

Inspired by Paul Hellermann

2.0 Insulation

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


















Type	Product picture	Variant	Material	Shrink Ratio	Operating Temperature (°C)	Longitudinal change after shrinkage [Max]
Hot Melt Tape		Adhesive Tape	EVA		-55 to +105	N/A
Low Voltage Joint Kits (Includes copper braid, roll springs)		Medium wall	PO-X	2:1	-55 to +135	N/A
Submersible Joint Kits		Medium wall	PO-X	2:1	-55 to +135	N/A
LVR		Thin wall	PVC	2:1	-30 to +105	+/-10%
SGP (Available in 1m packs)		Thin wall	PO-X	2:1	-55 to +125	-10%
TFE2		Thin wall	PTFE	2:1	-70 to +260	-20%
TL27		Thin wall	PO-X	2:1	-55 to +135	+5%/-15%
TR27		Thin wall	PO-X	2:1	-40 to +105	+5%/-10%
Viton® -E		Standard wall	FPMX	2:1	-55 to +220	-10%
HFT-A		Thin wall	PO-X	2:1	-55 to +135	5%
HFT-B		Thin wall	PO-X	2:1	-55 to +135	+5%/-10%
HFT-333		Thin wall	PO	3:1	-55 to +135	+5/-15%
IMCS-A		Medium wall	PO-X	3:1	-55 to +130	-10%
TF34		Thin wall	PO-X	3:1	-55 to +135	-5%
EPS-300		Thin wall hot melt adhesive	PO-X	3:1	-55 to +125	-10%
EPS-400		Thin wall hot melt adhesive	PO-X	4:1	-55 to +125	-10%
HA47		Thick wall hot melt adhesive	PO-X	up to 4:1	-55 to +110	-10%
TFE4		Thin wall	PTFE	4:1	-70 to +260	-20%

* Please refer to our website www.HellermannTyton.co.za for product specific colour certification and approvals

** Black UV stable

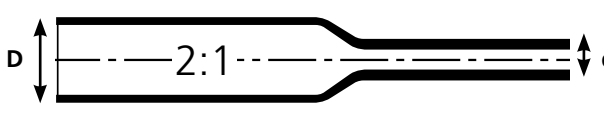
#Not flame retardant

Dielectric strength	Colour	Flammability	Self-extinguishing	Flame Retardant	Material Specification	Certification & Approvals*
N/A	CL 				HF✓ RoHS✓	DEF STAN
>20kVmm (ASTM D2671)	BK 		●	●	HF✓ RoHS✓	
>20kVmm ((ASTM D2671))	BK 		●		HF✓ RoHS✓	
15kV/mm (IEC 243)	BK  YL  WT  BL  RD  GYS 	UL224 VW-1 ASTM D2671	●	●	RoHS✓	
20kV/mm (ASTM D2671)	BK**  YL  WT  GYS  BL  RD  CL 	UL224 ASTM D2671	●	●*	HF✓ RoHS✓	
40kV/mm (DIN 53481)	CL 	Non-burning	●		RoHS✓	
20kV/mm	BK 	FMVSS 302		●	HF✓ RoHS✓	
15kV/mm (IEC 684 P2)	BK 	Limited fire hazard	●	●	HF✓ RoHS✓ LFH✓	EN 45545-2 DEF STAN
15kV/mm	BK 	VG 95343	●		RoHS✓	LEA VG
20kV/mm (IEC 684 P2)	BK  YL  WH  BL  RD 	UL224 VW-1	●		HF✓ RoHS✓	ASN  DEF STAN LEA MIL NF F NSA  SAE  VG
20kV/mm (IEC 684 P2)	CL 	ASTM D876			HF✓ RoHS✓	DEF STAN MIL NF F SAE
37 kV/mm	BK 	UL224 VW-1	●		RoHS✓	 
20 kV/mm (IEC 684 P2)	BK 	ASTM D876	●		HF✓ RoHS✓	
46kV/mm	CL 				HF✓	
15kV/mm (IEC 684 P2)	BK 	ASTM D2671	●		RoHS✓	SAE
15kV/mm (IEC 684 P2)	BK 	ASTM D2671	●		RoHS✓	SAE
20kV/mm	BK 				HF✓ RoHS✓	
40kV/mm (DIN 53481)	CL 		●		RoHS✓	

Selecting the Correct Heatshrink Tubing Size

Heatshrink ratio refers to the expansion and recovery rate of the heatshrink tubing. When selecting the correct heatshrink tubing size, it is important to use the 80:20 rule. The 80:20 rule means that a heatshrink tube should shrink by at least 20% and not more than 80% of its complete shrinkage capacity to achieve the desired result.

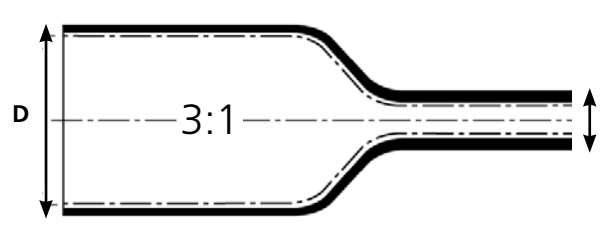
Shrink ratio 2:1



Size		Cable / Wire diameter
1.2/ 0.6		0.7mm
		1.1mm
		1.4mm
3.2/1.6	2.4/1.2	1.9mm
		2.2mm
		2.9mm
6.4/3.2	4.8/2.4	3.8mm
		4.3mm
		5.7mm
12.7/6.4	9.5/4.7	5.8mm
		7.7mm
		8.6mm
25.4/12.7	19.1/9.5	11.4mm
		15.2mm
		17.2mm
50.8/25.4	38.1/19.1	22.9mm
		30.5mm
		34.3mm
101.6/50.8	76.2/38.1	45.7mm
		61mm
		68.6mm
		91.4mm

Note: Standard thin wall will shrink to half its supplied size

Shrink ratio 3:1






Size		Cable / Wire diameter
1.5/ 0.5		0.7mm
		1.3mm
		1.4mm
6.0/2.0	3.0/1.0	2.6mm
		2.8mm
		5.2mm
24/8	12/4.0	5.6mm
		10.4mm
		11.2mm
	39/13	18.2mm
		20.8mm
		34.6mm

Example: Heatshrink Ratio 3:1

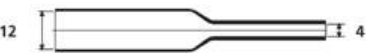


A 5mm cable diameter is to be wrapped in heatshrink tubing. Either 6/2 or 12/4 tubing is suitable, since the 5mm cable diameter lies within the shrink range of both tube sizes.

Size 6/2

Tube size 6/2 has a range between 2.8mm and 5.2mm which is suitable for a 5mm cable diameter.

Maximum shrink (100%)	Optimum shrinkage max. (80%)	Optimum shrinkage min. (20%)
 <p>Maximum shrinkage = 4.0mm</p>	 <p>Shrinkage = 3.2mm</p>	 <p>Shrinkage = 0.8mm</p>

Size 12/4

Maximum shrink (100%)	Optimum shrinkage max. (80%)	Optimum shrinkage min. (20%)
 <p>Maximum shrinkage = 8.0mm</p>	 <p>Shrinkage = 6.4mm</p>	 <p>Shrinkage = 1.6mm</p>

Note: Tube size 12/4 smallest diameter is 5.6mm which is unsuitable for a 5mm cable diameter.

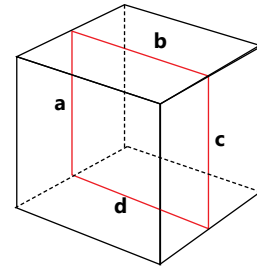
Chart below refers to standard sizes offered in our range

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	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

Busbars

To determine the outside diameter (OØ):

- Add four sides (a + b + c + d) together
- Divide by Pi (3.14)
- Sleeve size should include an allowance to give sufficient clearance to slip easily over the bar. An estimation of +10% is recommended
- Answer relates to outside diameter (OØ) you want to shrink down to

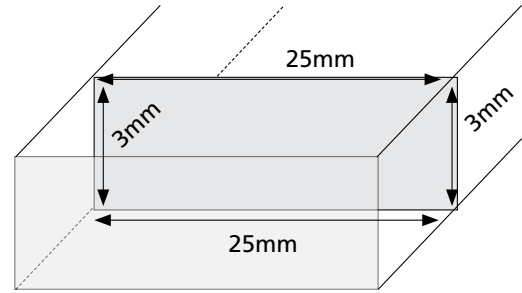


Example: Busbar size

Busbar size = 25 x 3

$$\begin{aligned} O\text{Ø} &= (25 + 25 + 3 + 3) \div 3.14 \\ &= 17.83 \text{ (+10\% for clearance)} \\ &= \mathbf{19.61} \end{aligned}$$

Most suitable diameter 19.0mm



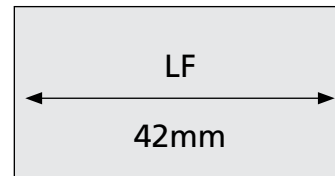
Lay Flat Sizes Chart

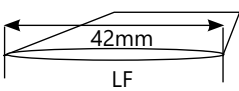
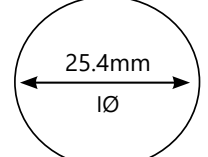
Heatshrink size is given as internal diameter (IØ) and not Lay flat (LF) size.

