





2.1 Heat Shrinkable Tubing

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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

HFT-A, TL27, TF21, TF24, VITON®-E, TK20, TK29, TFE-2, TR27, TCN20, TE28, SE28

Heat Shrinkable 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 heat shrink tubes: TF34, TF31, EPS-300, TCN20 overexpanded, TA32, TA37

Shrink ratio 2:1 Size mm		Cable/Wire Diameter
1.2/0.6		0.7 mm
		1.1 mm
3.2/1.6	2.4/1.2	1.4 mm
		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
		11.4 mm
25.4/12.7	19.1/9.5	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

Shrink ratio 3:1 Size mm		Cable/Wire Diameter
1.5/0.5		0.7 mm
		1.3 mm
6/2	3/1	1.4 mm
		2.6 mm
		2.8 mm
18/6	12/4	5.2 mm
		5.6 mm
		8.4 mm
		10.4 mm
40/13	24/8	11.2 mm
		15.6 mm
		18.4 mm
		20.8 mm
		34.6 mm

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

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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 5mm is to be wrapped in heat shrink 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.

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.hellermannityton.com.sg/site/calculators/heatshrinkcalculator!>

The calculator tool also checks if the heat shrink tubing you have chosen is suitable for your application. For example you can find the heat shrink tubing with the Product Search on the HellermannTyton website.

Heatshrinkable Tubing Overview

	Type	Material	Shrink Ratio	Operating Temperature	Dimension (mm)	Halogen-free	Colour	Specification	Page
Thin-Wall	TCN20	PO-X	2:1	-55 °C to +125 °C	1.2 - 50.8		Black	2, 11, 12	168
	TCN20 over-expanded	PO-X	3:1	-55 °C to +125 °C	2.4 - 38.0		Black	2, 11, 12	169
	TL27	PO-X	2:1	-55 °C to +135 °C	1.2 - 50.8	HF ✓	Black		170
	TR27	PO-X	2:1	-40 °C to +105 °C	3.2 - 50.8	HF ✓	Black	1, 3, 7	171
	TF21	PO-X	2:1	-55 °C to +135 °C	1.2 - 101.6		Black, Blue, Green-Yellow, Red, White, Yellow	2, 6, 9, 10, 11, 12	172
	TF24	PO-X	2:1	-55 °C to +135 °C	1.2 - 101.6	HF ✓	Transparent	3, 10, 13	175
	HFT-A	PO-X	2:1	-55 °C to +135 °C	1.2 - 101.6		Black, Blue, Green-Yellow, Red, White, Yellow	2, 3, 4, 8, 9, 10, 11, 12, 13	176
	TF31	PO-X	3:1	-55 °C to +135 °C	1.5 - 40.0		Black, Blue, Green, Green-Yellow, Red, White, Yellow	2, 11, 12	179
	TF34	PO-X	3:1	-55 °C to +135 °C	1.5 - 40.0	HF ✓	Transparent		182
	SE28	POA	2:1	-75 °C to +150 °C	3.2 - 102.0		Black	9, 10, 13	183
	TE28	POA	2:1	-75 °C to +150 °C	2.4 - 51.0		Black	13	184
	TK20	PVDF	2:1	-55 °C to +175 °C	1.2 - 50.8		Transparent	10, 11, 12, 13	185
	TK29	PVDF	2:1	-55 °C to +175 °C	1.2 - 50.8		Transparent	8, 11, 12	186
	Viton®-E	FPMX	2:1	-55 °C to +220 °C	3.2 - 50.8		Black	13	187
	TFE2	PTFE	2:1	-70 °C to +260 °C	0.86 - 11.94		Transparent		188
	TFE4	PTFE	4:1	-70 °C to +260 °C	1.98 - 31.75		Transparent		188

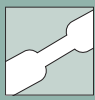
Heatshrinkable Tubing Overview

	Type	Material	Shrink Ratio	Operating Temperature	Dimension (mm)	Halogen-free	Colour	Specification	Page
Thin-Wall Hot melt adhesive	EPS-300	PO-X	3:1	-55 °C to +110 °C	3.0 - 40.0		Black	10	190
	EPS-400	PO-X	4:1	-55 °C to +110 °C	4.0 - 32.0		Black	10	190
	TA32	PO-X	3:1	-55 °C to +125 °C	3.2 - 40.0		Black	2, 10, 11, 12	192
	TA37	PO-X	3:1	-40 °C to +105 °C	3.0 - 120	HF ✓	Black	1	191
	TA42	PO-X	4:1	-55 °C to +125 °C	4.0 - 52.0		Black	10, 11, 12	192
Medium-Wall	MU47	PO-X	up to 4:1	-55 °C to +110 °C	12.0 - 140.0	HF ✓	Black		193
Medium-Wall Hot melt adhesive	MA40	PO-X	4:1	-55 °C to +110 °C	8.0 - 55.0		Black	5	195
	MA47	PO-X	up to 4:1	-55 °C to +110 °C	12.0 - 140.0	HF ✓	Black		193
Thick-Wall	HU47	PO-X	up to 3.5:1	-55 °C to +110 °C	9.0 - 180.0	HF ✓	Black		197
Thick-Wall Hot melt adhesive	HA40	PO-X	4:1	-55 °C to +110 °C	9.0 - 92.0		Black	5	198
	HA47	PO-X	up to 3.5:1	-55 °C to +110 °C	9.0 - 180.0	HF ✓	Black		196

Specification

1	2	3	4	5	6	7
8	9	10	11	12	13	

Please refer to the Approvals Overview for further information, see page: 468, 469



Low-Heat Shrinkable Tubing 2:1

- **TCN20 - self extinguishing**

TCN20 is suitable for a wide range of applications such as electrical insulation, mechanical protection and cable bundling.

Features and Benefits

- Thin walled general purpose polyolefin tubing
- Highly flame-retardant, UL224 VW-1 , CSA
- Fast shrinking
- Low shrink temperature



Heat Shrink Tubing TCN20.

MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	2:1
Operating Temperature	-55 °C to +125 °C
Min. Shrink Temperature	+100 °C
Longitudinal change after shrinkage	+/-5%
Dielectric Strength	20 kV/mm according to IEC 243
Flammability	self-extinguishing
Specifications	CSA, UL224 125 °C 600V VW-1

RoHS



Heat Shrinkable Tubing 2:1

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

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 3:1 - Self extinguishing

- **TCN20 overexpanded**

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
- Inch size tubing with 3:1 shrink ratio
- Very fast shrinking and low shrink temperature
- Highly flame-retardant, UL224 VW-1



Heat shrink tubing TCN20 overexpanded.

MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	3:1
Operating Temperature	-55 °C to +125 °C
Min. Shrink Temperature	+100 °C
Longitudinal change after shrinkage	+/-5%
Dielectric Strength	20 kV/mm according to IEC 243
Flammability	self-extinguishing
Specifications	CSA, UL224 125 °C 600V VW-1



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



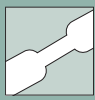
Heat Shrinkable Tubing 3:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Article-No.
TCN20-2.4/0.8	2.4	0.8	0.40	300 m	Black (BK)	300-73130
TCN20-3.2/1.2	3.2	1.2	0.50	300 m	Black (BK)	300-73140
TCN20-4.8/1.6	4.8	1.6	0.50	300 m	Black (BK)	300-73150
TCN20-6.6/2.4	6.6	2.4	0.55	300 m	Black (BK)	300-73160
TCN20-9.5/3.2	9.5	3.2	0.65	100 m	Black (BK)	300-73170
TCN20-12.7/4.8	12.7	4.8	0.75	100 m	Black (BK)	300-73180
TCN20-19.0/6.4	19.0	6.4	0.75	60 m	Black (BK)	300-73190
TCN20-25.4/9.5	25.4	9.5	0.79	60 m	Black (BK)	300-73200
TCN20-38.0/12.7	38.0	12.7	0.95	30 m	Black (BK)	300-73210

All dimensions in mm. Subject to technical changes.
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For product specific approvals and specifications please refer to the Appendix.



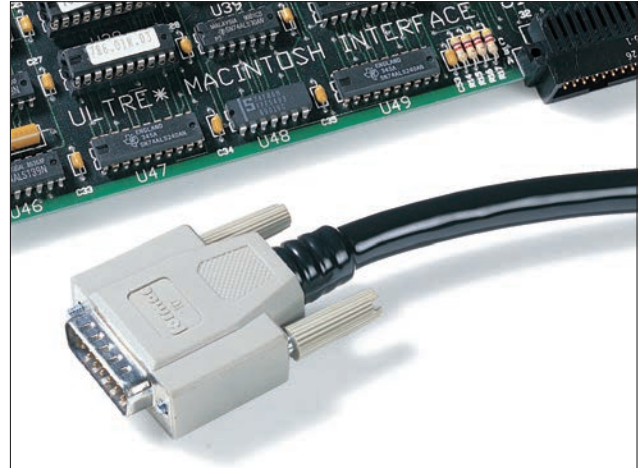
Low-Heat Shrinkable Tubing 2:1

- TL27 - halogen free

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.

Features and Benefits

- Very low shrink temperature
- Fast shrinking
- Halogen free



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

MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	2:1
Operating Temperature	-55 °C to +135 °C
Min. Shrink Temperature	+90 °C
Longitudinal change after shrinkage	+5%/-15%
Dielectric Strength	>20 kV/mm
Flammability	FMVSS 302



Heat Shrinkable Tubing 2:1



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

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



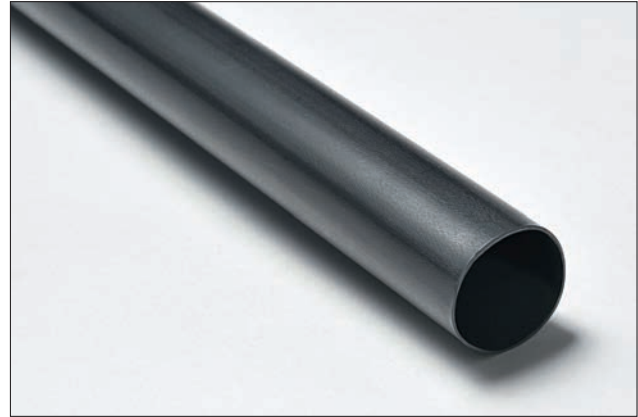
Heat Shrinkable Tubing 2:1 - Flame retardant

- TR27

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

Features and Benefits

- Thin walled, flexible polyolefin tubing
- Optional available with adhesive or as thick walled version (SR27)
- Halogen free and excellent flame-retardant properties
- Meets various industrial standards



TR27 is ideal for safety sensitive areas.

MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	2:1
Operating Temperature	-40 °C to +105 °C
Min. Shrink Temperature	+115 °C
Longitudinal change after shrinkage	+5%/-10% max.
Dielectric Strength	15 kV/mm according to IEC 684 P2
Flammability	Limited Fire Hazard, halogen free, low generation of toxic gases and corrosive acid, low smoke generation
Specifications	CEN TS 45545-2: HL3, DEF STAN 59-97 Type 8, LUL Engineering Standard E1042:A6



TR27 is ideal for safety sensitive areas.



Heat Shrinkable Tubing 2:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Article-No.
TR27-3.2/1.6	3.2	1.6	0.51	150 m	Black (BK)	315-50320
TR27-4.8/2.4	4.8	2.4	0.51	60 m	Black (BK)	315-50480
TR27-6.4/3.2	6.4	3.2	0.64	60 m	Black (BK)	315-50640
TR27-9.5/4.8	9.5	4.8	0.64	60 m	Black (BK)	315-50950
TR27-12.7/6.4	12.7	6.4	0.64	60 m	Black (BK)	315-51270
TR27-19.1/9.5	19.1	9.5	0.76	60 m	Black (BK)	315-51900
TR27-25.4/12.7	25.4	12.7	0.89	60 m	Black (BK)	315-52540
TR27-38.1/19.1	38.1	19.1	1.02	60 m	Black (BK)	315-53810
TR27-50.8/25.4	50.8	25.4	1.14	60 m	Black (BK)	315-55100

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 2:1 flexible and coloured

- TF21

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

Features and Benefits

- Thin walled, flexible polyolefin tubing
- Fast shrinking and low shrink temperature
- Meets and exceeds lots of industrial standards
- Big variety of different colours and sizes
- Printable
- Flame retarded and UL224 VW1 listed



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

Cut lengths available on request. Please contact us!

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

RoHS



Heat Shrinkable Tubing 2:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Article-No.
TF21-1.2/0.6	1.2	0.6	0.41	100 m	Blue (BU)	309-20126
	1.2	0.6	0.41	100 m	Red (RD)	309-20122
	1.2	0.6	0.41	100 m	White (WH)	309-20129
	1.2	0.6	0.41	100 m	Yellow (YE)	309-20124
	1.2	0.6	0.41	300 m	Black (BK)	309-10120
TF21-1.6/0.8	1.6	0.8	0.43	100 m	Blue (BU)	309-20166
	1.6	0.8	0.43	100 m	Red (RD)	309-20162
	1.6	0.8	0.43	100 m	White (WH)	309-20169
	1.6	0.8	0.43	100 m	Yellow (YE)	309-20164
	1.6	0.8	0.43	300 m	Black (BK)	309-10160

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 2:1 flexible and coloured

- TF21



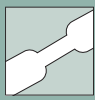
Heat Shrinkable Tubing 2:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Article-No.
TF21-2.4/1.2	2.4	1.2	0.51	100 m	Blue (BU)	309-20246
	2.4	1.2	0.51	100 m	Green-Yellow (GNYE)	309-40247
	2.4	1.2	0.51	100 m	Red (RD)	309-20242
	2.4	1.2	0.51	100 m	White (WH)	309-20249
	2.4	1.2	0.51	100 m	Yellow (YE)	309-20244
	2.4	1.2	0.51	300 m	Black (BK)	309-10240
TF21-3.2/1.6	3.2	1.6	0.51	100 m	Blue (BU)	309-20326
	3.2	1.6	0.51	100 m	Green-Yellow (GNYE)	309-40327
	3.2	1.6	0.51	100 m	Red (RD)	309-20322
	3.2	1.6	0.51	100 m	White (WH)	309-20329
	3.2	1.6	0.51	100 m	Yellow (YE)	309-20324
	3.2	1.6	0.51	300 m	Black (BK)	309-10320
TF21-4.8/2.4	4.8	2.4	0.51	60 m	Blue (BU)	309-50486
	4.8	2.4	0.51	60 m	Green-Yellow (GNYE)	309-50487
	4.8	2.4	0.51	60 m	Red (RD)	309-50482
	4.8	2.4	0.51	60 m	White (WH)	309-50489
	4.8	2.4	0.51	60 m	Yellow (YE)	309-50484
	4.8	2.4	0.51	300 m	Black (BK)	309-10480
TF21-6.4/3.2	6.4	3.2	0.64	60 m	Blue (BU)	309-50646
	6.4	3.2	0.64	60 m	Green-Yellow (GNYE)	309-50647
	6.4	3.2	0.64	60 m	Red (RD)	309-50642
	6.4	3.2	0.64	60 m	White (WH)	309-50649
	6.4	3.2	0.64	60 m	Yellow (YE)	309-50644
	6.4	3.2	0.64	300 m	Black (BK)	309-10640
TF21-9.5/4.8	9.5	4.8	0.64	50 m	Blue (BU)	309-20956
	9.5	4.8	0.64	50 m	Green-Yellow (GNYE)	309-50957
	9.5	4.8	0.64	50 m	Red (RD)	309-20952
	9.5	4.8	0.64	50 m	White (WH)	309-20959
	9.5	4.8	0.64	50 m	Yellow (YE)	309-20954
	9.5	4.8	0.64	150 m	Black (BK)	309-10950
TF21-12.7/6.4	12.7	6.4	0.64	50 m	Blue (BU)	309-21276
	12.7	6.4	0.64	50 m	Green-Yellow (GNYE)	309-41277
	12.7	6.4	0.64	50 m	Red (RD)	309-21272
	12.7	6.4	0.64	50 m	White (WH)	309-21279
	12.7	6.4	0.64	50 m	Yellow (YE)	309-21274
	12.7	6.4	0.64	100 m	Black (BK)	309-11270

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 2:1 flexible and coloured

• TF21



Heat Shrinkable Tubing 2:1

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

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



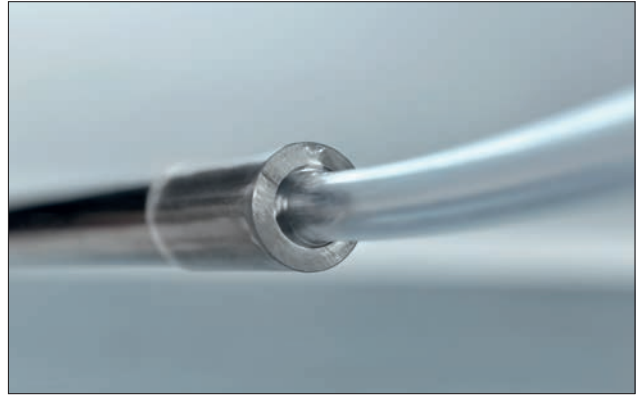
Heat Shrinkable Tubing 2:1 flexible and transparent

- TF24

Protects wire and cable markers subject to abuse, while permitting inspectability of each item covered. Protects electronic components while permitting their identification and inspection.

