





Protection 3

	Page
3.1 Heat shrinkable tubing	
Heat shrink tubing selection guide	144
Application overview heat shrinkable tubing	146
The right heat shrink tube	147
Heat shrinkable tubing	
TCN20, 2:1, fast shrinkable, self-extinguishing	148
TCN20, 3:1, fast shrinkable, self-extinguishing	149
TL27, 2:1, fast shrinkable, halogenfree	150
TF21, 2:1, coloured	151
TF24, 2:1, transparent	154
TF31, 3:1, coloured	155
TF34, 3:1, transparent	157
EPS, 3:1, 4:1, adhesive lined	158
Viton®-E, 2:1, Fluorelastomer	159
TK20, 2:1, PVDF	160
TK29, 2:1, PVDF	161
TFE2, 2:1, 4:1, PTFE	162
TR27, 2:1, flame retardant	164

	Page
3.2 Braided sleeving	
Braided sleeving Helagaine	
HEGP	165
HEGPX, expansion rate: 3:1	166
HEGPV0, UL94V0 classification	167
HEGPV0X, expansion rate: 3:1, UL94V0 classification	168
HEGPA66, for abrasion resistance	169
HEGSAS, for noise reduction	170
HEGEMIP, EMI protection	171
HEGEMIPV0, EMI protection, UL94V0 classification	172
HEGPL, light weight	173
Fabric tubing	
HELAHOOK, re-sealable	174
Twist-In, self-closing	175

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

Begin your search in the flow chart at the START point. You will be guided through Charts 1 to 4 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 heat shrinkable tubing with ease.

Of course, you can always call us whenever you wish on our usual telephone numbers.

Diagram 1

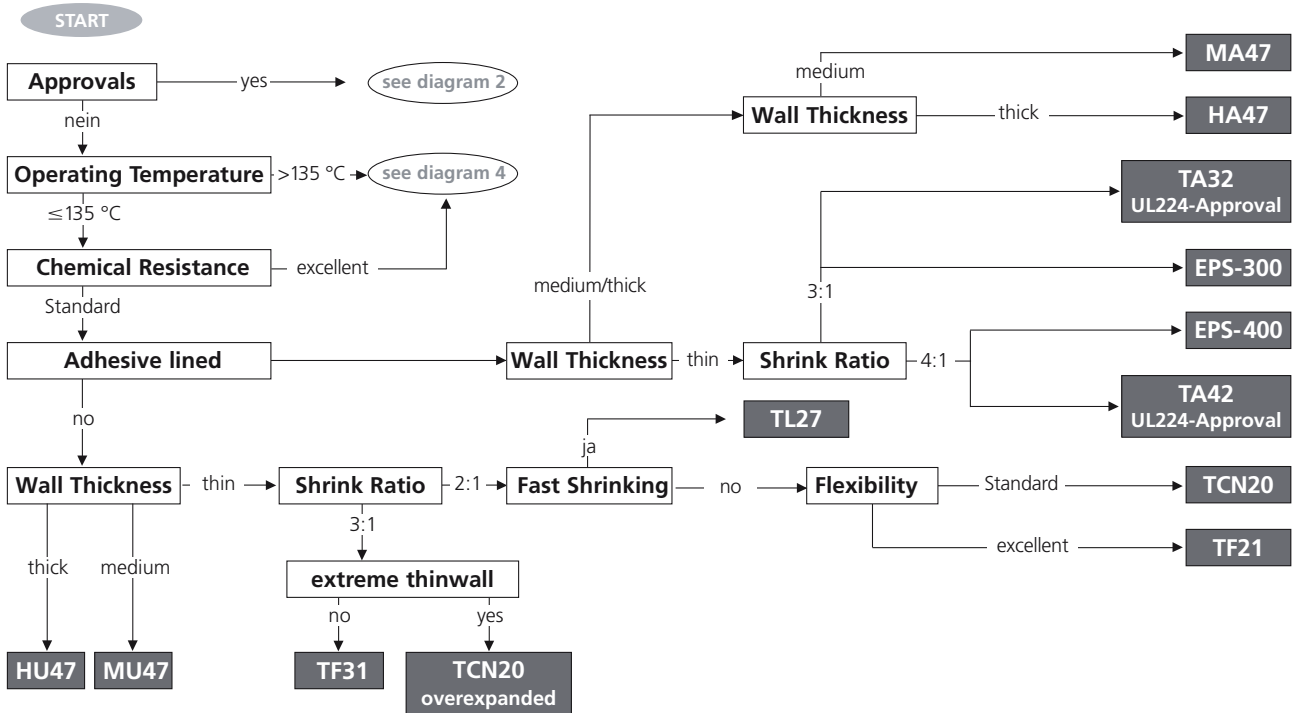
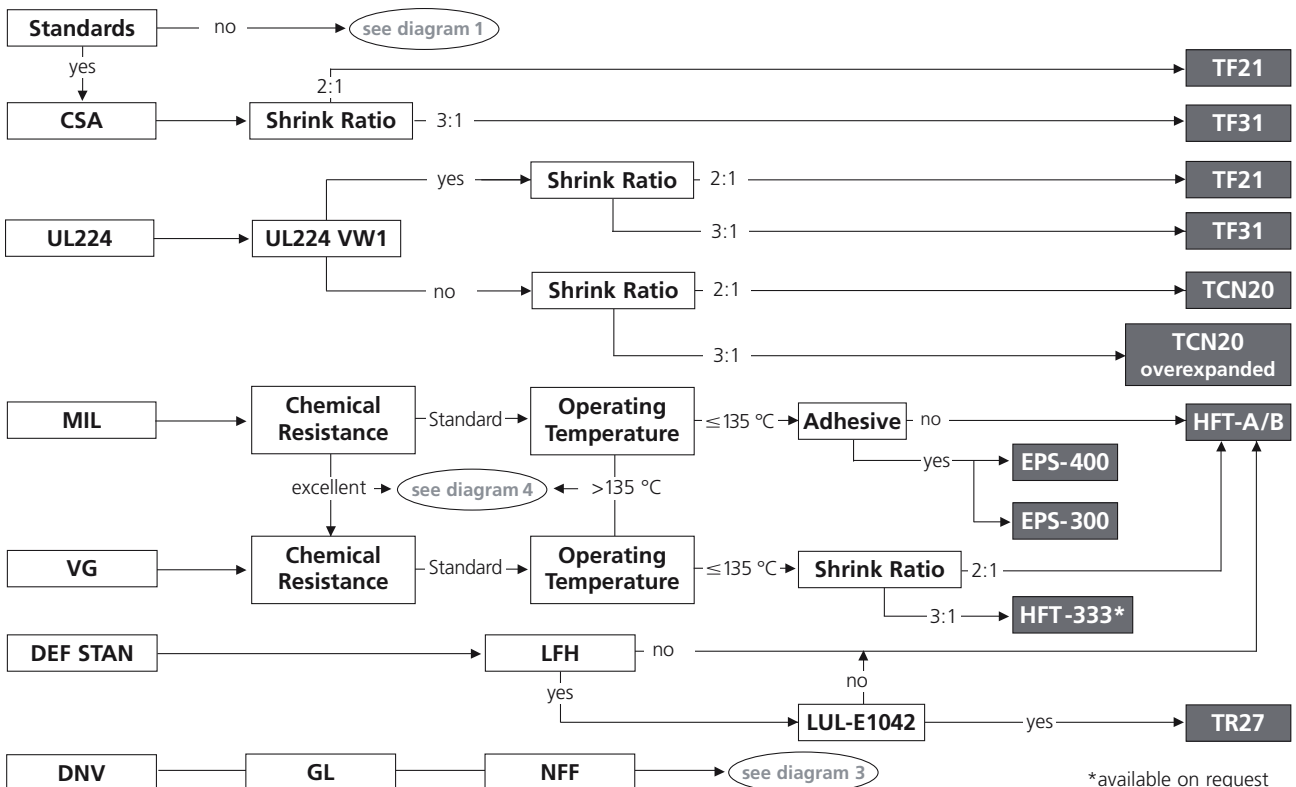