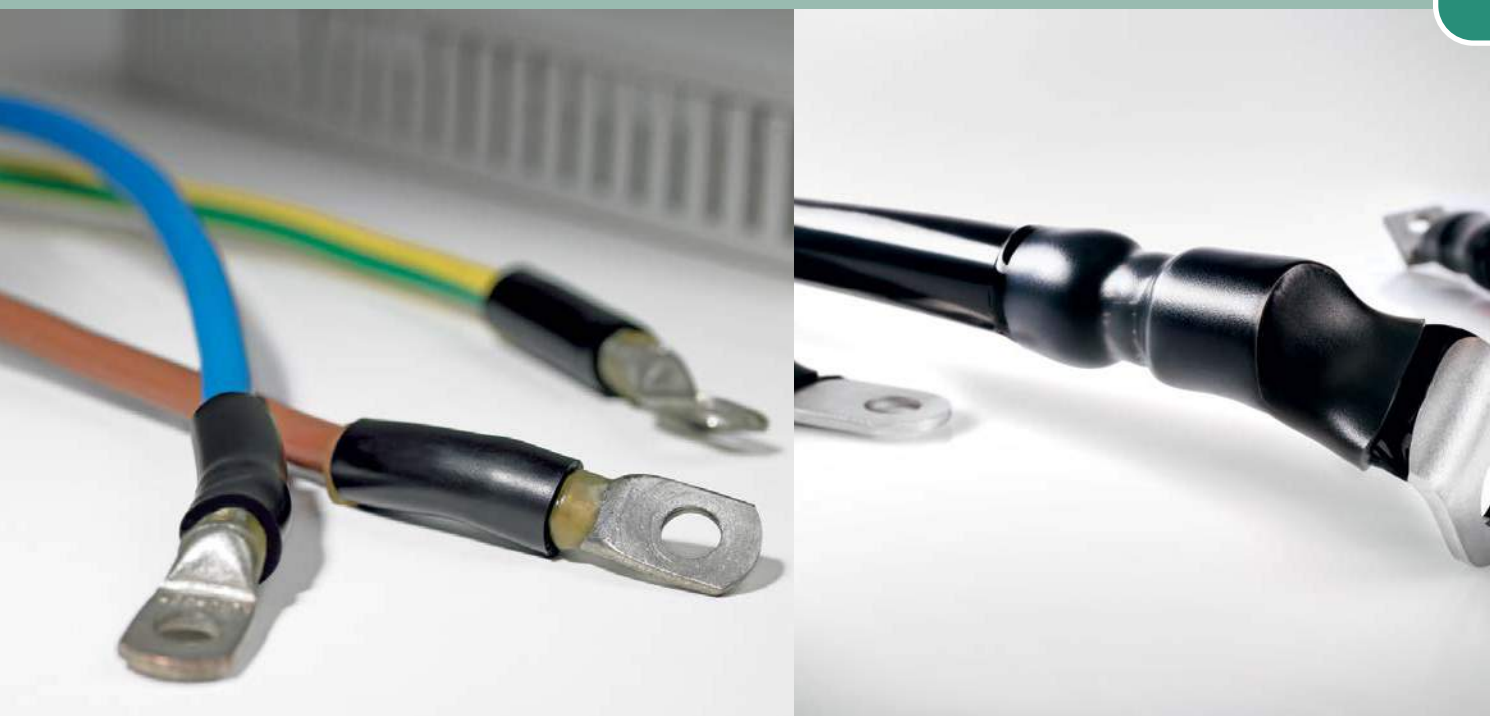
The lay flat size indicates the approximate internal diameter which will always be smaller than measured mm.

Example:

$$\begin{aligned} I\text{Ø} &= 2LF \div 3.14 \\ &= \mathbf{26.8} \end{aligned}$$



Lay Flat (mm)	Internal Diameter (IØ)
	
2	1.3
2.5	1.6
4	2.4
6	3.2
8	4.8
11	6.4
16	9.5
21.5	12.7
32.5	19
40 - 43	25.4
63 - 64.5	38.1
84 - 85	50.8
129	76.2
166.5	102
222	120



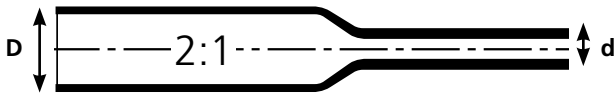
2.2 Heatshrink Tubing

Pre-Packs	107-108
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Joint Kits	111
Flame Retardant (SGP)	112-114
Self-Extinguishing	
- HFT-A	115
- HFT-B	116
Highly Flexible (HFT-333)	117
Low Heat (TL27)	118
Flexible (TF340)	119
Adhesive Lined	
- EPS-300	120
- EPS-400	120
Thick Wall Adhesive Lined (HA47)	121
Heavy Duty Adhesive Lined (IMCS-A)	122
High Temperature	
- Viton®-E	123
- TFE2	124
- TFE4	125
Flame Retardant (TR27)	126
Adhesive lined (SA47, SA47-LA, SA47HT)	127-128
Gel Technology (Relicon)	
- Straight-Through and Branch Gel Cable Joints with Connectors (Relilight, Relifix and Reliseal)	129-130
- Two-Component Gel (Religel)	131
Miscellaneous Tools	
- Heat Guns	132

Heatshrink Pre-Packs 2:1






























Flame Retardant (Black and Colour)

- Shrink ratio 2:1
- Operating temperature -55°C to +125°C
- Longitudinal change after shrinkage -5% max.
- Min. shrink temperature +120°C
- Electrical connections, terminals, components and wiring systems
- Suitable for continuous insulation sleeve





























Convenient 1m packs available in various sizes and colours

HF ✓ RoHS ✓

Type	Supplied IØ(D)	Recovery IØ(d)	Wall (WT) nom.	Material (p4)	Colour	Length (m)	Article-No.
CP24PBK	2.4	1.2	0.5	POX	Black (BK) 	1	911-01258
CP24PBL	2.4	1.2	0.5	POX	Blue (BL) 	1	911-01259
CP24PCL	2.4	1.2	0.5	POX	Clear (CL)* 	1	911-01260
CP24PRD	2.4	1.2	0.5	POX	Red (RD) 	1	911-01261
CP24PWT	2.4	1.2	0.5	POX	White (WT) 	1	911-01262
CP24PYL	2.4	1.2	0.5	POX	Yellow (YL) 	1	911-01263
CP32PBK	3.2	1.6	0.5	POX	Black (BK) 	1	911-01264
CP32PBL	3.2	1.6	0.5	POX	Blue (BL) 	1	911-01265
CP32PCL	3.2	1.6	0.5	POX	Clear (CL)* 	1	911-01266
CP32PGYS	3.2	1.6	0.5	POX	Green Yellow Stripe (GRYL) 	1	911-01267
CP32PRD	3.2	1.6	0.5	POX	Red (RD) 	1	911-01268
CP32PWT	3.2	1.6	0.5	POX	White (WT) 	1	911-01269
CP32PYL	3.2	1.6	0.5	POX	Yellow (YL) 	1	911-01270
CP48PBK	4.8	2.4	0.5	POX	Black (BK) 	1	911-01271
CP48PBL	4.8	2.4	0.5	POX	Blue (BL) 	1	911-01272
CP48PCL	4.8	2.4	0.5	POX	Clear (CL)* 	1	911-01273
CP48PGYS	4.8	2.4	0.5	POX	Green Yellow Stripe (GRYL) 	1	911-01274
CP48PRD	4.8	2.4	0.5	POX	Red (RD) 	1	911-01275
CP48PWT	4.8	2.4	0.5	POX	White (WT) 	1	911-01276
CP48PYL	4.8	2.4	0.5	POX	Yellow (YL) 	1	911-01277
CP64PBK	6.4	3.2	0.6	POX	Black (BK) 	1	911-01278
CP64PBL	6.4	3.2	0.6	POX	Blue (BL) 	1	911-01279
CP64PCL	6.4	3.2	0.6	POX	Clear (CL)* 	1	911-01280
CP64PGYS	6.4	3.2	0.6	POX	Green Yellow Stripe (GRYL) 	1	911-01281
CP64PRD	6.4	3.2	0.6	POX	Red (RD) 	1	911-01282
CP64PWT	6.4	3.2	0.6	POX	White (WT) 	1	911-01283
CP64PYL	6.4	3.2	0.6	POX	Yellow (YL) 	1	911-01284
CP95PBK	9.5	4.8	0.6	POX	Black (BK) 	1	911-01285
CP95PBL	9.5	4.8	0.6	POX	Blue (BL) 	1	911-01286