Features and Benefits

- Transparent, flexible polyolefin tubing
- Protects identification marking perfect
- Halogen free
- Good mechanical and chemical resistance
- VG-approval and additional industrial approvals



TF24 transparent tubing with 2:1 shrink ratio.

Cut lengths available on request. Please contact us!

MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	2:1
Operating Temperature	-55 °C to +135 °C
Min. Shrink Temperature	+110 °C
Longitudinal change after shrinkage	+/-5% max.
Dielectric Strength	≥ 30 kV/mm min. according to ASTM D2171
Flammability	not flame retarded
Specifications	DEF STAN 59-97 Type 2B, SAE - AMS - DTL-23053/5 Class 2, VG 95343



Heat Shrinkable Tubing 2:1

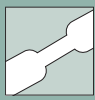


TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Designation as per VG-Norm	Article-No.
TF24-1.2/0.6	1.2	0.6	0.41	100 m	Transparent (CL)	VG95343T05B001M	309-40123
TF24-1.6/0.8	1.6	0.8	0.43	100 m	Transparent (CL)	VG95343T05B002M	309-40163
TF24-2.4/1.2	2.4	1.2	0.51	100 m	Transparent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

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 2:1 flexible and coloured

- **HFT-A - self extinguishing**

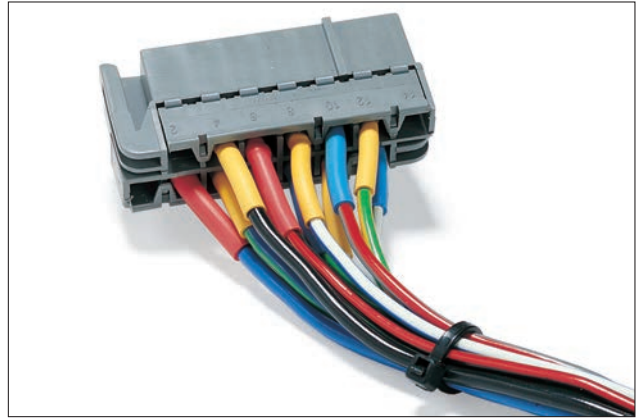
This high performance thin wall tubing is used extensively for electrical and mechanical protection. It is also well proven for sleeve marking to identify wiring circuits. It shrinks uniformly to form a permanent insulation covering.

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.

Features and Benefits

- Flexible heat shrink tubing
- Fast shrinking, easy handling, good mechanical strength
- Easy to print on
- Wide range of colours
- Internal diameters up to 4 inches (101.6 mm)
- UL-224 ,CSA listed and VG approved

Standard available in colours black, red, blue, yellow, white and green-yellow.



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

MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	2:1
Operating Temperature	-55 °C to +135 °C
Min. Shrink Temperature	+100 °C
Longitudinal change after shrinkage	+5%/-10%
Dielectric Strength	20 kV/mm according to IEC 684 P2
Flammability	self-extinguishing
Specifications	CSA, DEF STAN 59-97/3, MIL-DTL-23053/5C, NF F 00-608, SAE - AMS - DTL-23053/5C, UL224 125 °C 600V, VG 95343



Heat Shrinkable Tubing 2:1



TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Designation as per VG-Norm	Article-No.
HFT-A-1.2/0.6	1.2	0.6	0.40	400 m	Black (BK)	VG 95343 T05 A 001A	305-01200
	1.2	0.6	0.40	400 m	Blue (BU)	VG 95343 T05 A 001 G	305-01206
	1.2	0.6	0.40	400 m	Red (RD)	VG 95343 T05 A 001 C	305-01202
	1.2	0.6	0.40	400 m	White (WH)	VG 95343 T05 A 001 L	305-01209
	1.2	0.6	0.40	400 m	Yellow (YE)	VG 95343 T05 A 001 E	305-01204
HFT-A-1.6/0.8	1.6	0.8	0.40	400 m	Black (BK)	VG 95343 T05 A 002 A	305-01600
	1.6	0.8	0.40	400 m	Blue (BU)	VG 95343 T05 A 002 G	305-01606
	1.6	0.8	0.40	400 m	Red (RD)	VG 95343 T05 A 002 C	305-01602
	1.6	0.8	0.40	400 m	White (WH)	VG 95343 T05 A 002 L	305-01609
	1.6	0.8	0.40	400 m	Yellow (YE)	VG 95343 T05 A 002 E	305-01604
HFT-A-2.4/1.2	2.4	1.2	0.50	100 m	Blue (BU)	VG 95343 T05 A 003 G	305-02406
	2.4	1.2	0.50	100 m	Red (RD)	VG 95343 T05 A 003 C	305-02402
	2.4	1.2	0.50	100 m	White (WH)	VG 95343 T05 A 003 L	305-02409
	2.4	1.2	0.50	100 m	Yellow (YE)	VG 95343 T05 A 003 E	305-02404
	2.4	1.2	0.50	400 m	Black (BK)	VG 95343 T05 A 003 A	305-02400

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 2:1 flexible and coloured

- HFT-A - self extinguishing



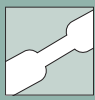
Heat Shrinkable Tubing 2:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Designation as per VG-Norm	Article-No.
HFT-A-3.2/1.6	3.2	1.6	0.50	100 m	Blue (BU)	VG 95343 T05 A 004 G	305-03206
	3.2	1.6	0.50	100 m	Green-Yellow (GNYE)	VG 95343 T05 A 004 N	305-03245
	3.2	1.6	0.50	100 m	Red (RD)	VG 95343 T05 A 004 C	305-03202
	3.2	1.6	0.50	100 m	White (WH)	VG 95343 T05 A 004 L	305-03209
	3.2	1.6	0.50	100 m	Yellow (YE)	VG 95343 T05 A 004 E	305-03204
	3.2	1.6	0.50	400 m	Black (BK)	VG 95343 T05 A 004 A	305-03200
HFT-A-4.8/2.4	4.8	2.4	0.50	75 m	Blue (BU)	VG 95343 T05 A 005 G	305-04806
	4.8	2.4	0.50	75 m	Green-Yellow (GNYE)	VG 95343 T05 A 005 N	305-04845
	4.8	2.4	0.50	75 m	Red (RD)	VG 95343 T05 A 005 C	305-04802
	4.8	2.4	0.50	75 m	White (WH)	VG 95343 T05 A 005 L	305-04809
	4.8	2.4	0.50	75 m	Yellow (YE)	VG 95343 T05 A 005 E	305-04804
	4.8	2.4	0.50	300 m	Black (BK)	VG 95343 T05 A 005 A	305-04800
HFT-A-6.4/3.2	6.4	3.2	0.60	75 m	Blue (BU)	VG 95343 T05 A 006 G	305-06406
	6.4	3.2	0.60	75 m	Green-Yellow (GNYE)	VG 95343 T05 A 006 N	305-06445
	6.4	3.2	0.60	75 m	Red (RD)	VG 95343 T05 A 006 C	305-06402
	6.4	3.2	0.60	75 m	White (WH)	VG 95343 T05 A 006 L	305-06409
	6.4	3.2	0.60	75 m	Yellow (YE)	VG 95343 T05 A 006 E	305-06404
	6.4	3.2	0.60	300 m	Black (BK)	VG 95343 T05 A 006 A	305-06400
HFT-A-9.5/4.8	9.5	4.8	0.60	50 m	Blue (BU)	VG 95343 T05 A007 G	305-09506
	9.5	4.8	0.60	50 m	Green-Yellow (GNYE)	VG 95343 T05 A007 N	305-09545
	9.5	4.8	0.60	50 m	Red (RD)	VG 95343 T05 A007 C	305-09502
	9.5	4.8	0.60	50 m	White (WH)	VG 95343 T05 A007 L	305-09509
	9.5	4.8	0.60	50 m	Yellow (YE)	VG 95343 T05 A007 E	305-09504
	9.5	4.8	0.60	150 m	Black (BK)	VG 95343 T05 A007 A	305-09500
HFT-A-12.7/6.4	12.7	6.4	0.60	50 m	Blue (BU)	VG 95343 T05 A 008 G	305-12706
	12.7	6.4	0.60	50 m	Green-Yellow (GNYE)	VG 95343 T05 A 008 N	305-12745
	12.7	6.4	0.60	50 m	Red (RD)	VG 95343 T05 A 008 C	305-12702
	12.7	6.4	0.60	50 m	White (WH)	VG 95343 T05 A 008 L	305-12709
	12.7	6.4	0.60	50 m	Yellow (YE)	VG 95343 T05 A 008 E	305-12704
	12.7	6.4	0.60	100 m	Black (BK)	VG 95343 T05 A 008 A	305-12700

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 2:1 flexible and coloured

- HFT-A - self extinguishing



Heat Shrinkable Tubing 2:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Designation as per VG-Norm	Article-No.
HFT-A-19.0/9.5	19.0	9.5	0.80	25 m	Blue (BU)	VG 95343 T05 A 009 G	305-19006
	19.0	9.5	0.80	25 m	Green-Yellow (GNYE)	VG 95343 T05 A 009 N	305-19045
	19.0	9.5	0.80	25 m	Red (RD)	VG 95343 T05 A 009 C	305-19002
	19.0	9.5	0.80	25 m	White (WH)	VG 95343 T05 A 009 L	305-19009
	19.0	9.5	0.80	25 m	Yellow (YE)	VG 95343 T05 A 009 E	305-19004
	19.0	9.5	0.80	50 m	Black (BK)	VG 95343 T05 A 009 A	305-19000
HFT-A-25.4/12.7	25.4	12.7	0.90	25 m	Blue (BU)	VG 95343 T05 A 010 G	305-25406
	25.4	12.7	0.90	25 m	Green-Yellow (GNYE)	VG 95343 T05 A 010 N	305-25445
	25.4	12.7	0.90	25 m	Red (RD)	VG 95343 T05 A 010 C	305-25402
	25.4	12.7	0.90	25 m	White (WH)	VG 95343 T05 A 010 L	305-25409
	25.4	12.7	0.90	25 m	Yellow (YE)	VG 95343 T05 A 010 E	305-25404
	25.4	12.7	0.90	50 m	Black (BK)	VG 95343 T05 A 010 A	305-25400
HFT-A-38.0/19.0	38.0	19.0	1.00	50 m	Black (BK)	VG 95343 T05 A 011 A	305-38100
	38.0	19.0	1.00	50 m	Blue (BU)	VG 95343 T05 A 011 G	305-38106
	38.0	19.0	1.00	50 m	Green-Yellow (GNYE)	VG 95343 T05 A 011 N	305-38145
	38.0	19.0	1.00	50 m	Red (RD)	VG 95343 T05 A 011 C	305-38102
	38.0	19.0	1.00	50 m	White (WH)	VG 95343 T05 A 011 L	305-38109
	38.0	19.0	1.00	50 m	Yellow (YE)	VG 95343 T05 A 011 E	305-38104
HFT-A-50.8/25.4	51.0	25.4	1.10	35 m	Black (BK)	VG 95343 T05 A 012 A	305-50800
	51.0	25.4	1.10	35 m	Blue (BU)	VG 95343 T05 A 012 G	305-50806
	51.0	25.4	1.10	35 m	Red (RD)	VG 95343 T05 A 012 C	305-50802
	51.0	25.4	1.10	35 m	White (WH)	VG 95343 T05 A 012 L	305-50809
	51.0	25.4	1.10	35 m	Yellow (YE)	VG 95343 T05 A 012 E	305-50804
HFT-A-76.0/38.0	76.0	38.0	1.30	25 m	Black (BK)	VG 95343 T05 A 013 A	305-76200
	76.0	38.0	1.30	25 m	Blue (BU)	VG 95343 T05 A 013 G	305-76206
	76.0	38.0	1.30	25 m	Red (RD)	VG 95343 T05 A 013 C	305-76202
	76.0	38.0	1.30	25 m	White (WH)	VG 95343 T05 A 013 L	305-76209
	76.0	38.0	1.30	25 m	Yellow (YE)	VG 95343 T05 A 013 E	305-76204
HFT-A-101.6/50.8	101.6	50.8	1.40	25 m	Black (BK)	VG 95343 T05 A 014 A	305-91600
	101.6	50.8	1.40	25 m	Blue (BU)	VG 95343 T05 A 014 G	305-91606
	101.6	50.8	1.40	25 m	Red (RD)	VG 95343 T05 A 014 C	305-91602
	101.6	50.8	1.40	25 m	White (WH)	VG 95343 T05 A 014 L	305-91609
	101.6	50.8	1.40	25 m	Yellow (YE)	VG 95343 T05 A 014 E	305-91604

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



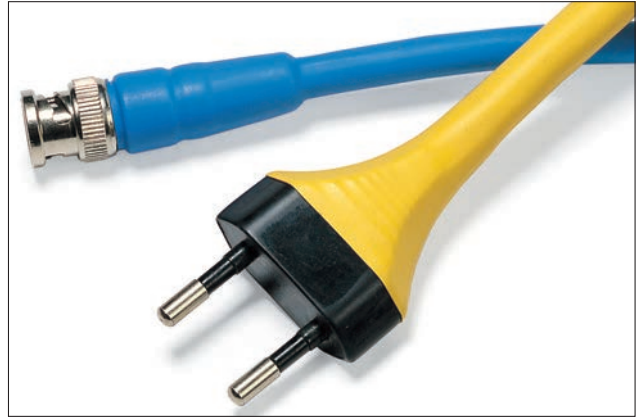
Heat Shrinkable Tubing 3:1 flexible and coloured

- 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, very flexible polyolefin tubing
- Few sizes cover a wide range of diameters allowing reduced inventory
- Fast shrinking and low shrink temperature
- Flame-retardant, UL224 VW1 listed



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

Cut lengths available on request. Please contact us!