Diagram 2



*available on request

Diagram 3

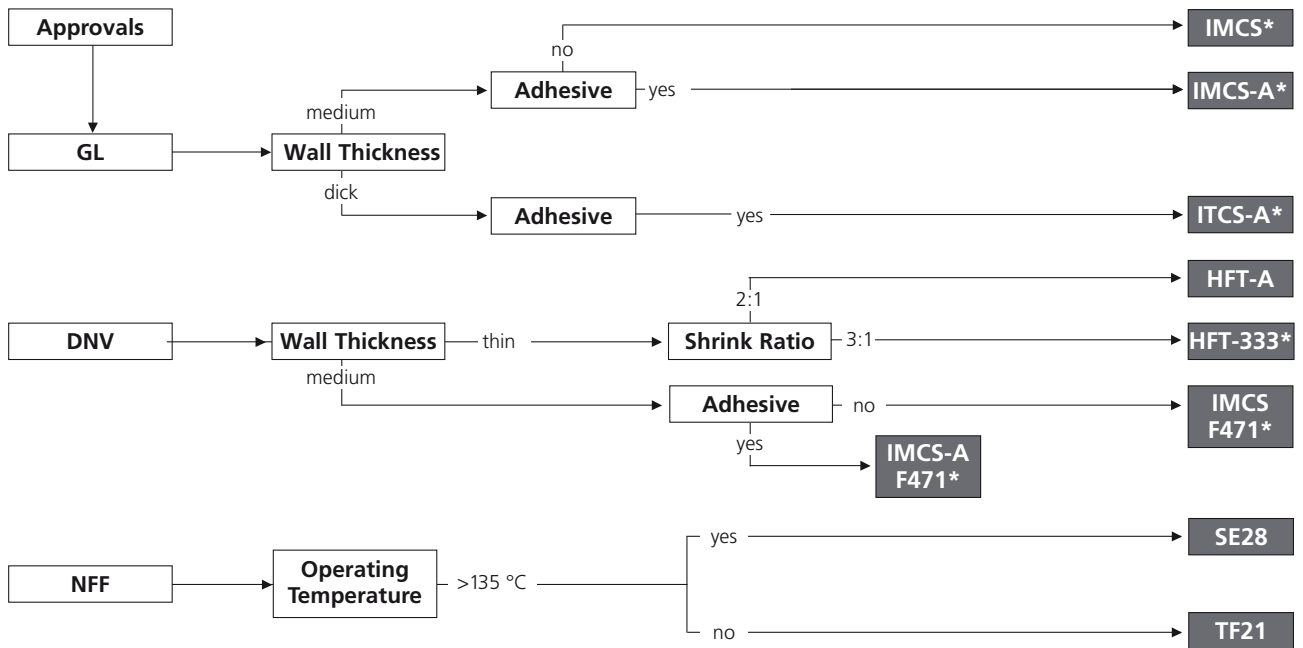
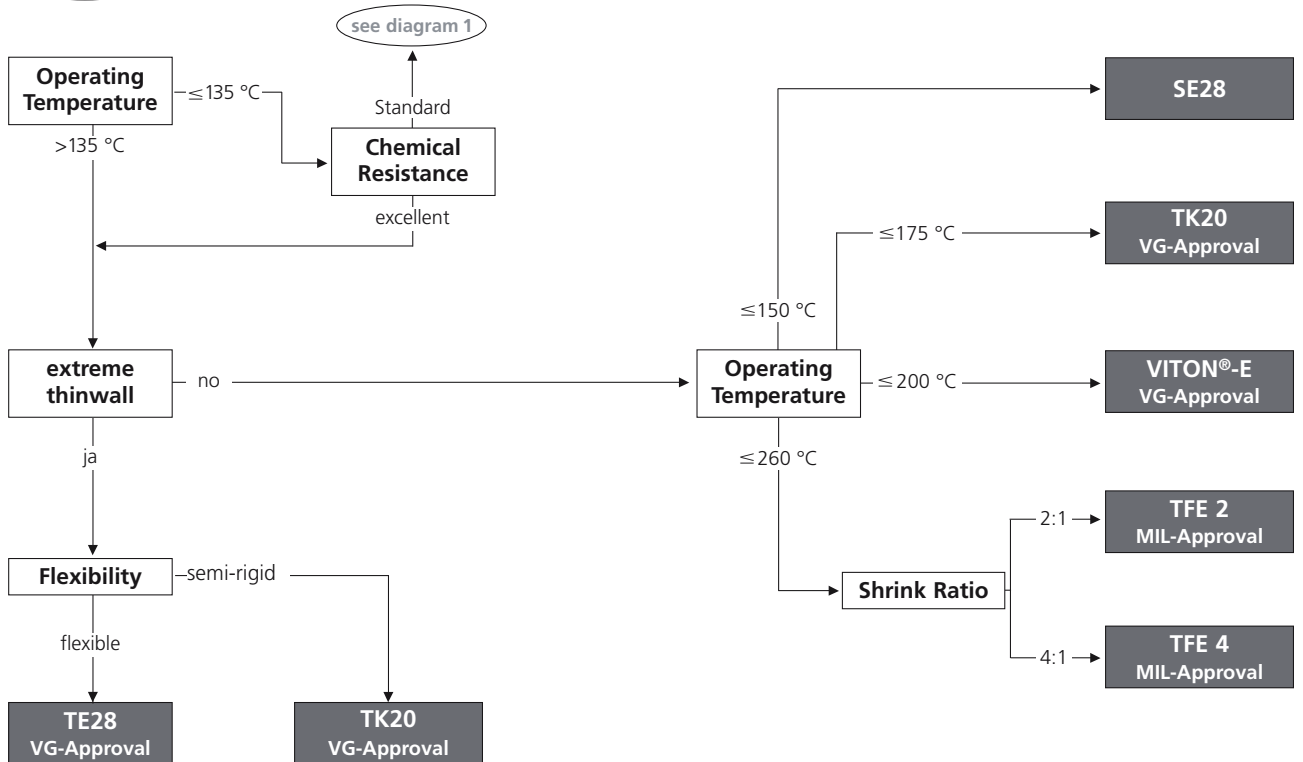


Diagram 4



*available on request

VITON® is a registered trademark of DuPont.



Overview of applications for Heat Shrink Tubing

When selecting the correct heat shrink tubing size, it is important to bear in mind the 80:20 rule. The heat shrink 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 heat shrink tube for every cable diameter. The 80:20 rule has of course been taken into account in the table.

Heat Shrinkable Tubing with a shrink ratio of 2:1

HIS-Pack; LVR; TF21; TL27; HFT-A; HFT-B;
VITON-E®; TFE-2; TR27; TCN20; TF24; SE28;
TE28

Shrink ratio 2:1		Cable/Wire diameter
Size mm		
1,2/0,6		0,7 mm
		1,1 mm
		1,4 mm
3,2/1,6	2,4/1,2	1,9 mm
		2,2 mm
		2,9 mm
6,4/3,2	4,8/2,4	3,8 mm
		4,3 mm
		5,7 mm
12,7/6,4	9,5/4,7	5,8 mm
		7,7 mm
		8,6 mm
25,4/12,7	19,1/9,5	11,4 mm
		15,2 mm
		17,2 mm
50,8/25,4	38,1/19,1	22,9 mm
		30,5 mm
		34,3 mm
101,6/50,8	76,2/38,1	45,7 mm
		61,0 mm
		68,6 mm
		91,4 mm

Heat Shrinkable Tubing with a shrink 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 heat shrink tubes: HIS-3; HIS-A; TREDUX; TF34; TF31; EPS-300; TA32; TCN20 overexpanded; HIS-3 BAG; ShrinKits 3:1

Shrink ratio 3:1		Cable/Wire diameter
Size mm		
1,5/0,5		0,7 mm
		1,3 mm
		1,4 mm
	3/1	2,6 mm
		2,8 mm
		5,2 mm
6/2		5,6 mm
18/6	12/4	8,4 mm
		10,4 mm
		11,2 mm
40/13	24/8	15,6 mm
		18,4 mm
		20,8 mm
		34,6 mm

Conversion from imperial to metric

Zoll	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
Zoll	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

VITON® is a registered trademark of DuPont.

The right Heat Shrink Tube

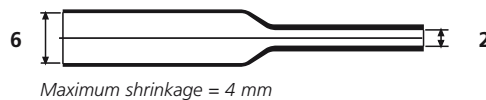
The **80:20 rule** means that a heat shrink tube should shrink by a **maximum of 80%** and a **minimum of 20%**.