Flame Retardant (Black and Colour)

Type	Supplied IØ(D)	Recovery IØ(d)	Wall (WT) nom.	Material (p4)	Colour	Length (m)	Article-No.
CP95PCL	9.5	4.8	0.6	POX	Clear (CL)* 	1	911-01287
CP95PGYS	9.5	4.8	0.6	POX	Green Yellow Stripe (GRYL) 	1	911-01288
CP95PRD	9.5	4.8	0.6	POX	Red (RD) 	1	911-01289
CP95PWT	9.5	4.8	0.6	POX	White (WT) 	1	911-01290
CP95PYL	9.5	4.8	0.6	POX	Yellow (YL) 	1	911-01291
CP127PBK	12.7	6.4	0.6	POX	Black (BK) 	1	911-01292
CP127PBL	12.7	6.4	0.6	POX	Blue (BL) 	1	911-01293
CP127PCL	12.7	6.4	0.6	POX	Clear (CL)* 	1	911-01294
CP127PGYS	12.7	6.4	0.6	POX	Green Yellow Stripe (GRYL) 	1	911-01295
CP127PRD	12.7	6.4	0.6	POX	Red (RD) 	1	911-01296
CP127PWT	12.7	6.4	0.6	POX	White (WT) 	1	911-01297
CP127PYL	12.7	6.4	0.6	POX	Yellow (YL) 	1	911-01298
CP190PBK	19	9.5	0.8	POX	Black (BK) 	1	911-01299
CP190PBL	19	9.5	0.8	POX	Blue (BL) 	1	911-01300
CP190PCL	19	9.5	0.8	POX	Clear (CL)* 	1	911-01301
CP190PGYS	19	9.5	0.8	POX	Green Yellow Stripe (GRYL) 	1	911-01302
CP190PRD	19	9.5	0.8	POX	Red (RD) 	1	911-01303
CP190PWT	19	9.5	0.8	POX	White (WT) 	1	911-01304
CP190PYL	19	9.5	0.8	POX	Yellow (YL) 	1	911-01305
CP254PBK	25.4	12.7	0.9	POX	Black (BK) 	1	911-01306
CP254PBL	25.4	12.7	0.9	POX	Blue (BL) 	1	911-01307
CP254PCL	25.4	12.7	0.9	POX	Clear (CL)* 	1	911-01308
CP254PGYS	25.4	12.7	0.9	POX	Green Yellow Stripe (GRYL) 	1	911-01309
CP254PRD	25.4	12.7	0.9	POX	Red (RD) 	1	911-01310
CP254PWT	25.4	12.7	0.9	POX	White (WT) 	1	911-01311
CP254PYL	25.4	12.7	0.9	POX	Yellow (YL) 	1	911-01312

All dimensions in mm. Subject to technical changes.

*Clear is not self extinguishing, flame retardant or HF

Pre-Pack multiple sizes and colours

Type	Supplied IØ (D)	Material (p4)	Colour	Length (m)	Qty	Article-No.
CPPKITBK	2.4 – 4.8	POX	Black (BK) 	1	x10 (each size)	911-01313
	6.4 – 25.4				x5 (each size)	
CPPKIT-COL	2.4 – 12.7	POX	CL  BL  RD  WT 	1	x5 (each size and colour)	911-01314
	19.0-25.4				x2 (each size and colour)	

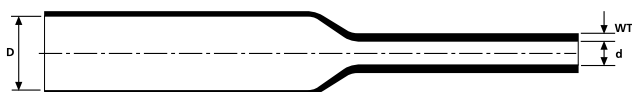
Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
Page	132	132	132

Heatshrink Tubing 2:1

LVR, PVC Chloride, Cadmium free (Black and Colour)

- Shrink ratio 2:1
- Cable joints, low voltage busbars and batteries
- Longitudinal change after shrinkage +/-10% max.
- Operating temperature -30°C to +105°C
- Min. shrink temperature +135°C
- Shelf life 12 months max.
- Self-extinguishing
- Good chemical resistance and mechanical protection



LVR
























LVR used for mechanical protection

HF ✓

RoHS ✓

Type	Supplied IØ(D)	Recovery IØ(d)	Wall (WT) nom.	Material (p4)	Colour	Length (m)	Article-No.
LVR12TBK	1.2	0.6	0.40	PVC	Black (BK) ■	500	911-01315
LVR12TYL	1.2	0.6	0.40	PVC	Yellow (YL) ■	500	911-01316
LVR16TBK	1.6	0.8	0.4	PVC	Black (BK) ■	500	911-01317
LVR24TBK	2.4	1.2	0.4	PVC	Black (BK) ■	500	911-01318
LVR24TBL	2.4	1.2	0.4	PVC	Blue (BL) ■	500	911-01319
LVR24TRD	2.4	1.2	0.4	PVC	Red (RD) ■	500	911-01320
LVR24TWT	2.4	1.2	0.4	PVC	White (WT) □	500	911-01321
LVR24TYL	2.4	1.2	0.4	PVC	Yellow (YL) ■	500	911-01322
LVR32TBK	3.2	1.6	0.4	PVC	Black (BK) ■	500	911-01323
LVR32TBL	3.2	1.6	0.4	PVC	Blue (BL) ■	500	911-01324
LVR32TRD	3.2	1.6	0.4	PVC	Red (RD) ■	500	911-01325
LVR32TWT	3.2	1.6	0.4	PVC	White (WT) □	500	911-01326
LVR32TYL	3.2	1.6	0.4	PVC	Yellow (YL) ■	500	911-01327
LV32TGYS	3.2	1.6	0.4	PVC	Green -Yellow Stripe (GYS) ■	500	911-01612
LVR48TBK	4.8	2.4	0.5	PVC	Black (BK) ■	500	911-01328
LVR48TBL	4.8	2.4	0.5	PVC	Blue (BL) ■	500	911-01329
LVR48TRD	4.8	2.4	0.5	PVC	Red (RD) ■	500	911-01330
LVR48TWT	4.8	2.4	0.5	PVC	White (WT) □	500	911-01331
LVR48TYL	4.8	2.4	0.5	PVC	Yellow (YL) ■	500	911-01332
LV48TGYS	4.8	2.4	0.5	PVC	Green -Yellow Stripe (GYS) ■	500	911-01613
LVR64TBK	6.4	3.2	0.6	PVC	Black (BK) ■	250	911-01333
LVR64TBL	6.4	3.2	0.6	PVC	Blue (BL) ■	250	911-01334
LVR64TRD	6.4	3.2	0.6	PVC	Red (RD) ■	250	911-01335
LVR64TWT	6.4	3.2	0.6	PVC	White (WT) □	250	911-01336
LVR64TYL	6.4	3.2	0.6	PVC	Yellow (YL) ■	250	911-01337
LV64TGYS	6.4	3.2	0.6	PVC	Green -Yellow Stripe (GYS) ■	250	911-01614
LVR95TBK	9.5	4.8	0.6	PVC	Black (BK) ■	150	911-01338
LVR95TBL	9.5	4.8	0.6	PVC	Blue (BL) ■	150	911-01339
LVR95TRD	9.5	4.8	0.6	PVC	Red (RD) ■	150	911-01340

LVR, PVC Chloride, Cadmium free (Black and Colour)