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



Heat Shrinkable Tubing 3:1

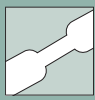


TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Article-No.
TF31-1.5/0.5	1.5	0.5	0.50	30 m	Black (BK)	333-30150
	1.5	0.5	0.50	30 m	Blue (BU)	333-30156
	1.5	0.5	0.50	30 m	Green (GN)	333-30155
	1.5	0.5	0.50	30 m	Green-Yellow (GNYE)	333-30157
	1.5	0.5	0.50	30 m	Red (RD)	333-30152
	1.5	0.5	0.50	30 m	White (WH)	333-30159
	1.5	0.5	0.50	30 m	Yellow (YE)	333-30154
	1.5	0.5	0.50	300 m	Black (BK)	333-20150
TF31-3/1	3.0	1.0	0.60	30 m	Black (BK)	333-30300
	3.0	1.0	0.60	30 m	Blue (BU)	333-30306
	3.0	1.0	0.60	30 m	Green (GN)	333-30305
	3.0	1.0	0.60	30 m	Green-Yellow (GNYE)	333-30307
	3.0	1.0	0.60	30 m	Red (RD)	333-30302
	3.0	1.0	0.60	30 m	White (WH)	333-30309
	3.0	1.0	0.60	30 m	Yellow (YE)	333-30304
	3.0	1.0	0.60	150 m	Black (BK)	333-40300

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 3:1 flexible and coloured

• TF31



Heat Shrinkable Tubing 3:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Article-No.
TF31-6/2	6.0	2.0	0.70	30 m	Black (BK)	333-30600
	6.0	2.0	0.70	30 m	Blue (BU)	333-30606
	6.0	2.0	0.70	30 m	Green (GN)	333-30605
	6.0	2.0	0.70	30 m	Green-Yellow (GNYE)	333-30607
	6.0	2.0	0.70	30 m	Red (RD)	333-30602
	6.0	2.0	0.70	30 m	White (WH)	333-30609
	6.0	2.0	0.70	30 m	Yellow (YE)	333-30604
		6.0	2.0	0.70	150 m	Black (BK)
TF31-9/3	9.0	3.0	0.80	30 m	Black (BK)	333-30900
	9.0	3.0	0.80	30 m	Blue (BU)	333-30906
	9.0	3.0	0.80	30 m	Green (GN)	333-30905
	9.0	3.0	0.80	30 m	Green-Yellow (GNYE)	333-30907
	9.0	3.0	0.80	30 m	Red (RD)	333-30902
	9.0	3.0	0.80	30 m	White (WH)	333-30909
	9.0	3.0	0.80	30 m	Yellow (YE)	333-30904
		9.0	3.0	0.80	150 m	Black (BK)
TF31-12/4	12.0	4.0	0.85	30 m	Black (BK)	333-31200
	12.0	4.0	0.85	30 m	Blue (BU)	333-31206
	12.0	4.0	0.85	30 m	Green (GN)	333-31205
	12.0	4.0	0.85	30 m	Green-Yellow (GNYE)	333-31207
	12.0	4.0	0.85	30 m	Red (RD)	333-31202
	12.0	4.0	0.85	30 m	White (WH)	333-31209
	12.0	4.0	0.85	30 m	Yellow (YE)	333-31204
		12.0	4.0	0.85	100 m	Black (BK)
TF31-18/6	18.0	6.0	1.00	30 m	Black (BK)	333-31800
	18.0	6.0	1.00	30 m	Blue (BU)	333-31806
	18.0	6.0	1.00	30 m	Green (GN)	333-31805
	18.0	6.0	1.00	30 m	Green-Yellow (GNYE)	333-31807
	18.0	6.0	1.00	30 m	Red (RD)	333-31802
	18.0	6.0	1.00	30 m	White (WH)	333-31809
	18.0	6.0	1.00	30 m	Yellow (YE)	333-31804
		18.0	6.0	1.00	60 m	Black (BK)

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 3:1 flexible and coloured

- TF31



Heat Shrinkable Tubing 3:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Article-No.
TF31-24/8	24.0	8.0	1.20	30 m	Black (BK)	333-32400
	24.0	8.0	1.20	30 m	Blue (BU)	333-32406
	24.0	8.0	1.20	30 m	Green (GN)	333-32405
	24.0	8.0	1.20	30 m	Green-Yellow (GNYE)	333-32407
	24.0	8.0	1.20	30 m	Red (RD)	333-32402
	24.0	8.0	1.20	30 m	White (WH)	333-32409
	24.0	8.0	1.20	30 m	Yellow (YE)	333-32404
	24.0	8.0	1.20	60 m	Black (BK)	333-42400
TF31-40/13	40.0	13.0	1.25	30 m	Black (BK)	333-34000
	40.0	13.0	1.25	30 m	Blue (BU)	333-34006
	40.0	13.0	1.25	30 m	Green (GN)	333-34005
	40.0	13.0	1.25	30 m	Green-Yellow (GNYE)	333-34007
	40.0	13.0	1.25	30 m	Red (RD)	333-34002
	40.0	13.0	1.25	30 m	White (WH)	333-34009
	40.0	13.0	1.25	30 m	Yellow (YE)	333-34004
	40.0	13.0	1.25	60 m	Black (BK)	333-24000

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 3:1 flexible and transparent

- TF34

Protects wire and cable markers subject to abuse, while permitting inspectability of each item covered. Protects electronic components while permitting their identification and inspection.

Features and Benefits

- Transparent, flexible polyolefin tubing
- Protects identification marking perfect
- Few sizes cover a wide range of diameters allowing reduced inventory
- Halogen free



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

Cut lengths available on request. Please contact us!

MATERIAL	Polyolefin, cross-linked (PO-X)
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
Flammability	not flame retarded



Heat Shrinkable Tubing 3:1

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

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



Heat Shrinkable Tubing 2:1 - Elastomer

- SE28

SE28 is used for long-term protection of cables and wire harnesses in military equipment, motor sports, and aviation.

Features and Benefits

- Flexible, high performance elastomeric heat shrink tubing
- Used in aerospace, defence, railway and automotive applications
- Resistant to diesel fuel, aviation and hydraulic fluids
- Provides a reliable protection against abrasion and mechanical damage
- Very suitable for protecting cables and wire harnesses



SE28 tubing.

MATERIAL	Elastomer, cross-linked (POA)
Shrink Ratio	2:1
Operating Temperature	-75 °C to +150 °C
Min. Shrink Temperature	+170 °C
Longitudinal change after shrinkage	-10% max.
Dielectric Strength	20 kV/mm
Flammability	VG 95343
Specifications	NF F 00-608, SAE - AMS - DTL-23053, VG 95343



SE28 is mainly used in high performance applications.



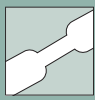
Heat Shrinkable Tubing 2:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Designation as per VG-Norm	Article-No.
SE28 3,2/1,6	3.2	1.6	0.70	150 m	Black (BK)	VG 95343 T 05 D 001 A	342-20000
SE28 4,8/2,4	4.8	2.4	0.80	60 m	Black (BK)	VG 95343 T 05 D 002 A	342-20010
SE28 6,4/3,2	6.4	3.2	0.90	60 m	Black (BK)	VG 95343 T 05 D 003 A	342-20020
SE28 9,5/4,8	9.5	4.8	1.00	60 m	Black (BK)	VG 95343 T 05 D 004 A	342-20030
SE28 12,7/6,4	12.7	6.4	1.20	60 m	Black (BK)	VG 95343 T 05 D 005 A	342-20040
SE28 19,0/9,5	19.0	9.5	1.40	30 m	Black (BK)	VG 95343 T 05 D 006 A	342-20050
SE28 25,4/12,7	25.4	12.7	1.80	30 m	Black (BK)	VG 95343 T 05 D 007 A	342-20060
SE28 38,0/19,0	38.0	19.0	2.40	30 m	Black (BK)	VG 95343 T 05 D 008 A	342-20070
SE28 51,0/25,4	51.0	25.4	2.80	30 m	Black (BK)	VG 95343 T 05 D 009 A	342-20080
SE28 76,0/38,0	76.0	38.0	3.20	15 m	Black (BK)	VG 95343 T 05 D 010 A	342-20090
SE28 101,2/51,0	102.0	51.0	3.50	10 m	Black (BK)	VG 95343 T 05 D 011 A	342-20100

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 2:1 - Elastomer

- TE28 - light weight

TE28 is used for long-term protection of cables and wire harnesses in military, motor sports and aviation equipment.

Features and Benefits

- Thin wall, very flexible, high performance elastomeric heat shrink tubing
- Used in aerospace, defence, railway and automotive harness applications
- Resistant to diesel, aviation and hydrolic fluids
- Provides a reliable protection against abrasion and mechanical damage
- Very suitable for protecting cables and wire harnesses



Thin wall TE28 tubing.

MATERIAL	Elastomer, cross-linked (POA)
Shrink Ratio	2:1
Operating Temperature	-75 °C to +150 °C
Min. Shrink Temperature	+170 °C
Longitudinal change after shrinkage	-10% max.
Dielectric Strength	20 kV/mm
Flammability	VG 95343
Specifications	VG 95343



TE28 is mainly used in high performance applications.



Heat Shrinkable Tubing 2:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Designation as per VG-Norm	Article-No.
TE28 2,4/1,2	2.4	1.2	0.50	150 m	Black (BK)	VG 95343 T 05 D 012 A	342-30000
TE28 3,2/1,6	3.2	1.6	0.50	150 m	Black (BK)	VG 95343 T 05 D 013 A	342-30010
TE28 4,8/2,4	4.8	2.4	0.50	60 m	Black (BK)	VG 95343 T 05 D 014 A	342-30020
TE28 6,4/3,2	6.4	3.2	0.60	60 m	Black (BK)	VG 95343 T 05 D 015 A	342-30030
TE28 9,5/4,8	9.5	4.8	0.60	60 m	Black (BK)	VG 95343 T 05 D 016 A	342-30040
TE28 12,7/6,4	12.7	6.4	0.60	60 m	Black (BK)	VG 95343 T 05 D 017 A	342-30050
TE28 19,0/9,5	19.0	9.5	0.80	30 m	Black (BK)	VG 95343 T 05 D 018 A	342-30060
TE28 25,4/12,7	25.4	12.7	0.90	30 m	Black (BK)	VG 95343 T 05 D 019 A	342-30070
TE28 38,0/19,0	38.0	19.0	1.00	30 m	Black (BK)	VG 95343 T 05 D 020 A	342-30080
TE28 51,0/25,4	51.0	25.4	1.10	30 m	Black (BK)	VG 95343 T 05 D 022 A	342-30090

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 2:1 - PVDF

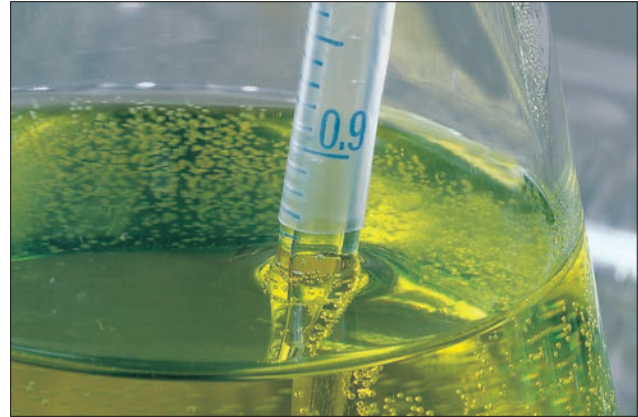
- TK20

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 a 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

- Semi-rigid heat shrinkable tubing made of PVDF
- Thin walled and tough
- For higher temperature applications
- Very good mechanical strength, abrasion resistance and chemical resistance
- Meets various industrial standards
- Self extinguishing, UL 224 VW1 listed



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

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



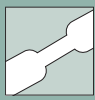
Heat Shrinkable Tubing 2:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Length (L)	Colour	Designation as per VG-Norm	Article-No.
TK20-1.2/0.6	1.2	0.6	0.25	1.2 m	Transparent (CL)	VG95343T05F001M	331-00129
TK20-1.6/0.8	1.6	0.8	0.25	1.2 m	Transparent (CL)	VG95343T05F002M	311-00169
TK20-2.4/1.2	2.4	1.2	0.25	1.2 m	Transparent (CL)	VG95343T05F003M	311-00249
TK20-3.2/1.6	3.2	1.6	0.25	1.2 m	Transparent (CL)	VG95343T05F004M	311-00329
TK20-4.8/2.4	4.8	2.4	0.25	1.2 m	Transparent (CL)	VG95343T05F005M	311-00489
TK20-6.4/3.2	6.4	3.2	0.30	1.2 m	Transparent (CL)	VG95343T05F006M	311-00649
TK20-9.5/4.8	9.5	4.8	0.30	1.2 m	Transparent (CL)	VG95343T05F007M	311-00959
TK20-12.7/6.4	12.7	6.4	0.30	1.2 m	Transparent (CL)	VG95343T05F008M	311-01279
TK20-19.1/9.5	19.1	9.5	0.43	1.2 m	Transparent (CL)	VG95343T05F009M	311-01909
TK20-25.4/12.7	25.4	12.7	0.48	1.2 m	Transparent (CL)	VG95343T05F010M	311-02549
TK20-38.1/19.1	38.1	19.1	0.51	1.2 m	Transparent (CL)	-	311-03819
TK20-50.8/25.4	50.8	25.4	0.51	1.2 m	Transparent (CL)	-	311-05089

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 2:1 - PVDF

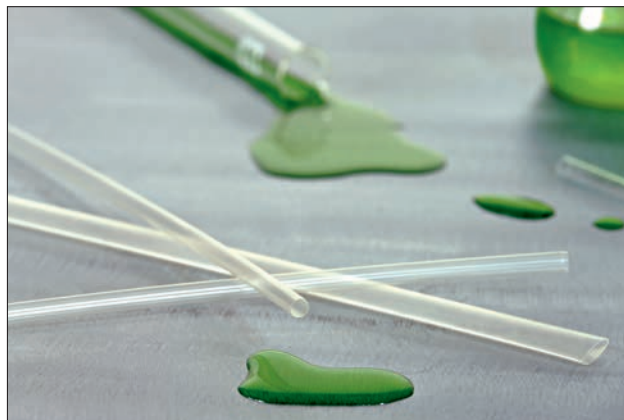
• TK29

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-flexible heat shrinkable tubing
- Very thin walled and tough
- Self extinguishing
- For higher temperature applications
- Very good mechanical strength and chemical resistance
- Meets lots of industrial standards
- Supplied on reel



TK29 thin walled, translucent heat shrink tubing on reel.