For example:

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

Size 6/2

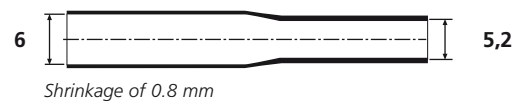
Maximal shrink (100%)



Optimum Shrinkage max. (80%)



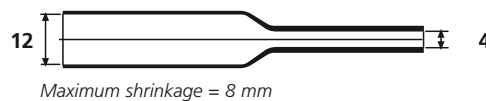
Optimum shrink min. (20%)



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

Size 12/4

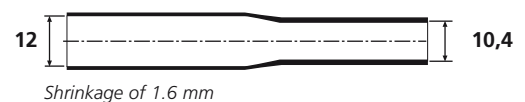
Maximum shrink (100%)



Optimum shrink max. (80%)



Optimum shrink min. (20%)



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

Calculator tool for Heat Shrink Tubing

The calculator tool for Heat Shrink Tubing is a selection guide for shrink tubing sizes based on the object to be covered. Fill in your specification and the calculator presents the right tubing size according to the 80:20 rule.

Find more information under <http://www.hellermannntyton.co.uk/heatshrink-calculator/>

The calculator tool also checks if the Heat shrink tubing you have choosed is suitable for your application.

For example you can find the Heat shrink tubing with the Product Search on the HellermannTyton website.

Low-Heat Shrinkable Tubing 2:1

• TCN20 - self extinguishing

TCN20 is suitable for a wide range of applications like electrical insulations, mechanical protection, cable bundling, et cetera.

Features and Benefits

- Thin walled general purpose polyolefin tubing TCN20
- Shrink ratio 2:1
- Flame-retardant
- Fast shrinkable
- Low shrink temperature
- Good mechanical strength
- Resistance to common fluids and solvents



Heat shrink tubing TCN20.



Material	Polyolefin, cross-linked (POX)
Colour	Black (BK)
Shrink Ratio	2:1
Longitudinal change after	+/- 5%
Min. Shrink Temperature	+100 °C
Operating Temperature	-55 °C to +125 °C
Dielectric Strength	20 kV/mm according to IEC 243
Flammability	self-extinguishing
Specification	UL224 125 °C 600V VW-1



Article-No.	Type	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Reel Length (m)
300-73010	TCN20-1.2/0.6	1.2	0.6	0.30	300
300-73020	TCN20-1.6/0.8	1.6	0.8	0.35	300
300-73030	TCN20-2.4/1.2	2.4	1.2	0.45	300
300-73040	TCN20-3.2/1.6	3.2	1.6	0.45	300
300-73050	TCN20-4.8/2.4	4.8	2.4	0.50	300
300-73060	TCN20-6.4/3.2	6.4	3.2	0.55	300
300-73070	TCN20-9.5/4.8	9.5	4.8	0.55	100
300-73080	TCN20-12.7/6.4	12.7	6.4	0.65	100
300-73090	TCN20-19.1/9.5	19.1	9.5	0.80	60
300-73100	TCN20-25.4/12.7	25.4	12.7	0.90	60
300-73110	TCN20-38.1/19.1	38.1	19.1	1.02	30
300-73120	TCN20-50.8/25.4	50.8	25.4	1.15	30

All dimensions in mm. Subject to technical changes.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

Low-Heat Shrinkable Tubing 3:1

• TCN20 overexpanded - self extinguishing

Mechanical, electrical and corrosion protection applications for parts with high diameter variances. This fast shrinking tubing makes it suitable for high volume production.

Features and Benefits

- Thin walled overexpanded polyolefin tubing TCN20X
- Shrink ratio 3:1
- Flame-retardant
- Extremely fast shrinkable
- Low shrink temperature
- Good mechanical strength
- Resistance to common fluids and solvents



Battery cables safely insulated with TCN20 overexpanded shrinkable tubing



Due to its thin wall TCN20 overexpanded is suitable for insulation of antennas.



TCN20

Material	Polyolefin, cross-linked (POX)
Colour	Black (BK)
Shrink Ratio	3:1
Longitudinal change after shrinkage	+/- 5%
Min. Shrink Temperature	+100 °C
Operating Temperature	-55 °C to +125 °C
Dielectric Strength	20 kV/mm
Flammability	self-extinguishing
Specification	UL224



Article-No.	Type	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Reel Length (m)
300-73130	TCN20-2.4/0.8	2.4	0.8	0.50	300
300-73140	TCN20-3.2/1.2	3.2	1.2	0.50	300
300-73150	TCN20-4.8/1.6	4.8	1.6	0.50	300
300-73160	TCN20-6.6/2.4	6.6	2.4	0.55	300
300-73170	TCN20-9.5/3.2	9.5	3.2	0.65	100
300-73180	TCN20-12.7/4.8	12.7	4.8	0.75	100
300-73190	TCN20-19.0/6.4	19.0	6.4	0.75	60
300-73200	TCN20-25.4/9.5	25.4	9.5	0.79	60
300-73210	TCN20-38.0/12.7	38.0	12.7	0.95	30

All dimensions in mm. Subject to technical changes.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

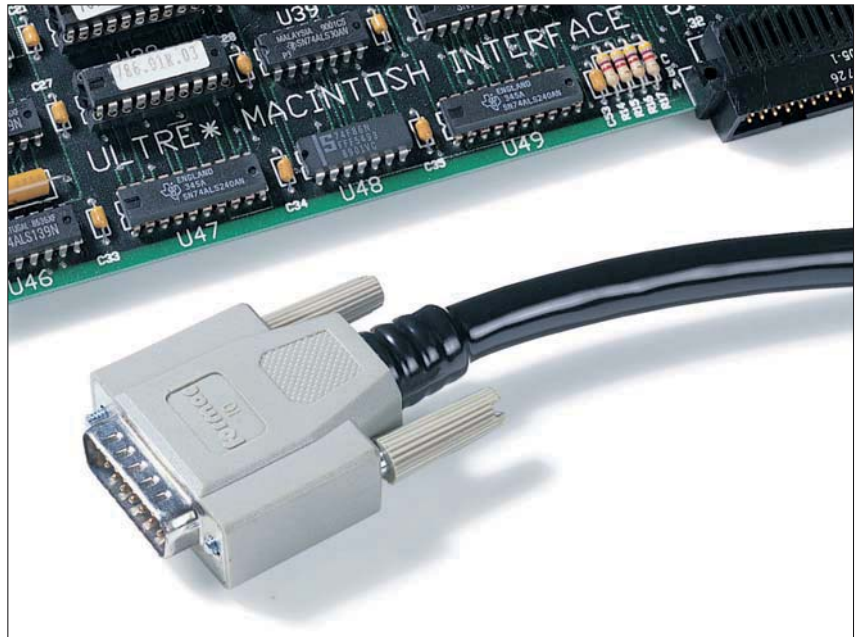
Low-Heat Shrinkable Tubing 2:1

• TL27 - halogen free

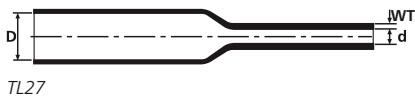
Its low shrink temperature offers very quick recovery. Application fields include covering of heat sensitive parts, mechanical protection and cosmetic covering.

Features and Benefits

- Thin walled and light weighting polyolefin tubing TL27
- Shrink ratio 2:1
- Halogenfree
- Very flexible
- Extremely fast shrinkable
- Very low shrink temperature



TL27 – a very flexible tubing for automotive applications.



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



Article-No.	Type	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Reel Length (m)
302-20120	TL27-1.2/0.6	1.2	0.6	0.31	500
302-20160	TL27-1.6/0.8	1.6	0.8	0.33	500
302-30240	TL27-2.4/1.2	2.4	1.2	0.36	300
302-30320	TL27-3.2/1.6	3.2	1.6	0.39	300
302-30480	TL27-4.8/2.4	4.8	2.4	0.42	150
302-30640	TL27-6.4/3.2	6.4	3.2	0.45	100
302-30950	TL27-9.5/4.8	9.5	4.8	0.48	100
302-21270	TL27-12.7/6.4	12.7	6.4	0.52	100
302-31900	TL27-19.1/9.5	19.1	9.5	0.58	100
302-32540	TL27-25.4/12.7	25.4	12.7	0.67	100
302-23810	TL27-38.1/19.1	38.1	19.1	0.76	100
302-25080	TL27-50.8/25.4	50.8	25.4	0.85	100

All dimensions in mm. Subject to technical changes.

