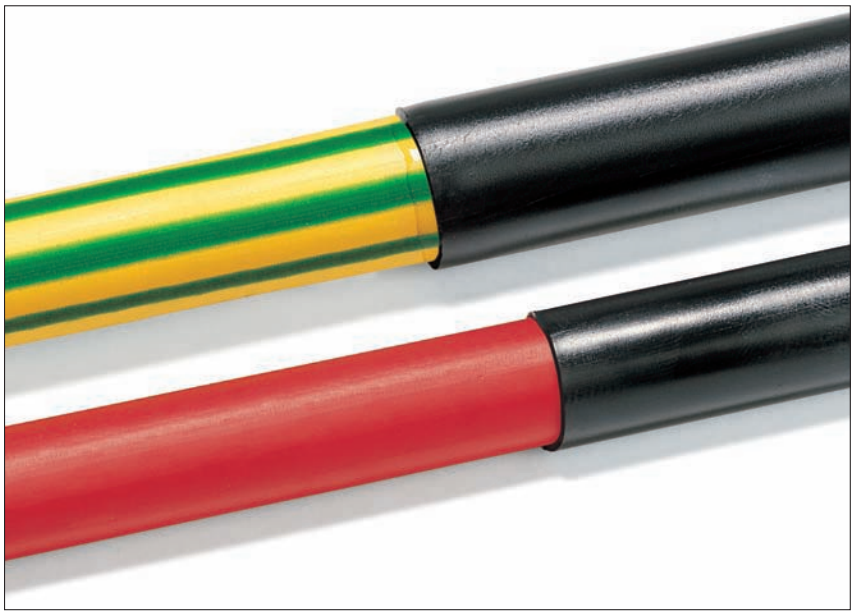
TR27

Features and Benefits

TR27 is a thin walled and halogen free tubing, self-extinguishing with flame retardant properties.

Application

TR27 is used in applications where toxic emissions evolved in a fire must be kept low, e.g. heavily populated buildings or safety sensitive areas like tunnels, hospitals, schools, theatres, mass transit vehicles and computer centres.



TR27 – thin walled, self-extinguishing and halogen free.

Detailed information about Heatguns please refer to page 400.

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Colour	**Black (BK)**
Shrink Ratio	**2:1**
Operating Temperature	**-40 °C to +105 °C**
Minimum Shrink Temperature (Metric)	**+115 °C**
Flammability	**Limited Fire Hazard, Halogen free, Low generation of toxic gases and corrosive acid, Low smoke generation**
Longitudinal change after shrinkage	**+5%/-10% max.**
Dielectric Strength (metric)	**15 kV/mm according to IEC 684 P2**
Specification	**DEF STAN 59-97/3, LUL Engineering Standard E1042:A6**

RoHS

HF (halogenfree)

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Length (L)
315-50320	**TR27-3.2/1.6**	3.2	1.6	0.51	150 m
315-50480	**TR27-4.8/2.4**	4.8	2.4	0.51	60 m
315-50640	**TR27-6.4/3.2**	6.4	3.2	0.64	60 m
315-50950	**TR27-9.5/4.8**	9.5	4.8	0.64	60 m
315-51270	**TR27-12.7/6.4**	12.7	6.4	0.64	60 m
315-51900	**TR27-19.1/9.5**	19.1	9.5	0.76	60 m
315-52540	**TR27-25.4/12.7**	25.4	12.7	0.89	60 m
315-53810	**TR27-38.1/19.1**	38.1	19.1	1.02	60 m
315-55100	**TR27-50.8/25.4**	50.8	25.4	1.14	60 m

All Dimensions in mm. Subject to technical changes.

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Please Note for Product Specific Approvals please refer to Chapter 7.3

SR27

Features and Benefits

SR27 is a halogen free heat shrink tubing. It is flexible and flame retardant and is designed for use where limited fire hazard properties are required. SR27 has a low smoke index and excellent flame retardant properties for use when strict fire security standards are desired in electrical installation.

Application

SR27 tubing is ideal for smoke sensitive areas such as underground railway, marine, offshore and aerospace work.

SR27 is ideal for high security areas.

Material Data

Material	**Polyolefin, Cross-linked (POX)**
Colour	**Black (BK)**
Shrink Ratio	**2:1**
Minimum Shrink Temperature (Metric)	**+115 °C**
Operating Temperature	**-40 °C to +105 °C**
Flammability	**Limited Fire Hazard, Halogen free, Low generation of toxic gases and corrosive acid, Low smoke generation**
Longitudinal change after shrinkage	**+5%/-10% max.**
Dielectric Strength (metric)	**19.7 kV/mm according to IEC 684 P2**
Specification	**DEF STAN 59-97/3, LUL Engineering Standard E1042:A6**

HF (halogenfree)

Technical Table

Article-No.	Type	Supplied Ø D	Recov. Ø (D)	Wall (WT) nom.	Length (L)
315-40320	**SR27-3.2/1.6**	3.2	1.6	0.7	150 m
315-40480	**SR27-4.8/2.4**	4.8	2.4	0.85	60 m
315-40640	**SR27-6.4/3.2**	6.4	3.2	0.9	60 m
315-40950	**SR27-9.5/4.8**	9.5	4.8	1.0	30 m
315-41270	**SR27-12.7/6.4**	12.7	6.4	1.2	30 m
315-41900	**SR27-19.1/9.5**	19.1	9.5	1.4	30 m
315-43810	**SR27-38.1/19.1**	38.1	19.1	1.5	30 m
315-45100	**SR27-50.8/25.4**	50.8	25.4	2.0	30 m

All Dimensions in mm. Subject to technical changes.

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Please Note for Product Specific Approvals please refer to Chapter 7.3