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



Heat Shrinkable Tubing 2:1



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

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 2:1 - Fluoroelastomer

- 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 temperature resistant fluoroelastomeric heat shrink tubing
- Very good electrical, chemical and mechanical features
- Resistant to many fuels, oils and lubricants
- Flexible even at very low temperatures



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

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



Heat Shrinkable Tubing 2:1



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

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing - PTFE

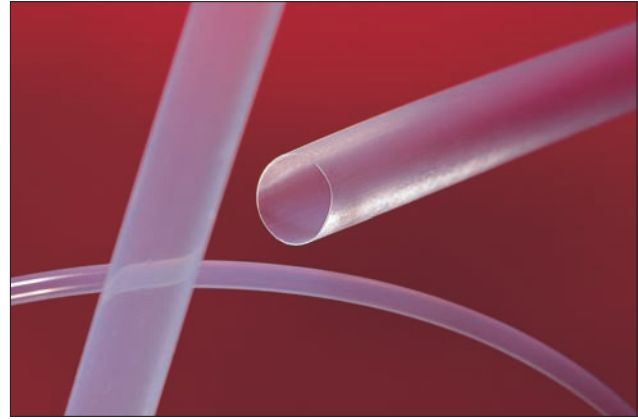
- TFE2 2:1

- 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

- PTFE heat shrink tubing
- Very high temperature resistance
- Extra thin wall translucent tubing
- High abrasion resistance and good resistance against aggressive chemicals
- Available in either 2:1 (TFE2) or 4:1 (TFE4) shrink ratios



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

Cut lengths available on request. Please contact us!

MATERIAL	Polytetrafluoroethylene (PTFE)
Operating Temperature	-70 °C to +260 °C
Min. Shrink Temperature	+350 °C
Longitudinal change after shrinkage	-20% max.
Dielectric Strength	40 kV/mm according to DIN 53481
Flammability	non-burning



Heat Shrinkable Tubing 2:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wire Size (AWG)	Wall (WT)	Length (L)	Colour	Shrink Ratio	Article-No.
TFE2-30	0.86	0.38	30	0.23	1.2 m	Transparent (CL)	2:1	336-00079
TFE2-28	0.96	0.46	28	0.23	1.2 m	Transparent (CL)	2:1	336-00099
TFE2-26	1.17	0.56	26	0.23	1.2 m	Transparent (CL)	2:1	336-00109
TFE2-24	1.27	0.69	24	0.25	1.2 m	Transparent (CL)	2:1	336-00139
TFE2-22	1.39	0.82	22	0.25	1.2 m	Transparent (CL)	2:1	336-00149
TFE2-20	1.52	0.99	20	0.30	1.2 m	Transparent (CL)	2:1	336-00159
TFE2-18	1.93	1.25	18	0.30	1.2 m	Transparent (CL)	2:1	336-00199
TFE2-16	2.36	1.55	16	0.30	1.2 m	Transparent (CL)	2:1	336-00249
TFE2-14	3.05	1.83	14	0.30	1.2 m	Transparent (CL)	2:1	336-00319
TFE2-12	3.81	2.26	12	0.30	1.2 m	Transparent (CL)	2:1	336-00399
TFE2-10	4.85	2.85	10	0.30	1.2 m	Transparent (CL)	2:1	336-00489
TFE2-8	6.10	3.58	8	0.38	1.2 m	Transparent (CL)	2:1	336-00619
TFE2-6	7.67	4.52	6	0.38	1.2 m	Transparent (CL)	2:1	336-00779
TFE2-4	9.40	5.69	4	0.38	1.2 m	Transparent (CL)	2:1	336-00949
TFE2-2	10.92	7.06	2	0.38	1.2 m	Transparent (CL)	2:1	336-01109
TFE2-0	11.94	8.81	0	0.38	1.2 m	Transparent (CL)	2:1	336-01209

AWG: American Wire Gauge Minimum Order Quantity (MOQ) may differ from package content.



Heat Shrinkable Tubing - PTFE

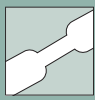
- TFE4 4:1



Heat Shrinkable Tubing 4:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Size (imperial)	Wall (WT)	Length (L)	Colour	Shrink Ratio	Article-No.
TFE4-5/64	1.98	0.64	5/64 "	0.22	1.2 m	Transparent (CL)	4:1	339-00209
TFE4-1/8	3.17	0.94	1/8 "	0.25	1.2 m	Transparent (CL)	4:1	339-00329
TFE4-3/16	4.75	1.27	3/16 "	0.30	1.2 m	Transparent (CL)	4:1	339-00340
TFE4-1/4	6.35	1.60	1/4 "	0.30	1.2 m	Transparent (CL)	4:1	339-00649
TFE4-3/8	9.52	2.44	3/8 "	0.30	1.2 m	Transparent (CL)	4:1	339-00959
TFE4-1/2	12.70	3.66	1/2 "	0.38	1.2 m	Transparent (CL)	4:1	339-01279
TFE4-5/8	15.87	4.52	5/8 "	0.38	1.2 m	Transparent (CL)	4:1	339-01599
TFE4-3/4	19.05	5.69	3/4 "	0.38	1.2 m	Transparent (CL)	4:1	339-01909
TFE4-1	25.40	7.06	1 "	0.38	1.2 m	Transparent (CL)	4:1	339-02549
TFE4-1 1/4	31.75	8.82	1 1/4 "	0.38	1.2 m	Transparent (CL)	4:1	339-03189

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



Heat Shrinkable Tubing adhesive lined

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

Heat shrinkable 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 heat shrink tubing
- With coextruded hot melt adhesive inner wall
- Protects against moisture
- Provides an environmental sealing of complex parts

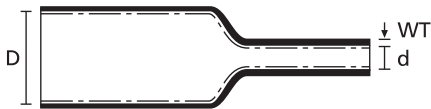


PTA300 and PTA400 offer high shrink ratios and protection against humidity.

Cut lengths available on request. Please contact us!



Heat Shrinkable Tubing 3:1 with adhesive



Heat Shrinkable Tubing 4:1 with adhesive

MATERIAL	Polyolefin, cross-linked (PO-X)
Operating Temperature	-55 °C to +110 °C
Min. Shrink Temperature	+120 °C
Longitudinal change after shrinkage	-10% max.
Softening Point Adhesive	+90 °C
Dielectric Strength	15 kV/mm according to IEC 684 P2
Flammability	ASTM D2671 (outer layer only)
Specifications	SAE - AMS - DTL-23053/4



TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Shrink Ratio	Article-No.
EPS-300-3/1	3.0	1.0	1.00	400 m	Black (BK)	3:1	340-03010
EPS-300-6/2	6.0	2.0	1.00	300 m	Black (BK)	3:1	340-06020
EPS-300-9/3	9.0	3.0	1.40	150 m	Black (BK)	3:1	340-09030
EPS-300-12/4	12.0	4.0	1.80	100 m	Black (BK)	3:1	340-12040
EPS-300-19/6	19.0	6.0	2.20	50 m	Black (BK)	3:1	340-19060
EPS-300-24/8	24.0	8.0	2.50	25 m	Black (BK)	3:1	340-24080
EPS-300-40/13	40.0	13.0	2.50	25 m	Black (BK)	3:1	340-40130

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Reel Length	Colour	Shrink Ratio	Article-No.
EPS-400-4/1	4.0	1.0	1.00	300 m	Black (BK)	4:1	341-04010
EPS-400-8/2	8.0	2.0	1.00	150 m	Black (BK)	4:1	341-08020
EPS-400-12/3	12.0	3.0	1.40	100 m	Black (BK)	4:1	341-12030
EPS-400-16/4	16.0	4.0	1.80	100 m	Black (BK)	4:1	341-16040
EPS-400-24/6	24.0	6.0	2.20	50 m	Black (BK)	4:1	341-24060
EPS-400-32/8	32.0	8.0	2.50	25 m	Black (BK)	4:1	341-32080

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing 3:1 - Flame retardant

- **TA37 - thin wall adhesive lined**

TA37 shrink tubing has a low smoke index and excellent flame retardant properties to meet strict fire security standards in electrical insulation.

Features and Benefits

- Thin wall adhesive lined heat shrink tubing
- Halogen Free
- Flame Retarded
- Combination of these three (halogen free, adhesive lined and flame retarded) product properties is unique
- Tubing conforms to London Underground specification LUL E1042-A6, BS6853



TA37 - adhesive lined tubing for safety sensitive areas.

MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	3:1
Operating Temperature	-40 °C to +105 °C
Min. Shrink Temperature	+150 °C
Softening Point Adhesive	+85 °C
Longitudinal change after shrinkage	-15% max.
Flammability	self-extinguishing
Specifications	CEN TS 45545-2: HL3, conforms to BS6853, conforms to LUL E1042:A6



Mainly used in railway applications.



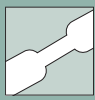
Heat Shrinkable Tubing 3:1 with adhesive

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Length (L)	Colour	Article-No.
TA37 3-1	3.0	1.0	0.95	1.2 m	Black (BK)	315-13000
TA37 4,5-1,5	4.5	1.5	1.10	1.2 m	Black (BK)	315-13001
TA37 6-2	6.0	2.0	1.20	1.2 m	Black (BK)	315-13002
TA37 9-3	9.0	3.0	1.30	1.2 m	Black (BK)	315-13003
TA37 12-4	12.0	4.0	1.40	1.2 m	Black (BK)	315-13004
TA37 19-6	19.0	6.0	1.80	1.2 m	Black (BK)	315-13005
TA37 24-8	24.0	8.0	2.50	1.2 m	Black (BK)	315-13006
TA37 40-13	40.0	13.0	2.50	1.2 m	Black (BK)	315-13007
TA37 50-19	50.0	19.0	4.00	1.2 m	Black (BK)	315-13008
TA37 75-25	75.0	25.0	3.00	1.2 m	Black (BK)	315-13009
TA37 120-45	120.0	45.0	4.00	1.2 m	Black (BK)	315-13011

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



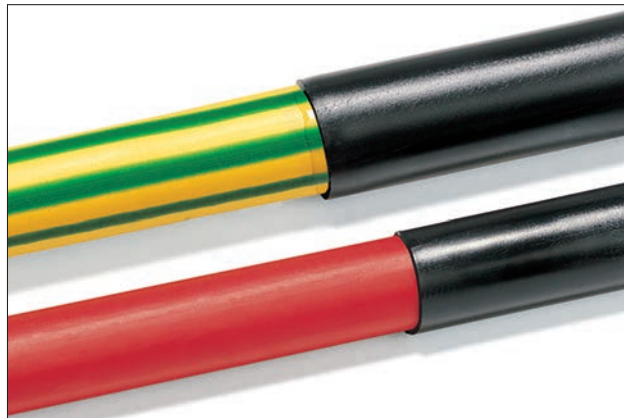
Heat Shrinkable Tubing adhesive lined - 1.2 m lengths

- TA32 - thin wall, 3:1 shrink ratio
- TA42 - thin wall, 4:1 shrink ratio

TA32/TA42 is designed for environmental sealing and electrical insulation of wire splices, terminations and components.

Features and Benefits

- Thin walled adhesive-lined heat shrink tubing
- Highly flame retardant
- Outer wall conforms to UL224



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

Cut lengths available on request. Please contact us!



Heat Shrinkable Tubing 3:1 with adhesive

MATERIAL	Polyolefin, cross-linked (PO-X)
Operating Temperature	-55 °C to +125 °C
Min. Shrink Temperature	+110 °C
Softening Point Adhesive	+110 °C
Longitudinal change after shrinkage	-15% max.
Dielectric Strength	15 kV/mm according to IEC 684 P2
Flammability	UL224
Specifications	CSA, SAE - AMS - DTL-23053/4 Class 3, UL224 125 °C 600V

RoHS

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Length (L)	Colour	Shrink Ratio	Article-No.
TA32-3/1	3.2	0.6	0.95	1.2 m	Black (BK)	3:1	318-30300
TA32 4.5/1.5	4.5	1.5	1.10	1.2 m	Black (BK)	3:1	318-30450
TA32-6/2	6.0	2.0	1.20	1.2 m	Black (BK)	3:1	318-30600
TA32-9/3	9.0	3.0	1.30	1.2 m	Black (BK)	3:1	318-30900
TA32-12/4	12.0	4.0	1.40	1.2 m	Black (BK)	3:1	318-31200
TA32-19/6	19.0	6.0	1.80	1.2 m	Black (BK)	3:1	318-31900
TA32-24/8	24.0	8.0	2.50	1.2 m	Black (BK)	3:1	318-32400
TA32-40/13	40.0	13.0	2.50	1.2 m	Black (BK)	3:1	318-34000

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Heat Shrinkable Tubing adhesive lined - 1.2 m lengths

- TA42 - thin wall, 4:1 shrink ratio



Heat Shrinkable Tubing 4:1 with adhesive

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

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.

Heat Shrinkable Tubing up to 4:1 - 1 m lengths

- MA47 - medium wall adhesive lined
- MU47 - medium wall unlined

Insulation and Protection of low voltage cable joints and terminations above and below ground.

Features and Benefits

- Medium walled tubing with robust insulation characteristics
- Shrink tubing for above and underground cable applications
- Protects cable joints and terminations in low voltage applications
- Coated inside with thermoplastic adhesive
- Protects against humidity and other environmental impacts after shrinking

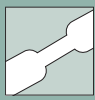


MA47 and MU47 medium wall tubing - lined and unlined.

Cut lengths available on request. Please contact us!

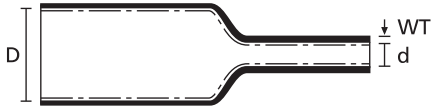
MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	up to 4:1
Operating Temperature	-55 °C to +110 °C
Min. Shrink Temperature	+120 °C
Softening Point Adhesive	+85 °C
Longitudinal change after shrinkage	-10% max.
Dielectric Strength	20 kV/mm
Flammability	not flame retarded
Insulation Class	A (VDE 0530)





Heat Shrinkable Tubing up to 4:1 - 1 m lengths

- MA47 - medium wall adhesive lined



Heat Shrinkable Tubing 4:1 with adhesive

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Length (L)	Colour	Article-No.
MA47-12/3	12.0	3.0	2.00	1.0 m	Black (BK)	323-20120
MA47-19/6	19.0	6.0	2.50	1.0 m	Black (BK)	323-20190
MA47-30/8	30.0	8.0	2.50	1.0 m	Black (BK)	323-20300
MA47-40/12	40.0	12.0	2.50	1.0 m	Black (BK)	323-20400
MA47-50/16	50.0	16.0	2.70	1.0 m	Black (BK)	323-20500
MA47-63/19	63.0	19.0	2.80	1.0 m	Black (BK)	323-20630
MA47-75/22	75.0	22.0	3.00	1.0 m	Black (BK)	323-20750
MA47-95/30	95.0	30.0	3.00	1.0 m	Black (BK)	323-20950
MA47-115/34	115.0	34.0	3.00	1.0 m	Black (BK)	323-21150
MA47-140/42	140.0	42.0	3.00	1.0 m	Black (BK)	323-21400

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.

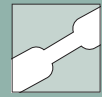
- MU47 - medium wall unlined



Heat Shrinkable Tubing 4:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Length (L)	Colour	Article-No.
MU47-12/3	12.0	3.0	2.00	1.0 m	Black (BK)	323-10120
MU47-19/6	19.0	6.0	2.20	1.0 m	Black (BK)	323-10190
MU47-30/8	30.0	8.0	2.50	1.0 m	Black (BK)	323-10300
MU47-40/12	40.0	12.0	2.50	1.0 m	Black (BK)	323-10400
MU47-50/16	50.0	16.0	2.70	1.0 m	Black (BK)	323-10500
MU47-63/19	63.0	19.0	2.80	1.0 m	Black (BK)	323-10630
MU47-75/22	75.0	22.0	3.00	1.0 m	Black (BK)	323-10750
MU47-95/30	95.0	30.0	3.00	1.0 m	Black (BK)	323-10950
MU47 115/34	115.0	34.0	3.00	1.0 m	Black (BK)	323-11150
MU47-140/42	140.0	42.0	3.00	1.0 m	Black (BK)	323-11400

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



Heat Shrinkable Tubing 4:1 - Flame retardant

- MA40 - medium wall adhesive lined

Designed for low voltage cable joints and terminations in shipbuilding. Insulates and protects against moisture.