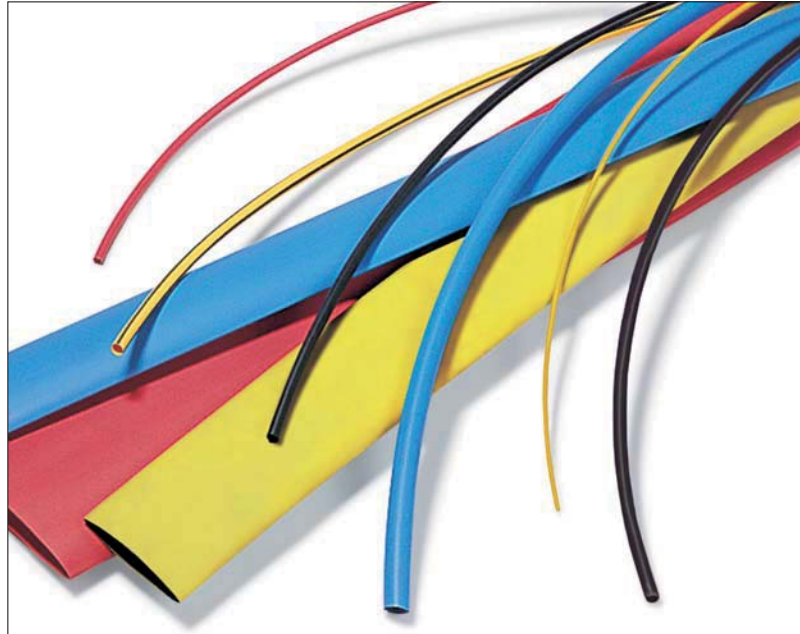
Heat Shrinkable Tubing 2:1 flexible and coloured

• TF21

TF21 is due to its versatility suitable for a wide range of applications like electrical insulations, mechanical protection and marking.

Features and Benefits

- Thin walled, flexible polyolefin tubing TF21
- Shrink ratio 2:1
- Extremely fast shrinkable
- Very low shrink temperature
- Very good mechanical strength and strain relief
- Resistance to common fluids and solvents
- Meets and exceeds lots of industrial standards
- Big variety of different colours and sizes
- Printable



TF21 – available in a wide range of colours and sizes.



TF21

Material	Polyolefin, cross-linked (POX)
Shrink Ratio	2:1
Operating Temperature	-55 °C to +135 °C
Min. Shrink Temperature	+90 °C
Flammability	ASTM D876
Longitudinal change after shrinkage	+/- 5%
Dielectric Strength Specification	37 kV/mm UL224 125 °C 600V VW-1, CSA, SAE - AMS - DTL-23053/5 Class 1, NF F 00-608, JAR/FAR 25.853



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

Heat Shrinkable Tubing 2:1 flexible and coloured

• TF21

Article-No.	Type	Supplied \varnothing D min.	Recov. \varnothing d max.	Wall (WT)	Colour	Reel Length (m)
309-10120	TF21-1.2/0.6	1.2	0.6	0.41	Black (BK)	300
309-20129	TF21-1.2/0.6	1.2	0.6	0.41	White (WH)	100
309-20122	TF21-1.2/0.6	1.2	0.6	0.41	Red (RD)	100
309-20124	TF21-1.2/0.6	1.2	0.6	0.41	Yellow (YE)	100
309-20126	TF21-1.2/0.6	1.2	0.6	0.41	Blue (BU)	100
309-10160	TF21-1.6/0.8	1.6	0.8	0.43	Black (BK)	300
309-20169	TF21-1.6/0.8	1.6	0.8	0.43	White (WH)	100
309-20162	TF21-1.6/0.8	1.6	0.8	0.43	Red (RD)	100
309-20164	TF21-1.6/0.8	1.6	0.8	0.43	Yellow (YE)	100
309-20166	TF21-1.6/0.8	1.6	0.8	0.43	Blue (BU)	100
309-10240	TF21-2.4/1.2	2.4	1.2	0.51	Black (BK)	300
309-20249	TF21-2.4/1.2	2.4	1.2	0.51	White (WH)	100
309-20242	TF21-2.4/1.2	2.4	1.2	0.51	Red (RD)	100
309-20244	TF21-2.4/1.2	2.4	1.2	0.51	Yellow (YE)	100
309-20246	TF21-2.4/1.2	2.4	1.2	0.51	Blue (BU)	100
309-40247	TF21-2.4/1.2	2.4	1.2	0.51	Green-Yellow (GNYE)	100
309-10320	TF21-3.2/1.6	3.2	1.6	0.51	Black (BK)	300
309-20329	TF21-3.2/1.6	3.2	1.6	0.51	White (WH)	100
309-20322	TF21-3.2/1.6	3.2	1.6	0.51	Red (RD)	100
309-20324	TF21-3.2/1.6	3.2	1.6	0.51	Yellow (YE)	100
309-20326	TF21-3.2/1.6	3.2	1.6	0.51	Blue (BU)	100
309-40327	TF21-3.2/1.6	3.2	1.6	0.51	Green-Yellow (GNYE)	100
309-10480	TF21-4.8/2.4	4.8	2.4	0.51	Black (BK)	300
309-50489	TF21-4.8/2.4	4.8	2.4	0.51	White (WH)	60
309-50482	TF21-4.8/2.4	4.8	2.4	0.51	Red (RD)	60
309-50484	TF21-4.8/2.4	4.8	2.4	0.51	Yellow (YE)	60
309-50486	TF21-4.8/2.4	4.8	2.4	0.51	Blue (BU)	60
309-50487	TF21-4.8/2.4	4.8	2.4	0.51	Green-Yellow (GNYE)	60
309-10640	TF21-6.4/3.2	6.4	3.2	0.64	Black (BK)	300
309-50649	TF21-6.4/3.2	6.4	3.2	0.64	White (WH)	60
309-50642	TF21-6.4/3.2	6.4	3.2	0.64	Red (RD)	60
309-50644	TF21-6.4/3.2	6.4	3.2	0.64	Yellow (YE)	60
309-50646	TF21-6.4/3.2	6.4	3.2	0.64	Blue (BU)	60
309-50647	TF21-6.4/3.2	6.4	3.2	0.64	Green-Yellow (GNYE)	60
309-10950	TF21-9.5/4.8	9.5	4.8	0.64	Black (BK)	150
309-20959	TF21-9.5/4.8	9.5	4.8	0.64	White (WH)	50
309-20952	TF21-9.5/4.8	9.5	4.8	0.64	Red (RD)	50
309-20954	TF21-9.5/4.8	9.5	4.8	0.64	Yellow (YE)	50
309-20956	TF21-9.5/4.8	9.5	4.8	0.64	Blue (BU)	50
309-50957	TF21-9.5/4.8	9.5	4.8	0.64	Green-Yellow (GNYE)	50

All dimensions in mm. Subject to technical changes.