Type	Supplied IØ(D)	Recovery IØ(d)	Wall (WT) nom.	Material (p4)	Colour	Length (m)	Article-No.
LVR95TWT	9.5	4.8	0.6	PVC	White (WT) 	150	911-01341
LVR95TYL	9.5	4.8	0.6	PVC	Yellow (YL) 	150	911-01342
LV95TGYS	9.5	4.8	0.6	PVC	Green -Yellow Stripe (GYS) 	150	911-01615
LVR127TBK	12.7	6.4	0.7	PVC	Black (BK) 	100	911-01343
LVR127TBL	12.7	6.4	0.7	PVC	Blue (BL) 	100	911-01344
LVR127TRD	12.7	6.4	0.7	PVC	Red (RD) 	100	911-01345
LVR127TWT	12.7	6.4	0.7	PVC	White (WT) 	100	911-01346
LVR127TYL	12.7	6.4	0.7	PVC	Yellow (YL) 	100	911-01347
LV127TGYS	12.7	6.4	0.7	PVC	Green -Yellow Stripe (GYS) 	100	911-01608
LVR190TBK	19.0	9.5	0.8	PVC	Black (BK) 	50	911-01348
LVR190TBL	19.0	9.5	0.8	PVC	Blue (BL) 	50	911-01349
LVR190TRD	19.0	9.5	0.8	PVC	Red (RD) 	50	911-01350
LVR190TWT	19.0	9.5	0.8	PVC	White (WT) 	50	911-01351
LVR190TYL	19.0	9.5	0.8	PVC	Yellow (YL) 	50	911-01352
LV190TGYS	19.0	9.5	0.8	PVC	Green -Yellow Stripe (GYS) 	50	911-01609
LVR254TBK	25.4	12.7	1.0	PVC	Black (BK) 	50	911-01353
LVR254TBL	25.4	12.7	1.0	PVC	Blue (BL) 	50	911-01354
LVR254TRD	25.4	12.7	1.0	PVC	Red (RD) 	50	911-01355
LVR254TWT	25.4	12.7	1.0	PVC	White (WT) 	50	911-01356
LVR254TYL	25.4	12.7	1.0	PVC	Yellow (YL) 	50	911-01357
LV254TGYS	25.4	12.7	1.0	PVC	Green -Yellow Stripe (GYS) 	50	911-01610

All dimensions in mm. Subject to technical changes.

Recommended Tools

Type			
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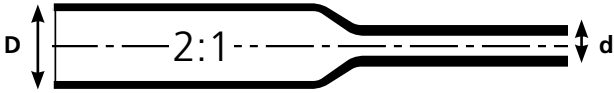
Heatshrink Joint Kits 2:1

Low Voltage and Submersible (Black)

- Shrink ratio 2:1
- Operating temperature -55°C to +135 110°C(*insulation/sheaths)
- Min. shrink temperature 120°C
- Temperature voltage rating 600/1000V
- Water absorption ISO 62<0.15%
- Excellent impact and abrasion resistance
- Excellent environmental and UV properties
- Hot melt adhesive ensures excellent protection against moisture
- High electrical insulation properties
- Excellent strain relief and mechanical protection
- Quick and easy installation



Low voltage kit



HF ✓

RoHS ✓

Type	Application	Cable Size mm ² (3 & 4 Core)	Material	Colour	Article-No.
HSJKL154	Low Voltage	1.5 - 4	PO-X	Black (BK) ■	911-01205
HSJKL616	Low Voltage	6 - 16	PO-X	Black (BK) ■	911-01206
HSJKL2550	Low Voltage	25 - 50	PO-X	Black (BK) ■	911-01207
HSJKL70150	Low Voltage	70 - 150	PO-X	Black (BK) ■	911-01208
HSJKL185300	Low Voltage	185 - 300	PO-X	Black (BK) ■	911-01209
HSJKS156	Submersible	1.5 - 6	PO-X	Black (BK) ■	911-01210
HSJKS616	Submersible	6 - 16	PO-X	Black (BK) ■	911-01211

Kits include:

1. Low voltage - inner, outer and 4 ferrule heatshrink sleeves, 2 roll springs, tinned copper braid and instructions
 2. Submersible - inner, outer and 4 ferrule heatshrink sleeves and instructions
- Note: Ferrules are excluded due to cable sizes variations

Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
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Flame Retardant Heat Shrink Tubing 2:1

SGP, PO-X (Black and Colour)

- Shrink ratio 2:1
- Operating temperature -55°C to 125°C
- Tensile strength test method ASTM-D-638 14N/mm²
- Specific gravity test method ASTM-D-792 1.30 max.
- Longitudinal change test method ASTM-D-638% -10% max.
- Dielectric strength test method ASTM-D-2671 kV/mm 20kV/mm
- Dielectric constant test method ASTM-D-150 3.0 max.
- Thermal stability
- Higher resistance to physical abuse
- Cost effective
- Effective electrical insulation and protection for in-line components, disconnect terminals and splices
- Bundles wires and cables for very flexible light-duty harnesses
- Strain-relief for electrical wire connections and colour-code wires, cables, terminals and components


































Heatshrink tubing

HF ✓

RoHS ✓

Type	Supplied Ø(D)	Recovery Ø(d)	Wall (WT) nom.	Material (p4)	Colour	Length (m)	Article-No.
SGP16TBK	1.6	0.8	0.43	PO-X	Black (BK) ■	200	911-01397
SGP16TBL	1.6	0.8	0.43	PO-X	Blue (BL) ■	200	911-01398
SGP16TGYS	1.6	0.8	0.43	PO-X	Green-Yellow Stripe (GYS) ■	200	911-01399
SGP16TRD	1.6	0.8	0.43	PO-X	Red (RD) ■	200	911-01400
SGP16TYL	1.6	0.8	0.43	PO-X	Yellow (YL) ■	200	911-01401
SGP24TBK	2.4	1.2	0.508	PO-X	Black ■	200	911-01402
SGP24TBL	2.4	1.2	0.508	PO-X	Blue ■	200	911-01404
SGP24TGYS	2.4	1.2	0.508	PO-X	Green-Yellow Stripe ■	200	911-01406
SGP24TRD	2.4	1.2	0.508	PO-X	Red ■	200	911-01407
SGP24TWT	2.4	1.2	0.508	PO-X	White □	200	911-01409
SGP24TYL	2.4	1.2	0.508	PO-X	Yellow ■	200	911-01411
SGP32TBK	3.2	1.6	0.508	PO-X	Black ■	200	911-01413
SGP32TBL	3.2	1.6	0.508	PO-X	Blue ■	200	911-01415
SGP32TGYS	3.2	1.6	0.508	PO-X	Green -Yellow Stripe ■	200	911-01417
SGP32TRD	3.2	1.6	0.508	PO-X	Red ■	200	911-01418
SGP32TWT	3.2	1.6	0.508	PO-X	White □	200	911-01420
SGP32TYL	3.2	1.6	0.508	PO-X	Yellow ■	200	911-01422
SGP48TBK	4.8	2.4	0.508	PO-X	Black ■	100	911-01425
SGP48TBL	4.8	2.4	0.508	PO-X	Blue ■	100	911-01427
SGP48TGYS	4.8	2.4	0.508	PO-X	Green / Yellow Stripe ■	100	911-01429
SGP48TRD	4.8	2.4	0.508	PO-X	Red ■	100	911-01430
SGP48TWT	4.8	2.4	0.508	PO-X	White □	100	911-01432
SGP48TYL	4.8	2.4	0.508	PO-X	Yellow ■	100	911-01434
SGP64TBK	6.4	3.2	0.635	PO-X	Black ■	100	911-01436
SGP64TBL	6.4	3.2	0.635	PO-X	Blue ■	100	911-01438
SGP64TGYS	6.4	3.2	0.635	PO-X	Green / Yellow Stripe ■	100	911-01440
SGP64TRD	6.4	3.2	0.635	PO-X	Red ■	100	911-01441

SGP, PO-X (Black and Colour)