Features and Benefits

- Medium wall adhesive lined shrink tubing for low voltage power cables
- Designed for shipbuilding, Germanische Lloyd approved
- Flame retarded
- UV and weather resistant
- Excellent mechanical performance



MA40 medium wall, adhesive lined and flame retarded tubing for shipbuilding applications.

MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	4:1
Operating Temperature	-55 °C to +110 °C
Min. Shrink Temperature	+120 °C
Softening Point Adhesive	+85 °C
Longitudinal change after shrinkage	-10% max.
Dielectric Strength	>18 kV/mm
Flammability	self-extinguishing
Specifications	GL



Heat Shrinkable Tubing 4:1 with adhesive

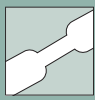


TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Length (L)	Colour	Article-No.
MA40 8/2	8.0	2.0	1.70	1.0 m	Black (BK)	323-00100
MA40 12/3	12.0	3.0	2.00	1.0 m	Black (BK)	323-00101
MA40 16/5	16.0	5.0	2.00	1.0 m	Black (BK)	323-00103
MA40 22/6	22.0	6.0	2.40	1.0 m	Black (BK)	323-00104
MA40 33/8	33.0	8.0	2.50	1.0 m	Black (BK)	323-00105
MA40 40/12	40.0	12.0	2.50	1.0 m	Black (BK)	323-00106
MA40 55/16	55.0	16.0	2.70	1.0 m	Black (BK)	323-00107

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



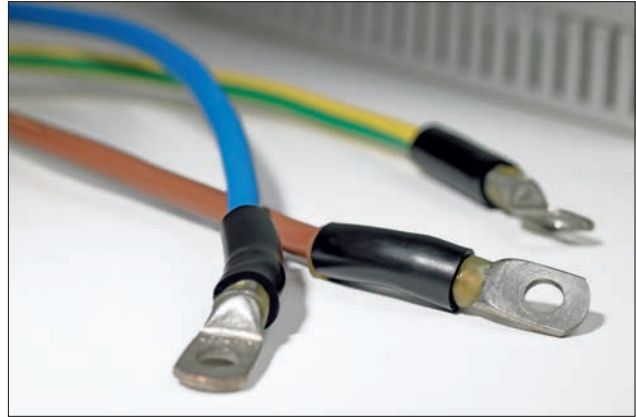
Heat Shrinkable Tubing up to 3.5:1 - 1 m lengths

- HA47 - thick wall adhesive lined
- HU47 - thick wall unlined

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

Features and Benefits

- Thick walled polyolefin adhesive-lined sleeving
- Thermoplastic adhesive protects against moisture and weathering
- Used for low voltage power applications



HA47 – Heavy wall adhesive lined tubing.

Cut lengths available on request. Please contact us!



Heat Shrinkable Tubing 3.5:1 with adhesive

MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	up to 3.5:1
Operating Temperature	-55 °C to +110 °C
Min. Shrink Temperature	+120 °C
Softening Point Adhesive	+85 °C
Longitudinal change after shrinkage	-10% max.
Dielectric Strength	20 kV/mm
Flammability	not flame retarded
Insulation Class	A (VDE 0530)



TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Length (L)	Colour	Article-No.
HA47-9/3	9.0	3.0	1.80	1.0 m	Black (BK)	321-20090
HA47-13/4	13.0	4.0	2.40	1.0 m	Black (BK)	321-20130
HA47-19/6	19.0	6.0	2.70	1.0 m	Black (BK)	321-20180
HA47-33/8	33.0	8.0	3.20	1.0 m	Black (BK)	321-20280
HA47-45/12	45.0	12.0	4.10	1.0 m	Black (BK)	321-20450
HA47-51/16	51.0	16.0	4.10	1.0 m	Black (BK)	321-20510
HA47-68/22	68.0	22.0	4.10	1.0 m	Black (BK)	321-20680
HA47-85/25	85.0	25.0	4.30	1.0 m	Black (BK)	321-20850
HA47-105/30	105.0	30.0	4.30	1.0 m	Black (BK)	321-20900
HA47-130/36	130.0	36.0	4.30	1.0 m	Black (BK)	321-21300
HA47-160/50	160.0	50.0	4.30	1.0 m	Black (BK)	321-21600
HA47-180/50	180.0	50.0	4.30	1.0 m	Black (BK)	321-21850

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



Heat Shrinkable Tubing up to 3.5:1 - 1 m lengths

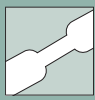
- HU47 - thick wall unlined



Heat Shrinkable Tubing 3.5:1

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Length (L)	Colour	Article-No.
HU47-9/3	9.0	3.0	1.80	1.0 m	Black (BK)	321-10090
HU47-13/4	13.0	4.0	2.40	1.0 m	Black (BK)	321-10130
HU47-19/6	19.0	6.0	2.70	1.0 m	Black (BK)	321-10180
HU47-33/8	33.0	8.0	3.20	1.0 m	Black (BK)	321-10280
HU47-45/12	45.0	12.0	4.10	1.0 m	Black (BK)	321-10450
HU47-51/16	51.0	16.0	4.10	1.0 m	Black (BK)	321-10510
HU47-68/22	68.0	22.0	4.10	1.0 m	Black (BK)	321-10680
HU47-85/25	85.0	25.0	4.30	1.0 m	Black (BK)	321-10850
HU47-105/30	105.0	30.0	4.30	1.0 m	Black (BK)	321-10900
HU47-130/36	130.0	36.0	4.30	1.0 m	Black (BK)	321-11300
HU47-160/50	160.0	50.0	4.30	1.0 m	Black (BK)	321-11600
HU47-180/50	180.0	50.0	4.30	1.0 m	Black (BK)	321-11850

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



Heat Shrinkable Tubing 4:1 - Flame retardant

- HA40 - thick wall adhesive lined

Designed for low voltage cable joints and terminations in shipbuilding. Insulates and protects against moisture.

Features and Benefits

- Heavy wall adhesive lined shrink tubing for low voltage power cables
- Designed for shipbuilding, Germanische Lloyd approved
- Flame retarded
- UV and weather resistant
- Excellent mechanical performance



HA40 thick wall, adhesive lined and flame retarded tubing for shipbuilding applications.

MATERIAL	Polyolefin, cross-linked (PO-X)
Shrink Ratio	4:1
Operating Temperature	-55 °C to +110 °C
Min. Shrink Temperature	+120 °C
Softening Point Adhesive	+85 °C
Longitudinal change after shrinkage	-10% max.
Dielectric Strength	>18 kV/mm
Flammability	self-extinguishing
Specifications	GL



Heat Shrinkable Tubing 4:1 with adhesive

RoHS ✓

LFH ✓

TYPE	Supplied Ø D min.	Recov. Ø d max.	Wall (WT)	Length (L)	Colour	Article-No.
HA40 9/3	9.0	3.0	1.80	1.0 m	Black (BK)	321-00100
HA40 13/4	13.0	4.0	2.20	1.0 m	Black (BK)	321-00101
HA40 22/6	22.0	6.0	2.70	1.0 m	Black (BK)	321-00102
HA40 33/8	33.0	8.0	2.70	1.0 m	Black (BK)	321-00103
HA40 40/12	40.0	12.0	4.00	1.0 m	Black (BK)	321-00104
HA40 55/16	55.0	16.0	4.00	1.0 m	Black (BK)	321-00105
HA40 75/22	75.0	22.0	4.10	1.0 m	Black (BK)	321-00106
HA40 92/25	92.0	25.0	4.20	1.0 m	Black (BK)	321-00107

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.

Heat Shrinkable Moulded Shapes



The moulded shapes catalogue offers a wide range of moulded parts. The extensive product line includes low profile, bulbous and lipped types for use on circular and D-type connectors as well as complex multiway transitions.

They can be sealed with our special adhesives and encapsulants to ensure the proper degree of mechanical support, strain relief and environmental protection.

A range of specially formulated materials is available to meet a variety of performance requirements.

A wider range of material / adhesive combinations are available in the moulded shapes catalogue.

Adhesive for Heat Shrinkable Moulded Shapes

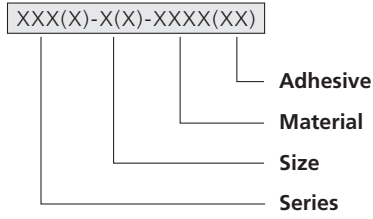
Adhesive Specifications				
	W / W2	WM250	V9500	HMT200A
Adhesive	Hot melt adhesive	Hot melt adhesive	Two part, black, epoxy adhesive	Hot melt adhesive tape
Operating Temperature	-55 °C to +80 °C	-55 °C to +80 °C	-75 °C to +150 °C	-55 °C to +105 °C
Softening Point Adhesive	+95 °C	+95 °C		+110 °C
Supplied Form	pre-applied	pre-applied	cartridge	tape
Shelf life	5 years	5 years	18 months	5 years
Solvent Resistance	Fair under splash conditions	Fair under splash conditions	De-icing fluid: Excellent, Petrol: Excellent, Lubricating Oil: Excellent, Hydraulic Oil: Excellent	Fair under splash conditions

Materials for Heat Shrinkable Moulded Shapes

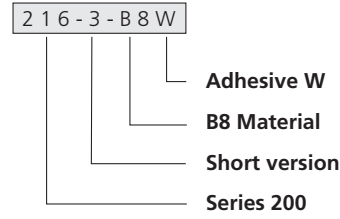
Material Specifications				
	G	B7	B8	-9
Material	Fluid resistant elastomer	Semi-rigid flame retarded polyolefin	Semi-rigid flame retarded polyolefin	Modified elastomer blend
Operating Temperature	-75 °C to +150 °C	-55 °C to +135 °C	-55 °C to +100 °C	-55 °C to 120 °C
Minimum Shrink Temperature	+135 °C	+135 °C	+135 °C	+135 °C
Specification	DEF STAN 59-97, BSG198 Part 5	MIL-I-81765/1 Type 1, DEF STAN 59-97, BSG198 Part 5	EA-TS 09-11	SCX15112
Tensile Strength	15 MPa	13 MPa	15 MPa	12 MPa
Elongation at break	580 %	500 %	500 %	500 %
Dielectric Strength	14 kV/mm	14 kV/mm	15 kV/mm	20 kV/mm
Flammability for Material	excellent	excellent	good	excellent
Features and Benefits	Excellent resistance to fuels	Good physical and chemical resistance	Good physical and reasonable chemical resistance	Good physical and reasonable chemical resistance
Typical Application	Military and general high performance harnessing	Military and general high performance harnessing	Power/utility shapes	Military and general high performance harnessing

Order Example

Type:



Example:



Other product styles are available.
Please refer to Moulded Shapes catalogue.

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One Step to the Web!

Other product styles are available.
Please refer to Moulded Shapes catalogue.

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Angled T-Shapes Helashrink 1300 Series, 30° & 45° angle, VG		



Low Profile Convolute Boots

- Helashrink 313C Series, with adapter lip

Features and Benefits

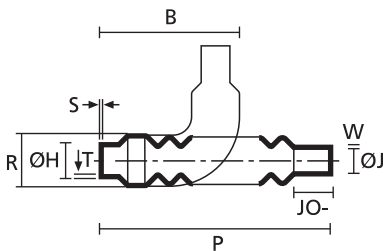
- For circular grooved adapters to provide strain relief
- Excellent environmental sealing with adhesive
- Convoluted design grants flexibility for different cable outlet angles



313C722-774 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R max.	JO ± 10%	W min.	B nom.	T ± 0.5	S ± 0.5	Article-No.
313C722-9	14.2	6.9	11.1	4.8	12.6	21.1	17.3	1.5	62.4	1.3	1.5	422-00001
313C732-9	22.4	11.7	17.7	8.1	133.3	26.5	19.8	1.5	67.8	1.3	1.5	422-00101
313C743-9	34.0	17.5	26.9	12.7	146.0	32.7	22.3	1.5	73.4	1.3	1.8	422-00201
313C753-9	44.2	22.3	36.5	17.5	158.7	37.8	25.4	1.5	78.2	1.3	1.8	422-00302
313C764-9	53.8	27.9	45.7	22.3	171.4	42.9	28.4	1.5	82.8	2	1.8	422-00400
313C774-9	77.2	4.6	54.6	22.8	236.2	62.2	25.4	1.5	138.4	2	2	422-00501

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

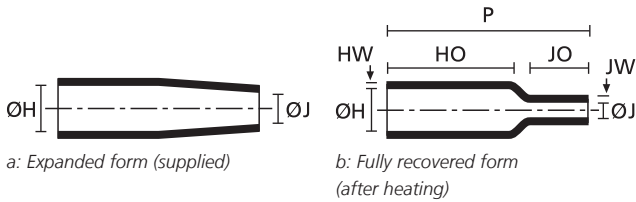


Low Profile Shim Boots

- Helashrink 313E Series, without adapter lip

Features and Benefits

- Used to build up or shim a cable diameter
- Facilitates better fit for components in cable harness



313E445-457 Series supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	HO ± 10%	HW ± 25%	JW ± 25%	JO ± 10%	Article-No.
313E447-9	2.8	14.7	2.6	9.9	63.5	41.1	1.5	1.5	16.5	422-10100
313E445-9	12.7	12.7	11.1	3.3	63.5	41.1	1.5	1.5	15.7	422-10000
313E457-9	22.1	22.1	2.6	9.9	53.3	27.9	2.3	1.5	14.0	422-10300
313E455-9	22.1	22.1	11.2	3.3	53.3	27.9	2.3	1.5	15.7	422-10200

All dimensions in mm. Subject to technical changes.