TF21

Heat Shrinkable Tubing 2:1 flexible and coloured

• TF21

Article-No.	Type	Supplied \varnothing D min.	Recov. \varnothing d max.	Wall (WT)	Colour	Reel Length (m)
309-11270	TF21-12.7/6.4	12.7	6.4	0.64	Black (BK)	100
309-21279	TF21-12.7/6.4	12.7	6.4	0.64	White (WH)	50
309-21272	TF21-12.7/6.4	12.7	6.4	0.64	Red (RD)	50
309-21274	TF21-12.7/6.4	12.7	6.4	0.64	Yellow (YE)	50
309-21276	TF21-12.7/6.4	12.7	6.4	0.64	Blue (BU)	50
309-41277	TF21-12.7/6.4	12.7	6.4	0.64	Green-Yellow (GNYE)	50
309-11900	TF21-19.0/9.5	19.1	9.5	0.76	Black (BK)	50
309-11909	TF21-19.0/9.5	19.1	9.5	0.76	White (WH)	50
309-11902	TF21-19.0/9.5	19.1	9.5	0.76	Red (RD)	50
309-11904	TF21-19.0/9.5	19.1	9.5	0.76	Yellow (YE)	50
309-11906	TF21-19.0/9.5	19.1	9.5	0.76	Blue (BU)	50
309-11907	TF21-19.0/9.5	19.1	9.5	0.76	Green-Yellow (GNYE)	50
309-12540	TF21-25.4/12.7	25.4	12.7	0.89	Black (BK)	50
309-12549	TF21-25.4/12.7	25.4	12.7	0.89	White (WH)	50
309-12542	TF21-25.4/12.7	25.4	12.7	0.89	Red (RD)	50
309-12544	TF21-25.4/12.7	25.4	12.7	0.89	Yellow (YE)	50
309-12546	TF21-25.4/12.7	25.4	12.7	0.89	Blue (BU)	50
309-12547	TF21-25.4/12.7	25.4	12.7	0.89	Green-Yellow (GNYE)	50
309-13810	TF21-38.0/19.0	38.1	19.1	1.02	Black (BK)	60
309-13819	TF21-38.0/19.0	38.1	19.1	1.02	White (WH)	60
309-13812	TF21-38.0/19.0	38.1	19.1	1.02	Red (RD)	60
309-13814	TF21-38.0/19.0	38.1	19.1	1.02	Yellow (YE)	60
309-13816	TF21-38.0/19.0	38.1	19.1	1.02	Blue (BU)	60
309-13817	TF21-38.0/19.0	38.1	19.1	1.02	Green-Yellow (GNYE)	60
309-15080	TF21-50.8/25.4	50.8	25.4	1.14	Black (BK)	60
309-15089	TF21-50.8/25.4	50.8	25.4	1.14	White (WH)	60
309-15082	TF21-50.8/25.4	50.8	25.4	1.14	Red (RD)	60
309-15084	TF21-50.8/25.4	50.8	25.4	1.14	Yellow (YE)	60
309-15086	TF21-50.8/25.4	50.8	25.4	1.14	Blue (BU)	60
309-15087	TF21-50.8/25.4	50.8	25.4	1.14	Green-Yellow (GNYE)	60
309-17600	TF21-76.0/38.0	76.2	38.1	1.27	Black (BK)	30
309-17609	TF21-76.0/38.0	76.2	38.1	1.27	White (WH)	30
309-17602	TF21-76.0/38.0	76.2	38.1	1.27	Red (RD)	30
309-17604	TF21-76.0/38.0	76.2	38.1	1.27	Yellow (YE)	30
309-17606	TF21-76.0/38.0	76.2	38.1	1.27	Blue (BU)	30
309-11020	TF21-101.6/50.8	101.6	50.8	1.40	Black (BK)	15
309-11029	TF21-101.6/50.8	101.6	50.8	1.40	White (WH)	15
309-11022	TF21-101.6/50.8	101.6	50.8	1.40	Red (RD)	15
309-11024	TF21-101.6/50.8	101.6	50.8	1.40	Yellow (YE)	15
309-11026	TF21-101.6/50.8	101.6	50.8	1.40	Blue (BU)	15

All dimensions in mm. Subject to technical changes.



TF21

Cut lengths available on request. Please contact us!

Heat Shrinkable Tubing 2:1 flexible and transparent

• TF24

Features and Benefits

- Transparent, flexible polyolefin tubing TF24
- Protects identification marking perfect
- Shrink ratio 2:1
- Halogenfree
- Good mechanical and chemical resistance
- VG-approval and additional industrial approvals



TF24 – ideal to protect cable markers.



Cut lengths available on request. Please contact us!

Material	Polyolefin, cross-linked (POX)
Shrink Ratio	2:1
Operating Temperature	-55 °C to +135 °C
Min. Shrink Temperature	+110 °C
Longitudinal change after shrinkage	+/-5% max.
Dielectric Strength	46 kV/mm
Specification	VG 95343, SAE - AMS - DTL-23053/5 Class 2, DEF STAN 59-97 Type 2B



Article-No.	Type	Designation as per VG-Norm	Wall (WT) nom.	Supplied Ø D min.	Recov. Ø d max.	Colour	Reel Length (m)
309-40123	TF24-1.2/0.6	VG95343T05B001M	0.41	1.2	0.6	Transparent (CL)	100
309-40163	TF24-1.6/0.8	VG95343T05B002M	0.43	1.6	0.8	Transparent (CL)	100
309-40243	TF24-2.4/1.2	VG95343T05B003M	1.51	2.4	1.2	Transparent (CL)	100
309-40323	TF24-3.2/1.6	VG95343T05B004M	0.51	3.2	1.6	Transparent (CL)	100
309-50483	TF24-4.8/2.4	VG95343T05B005M	0.51	4.8	2.4	Transparent (CL)	60
309-50643	TF24-6.4/3.2	VG95343T05B006M	0.64	6.4	3.2	Transparent (CL)	60
309-40953	TF24-9.5/4.8	VG95343T05B007M	0.64	9.5	4.8	Transparent (CL)	50
309-41273	TF24-12.7/6.4	VG95343T05B008M	0.64	12.7	6.4	Transparent (CL)	50
309-31903	TF24-19.1/9.5	VG95343T05B009M	0.76	19.1	9.5	Transparent (CL)	50
309-32543	TF24-25.4/12.7	VG95343T05B010M	0.89	25.4	25.4	Transparent (CL)	50
309-33813	TF24-38.1/19.1	VG95343T05B011M	1.02	38.1	19.1	Transparent (CL)	60
309-35083	TF24-50.8/25.4	VG95343T05B012M	1.14	50.8	25.4	Transparent (CL)	60
309-37603	TF24-76.2/38.1	VG95343T05B013M	1.27	76.2	38.1	Transparent (CL)	30
309-31023	TF24-101.6/50.8	VG95343T05B014M	1.40	101.6	50.8	Transparent (CL)	15

All dimensions in mm. Subject to technical changes.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

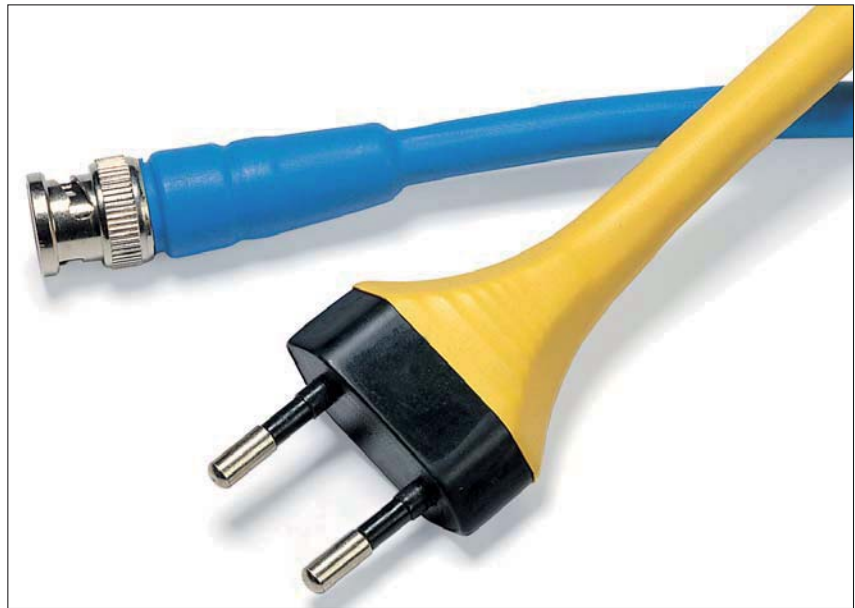
Heat Shrinkable Tubing 3:1 flexible and coloured

• TF31

If higher fire protection is a requirement heat shrinkable tubing TF31 is a good choice. It is used for protection insulation and identification wires, cables and light duty harnesses.

Features and Benefits

- Thin walled, flexible polyolefin tubing TF31
- Shrink ratio 3:1
- Flame-retardant
- Fast shrinkable
- Low shrink temperature
- Good mechanical strength and chemical resistance
- Resistance to common fluids and solvents



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



TF31

Cut lengths available on request. Please contact us!

Detailed Information about Heatguns please refer to page 137.