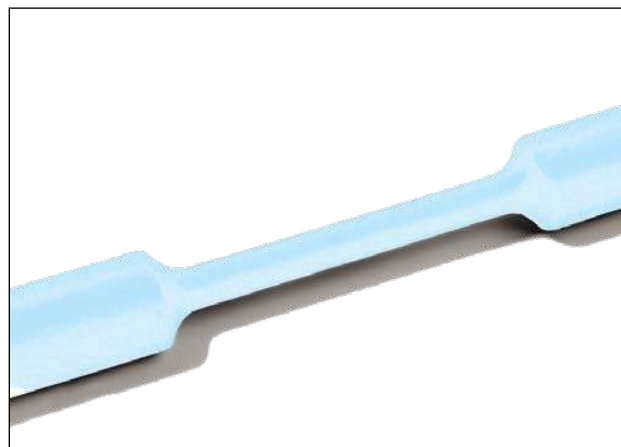
Type	Supplied IØ(D)	Recovery IØ(d)	Wall (WT) nom.	Material (p4)	Colour	Length (m)	Article-No.
SGP64TWT	6.4	3.2	0.635	PO-X	White 	100	911-01443
SGP64TYL	6.4	3.2	0.635	PO-X	Yellow 	100	911-01445
SGP95TBK	9.5	4.8	0.635	PO-X	Black 	100	911-01447
SGP95TBL	9.5	4.8	0.635	PO-X	Blue 	100	911-01449
SGP95TBN	9.5	4.8	0.635	PO-X	Brown 	100	911-01451
SGP95TGR	9.5	4.8	0.635	PO-X	Green 	100	911-01452
SGP95TGYS	9.5	4.8	0.635	PO-X	Green / Yellow Stripe 	100	911-01453
SGP95TRD	9.5	4.8	0.635	PO-X	Red 	100	911-01454
SGP95TWT	9.5	4.8	0.635	PO-X	White 	100	911-01456
SGP95TYL	9.5	4.8	0.635	PO-X	Yellow 	100	911-01458
SGP127TBK	12.7	6.4	0.635	PO-X	Black 	100	911-01460
SGP127TBL	12.7	6.4	0.635	PO-X	Blue 	100	911-01462
SGP127TBN	12.7	6.4	0.635	PO-X	Brown 	100	911-01464
SGP127TGYS	12.7	6.4	0.635	PO-X	Green / Yellow Stripe 	100	911-01465
SGP127TRD	12.7	6.4	0.635	PO-X	Red 	100	911-01466
SGP127TWT	12.7	6.4	0.635	PO-X	White 	100	911-01468
SGP127TYL	12.7	6.4	0.635	PO-X	Yellow 	100	911-01470
SGP190TBK	19	9.5	0.762	PO-X	Black 	100	911-01472
SGP190TBL	19	9.5	0.762	PO-X	Blue 	100	911-01474
SGP190TGYS	19	9.5	0.762	PO-X	Green / Yellow Stripe 	100	911-01476
SGP190TRD	19	9.5	0.762	PO-X	Red 	100	911-01477
SGP190TWT	19	9.5	0.762	PO-X	White 	100	911-01479
SGP190TYL	19	9.5	0.762	PO-X	Yellow 	100	911-01481
SGP254TBK	25.4	12.7	0.889	PO-X	Black 	50	911-01483
SGP254TBL	25.4	12.7	0.889	PO-X	Blue 	50	911-01486
SGP254TGYS	25.4	12.7	0.889	PO-X	Green / Yellow Stripe 	50	911-01489
SGP254TRD	25.4	12.7	0.889	PO-X	Red 	50	911-01490
SGP254TWT	25.4	12.7	0.889	PO-X	White 	50	911-01493
SGP254TYL	25.4	12.7	0.889	PO-X	Yellow 	50	911-01496
SGP381TGYS	38.1	19.1	1.020	PO-X	Green / Yellow Stripe 	100	911-01503
SGP508GYS	50.8	25.4	1.140	PO-X	Green / Yellow Stripe 	100	911-01504
SGP508TBK	50.8	25.4	1.140	PO-X	Black 50m 	100	911-01505
SGP508TBL	50.8	25.4	1.140	PO-X	Blue 50m 	100	911-01506
SGP508TGYS	50.8	25.4	1.140	PO-X	Green / Yellow Stripe 	100	911-01507
SGP508TRD	50.8	25.4	1.140	PO-X	Red 50m 	100	911-01508
SGP508TWT	50.8	25.4	1.140	PO-X	White 50m 	100	911-01509
SGP508TYL	50.8	25.4	1.140	PO-X	Yellow 50m 	100	911-01510
SGP762TBK	76.2	38.1	1.27	PO-X	Black 	50	911-01512
SGP762TBL	76.2	38.1	1.27	PO-X	Blue 	50	911-01513
SGP762TCL	76.2	38.1	1.27	PO-X	Clear 	50	911-01514
SGP762TRD	76.2	38.1	1.27	PO-X	Red 	50	911-01515
SGP762TWT	76.2	38.1	1.27	PO-X	White 	50	911-01516
SGP762TYL	76.2	38.1	1.27	PO-X	Yellow 	50	911-01517

All dimensions in mm. Subject to technical changes.

Heatshrink Tubing 2:1

SGP, PO-X (Transparent)

- Shrink ratio 2:1
- Operating temperature -55°C to 125°C
- Tensile strength test method ASTM-D-638 14N/mm²
- Specific gravity test method ASTM-D-792 1.30 max.
- Longitudinal change test method ASTM-D-638% -10% max.
- Dielectric strength test method ASTM-D-2671kV/mm 20kV/mm
- Dielectric constant test method ASTM-D-150 3.0 max.
- Thermal stability
- Higher resistance to physical abuse
- Cost effective
- Effective electrical insulation and protection for in-line components, disconnect terminals and splices
- Bundles wires and cables for very flexible light-duty harnesses
- Strain-relief for electrical wire connections and colour-code wires, cables, terminals and components
- Not flame retardant



Transparent heatshrink

RoHS ✓

Type	Supplied IØ(D)	Recovery IØ(d)	Wall (WT) nom.	Material (p4)	Colour	Length (m)	Article-No.
CP16TCL	1.6	0.8	0.43	PO-X	Clear (CL) <input type="checkbox"/>	200	911-01991
CP24TCL	2.4	1.2	0.508	PO-X	Clear (CL) <input type="checkbox"/>	200	911-01373
CP32TCL	3.2	1.2	0.508	PO-X	Clear (CL) <input type="checkbox"/>	200	911-01375
CP48TCL	4.8	2.4	0.508	PO-X	Clear (CL) <input type="checkbox"/>	100	911-01377
CP64TCL	6.4	3.2	0.635	PO-X	Clear (CL) <input type="checkbox"/>	100	911-01379
CP95TCL	9.5	4.8	0.635	PO-X	Clear (CL) <input type="checkbox"/>	100	911-01381
CP127TCL	12.7	6.4	0.635	PO-X	Clear (CL) <input type="checkbox"/>	100	911-01383
CP190TCL	19	9.5	0.762	PO-X	Clear (CL) <input type="checkbox"/>	100	911-01385
CP254TCL	25.4	12.7	0.889	PO-X	Clear (CL) <input type="checkbox"/>	50	911-01387
CP508TCL	50.8	25.4	1.14	PO-X	Clear (CL) <input type="checkbox"/>	50	911-01391

All dimensions in mm. Subject to technical changes.

Other colours available on request (minimum order quantity required)

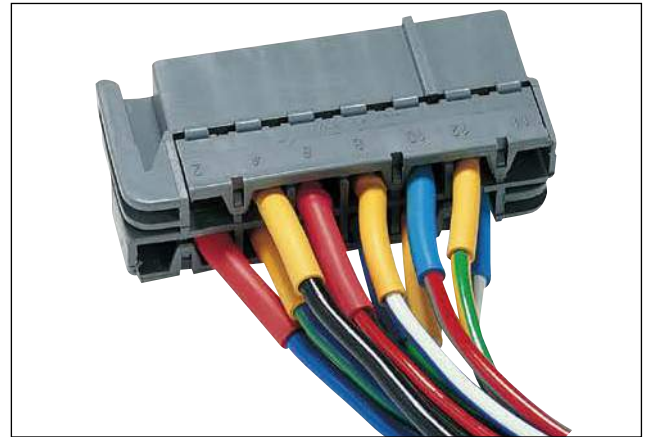
Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
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Heatshrink Tubing 2:1

HFT-A (Colour)

- Shrink ration 2:1
- Operating temperature -55°C to +135°C
- Intermittent +225°C
- Longitudinal change after shrinkage -5% max.
- Min. shrink temperature +100°C
- Insulation Class B (VDE 0530)
- Dielectric strength 20kV/mm according to IEC 684 P2
- Flammability Self extinguishing
- Fast shrinking and shrinks uniformly to form a permanent insulation covering
- Easy handling
- Good mechanical strength
- Resistance against chemicals and solvents
- Easy to print on sleeve marking to identify wiring circuits



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

RoHS ✓



Type	Supplied IØ(D)	Recovery IØ(d)	Wall (WT) nom.	Materail (p4)	Colour
HFT-A 12	1.2	0.6	0.4	PO-X	Black (BK) ■ Blue (BL) ■ Red (RD) ■ White (WT) □ Yellow (YL) ■
HFT-A 16	1.6	0.8	0.4	PO-X	
HFT-A 24	2.4	1.2	0.5	PO-X	
HFT-A 32	3.2	1.6	0.5	PO-X	
HFT-A 48	4.8	2.4	0.5	PO-X	
HFT-A 64	6.4	3.2	0.6	PO-X	
HFT-A 95	9.5	4.8	0.6	PO-X	
HFT-A 127	12.7	6.4	0.6	PO-X	
HFT-A 190	19	9.5	0.8	PO-X	
HFT-A 254	25.4	12.7	0.9	PO-X	
HFT-A 380	38	19	1	PO-X	
HFT-A 508	50.8	25.4	1.1	PO-X	
HFT-A 760	76	38	1.3	PO-X	
HFT-A 1016	101.6	50.8	1.4	PO-X	

All dimensions in mm. Subject to technical changes.

Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
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Recommended Industries



Flame Retardant Heatshrink Tubing 2:1

HFT-B (Transparent)

- Shrink ratio 2:1
- Used for bundling cables
- Protection where visual inspection is required
- Used as a see through protective sleeve over cable markers



HFT-B

Type	Supplied IØ(D)	Recovery IØ(d)	Wall (WT) nom.	Material (p4)	Colour	Article-No.
HFT12TCL	1.2	0.6	0.4	PO-X	Transparent <input type="checkbox"/>	305-01219
HFT16TCL	1.6	0.8	0.4	PO-X	Transparent <input type="checkbox"/>	305-01619
HFT24TCL	2.4	1.2	0.5	PO-X	Transparent <input type="checkbox"/>	305-02419
HFT32TCL	3.2	1.6	0.5	PO-X	Transparent <input type="checkbox"/>	305-03219
HFT48TCL	4.8	2.4	0.5	PO-X	Transparent <input type="checkbox"/>	305-04819
HFT64TCL	6.4	3.2	0.6	PO-X	Transparent <input type="checkbox"/>	305-06419
HFT95TCL	9.5	4.8	0.6	PO-X	Transparent <input type="checkbox"/>	305-09519
HFT127TCL	12.7	6.4	0.6	PO-X	Transparent <input type="checkbox"/>	305-12719
HFT190TCL	19	9.5	0.8	PO-X	Transparent <input type="checkbox"/>	305-19019
HFT254TCL	25.4	12.7	0.9	PO-X	Transparent <input type="checkbox"/>	305-25419
HFT381TCL	38	19	1	PO-X	Transparent <input type="checkbox"/>	305-38119
HFT508TCL	50.8	25.4	1.1	PO-X	Transparent <input type="checkbox"/>	305-50819

All dimensions in mm. Subject to technical changes.

Recommended Tools

Type			
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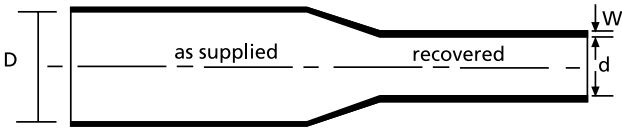
Recommended Industries



Flexible Heatshrink Tubing 3:1

HFT-333 (Black)

- Shrink ratio 3:1
- Continuous operating temperature -55°C to +135°C
- Intermittent temperature +225°C
- Min. shrink temperature +100°C
- Tensile strength 18MPa
- Elongation 500%
- Dielectric strength 25kV/mm
- Highly flexible, fast shrinking
- Excellent chemical and thermal resistance
- No tendency to split



HFT-333

RoHS

Type	Bore as supplied min.	Bore recovered max.	Wall thickness fully recovered (mm)	Material (p4)	Colour
HFT1505TBK	1.5	0.5	0.45	PO	Black (BK) ■
HFT31TBK	3	1	0.55	PO	Black (BK) ■
HFT62TBK	6	2	0.65	PO	Black (BK) ■
HFT93TBK	9	3	0.75	PO	Black (BK) ■
HFT124TBK	12	4	0.75	PO	Black (BK) ■
HFT186TBK	18	6	0.75	PO	Black (BK) ■
HFT248TBK	24	8	1.00	PO	Black (BK) ■
HFT3913TBK	39	13	1.15	PO	Black (BK) ■

All dimensions in mm. Subject to technical changes.

Recommended Industries



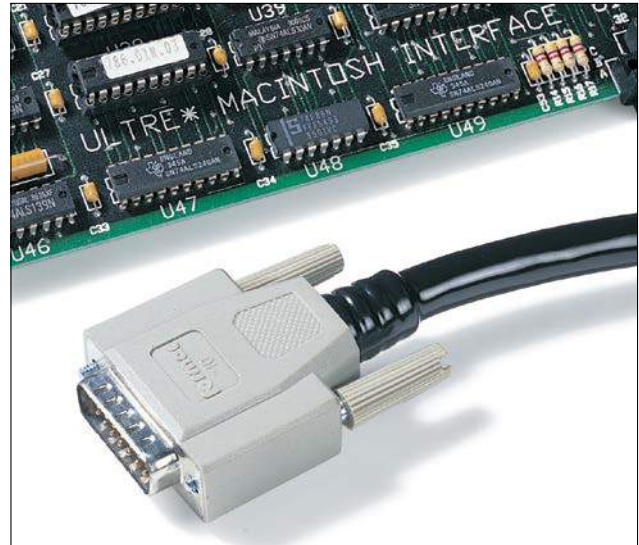
Heatshrink Tubing 2:1

TL27 (Black)

- 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
- Very low shrink temperature
- Fast shrinking



Heat Shrinkable Tubing 2:1



Very flexible tubing for automotive or Industries where halogens cannot be accepted

HF ✓ RoHS ✓

Type	Supplied IØ(D) min.	Recovery IØ(d) max.	Size (Inches)	Wall (WT)	Colour	Material (p4)	Length (m)	Article-No.
TL27-1.2/0.6	1.2	0.6	3/64"	0.31	Black (BK) ■	PO-X	500	302-20120
TL27-1.6/0.8	1.6	0.8	1/16"	0.33	Black (BK) ■	PO-X	500	302-20160
TL27-2.4/1.2	2.4	1.2	3/32"	0.36	Black (BK) ■	PO-X	500	302-30240
TL27-3.2/1.6	3.2	1.6	1/8"	0.39	Black (BK) ■	PO-X	300	302-30320
TL27-4.8/2.4	4.8	2.4	3/16"	0.42	Black (BK) ■	PO-X	150	302-30480
TL27-6.4/3.2	6.4	3.2	1/4"	0.45	Black (BK) ■	PO-X	100	302-30640
TL27-9.5/4.8	9.5	4.8	3/8"	0.48	Black (BK) ■	PO-X	100	302-30950
TL27-12.7/6.4	12.7	6.4	1/2"	0.52	Black (BK) ■	PO-X	100	302-21270
TL27-19.1/9.5	19.1	9.5	3/4"	0.58	Black (BK) ■	PO-X	100	302-31900
TL27-25.4/12.7	25.4	12.7	1"	0.67	Black (BK) ■	PO-X	100	302-32540
TL27-38.1/19.1	38.1	19.1	1-1/2"	0.76	Black (BK) ■	PO-X	100	302-23810
TL27-50.8/25.4	50.8	25.4	2"	0.85	Black (BK) ■	PO-X	100	302-25080

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

Recommended Tools

Type			
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Recommended Industries



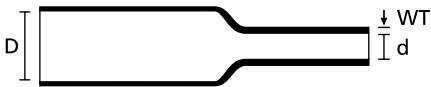
Heat Shrink Tubing 3:1

TF34 (Transparent)

- Shrink ratio 3:1
- Operating temperature -55°C to +135°C
- Min. shrink temperature +110°C
- Longitudinal change after shrinkage -5% max.
- Dielectric strength 46kV/mm
- Not flame retardant
- Protects identification marking perfect
- Sizes cover wide range of diameters allowing reduced inventory



Transparent tubing with 3:1 shrink ratio allowing for a wider range of application



Heat Shrinkable Tubing 3:1

HF ✓ RoHS ✓

Type	Supplied IØ(D) min.	Recov. IØ(d) max.	Wall (WT)	Colour	Material (p4)	Length (m)	Article-No.
TF34-1.5/0.5	1.5	0.5	0.5	Transparent (CL) <input type="checkbox"/>	PO-X	30	333-30153
TF34-3/1	3	1	0.5	Transparent (CL) <input type="checkbox"/>	PO-X	30	333-30303
TF34-6/2	6	2	0.7	Transparent (CL) <input type="checkbox"/>	PO-X	30	333-30603
TF34-9/3	9	3	0.8	Transparent (CL) <input type="checkbox"/>	PO-X	30	333-30903
TF34-12/4	12	4	0.85	Transparent (CL) <input type="checkbox"/>	PO-X	30	333-31203
TF34-18/6	18	6	1	Transparent (CL) <input type="checkbox"/>	PO-X	30	333-31803
TF34-24/8	24	8	1.2	Transparent (CL) <input type="checkbox"/>	PO-X	30	333-32403
TF34-40/13	40	13	1.25	Transparent (CL) <input type="checkbox"/>	PO-X	30	333-34003