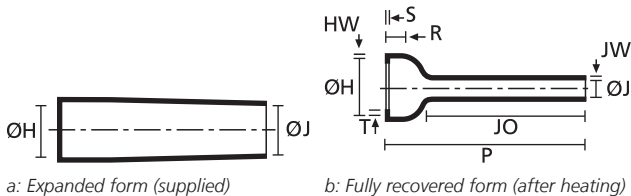
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

Low Profile Straight Boots

- Helashrink 313F Series, with adapter lip

Features and Benefits

- Connector strain relief for small cable diameters requiring high shrink ratio



313F322-396 Series supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 15%	T ± 0.8	JO ± 10%	HW ± 1.5	S ± 1.5	Article-No.
313F343-9	3.9	18.5	24.3	8.9	138.6	12.1	1.3	112.7	1.7	1.7	422-20200
313F322-9	23.8	9.9	17.2	6.6	105.9	11.6	1.3	86.3	1.5	1.5	422-20000
313F332-9	27.1	13.2	2.8	7.6	121.1	12.1	1.3	98.5	1.5	1.5	422-20100
313F353-9	35.6	22.1	28.7	1.1	159.5	12.1	1.3	13.8	1.7	1.7	422-20300
313F364-9	38.8	28.2	31.4	1.9	177.8	13.9	1.8	142.2	1.7	1.7	422-20400
313F374-9	42.2	32.2	38.3	12.7	203.2	15.2	1.8	163.0	1.7	1.7	422-20500
313F385-9	51.5	45.4	45.4	14.9	203.2	15.2	1.8	157.7	1.7	1.7	422-20600
313F396-9	62.7	45.4	53.3	16.7	228.6	16.0	1.8	153.1	1.7	1.7	422-20700

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



Low Profile Right Angle Boots

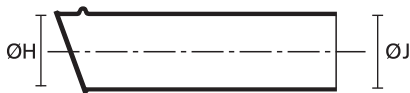
- Helashrink 333F-Series, with adapter lip, 90° angle

Features and Benefits

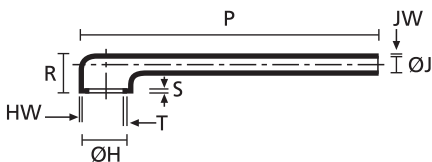
- Connector strain relief for small cable diameters requiring high shrink ratio



333F322-385 series as supplied / recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 15%	T ± 0.8	HW ± 1.5	JW ± 0.8	S ± 1.5	Article-No.
333F343-9	3.9	18.5	24.3	8.9	146.3	2.8	1.3	1.7	1.5	1.7	422-30100
333F322-9	23.8	9.9	17.2	6.6	105.1	18.5	1.3	1.5	1.5	1.5	422-30000
333F332-9	27.1	13.2	2.8	7.6	115.8	19.8	1.3	1.5	1.5	1.5	422-30004
333F353-9	35.3	21.6	28.7	1.1	172.2	21.8	1.3	1.7	1.5	1.7	422-30200
333F364-9	38.8	27.9	31.4	1.9	185.1	24.1	1.8	1.7	1.5	1.7	422-30301
333F374-9	45.2	34.0	38.3	12.1	213.6	27.4	1.8	1.7	1.5	1.7	422-30400
333F385-9	51.5	41.1	44.4	15.0	224.5	29.4	1.7	1.7	1.7	1.7	422-30500

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

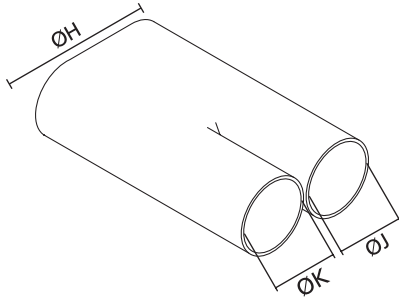


Low Profile Transition Boots

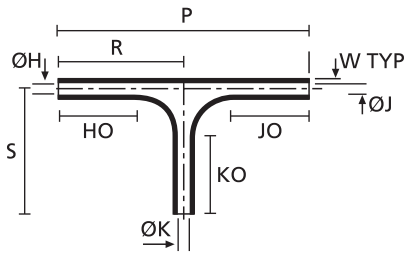
- Helashrink 412H Series, side breakout

Features and Benefits

- Connector cable strain relief
- Used with circular adapter



a: Expanded form (supplied)



b: Fully recovered form (after heating)



412H622-625 Series supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ/K min. a	ØJ/K max. b	HO/JO/KO ± 10%	P nom.	W nom.	R/S nom.	Article-No.
412H624-9	6.1	20.0	4.1	20	63.5	175.7	1.5	87.8	422-40200
412H622-9	19.8	6.6	13.2	6.6	25.4	8.7	1.0	4.3	422-40000
412H623-9	34.2	11.4	22.8	6.6	41.1	12.3	1.3	6.1	422-40100
412H625-9	83.3	33.2	54.8	33.2	88.9	242.3	1.7	121.1	422-40300

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

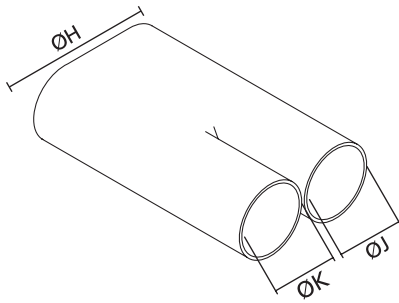


Low Profile Transition Boots

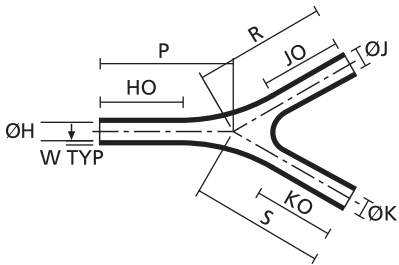
- Helashrink 492H Series, 1 to 2 cables

Features and Benefits

- For cable harness breakouts or transitions
- Strain relief, sealing and mechanical protection



a: Expanded form (supplied)



b: Fully recovered form (after heating)



492H412-415 Series supplied / fully recovered.

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ/K min. a	ØJ/K max. b	HO/JO/KO ± 15%	W nom.	P/R/S nom.	Article-No.
492H414-9-01	6.1	20.0	4.1	20	31.7	1.5	62.9	422-50200
492H414-9	6.1	20.0	4.1	20	63.5	1.5	94.7	422-50202
492H412-9	19.8	6.6	13.2	6.6	25.4	1.0	4.6	422-50000
492H413-9	34.2	11.4	22.8	11.4	41.1	1.3	62.9	422-50101
492H415-9-01	83.3	33.2	54.8	33.2	49.7	1.7	94.7	422-50300
492H415-9	83.3	33.2	54.8	33.2	49.7	1.7	133.8	422-50302

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

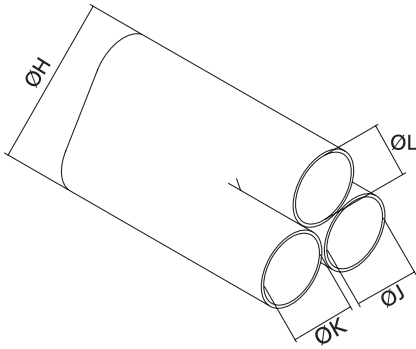


Low Profile Transition Boots

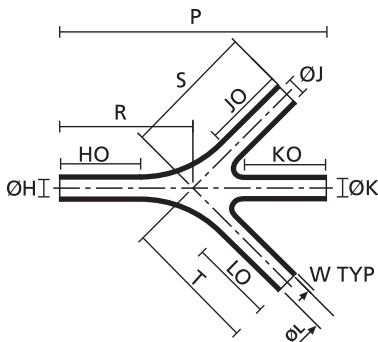
- Helashrink 573H Series, 1 to 3 cables

Features and Benefits

- For cable harness breakouts or transitions
- Strain relief, sealing and mechanical protection



a: Expanded form (supplied)



b: Fully recovered form (after heating)



573H532-535 Series supplied / fully recovered.

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ/K/L min. a	ØJ/K/L max. b	P nom.	R/S/T nom.	W nom.	HO/JO /KO/LO ± 15%	Article-No.
573H534-9-01	6.1	20.0	36	20	135.6	67.8	1.5	27.6	422-60200
573H534-9	6.1	20.0	36	20	207.2	103.6	1.5	63.5	422-60202
573H532-9	19.8	6.6	13.2	6.6	85.8	42.9	1.0	25.4	422-60000
573H533-9	34.2	11.4	2.5	11.4	135.6	67.8	1.3	41.1	422-60100
573H535-9-01	99.8	33.2	54.8	33.2	207.2	103.6	1.7	45.4	422-60300
12273163-410	99.8	33.2	54.8	33.2	294.6	147.3	1.7	88.9	422-60302

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



Bottle Shapes, VG style

- Helashrink 150 Series, with rib

Features and Benefits

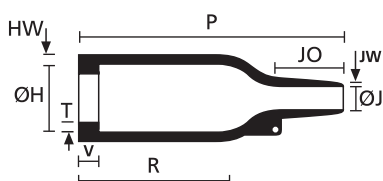
- Use in conjunction with circular grooved adaptor
- For strain relief and environmental sealing



150 Series boot recovered onto a connector.



a: Expanded form (supplied)



b: Fully recovered form (after heating)



150 Series supplied.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	JO ± 10%	HW ± 20%	JW ± 20%	V ± 10%	V max.	T ± 20%	Designation as per VG-Norm	Article-No.
152-41-G	24.0	10.5	24.0	6.0	26.0	9.0	10.0	1.6	0.5	3.0	3.3	1.0	VG 95343 T06 A 001 A	401-52780
152-42-G	24.0	10.5	24.0	6.0	38.0	21.0	10.0	1.6	0.5	3.0	3.3	1.0	VG 95343 T06 B 001 A	401-52880
153-41-G	25.0	14.0	9.0	3.5	40.0	13.0	16.0	1.8	0.5	3.0	3.3	1.0	VG 95343 T06 A 002 A	401-53780
153-42-G	25.0	14.0	9.0	3.5	55.0	28.0	16.0	1.8	0.5	3.0	3.3	1.0	VG 95343 T06 B 002 A	401-53880
154-41-G	30.0	14.0	30.0	6.0	43.0	20.0	13.0	1.8	1.0	3.0	3.3	1.0	VG 95343 T06 A 003 A	401-54780
154-42-G	30.0	14.0	30.0	6.0	55.0	32.0	13.0	1.8	1.0	3.0	3.3	1.0	VG 95343 T06 B 003 A	401-54880
155-41-G	31.0	18.0	31.0	7.0	47.0	15.0	18.0	1.8	1.0	3.0	3.3	1.0	VG 95343 T06 A 004 A	401-55780
155-42-G	31.0	18.0	31.0	7.0	67.0	35.0	18.0	1.8	1.0	3.0	3.3	1.0	VG 95343 T06 B 004 A	401-55880
156-41-G	36.0	22.5	36.0	8.5	60.0	22.0	20.0	2.0	1.0	3.0	3.3	1.0	VG 95343 T06 A 005 A	401-56780
156-42-G	36.0	22.5	36.0	8.5	80.0	42.0	20.0	2.0	1.0	3.0	3.3	1.0	VG 95343 T06 B 005 A	401-56880
157-41-G	43.0	28.0	43.0	10.0	60.0	21.0	20.0	2.2	1.0	3.0	3.3	1.7	VG 95343 T06 A 006 A	401-57780
157-42-G	43.0	28.0	43.0	10.0	79.0	41.0	20.0	2.2	1.0	3.0	3.3	1.7	VG 95343 T06 B 006 A	401-57880
157-43-G	43.0	28.0	43.0	10.0	99.0	61.0	20.0	2.2	1.0	3.0	3.3	1.7	VG 95343 T06 C 001 A	401-57980
158-41-G	60.0	35.0	60.0	16.0	90.0	32.0	38.0	3.2	1.5	3.0	3.3	1.7	VG 95343 T06 A 007 A	401-58780
158-42-G	60.0	35.0	60.0	16.0	110.0	52.0	38.0	3.2	1.5	3.0	3.3	1.7	VG 95343 T06 B 007 A	401-58880
158-43-G	60.0	35.0	60.0	16.0	130.0	72.0	38.0	3.2	1.5	3.0	3.3	1.7	VG 95343 T06 C 002 A	401-58980
159-41-G	66.0	45.0	66.0	17.0	130.0	50.0	50.0	3.8	2.0	3.0	3.3	2.0	VG 95343 T06 A 008 A	401-59780
159-42-G	66.0	45.0	66.0	17.0	150.0	70.0	50.0	3.8	2.0	3.0	3.3	2.0	VG 95343 T06 B 008 A	401-59880
159-43-G	66.0	45.0	66.0	17.0	171.0	90.0	50.0	3.8	2.0	3.0	3.3	2.0	VG 95343 T06 C 003 A	401-59980
160-41-G	82.0	58.0	82.0	27.0	137.0	37.0	62.0	3.8	3.8	3.0	3.3	2.0	VG 95343 T06 A 009 A	401-60780
160-42-G	82.0	58.0	82.0	27.0	158.0	58.0	62.0	3.8	3.8	3.0	3.3	2.0	VG 95343 T06 B 009 A	401-60880
160-43-G	82.0	58.0	82.0	27.0	213.0	113.0	62.0	3.8	3.8	3.0	3.3	2.0	VG 95343 T06 C 004 A	401-60980

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.



Bottle Shapes, MIL-Style

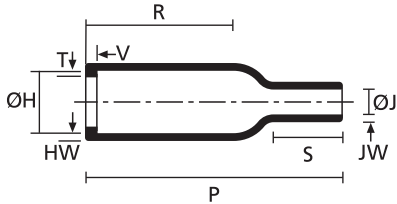
- Helashrink 100 Series, with rib

Features and Benefits

- With circular grooved adaptor for strain relief
- Combine with complementary adhesives for environmental sealing



a: Expanded form (supplied)



b: Fully recovered form (after heating)



100 series supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	V ± 10%	T ± 20%	S nom.	Article-No.
113-4-G	10.7	7.9	4.6	2.0	25.4	14.5	1.3	1.0	3.0	1.0	4.6	401-13480

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

Bottle Shapes

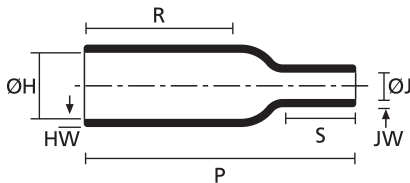
- Helashrink 100 Series, without rib

Features and Benefits

- Strain relief for connector cable
- Easy re-entry for repair when combined with hot melt adhesive



a: Expanded form (supplied)



b: Fully recovered form (after heating)



100 series supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R max.	HW ± 20%	JW ± 30%	S nom.	Article-No.
113-1-G	10.7	7.9	4.6	2.0	25.4	14.5	1.3	1.0	4.6	401-13180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



Long Outlet Shape, VG style

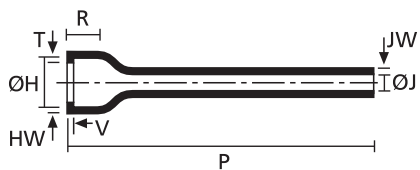
- Helashrink 130 Series, with rib, low profile

Features and Benefits

- Low profile and lightweight
- Typically used on airborne harnesses
- Rib locates on circular backshell



a: Expanded form (supplied)



b: Fully recovered form (after heating)



135-1-G as supplied / fully recovered.

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	V ± 10%	V max.	T ± 10%	Designation as per VG-Norm	Article-No.
129-1-G	22.0	12.0	22.0	6.5	76.0	12.0	1.5	1.1	3.0	3.3	1.0	VG95343T06D001A	401-29180
130-1-G	25.5	15.0	25.5	7.5	83.0	12.0	1.5	1.1	3.0	3.3	1.0	VG95343T06D002A	401-30180
131-1-G	29.0	19.0	29.0	8.5	89.0	12.0	1.8	1.1	3.0	3.3	1.0	VG95343T06D003A	401-31180
132-1-G	34.0	23.0	34.0	10.0	102.0	12.0	1.8	1.1	3.0	3.3	1.0	VG95343T06D004A	401-32180
133-1-G	37.0	30.0	37.0	11.0	108.0	14.0	2.0	1.1	3.0	3.3	1.7	VG95343T06D005A	401-33180
134-1-G	43.5	34.0	43.5	12.0	114.0	15.0	2.0	1.1	3.0	3.3	1.7	VG95343T06D006A	401-34180
135-1-G	50.0	41.0	50.0	14.5	118.0	15.0	2.3	1.4	3.0	3.3	1.7	VG95343T06D007A	401-35180
136-1-G	62.5	47.0	62.5	18.0	121.0	16.0	2.5	1.4	3.0	3.3	2.0	VG95343T06D008A	401-36180
138-1-G	69.0	60.0	69.0	20.0	127.0	16.0	2.5	1.4	3.0	3.3	2.0	VG95343T06D009A	401-38180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.