Material	Polyolefin, cross-linked (POX)
Shrink Ratio	3:1
Operating Temperature	-55 °C to +135 °C
Min. Shrink Temperature	+90 °C
Flammability	ASTM D876
Longitudinal change after shrinkage	+5%/-15%
Dielectric Strength	37 kV/mm
Specification	UL224 125 °C 600V VW-1, CSA



Article-No.	Type	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Colour	Reel Length (m)
333-20150	TF31-1.5/0.5	1.5	0.5	0.50	Black (BK)	300
333-40300	TF31-3/1	3.0	1.0	0.60	Black (BK)	150
333-40600	TF31-6/2	6.0	2.0	0.70	Black (BK)	150
333-20900	TF31-9/3	9.0	3.0	0.80	Black (BK)	150
333-21200	TF31-12/4	12.0	4.0	0.85	Black (BK)	100
333-41800	TF31-18/6	18.0	6.0	1.00	Black (BK)	60
333-42400	TF31-24/8	24.0	8.0	1.20	Black (BK)	60
333-24000	TF31-40/13	40.0	13.0	1.25	Black (BK)	60

All dimensions in mm. Subject to technical changes.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

Heat Shrinkable Tubing 3:1 flexible and coloured

Article-No.	Type	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Colour	Reel Length (m)
333-30150	TF31-1.5/0.5	1.5	0.5	0.50	Black (BK)	30
333-30156	TF31-1.5/0.5	1.5	0.5	0.50	Blue (BU)	30
333-30155	TF31-1.5/0.5	1.5	0.5	0.50	Green (GN)	30
333-30157	TF31-1.5/0.5	1.5	0.5	0.50	Green-Yellow (GNYE)	30
333-30152	TF31-1.5/0.5	1.5	0.5	0.50	Red (RD)	30
333-30159	TF31-1.5/0.5	1.5	0.5	0.50	White (WH)	30
333-30154	TF31-1.5/0.5	1.5	0.5	0.50	Yellow (YE)	30
333-30306	TF31-3/1	3.0	1.0	0.60	Blue (BU)	30
333-30300	TF31-3/1	3.0	1.0	0.60	Black (BK)	30
333-30305	TF31-3/1	3.0	1.0	0.60	Green (GN)	30
333-30307	TF31-3/1	3.0	1.0	0.60	Green-Yellow (GNYE)	30
333-30302	TF31-3/1	3.0	1.0	0.60	Red (RD)	30
333-30309	TF31-3/1	3.0	1.0	0.60	White (WH)	30
333-30304	TF31-3/1	3.0	1.0	0.60	Yellow (YE)	30
333-30606	TF31-6/2	6.0	2.0	0.70	Blue (BU)	30
333-30600	TF31-6/2	6.0	2.0	0.70	Black (BK)	30
333-30605	TF31-6/2	6.0	2.0	0.70	Green (GN)	30
333-30607	TF31-6/2	6.0	2.0	0.70	Green-Yellow (GNYE)	30
333-30602	TF31-6/2	6.0	2.0	0.70	Red (RD)	30
333-30609	TF31-6/2	6.0	2.0	0.70	White (WH)	30
333-30604	TF31-6/2	6.0	2.0	0.70	Yellow (YE)	30
333-30906	TF31-9/3	9.0	3.0	0.80	Blue (BU)	30
333-30900	TF31-9/3	9.0	3.0	0.80	Black (BK)	30
333-30905	TF31-9/3	9.0	3.0	0.80	Green (GN)	30
333-30907	TF31-9/3	9.0	3.0	0.80	Green-Yellow (GNYE)	30
333-30902	TF31-9/3	9.0	3.0	0.80	Red (RD)	30
333-30909	TF31-9/3	9.0	3.0	0.80	White (WH)	30
333-30904	TF31-9/3	9.0	3.0	0.80	Yellow (YE)	30
333-31206	TF31-12/4	12.0	4.0	0.85	Blue (BU)	30
333-31200	TF31-12/4	12.0	4.0	0.85	Black (BK)	30
333-31205	TF31-12/4	12.0	4.0	0.85	Green (GN)	30
333-31207	TF31-12/4	12.0	4.0	0.85	Green-Yellow (GNYE)	30
333-31202	TF31-12/4	12.0	4.0	0.85	Red (RD)	30
333-31209	TF31-12/4	12.0	4.0	0.85	White (WH)	30
333-31204	TF31-12/4	12.0	4.0	0.85	Yellow (YE)	30
333-31806	TF31-18/6	18.0	6.0	1.00	Blue (BU)	30
333-31800	TF31-18/6	18.0	6.0	1.00	Black (BK)	30
333-31805	TF31-18/6	18.0	6.0	1.00	Green (GN)	30
333-31807	TF31-18/6	18.0	6.0	1.00	Green-Yellow (GNYE)	30
333-31802	TF31-18/6	18.0	6.0	1.00	Red (RD)	30
333-31809	TF31-18/6	18.0	6.0	1.00	White (WH)	30
333-31804	TF31-18/6	18.0	6.0	1.00	Yellow (YE)	30
333-32406	TF31-24/8	24.0	8.0	1.20	Blue (BU)	30
333-32400	TF31-24/8	24.0	8.0	1.20	Black (BK)	30
333-32405	TF31-24/8	24.0	8.0	1.20	Green (GN)	30
333-32407	TF31-24/8	24.0	8.0	1.20	Green-Yellow (GNYE)	30
333-32402	TF31-24/8	24.0	8.0	1.20	Red (RD)	30
333-32409	TF31-24/8	24.0	8.0	1.20	White (WH)	30
333-32404	TF31-24/8	24.0	8.0	1.20	Yellow (YE)	30
333-34006	TF31-40/13	40.0	13.0	1.25	Blue (BU)	30
333-34000	TF31-40/13	40.0	13.0	1.25	Black (BK)	30
333-34005	TF31-40/13	40.0	13.0	1.25	Green (GN)	30
333-34002	TF31-40/13	40.0	13.0	1.25	Red (RD)	30
333-34009	TF31-40/13	40.0	13.0	1.25	White (WH)	30
333-34004	TF31-40/13	40.0	13.0	1.25	Yellow (YE)	30

Alle Maße in mm. Technische Änderungen vorbehalten.

Heat Shrinkable Tubing 3:1 flexible and transparent

• TF34

Features and Benefits

- Transparent, highly flexible polyolefin tubing TF34
- Protects identification marking perfect
- Shrink ratio 3:1
- Halogenfree
- Good mechanical and chemical resistance



TF34 transparent tubing with 3:1 shrink ratio allowing for a wider range of application.



TF34

Cut lengths available on request. Please contact us!

Material	Polyolefin, cross-linked (POX)
Colour	Transparent (CL)
Shrink Ratio	3:1
Operating Temperature	-55 °C to +135 °C
Min. Shrink Temperature	+110 °C
Longitudinal change after shrinkage	-5% max.
Dielectric Strength	46 kV/mm



Article-No.	Type	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Reel Length (m)
333-30153	TF34-1.5/0.5	1.5	0.5	0.50	30
333-30303	TF34-3/1	3.0	1.0	0.50	30
333-30603	TF34-6/2	6.0	2.0	0.70	30
333-30903	TF34-9/3	9.0	3.0	0.80	30
333-31203	TF34-12/4	12.0	4.0	0.85	30
333-31803	TF34-18/6	18.0	6.0	1.00	30
333-32403	TF34-24/8	24.0	8.0	1.20	30
333-34003	TF34-40/13	40.0	13.0	1.25	30

All dimensions in mm. Subject to technical changes.

Heat Shrinkable Tubing adhesive lined

- EPS-300 3:1
- EPS-400 4:1

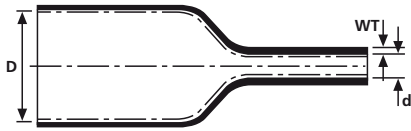
Heatshrinkable tubing EPS seals and protects a wide variety of electrical applications like back end connector sealing, connector-to-cable transitions and splices.

Features and Benefits

- Flexible, thin walled polyolefin tubing EPS
- With coextruded hot melt adhesive inner wall
- Shrink ratio 3:1 and 4:1
- Protects against moisture
- Provides an environmental sealing of complex parts



EPS offers high shrink ratios and protection against humidity.



EPS-300, EPS-400

Cut lengths available on request. Please contact us!