Bottle Shapes, VG style

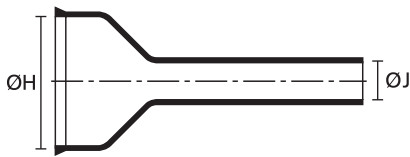
- Helashrink 170 Series, with rib

Features and Benefits

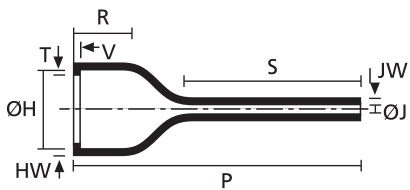
- Cable strain relief for partially loaded connectors
- Small cable diameters
- Use with our W24 adhesive for excellent chemical resistance



177-1-G as supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	T ± 20%	HW ± 20%	JW nom.	V max.	S nom.	Designation as per VG-Norm	Article-No.
176-1-G	19.3	13.0	6.3	2.1	60.0	11.7	1.0	1.5	1.1	3.3	38.0	VG95343T06D011A	401-76180
177-1-G	26.1	19.1	7.6	2.6	74.0	12.2	1.0	1.8	1.1	3.3	45.0	VG95343T06D012A	401-77180
178-1-G	34.2	26.0	9.6	3.1	84.0	12.2	1.0	1.8	1.1	3.3	51.0	VG95343T06D013A	401-78180
179-1-G	43.6	34.1	11.4	3.6	100.0	12.2	1.7	1.8	1.1	3.3	58.0	VG95343T06D014A	401-79180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.



Bottle Shapes, VG style

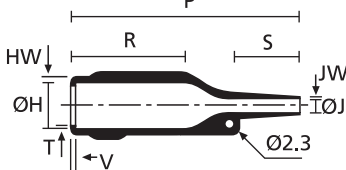
- Helashrink 190 Series, with external ribs

Features and Benefits

- Specifically for small audio connectors
- Multiple external ribs to improve grip in harsh conditions



a: Expanded form (supplied)



b: Fully recovered form (after heating)



199-4-G supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	V ± 10%	T ± 20%	S nom.	Designation as per VG-Norm	Article-No.
199-4-G	17.5	14.0	7.0	4.3	70.0	35.0	1.8	0.5	1.5	1.0	20.0	VG95343T06A010A	401-99480

All dimensions in mm. Subject to technical changes.

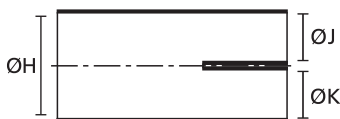
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

2-Way Outlet Shapes

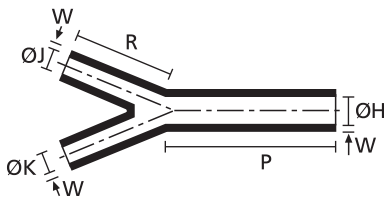
- Helashrink 200 Series, low profile

Features and Benefits

- For harnesses which route multi-core cables in different directions
- High ratio expansion for quick and easy installation
- Mechanical tension relief



a: Expanded form (supplied)



b: Fully recovered form (after heating)



200 series supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	W ± 20%	Article-No.
201-1-G	19.0	9.4	6.4	14.0	6.4	14.0	50.8	30.5	1.5	402-01180
201-2-G	31.8	9.4	15.7	6.4	15.7	6.4	50.8	30.5	1.5	402-01220

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.



2-Way Outlet Shapes, VG style

- Helashrink 200 Series

Features and Benefits

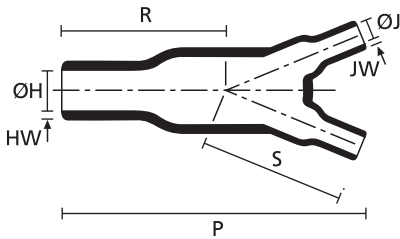
- Mechanical tension relief in cable harnesses



Two-way outlet shape 223-2 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW nom.	S nom.	Designation as per VG-Norm	Article-No.
206-1-G	13.0	6.0	7.0	3.0	41.0	19.0	1.5	1.0	19.0	VG95343T08C001A	402-06180
212-1-G	14.5	8.0	8.5	5.5	82.6	83.0	2.3	2.0	63.0	VG95343T08C005A	402-12180
213-1-G	17.3	7.9	11.1	7.9	140.0	83.1	2.3	1.0	64.0	-	402-13180
203-1-G	27.0	12.0	13.0	6.0	80.0	43.0	2.5	1.5	43.0	VG95343T08C002A	402-03180
204-1-G	39.0	18.0	27.0	12.0	66.0	81.0	3.1	2.0	81.0	VG95343T08C003A	402-04180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.



2-Way Outlet Shapes, Breakout Boots

- Helashrink 200 Series, in line, low voltage

Features and Benefits

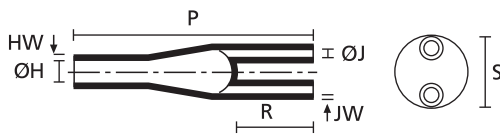
- Easy, time-saving insulation of cable branch point where it splits into single wires
- Adhesive to relieve mechanical tension in cable harnesses



223-2 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom.	Article-No.
216-3-B8W	21.0	9.4	9.0	2.8	76.5	20.0	1.6	1.6	14.0	402-16039
223-2-B8W	33.0	9.4	17.5	4.1	94.0	30.0	1.5	1.2	20.0	402-23058
218-2-B8W	49.0	22.9	20.0	7.6	119.0	34.0	3.2	3.2	30.0	402-18051

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



3-Way Outlet Shapes, VG style

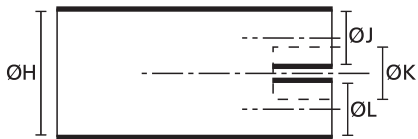
- Helashrink 300 Series

Features and Benefits

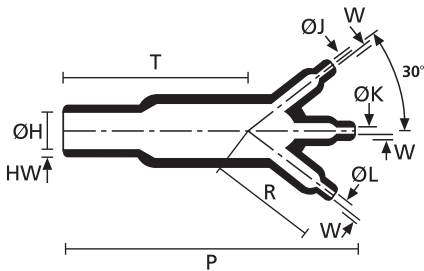
- Cable strain relief and mechanical protection at harness transition points
- All outlets clearly marked to aid orientation during installation



304-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ/K/L min. a	ØJ/K/L max. b	P ± 10%	R ± 10%	HW ± 20%	W ± 20%	T ± 10%	Designation as per VG-Norm	Article-No.
306-1-G	13.0	6.5	6.5	3.5	46.0	25.4	1.3	1.0	20.3	VG95343T08D001A	403-06180
304-1-G	27.0	13.5	13	7.0	93.0	50.3	2.5	1.5	42.9	VG95343T08D002A	403-04180
310-1-G	38.5	19.0	19	10.0	135.0	73.7	3.1	1.8	61.0	VG95343T08D003A	403-10180
311-1-G	55.5	25.5	27	12.5	192.0	103.1	4.6	3.1	88.9	VG95343T08D004A	403-11180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.

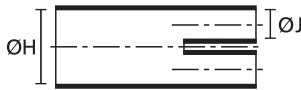


3-Way Outlet Shapes, Breakout Boots

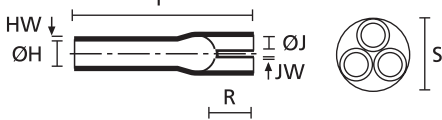
- Helashrink 300 Series, in line, low voltage

Features and Benefits

- Easy, time-saving insulation of cable branch point where it splits into single wires
- Adhesive to relieve mechanical tension in cable harnesses



a: Expanded form (supplied)



b: Fully recovered form (after heating)



300 Series supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom.	Article-No.
354-1-B8W	45.0	10.0	16.0	4.0	100.0	25.0	3.0	2.0	-	403-54004
320-1-B8W2	55.8	22.5	30.4	9.0	180.0	44.0	3.0	2.0	37.0	403-20014
355-1-B8W2	100.0	28.0	40.0	13.0	210.0	50.0	3.5	2.5	-	403-55008
342-1-B8W2	110.0	35.0	40.0	17.5	230.0	45.0	4.0	3.5	65.0	403-42006

All dimensions in mm. Subject to technical changes.

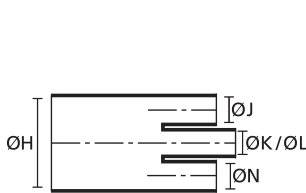
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

4-Way Outlet Shapes, VG style

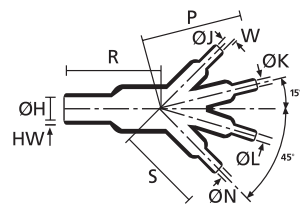
- Helashrink 400 Series

Features and Benefits

- All outlets clearly marked to aid orientation during installation
- Cable strain relief and mechanical protection at harness transition points



a: Expanded form (supplied)



b: Fully recovered form (after heating)



442-1 supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ/K/L/N min. a	ØJ/K/L/N max. b	P ± 10%	R ± 10%	S ± 10%	HW ± 20%	W ± 10%	Designation as per VG-Norm	Article-No.
411-1-G	19.0	10.0	9.5	5.5	36.1	35.6	32.0	1.8	1.0	VG95343T08E002A	404-11180
403-1-G	27.0	13.0	13.0	7.0	51.8	49.0	45.0	2.5	1.0	VG95343T08E004A	404-03180
413-1-G	38.6	19.0	19.0	10.0	74.9	75.0	65.3	1.8	1.0	VG95343T08E005A	404-13180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.



4-Way Outlet Shapes, Breakout Boots

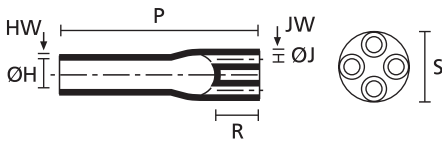
- Helashrink 400 Series, in line, low voltage

Features and Benefits

- Easy, time-saving insulation of cable branch point where it splits into single wires
- Made of tough, cross-linked, Polyolefin
- Adhesive to relieve mechanical tension in cable harnesses



a: Expanded form (supplied)



b: Fully recovered form (after heating)



400 series supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom.	Article-No.
442-1-B8WM250	28.0	9.0	9.0	1.8	78.0	17.0	2.7	2.0	20.0	404-42009
408-2-B8W2	35.0	12.0	15.0	3.0	95.0	24.0	2.5	2.0	22.0	404-08022
409-2-B8W2	47.4	22.9	21.5	6.4	165.0	38.1	4.1	3.3	38.1	404-09021
418-4-B8W2	60.0	22.9	30.0	6.4	202.0	38.1	4.1	3.3	38.1	404-18020
444-2-B8W2	95.0	35.6	35.6	12.5	240.0	55.0	4.0	3.5	50.8	404-44022

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

5-Way Outlet Shapes, Breakout Boots

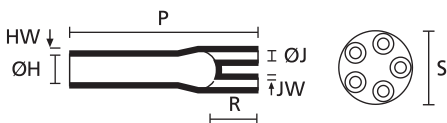
- Helashrink 500 Series, in line, low voltage

Features and Benefits

- Cable breakout boots for insulating and sealing cable crotch or conduit system
- Excellent resistance to abrasion and weathering



a: Expanded form (supplied)



b: Fully recovered form (after heating)



500 Series supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom.	Article-No.
508-3-B7	89.0	24.5	33.0	7.5	180.0	30.0	3.5	3.0	48.0	405-08036
508-3-B7W	89.0	24.5	33.0	7.5	180.0	30.0	3.5	3.0	48.0	405-08035

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



6-Way Outlet Shapes, Breakout Boots

- Helashrink 600 Series, in line, low voltage

Features and Benefits

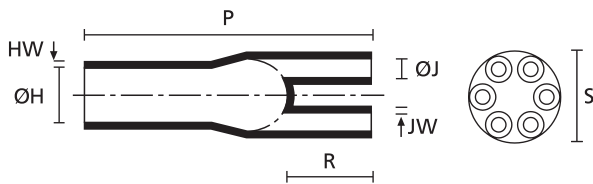
- Cable breakout boots for insulating and sealing cable crotch or conduit system
- Excellent resistance to abrasion and weathering



600 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	S nom.	Article-No.
609-2-B7	40.0	16.0	12.0	4.0	75.0	20.0	2.5	1.5	25.0	406-09023
609-2-B7W	40.0	16.0	12.0	4.0	75.0	20.0	2.5	1.5	25.0	406-09027
608-2-B7W	61.0	37.0	21.0	9.0	152.0	56.0	3.2	3.2	46.0	406-08024
608-2-B7	61.0	37.0	21.0	9.0	152.0	56.0	3.2	3.2	46.0	406-08023
610-1-B8HW	114.3	35.0	45.7	14.0	241.3	50.8	4.0	2.3	101.6	406-10000

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



Right-Angle Shapes, VG-Style

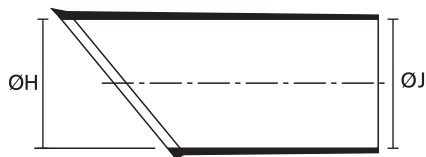
- Helashrink 1100 Series, with rib

Features and Benefits

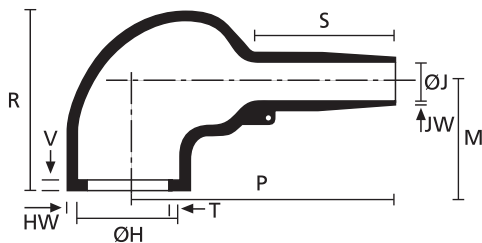
- With circular grooved adaptor for strain relief



1152-4-G recovered on to a connector.



a: Expanded form (supplied)



b: Fully recovered form (after heating)



1155-4 supplied.

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	V ± 10%	V max.	T ± 20%	M nom.	S nom.	Designation as per VG-Norm	Article-No.
1152-4-G	24.0	10.5	24.0	6.0	26.0	25.0	1.3	0.5	3.0	-	1.0	19	10.0	VG95343T06E001A	411-52480
1154-4-G	30.0	15.5	30.0	6.0	32.0	27.0	1.5	0.8	3.0	1.0	1.0	19	12.0	VG95343T06E002A	411-54480
1155-4-G	31.0	18.0	31.0	7.0	40.0	31.0	1.8	1.0	3.0	3.3	1.0	21	15.0	VG95343T06E003A	411-55480
1156-4-G	36.0	22.5	36.0	8.5	46.0	38.0	1.8	1.0	3.0	3.3	1.0	26	15.0	VG95343T06E004A	411-56480
1157-4-G	43.0	28.5	43.0	10.0	55.0	45.0	2.0	1.0	3.0	3.3	1.7	30	16.0	VG95343T06E005A	411-57480
1158-4-G	60.0	35.0	60.0	16.0	80.0	54.0	3.3	1.5	3.0	3.3	1.7	35	30.0	VG95343T06E006A	411-58480
1159-4-G	66.0	45.0	66.0	17.0	108.0	68.0	3.8	2.0	3.0	3.3	2.0	42	51.0	VG95343T06E007A	411-59480
1160-4-G	82.0	61.0	82.0	25.0	118.0	84.0	4.0	4.0	3.0	3.3	2.0	52	39.0	VG95343T06E008A	411-60480

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.