Material	Polyolefin, cross-linked (POX)
Colour	Black (BK)
Shrink Ratio	3:1, 4:1
Longitudinal change after shrinkage	-10% max.
Min. Shrink Temperature	+120 °C
Operating Temperature	-55 °C to +110 °C
Softening Point Adhesive	+90 °C
Dielectric Strength	15 kV/mm according to IEC 684 P2
Flammability	ASTM D2671 (outer layer only)
Specification	SAE - AMS - DTL-23053/4 (EPS400)



Article-No.	Type	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Reel Length (m)
EPS-300					
340-03010	EPS-300-3/1	3.0	1.0	1.00	400
340-06020	EPS-300-6/2	6.0	2.0	1.00	300
340-09030	EPS-300-9/3	9.0	3.0	1.40	150
340-12040	EPS-300-12/4	12.0	4.0	1.80	100
340-19060	EPS-300-19/6	19.0	6.0	2.20	50
340-24080	EPS-300-24/8	24.0	8.0	2.50	25
340-40130	EPS-300-40/13	40.0	13.0	2.50	25
EPS-400					
341-04010	EPS-400-4/1	4.0	1.0	1.00	300
341-08020	EPS-400-8/2	8.0	2.0	1.00	150
341-12030	EPS-400-12/3	12.0	3.0	1.40	100
341-16040	EPS-400-16/4	16.0	4.0	1.80	100
341-24060	EPS-400-24/6	24.0	6.0	2.20	50
341-32080	EPS-400-32/8	32.0	8.0	2.50	25

All dimensions in mm. Subject to technical changes.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

Heat Shrinkable Tubing 2:1 - Fluororubber

• Viton®-E

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.

Features and Benefits

- High resistant fluoroelastomeric heat shrink tubing Viton®-E
- Shrink ratio 2:1
- For high temperature applications
- Very low shrink temperature
- Flexible even at very low temperatures
- Very good electrical, chemical and mechanical features
- Resistance to fuels and lubricants
- Approved to VG 95343/5E



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



Viton®-E

Cut lengths available on request. Please contact us!

Detailed Information about Heatguns please refer to page 137.

Material	Fluoropolymer cross-linked (FPMX)
Colour	Black (BK)
Shrink Ratio	2:1
Longitudinal change after shrinkage	-10% max.
Min. Shrink Temperature	+175 °C
Operating Temperature	-55 °C to +220 °C
Insulation Class	C (VDE 0530)
Dielectric Strength	15 kV/mm
Flammability	VG 95343
Specification	VG 95343



Article-No.	Type	Designation as per VG-Norm	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Reel Length (m)
330-00320	VITON®-E-3.2/1.6	VG 95343 T 05 E 001 A	3.2	1.6	0.70	50
330-00480	VITON®-E-4.8/2.4	VG 95343 T 05 E 002 A	4.8	2.4	0.80	50
330-00640	VITON®-E-6.4/3.2	VG 95343 T 05 E 003 A	6.4	3.2	0.90	50
330-00950	VITON®-E-9.5/4.8	VG 95343 T 05 E 004 A	9.5	4.8	1.00	50
330-01270	VITON®-E-12.7/6.4	VG 95343 T 05 E 005 A	12.7	6.4	1.20	25
330-01900	VITON®-E-19.0/9.5	VG 95343 T 05 E 006 A	19.0	9.5	1.40	25
330-02540	VITON®-E-25.4/12.7	VG 95343 T 05 E 007 A	25.4	12.7	1.80	25
330-03810	VITON®-E-38.0/19.0	VG 95343 T 05 E 008 A	38.0	19.0	2.40	15
330-05080	VITON®-E-50.8/25.4	VG 95343 T 05 E 009 A	50.8	25.4	2.80	15

All dimensions in mm. Subject to technical changes.

Viton® is a registered trademark of DuPont.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

Heat Shrinkable Tubing 2:1 - PVDF

• TK20

Typical applications of this translucent tubing are where high-temperature performance is required. Also very suitable for applications that ask for visual inspection of covered components, or if low friction surface is needed. TK20 is also used as oil stop for energy cables.

This thin walled, translucent heat shrink tubing is often used for chemical applications.

Features and Benefits

- Transparent, semi-rigid heat shrinkable Tubing TK20
- Thin walled and tough
- Shrink ratio 2:1
- Self extinguishing
- For higher temperature applications
- Very good mechanical strength and chemical resistance
- Meets lots of industrial standards
- Cutted length: 1,20 m



This thin walled, translucent heat shrink tubing is often used for chemical applications.



TK20, TK29

Material	Polyvinylidene fluoride (PVDF)
Colour	Transparent (CL)
Shrink Ratio	2:1
Operating Temperature	-55 °C to +175 °C
Min. Shrink Temperature	+175 °C
Flammability	UL224 VW-1
Longitudinal change after shrinkage	+/-10% max
Dielectric Strength	≥ 30 kV/mm min. according to ASTM D2171
Specification	SAE - AMS - DTL-23053/8, UL224 150 °C 600V VW-1, VG 95343



Article-No.	Type	Designation as per VG-Norm	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Length (L) (m)
311-00129	TK20-1.2/0.6	VG95343T05F001M	1.2	0.6	0.25	1.20
311-00169	TK20-1.6/0.8	VG95343T05F002M	1.6	0.8	0.25	1.20
311-00249	TK20-2.4/1.2	VG95343T05F003M	2.4	1.2	0.25	1.20
311-00329	TK20-3.2/1.6	VG95343T05F004M	3.2	1.6	0.25	1.20
311-00489	TK20-4.8/2.4	VG95343T05F005M	4.8	2.4	0.25	1.20
311-00649	TK20-6.4/3.2	VG95343T05F006M	6.4	3.2	0.30	1.20
311-00959	TK20-9.5/4.8	VG95343T05F007M	9.5	4.8	0.30	1.20
311-01279	TK20-12.7/6.4	VG95343T05F008M	12.7	6.4	0.30	1.20
311-01909	TK20-19.1/9.5	VG95343T05F009M	19.1	9.5	0.43	1.20
311-02549	TK20-25.4/12.7	VG95343T05F010M	25.4	12.7	0.48	1.20
311-03819	TK20-38.1/19.1	–	38.1	19.1	0.51	1.20
311-05089	TK20-50.8/25.4	–	50.8	25.4	0.51	1.20

All dimensions in mm. Subject to technical changes.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

Heat Shrinkable Tubing 2:1 - PVDF

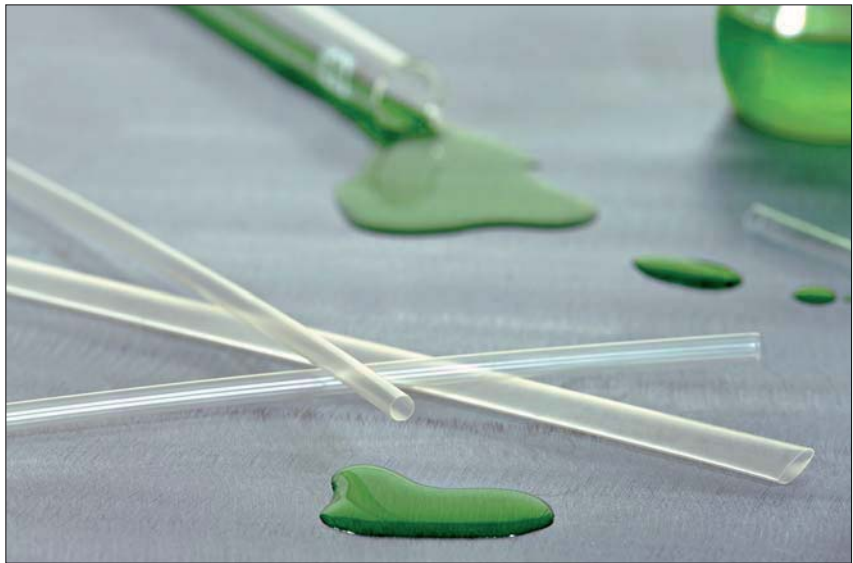
• TK29

Typical applications of this translucent tubing are where high-temperature performance is required. Also very suitable for applications that ask for visual inspection of covered components, or if low friction surface is needed. TK29 is also used as oil stop for energy cables.

This thin walled, translucent heat shrink tubing is often used for chemical applications.

Features and Benefits

- Transparent, semi-rigid heat shrinkable Tubing TK29
- Thin walled and tough
- Shrink ratio 2:1
- Self extinguishing
- For higher temperature applications
- Very good mechanical strength and chemical resistance
- Meets lots of industrial standards
- Delivery on reel



This thin walled, translucent heat shrink tubing is often used for chemical applications.



TK20, TK29

Material	Polyvinylidene fluoride (PVDF)
Colour	Transparent (CL)
Shrink Ratio	2:1
Operating Temperature	-55 °C to +175 °C
Min. Shrink Temperature	+150 °C
Flammability	UL224 VW-1
Longitudinal change after shrinkage	+/-10% max
Dielectric Strength	≥ 30 kV/mm min. according to ASTM D2171
Specification	MIL-DTL-23053, UL224 VW-1



Article-No.	Type	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Length (L) (m)
311-90129	TK29-1.2/0.6	1.2	1.2	0.25	300
311-90169	TK29-1.6/0.8	1.6	0.8	0.25	300
311-90249	TK29-2.4/1.2	2.4	1.2	0.25	150
311-90329	TK29-3.2/1.6	3.2	1.6	0.25	150
311-90489	TK29-4.8/2.4	4.8	2.4	0.25	60
311-90649	TK29-6.4/3.2	6.4	3.2	0.30	60
311-90959	TK29-9.5/4.8	9.5	4.8	0.30	60
311-91279	TK29-12.7/6.4	12.7	6.4	0.30	60
311-91909	TK29-19.1/9.5	19.1	9.5	0.43	60
311-92549	TK29-25.4/12.7	25.4	12.7	0.48	60
311-93819	TK29-38.1/19.1	38.1	19.1	0.51	60
311-95089	TK29-50.8/25.4	50.8	25.4	0.51	60

All dimensions in mm. Subject to technical changes.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.

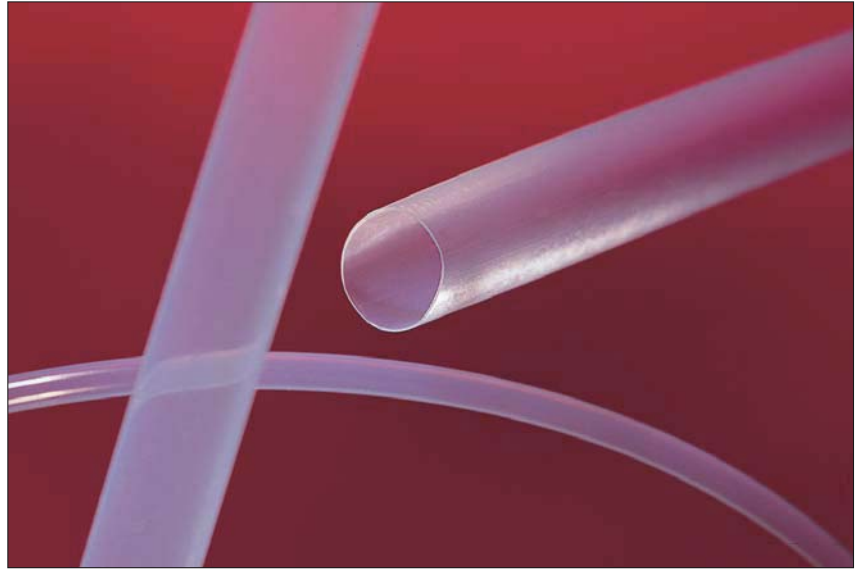
Heat Shrinkable Tubing - PTFE

- TFE2 2:1
- TFE4 4:1

TFE is ideal for high temperature applications, when resistance to aggressive fluids is 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.

Features and Benefits

- Transparent, non-burning heat shrinkable Tubing TFE
- Very thin walled and tough
- Shrink ratio 2:1 and 4:1
- For operating temperatures up to +260° C
- Very good mechanical strength
- High chemical resistance



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



TFE2, TFE4

Material	Polytetrafluoroethylene (PTFE)
Colour	Transparent (CL)
Shrink Ratio	2:1, 4:1
Operating Temperature	-70 °C to +260 °C
Min. Shrink Temperature	+330 °C
Flammability	non-burning
Longitudinal change after shrinkage	-20% max.
Dielectric Strength	40 kV/mm according to DIN 53481

Cut lengths available on request. Please contact us!



Heat Shrinkable Tubing - PTFE

- TFE2 2:1
- TFE4 4:1

Article-No.	Type	Wire Size (AWG)	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Length (L) (m)
TFE2						
336-00079	TFE2-30	30	0.86	0.38	0.23	1.22
336-00099	TFE2-28	28	0.96	0.46	0.23	1.22
336-00109	TFE2-26	26	1.17	0.56	0.23	1.22
336-00139	TFE2-24	24	1.27	0.69	0.25	1.22
336-00149	TFE2-22	22	1.39	0.82	0.25	1.22
336-00159	TFE2-20	20	1.52	0.99	0.30	1.22
336-00199	TFE2-18	18	1.93	1.25	0.30	1.22
336-00249	TFE2-16	16	2.36	1.55	0.30	1.22
336-00319	TFE2-14	14	3.05	1.83	0.30	1.22
336-00399	TFE2-12	12	3.81	2.26	0.30	1.22
336-00489	TFE2-10	10	4.85	2.85	0.30	1.22
336-00619	TFE2-8	8	6.10	3.58	0.38	1.22
336-00779	TFE2-6	6	7.67	4.52	0.38	1.22
336-00949	TFE2-4	4	9.40	5.69	0.38	1.22
336-01109	TFE2-2	2	10.92	7.06	0.38	1.22
336-01209	TFE2-0	0	11.94	8.81	0.38	1.22
TFE4						
		Size/Inch				
339-00209	TFE4-5/64	5/64	1.98	0.64	0.22	1.22
339-00329	TFE4-1/8	1/8	3.17	0.94	0.25	1.22
339-00340	TFE4-3/16	3/16	4.75	1.27	0.30	1.22
339-00649	TFE4-1/4	1/4	6.35	1.60	0.30	1.22
339-00959	TFE4-3/8	3/8	9.52	2.44	0.30	1.22
339-01279	TFE4-1/2	1/2	12.7	3.66	0.38	1.22
339-01599	TFE4-5/8	5/8	15.87	4.52	0.38	1.22
339-01909	TFE4-3/4	3/4	19.05	5.69	0.38	1.22
339-02549	TFE4-1	1	25.4	7.06	0.38	1.22
339-03189	TFE4-1 1/4	1 1/4	31.75	8.82	0.38	1.22

All dimensions in mm. Subject to technical changes.

Heat Shrinkable Tubing 2:1 - Flame retardant

• TR27

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

Features and Benefits

- Thin walled, flexible polyolefin tubing TR27
- Shrink ratio 2:1
- Halogenfree
- Self-extinguishing
- Excellent flame-retardant properties
- Meets lots of industrial standards
- Optional available with adhesive or as thick walled version SR27



TR27 is ideal for safety sensitive areas.

Detailed Information about Heatguns please refer to page 106.

Material	Polyolefin, cross-linked (POX)
Colour	Black (BK)
Shrink Ratio	2:1
Operating Temperature	-40 °C to +105 °C
Min. Shrink Temperature	+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	15 kV/mm according to IEC 684 P2
Specification	DEF STAN 59-97 Type 8, LUL Engineering Standard E1042:A6, CEN TS 45545-2: HL3



Article-No.	Type	Supplied Ø D min.	Recov. Ø d max.	Wall (WT) nom.	Reel Length (m)
315-50320	TR27-3.2/1.6	3.2	1.6	0.51	150.0
315-50480	TR27-4.8/2.4	4.8	2.4	0.51	60.0
315-50640	TR27-6.4/3.2	6.4	3.2	0.64	60.0
315-50950	TR27-9.5/4.8	9.5	4.8	0.64	60.0
315-51270	TR27-12.7/6.4	12.7	6.4	0.64	60.0
315-51900	TR27-19.1/9.5	19.1	9.5	0.76	60.0
315-52540	TR27-25.4/12.7	25.4	12.7	0.89	60.0
315-53810	TR27-38.1/19.1	38.1	19.1	1.02	60.0
315-55100	TR27-50.8/25.4	50.8	25.4	1.14	60.0

All dimensions in mm. Subject to technical changes.



Please note! Not all products listed on this page may have this approval. For product specific approvals please refer to the Appendix.