Right-Angle Shapes, MIL style

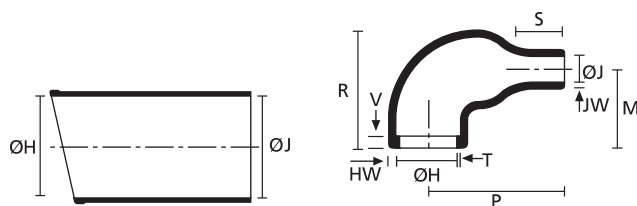
- Helashrink 1100 Series, with rib

Features and Benefits

- With circular grooved adaptor for strain relief



1108-4 supplied / fully recovered.



a: Expanded form (supplied)

b: Fully recovered form (after heating)

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 30%	V max.	T ± 20%	M nom.	S nom.	Article-No.
1108-4-G	16.5	7.9	16.5	3.8	17.3	20.1	1.0	1.6	3.3	1.0	15.2	5.1	411-08480

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

Right-Angle Shapes

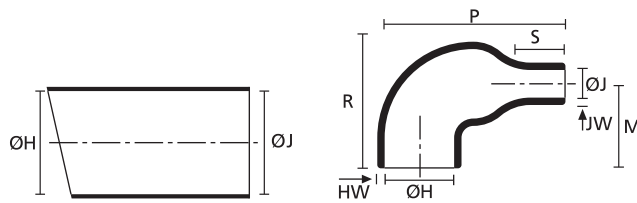
- Helashrink 1100 Series, without rib

Features and Benefits

- Strain relief for connector cable
- Easy re-entry for repair when combined with hot melt adhesive



1108-1 supplied / fully recovered.



a: Expanded form (supplied)

b: Fully recovered form (after heating)

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 30%	M nom.	S nom.	Article-No.
1108-1-G	16.5	7.9	16.5	3.8	17.3	20.1	1.0	1.6	15.2	5.1	411-08180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



Right-Angle Shapes, VG style/MIL style

- Helashrink 1100 Series, with rib, low profile

Features and Benefits

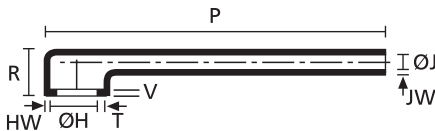
- Lightweight, low profile, compact strain relief and mechanical protection
- Typically used on airborne harnesses



1123-1-G Supplied and recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive information please refer to page 200.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 30%	T ± 10%	V ± 10%	Designation as per VG-Norm	Article-No.
1121-1-G	22.0	12.0	22.0	6.5	70.0	19.0	1.5	1.1	1.0	3.0	VG95343T06F001A	411-21180
1122-1-G	25.5	15.0	25.0	7.5	79.0	20.0	1.5	1.1	1.0	3.0	VG95343T06F002A	411-22180
1123-1-G	29.0	19.0	29.0	8.5	89.0	21.0	1.8	1.1	1.0	3.0	VG95343T06F003A	411-23180
1124-1-G	34.0	23.0	34.0	10.0	102.0	22.0	1.8	1.1	1.0	3.0	VG95343T06F004A	411-24180
1125-1-G	37.0	30.0	37.0	11.0	108.0	24.0	2.0	1.1	1.7	3.0	VG95343T06F005A	411-25180
1126-1-G	43.5	34.0	43.5	12.0	121.0	27.0	2.0	1.1	1.7	3.0	VG95343T06F006A	411-26180
1127-1-G	50.0	41.5	50.0	14.5	132.0	30.0	2.3	1.4	1.7	3.0	VG95343T06F007A	411-27180
1128-1-G	62.5	47.0	62.5	18.0	133.0	33.0	2.5	1.4	2.0	3.0	VG95343T06F008A	411-28180
1129-1-G	69.0	60.0	69.0	20.0	137.0	35.0	2.5	1.4	2.0	3.0	VG95343T06F009A	411-29180
1141-1-G	82.0	67.0	82.0	23.0	140.0	45.0	2.5	1.4	2.0	3.0	VG95343T06F010A	411-41180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.



Right-Angle Shapes, VG style

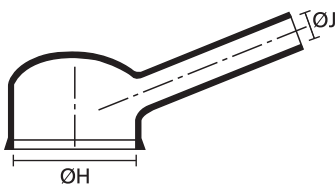
- Helashrink 1100 Series, with rib, low profile, high ratio

Features and Benefits

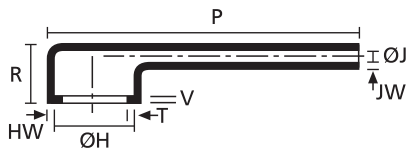
- Use in applications of partially loaded connectors with small cable diameters
- Tail design for easy orientation prior to cooling Strain relief for connector cable



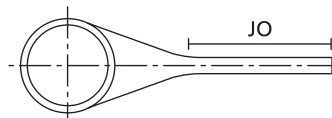
1135-1-G Supplied and recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)



Fully recovered form (after heating)

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	JO ± 10%	V ± 10%	V max.	T ± 20%	Designation as per VG-Norm	Article-No.
1133-1-G	19.0	13.0	6.0	2.0	44.0	16.3	1.5	1.1	21.8	3.0	3.3	1.0	VG95343T06F011A	411-33180
1134-1-G	26.0	19.0	7.5	2.5	67.0	18.0	1.8	1.1	29.2	3.0	3.3	1.0	VG95343T18H001A	411-34180
1135-1-G	34.0	26.0	9.5	3.0	81.0	18.8	1.8	1.1	35.3	3.0	3.3	1.0	VG95343T06F013A	411-35180
1136-1-G	43.5	34.0	11.5	3.5	116.0	21.3	1.8	1.1	47.0	3.0	3.3	1.7	VG95343T06F014A	411-36180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.



T-Shapes, VG style

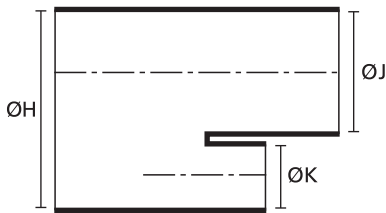
- Helashrink 1200 Series

Features and Benefits

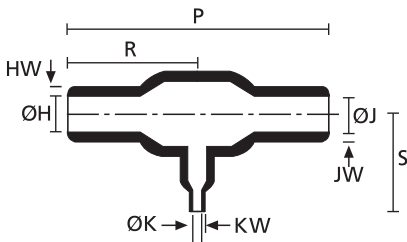
- Strain relief, sealing and mechanical protection on cable harnesses



1202-1-G recovered onto a cable harness.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

For Material / Adhesive information please refer to page 200.

TYPE	ØH/J min. a	ØH/J max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	JW ± 30%	S ± 10%	KW ± 20%	Designation as per VG-Norm	Article-No.
1206-1-G	6.6	3.0	6.6	3.0	29.7	14.7	1.0	1.0	1.0	14.7	1.0	VG95343T08A009A	412-06180
1203-1-G	13.2	6.0	6.5	3.0	52.0	26.0	1.5	1.5	1.5	19.3	1.0	VG95343T08A001A	412-03180
1202-1-G	13.2	6.1	13.2	6.1	58.7	29.2	1.5	1.5	1.5	29.2	1.5	VG95343T08A010A	412-02180
1205-1-G	17.7	8.9	7.6	3.8	50.8	25.4	1.5	1.5	1.5	25.4	1.0	-	412-05180
1201-1-G	17.7	8.9	10.1	5.1	47.5	23.6	1.5	1.5	1.5	23.6	1.0	VG95343T08A007A	412-01180
1207-1-G	26.9	12.4	26.9	12.4	120.1	55.9	2.5	2.5	2.5	59.9	2.5	VG95343T08A011A	412-07180
1209-1-G	27	12.4	13.2	6.0	108.0	54.0	2.5	2.5	2.5	38.6	1.5	VG95343T08A002A	412-09180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.

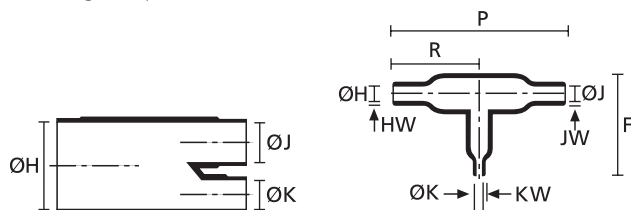


T-Shapes, VG-Style

- Helashrink 1200 Series, off-set

Features and Benefits

- For strain relief, sealing and mechanical protection
- Use adhesive for cable transition on harness, if environmental sealing is required



a: Expanded form (supplied)

b: Fully recovered form (after heating)



1204-1 supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	HW ± 20%	JW ± 20%	KW ± 20%	F ± 15%	Designation as per VG-Norm	Article-No.
1204-1-G	13.0	7.5	6.5	4.0	6.5	4.0	56.0	33.0	1.5	1.0	1.0	27	VG95343T08A016A	412-04180
1216-1-G	33.0	13.0	16.5	6.5	16.5	6.5	97.0	54.0	2.5	1.5	1.5	-	VG95343T08A017A	412-16180

All dimensions in mm. Subject to technical changes.

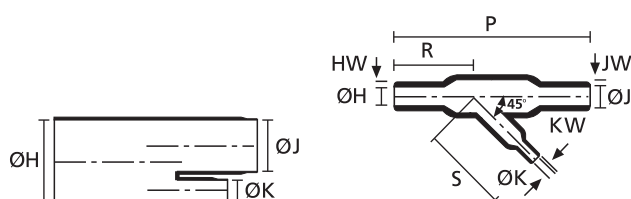
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.

Angled T-Shapes, VG style

- Helashrink 1300 Series, 30° & 45° angle

Features and Benefits

- Strain relief, sealing and mechanical protection on cable harnesses



a: Expanded form (supplied)

b: Fully recovered form (after heating)



1303-1-G supplied / fully recovered.

TYPE	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	P ± 10%	R ± 10%	HW ± 30%	JW ± 30%	KW ± 20%	S ± 10%	Angle	Designation as per VG-Norm	Article-No.
1306-1-G	13.0	6.0	6.5	3.0	6.5	3.0	45.0	23.0	1.5	1.0	1.5	21.5	45 °	VG95343T06B010A	413-06180
1301-1-G	13.0	7.0	13.0	7.0	7.0	3.5	50.0	23.0	1.5	1.5	1.0	23.0	45 °	VG95343T08B001A	413-01180
1302-1-G	27.0	13.0	27.0	13.0	7.0	3.5	93.0	41.0	2.5	2.5	1.0	36.0	45 °	VG95343T08B004A	413-02180
1303-1-G	27.0	14.0	27.0	14.0	13.0	7.5	145.0	70.0	1.5	1.5	1.5	54.0	45 °	VG95343T08B002A	413-03180
1311-1-G	30.4	15.0	30.4	15.0	20.3	10.0	83.0	32.0	2.5	2.5	1.8	51.0	30 °	VG95343T08B003A	413-11180

All dimensions in mm. Subject to technical changes.

For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the moulded shapes catalogue.



For product specific approvals and specifications please refer to the Appendix.



Hot Melt Tape for Heat Shrinkable Tubing and Shapes

- HMT200A

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 heat shrinkable shape over the tape and shrink down.

Features and Benefits

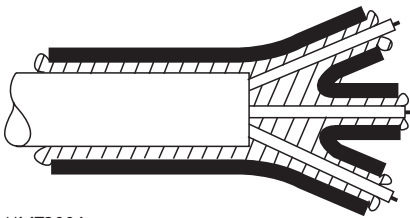
- Hot melt tape flows when heated to seal against moisture
- For heat shrink tubing and mouldings



HMT200A-tape.



Adhesive tape HMT200A for sealing against humidity.



HMT200A

MATERIAL	Ethylenevinylacetate (EVA)
Operating Temperature	-55 °C to +105 °C
Melting Point	starting from +95 °C
Specifications	DEF STAN 59-97 Type W (W)



TYPE	Thickness (T)	Width (W)	Colour	Reel Length	Article-No.
HMT200A	0.25	25.0	Translucent (TT)	10 m	354-02260
	0.25	25.0	Translucent (TT)	50 m	354-02259

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.



Two-Component Adhesive for Heat Shrinkable Tubing and Shapes

- V9500

Features and Benefits

- High performance, two-part epoxy adhesive
- Very resistant to most solvents and fuels, even at elevated temperatures
- Two different packages available
- V9500 available in 10g bags for manual mixing
- Processing set: emery paper, small mixing bowl and wooden spatula
- High performance bonding
- Meets military requirements for heat shrinkable components for harnesses
- VG-approved



Two-component epoxy adhesive V9500.



The V9500 applicator gun guarantees the clean and precise coating of special fittings.

MATERIAL	Epoxy resins (EP)	
Colour	Black (BK)	
Curing Temperature	+135 °C	
Curing Time	24 hours at +25 °C, 2 hours at +85 °C	
Operating Temperature	-75 °C to +150 °C	
Specifications	VG 95343 T15 A	VG 95343 T15 A 002 B

TYPE	Description	Designation as per VG-Norm	Article-No.
V9500 Epoxy Kit	1 x dual cartridge, 5 x mixing pots, 5 x mixing sticks, 5 x emery papers	VG 95343 T15 A 002 B	627-95001
V9500 Epoxy Cartridge	Two-component adhesive cartridge	VG 95343 T15 A	627-95002
V9500 Applicator Gun	Applicator gun	VG 95343 T15 DA	627-95003
V9500 Applicator Nozzle	Mixing nozzle	VG 95343 T15 MA	627-95004

All dimensions in mm. Subject to technical changes.



For product specific approvals and specifications please refer to the Appendix.



Rubber Tubing, PTFE

- FE

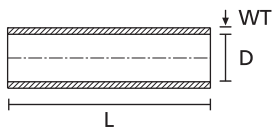
FE is ideal for high temperature applications, when resistance to aggressive fluids is required for example in high performance hose applications. FE tubing is also used to reduce movement due to friction, covering cable or wire.

Features and Benefits

- Thin walled rubber tubing made of PTFE
- Transparent or coloured
- Very high temperature resistance
- High abrasion resistance
- Good resistance to aggressive chemicals
- Available on reels



PTFE tubing FE.



PTFE tubing

MATERIAL	Polytetrafluoroethylene (PTFE)
Operating Temperature	-65 °C to +250 °C, intermittent +350 °C
Dielectric Strength	55 kV/mm according to IEC 60684 P2
Flammability	UL94 V0
Specifications	BS-2848 Type 6 250T, DEF STAN 59-15 Type D6



TYPE	Supplied Ø D min.	Wall (WT)	Reel Length	Colour	Article-No.
FE3	0.3	0.20	500 m	Natural (NA)	178-00005
FE4	0.4	0.25	500 m	Natural (NA)	178-00012
FE5	0.5	0.25	500 m	Natural (NA)	178-00020
FE9	0.9	0.25	500 m	Natural (NA)	178-00056
FE10	1.0	0.30	500 m	Natural (NA)	178-00068
FE11	1.1	0.30	500 m	Natural (NA)	178-00083
FE15	1.6	0.30	500 m	Natural (NA)	178-00119
FE19	1.9	0.30	250 m	Natural (NA)	178-00143

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content.



For product specific approvals and specifications please refer to the Appendix.

Non-shrinkable tubing



Hellerine lubricant in 284ml plastic bottle.

Installation aid for tubing and grommets

Hellerine lubricant for tubing and grommets installations.

Features and Benefits

- Effective aid for affixing elastomer sleeves
- Universally employable
- Evaporates after installation
- Consists of 99% vegetable oils
- Discoloration-free