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

Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
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Recommended Industries



Heatshrink Tubing Adhesive Lined

EPS-300, EPS-400 (Black)

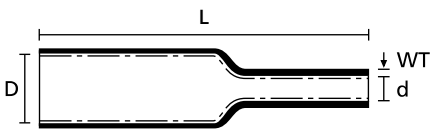
- Operating temperature -55°C to +125°C
- Min. shrink temperature +120°C
- Longitudinal change after shrinkage -10% max.
- Softening point adhesive +90°C
- Dielectric strength 15kV/mm according to IEC 684 P2
- Flammability ASTM D2671 (outer layer only)
- Flexible thin wall
- Coextruded hot melt adhesive inner wall
- Protects against moisture
- Provides an environmental sealing of complex parts



EPS300 and EPS400 offer high shrink ratios and protection against humidity

EPS-300 - 3:1 Shrink Ratio

RoHS ✓

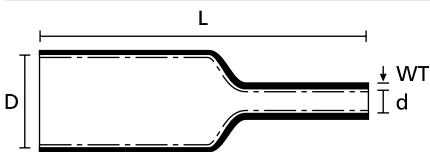


Heat Shrinkable Tubing 3:1 with adhesive

Type	Shrink Ratio	Supplied IØ(D) min.	Recovery IØ(d) max.	Wall (WT)	Colour	Material (p4)	Length (m)	Article-No.
EPS-300-3/1	3:1	3	1	1	Black (BK) ■	PO-X	400	340-03010
EPS-300-6/2	3:1	6	2	1	Black (BK) ■	PO-X	300	340-06020
EPS-300-9/3	3:1	9	3	1.4	Black (BK) ■	PO-X	150	340-09030
EPS-300-12/4	3:1	12	4	1.8	Black (BK) ■	PO-X	100	340-12040
EPS-300-19/6	3:1	19	6	2.2	Black (BK) ■	PO-X	50	340-19060
EPS-300-24/8	3:1	24	8	2.5	Black (BK) ■	PO-X	25	340-24080
EPS-300-40/13	3:1	40	13	2.5	Black (BK) ■	PO-X	25	340-40130

All dimensions in mm. Subject to technical changes.

EPS-400 - 4:1 Shrink Ratio



Heat Shrinkable Tubing 4:1 with adhesive

Type	Shrink Ratio	Supplied IØ(D) min.	Recovery IØ(d) max.	Wall (WT)	Colour	Material (p4)	Length (m)	Article-No.
EPS-400-4/1	4:1	4	1	1	Black (BK) ■	PO-X	300	341-04010
EPS-400-8/2	4:1	8	2	1	Black (BK) ■	PO-X	150	341-08020
EPS-400-12/3	4:1	12	3	1.4	Black (BK) ■	PO-X	100	341-12030
EPS-400-16/4	4:1	16	4	1.8	Black (BK) ■	PO-X	100	341-16040
EPS-400-24/6	4:1	24	6	2.2	Black (BK) ■	PO-X	50	341-24060
EPS-400-32/8	4:1	32	8	2.5	Black (BK) ■	PO-X	25	341-32080

All dimensions in mm. Subject to technical changes.

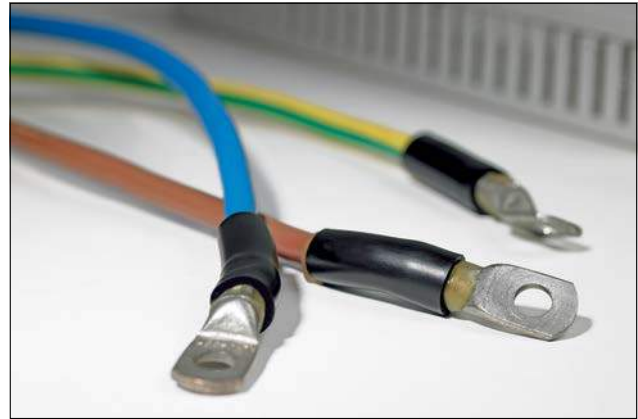
Recommended Industries



Heatshrinkable Tubing up to 3.5:1

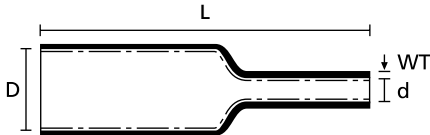
HA47: Thick Wall Adhesive Lined (Black)

- 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 24,5 kV/mm
- Not flame retardant
- Insulation class A (VDE 0530)
- Thermoplastic adhesive protects against moisture and weathering
- Used for low voltage power applications



Heavy wall tubing.

HF ✓ RoHS ✓



Heat Shrinkable Tubing 3.5:1 with adhesive

Type	Supplied IØ(D) min.	Recovery IØ(d) max.	Wall (WT)	Length (L)	Material (p4)	Colour	Article-No.
HA47-9/3	9	3	1.8	1	PO-X	Black (BK) ■	321-20090
HA47-13/4	13	4	2.4	1	PO-X	Black (BK) ■	321-20130
HA47-19/6	19	6	2.7	1	PO-X	Black (BK) ■	321-20180
HA47-33/8	33	8	3.2	1	PO-X	Black (BK) ■	321-20280
HA47-45/12	45	12	4.1	1	PO-X	Black (BK) ■	321-20450
HA47-51/16	51	16	4.1	1	PO-X	Black (BK) ■	321-20510
HA47-68/22	68	22	4.1	1	PO-X	Black (BK) ■	321-20680
HA47-85/25	85	25	4.3	1	PO-X	Black (BK) ■	321-20850
HA47-105/30	105	30	4.3	1	PO-X	Black (BK) ■	321-20900
HA47-130/36	130	36	4.3	1	PO-X	Black (BK) ■	321-21300
HA47-160/50	160	50	4.3	1	PO-X	Black (BK) ■	321-21600
HA47-180/50	180	50	4.3	1	PO-X	Black (BK) ■	321-21850

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

Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
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Recommended Industries



Heatshrink Tubing 3:1

IMCS-A: Adhesive Lined (Black)

- Shrink ratio 3:1
- Operating temperature -55°C to 110°C
- Longitudinal change after shrinkage -10% max.
- Min. shrink temperature +120°C
- Dielectric strength 20kV/mm according to IEC 684 P2
- Flammability ASTM D876 (IMCS-A outer layer only)
- Specification Germanischer Lloyd, Det Norske Veritas (IMCS F471 / IMCS-A F471)
- Medium wall tubing
- Outstanding insulation and environmental sealing properties
- UV resistant
- Excellent mechanical properties
- Excellent impact and abrasion resistance
- High electrical insulation properties



IMCSA heatshrink tubing with a high (up to 4:1) shrink ratio

HF ✓ RoHS ✓



Heat shrinkable tubing 3:1

Type	Supplied IØ(D)	Recovery IØ(d)	Wall (WT) nom.	Wall (WT)	Adhesive Thickness (TA) nom.	Material (p4)	Colour	Article-No.
IMCSA123	12	3	2	2.7	0.7	PO-X	Black (BK) ■	911-01571
IMCSA196	19	6	2.5	3.3	0.8	PO-X	Black (BK) ■	911-01572
IMCSA278	27	8	2.5	3.3	0.8	PO-X	Black (BK) ■	911-01573
IMCSA3275	32	7.5	2.5	3.3	0.8	PO-X	Black (BK) ■	911-01574
IMCSA3812	38	12	2.5	3.3	0.8	PO-X	Black (BK) ■	911-01575
IMCSA5018	50	18	2.5	3.3	0.8	PO-X	Black (BK) ■	911-01576
IMCSA7026	70	26	2.5	3.3	0.8	PO-X	Black (BK) ■	911-01577
IMCSA9036	90	36	2.5	3.3	0.8	PO-X	Black (BK) ■	911-01578
IMCSA1204	120	40	2.5	3.3	0.8	PO-X	Black (BK) ■	911-01579

All dimensions in mm. Subject to technical changes.

Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
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Heatshrink Tubing 2:1

Viton®-E: Fluoroelastomer (Black)

- 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
- Insulation Class C (VDE 0530)
- High temperature resistant fluoroelastomeric heatshrink 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

RoHS ✓



Heat Shrinkable Tubing 2:1

Type	Supplied IØ(D) min.	Recov. IØ(d) max.	Wall (WT)	Material (p4)	Colour	Designation as per VG-Norm	Length (m)	Article-No.
VITON®-E-3.2/1.6	3.2	1.6	0.7	PMX	Black (BK) ■	VG 95343 T05 E 001 A	50	330-00320
VITON®-E-4.8/2.4	4.8	2.4	0.8	PMX	Black (BK) ■	VG 95343 T05 E 002 A	50	330-00480
VITON®-E-6.4/3.2	6.4	3.2	0.9	PMX	Black (BK) ■	VG 95343 T05 E 003 A	50	330-00640
VITON®-E-9.5/4.8	9.5	4.8	1	PMX	Black (BK) ■	VG 95343 T05 E 004 A	25	330-00950
VITON®-E-12.7/6.4	12.7	6.4	1.2	PMX	Black (BK) ■	VG 95343 T05 E 005 A	25	330-01270
VITON®-E-19.0/9.5	19	9.5	1.4	PMX	Black (BK) ■	VG 95343 T05 E 006 A	25	330-01900
VITON®-E-25.4/12.7	25.4	12.7	1.8	PMX	Black (BK) ■	VG 95343 T05 E 007 A	25	330-02540
VITON®-E-38.0/19.0	38	19	2.4	PMX	Black (BK) ■	VG 95343 T05 E 008 A	15	330-03810
VITON®-E-50.8/25.4	50.8	25.4	2.8	PMX	Black (BK) ■	VG 95343 T05 E 009 A	15	330-05080

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

Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
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Recommended Industries



Heatshrink Tubing for High Temperature 2:1

TFE2 (Transparent)

- Shrink ratio 2:1
- 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
- Non-burning
- Very high temperature resistance
- Extra thin wall translucent tubing
- High abrasion resistance and good resistance against aggressive chemicals



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

RoHS ✓



Heat Shrinkable Tubing 2:1

Type	Supplied IØ(D) min.	Recovery IØ(d) max.	Wire Size (AWG)	Wall (WT)	Material (p4)	Colour	Length (m)	Article-No.
TFE2-30	0.86	0.38	30	0.23	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00079
TFE2-28	0.96	0.46	28	0.23	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00099
TFE2-26	1.17	0.56	26	0.23	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00109
TFE2-24	1.27	0.69	24	0.25	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00139
TFE2-22	1.39	0.82	22	0.25	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00149
TFE2-20	1.52	0.99	20	0.30	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00159
TFE2-18	1.93	1.25	18	0.30	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00199
TFE2-16	2.36	1.55	16	0.30	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00249
TFE2-14	3.05	1.83	14	0.30	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00319
TFE2-12	3.81	2.26	12	0.30	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00399
TFE2-10	4.85	2.85	10	0.30	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00489
TFE2-8	6.10	3.58	8	0.38	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00619
TFE2-6	7.67	4.52	6	0.38	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00779
TFE2-4	9.40	5.69	4	0.38	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-00949
TFE2-2	10.92	7.06	2	0.38	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-01109
TFE2-0	11.94	8.81	0	0.38	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	336-01209

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

Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
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Recommended Industries

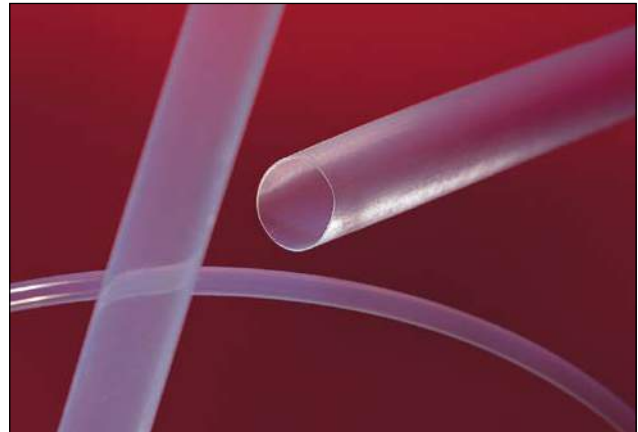


NSA

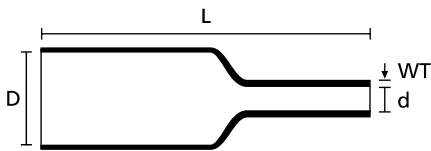
Heatshrink Tubing for High Temperature 4:1

TFE4 (Transparent)

- Shrink ratio 4:1
- Used for bundling and cables
- Protection where visual inspection is required
- Used as a see through protective sleeve over cable markers



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



Heat Shrinkable Tubing 4:1

RoHS ✓

Type	Supplied IØ(D) min.	Recovery IØ(d) max.	Size (Inches)	Wall (WT)	Material (p4)	Colour	Length (m)	Article-No.
TFE4-5/64	1.98	0.64	5/64"	0.22	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	339-00209
TFE4-1/8	3.17	0.94	1/8"	0.25	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	339-00329
TFE4-3/16	4.75	1.27	3/16"	0.30	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	339-00340
TFE4-1/4	6.35	1.6	1/4"	0.30	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	339-00649
TFE4-3/8	9.52	2.44	3/8"	0.30	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	339-00959
TFE4-1/2	12.7	3.66	1/2"	0.38	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	339-01279
TFE4-5/8	15.87	4.52	5/8"	0.38	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	339-01599
TFE4-3/4	19.05	5.69	3/4"	0.38	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	339-01909
TFE4-1	25.4	7.06	1"	0.38	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	339-02549
TFE4-1 1/4	31.75	8.82	1-1/4"	0.38	PTFE	Transparent (CL) <input type="checkbox"/>	1.2	339-03189

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

Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
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Recommended Industries



NSA

Heatshrink Tubing 2:1

TR27 - Flame Retardant (Black)

- 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: Low generation of toxic gases and corrosive acid, low smoke generation
- Thin wall
- Available with adhesive or thick wall version (SR27) on request



TR27 is ideal for safety sensitive areas

HF ✓ RoHS ✓ LFH ✓



Heat Shrinkable Tubing 2:1

Type	Supplied IØ(D) min.	Recov. IØ(d) max.	Size (Inches)	Wall (WT)	Material (p4)	Colour	Length (m)	Article-No.
TR27-3.2/1.6	3.2	1.6	1/8"	0.51	PO-X	Black (BK) ■	150	315-50320
TR27-4.8/2.4	4.8	2.4	3/16"	0.51	PO-X	Black (BK) ■	60	315-50480
TR27-6.4/3.2	6.4	3.2	1/4"	0.64	PO-X	Black (BK) ■	60	315-50640
TR27-9.5/4.8	9.5	4.8	3/8"	0.64	PO-X	Black (BK) ■	60	315-50950
TR27-12.7/6.4	12.7	6.4	1/2"	0.64	PO-X	Black (BK) ■	60	315-51270
TR27-19.1/9.5	19.1	9.5	3/4"	0.76	PO-X	Black (BK) ■	60	315-51900
TR27-25.4/12.7	25.4	12.7	1"	0.51	PO-X	Black (BK) ■	60	315-52540
TR27-38.1/19.1	38.1	19.1	1-1/2"	1.02	PO-X	Black (BK) ■	60	315-53810
TR27-50.8/25.4	50.8	25.4	2"	1.14	PO-X	Black (BK) ■	60	315-55100

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

Recommended Tools

Type			
	HG2120E	HL1920E	HL1821S
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Recommended Industries



EN 45545-2 DEF STAN

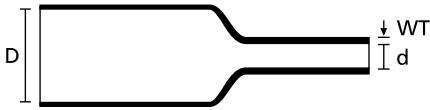
Heatshrink Tubing Adhesive Lined 4:1

SA47, SA47-LA, SA47-HT (Black and Clear)

- Shrink ratio 4:1
- Operating temperature -40°C to +125°C
- Min. shrink temperature +110°C
- Melting point starting from +110°C
- Longitudinal change after shrinkage -10% max.
- Dielectric strength >20 kV/mm
- Flexible, standard wall polyolefin heat shrink tubing
- Excellent tensile strength and strain relief
- Provides excellent moisture protection
- Tubing is clear and hot melt adhesive black
- Provides an environmental sealing of complex parts
- Cut lengths available on request, MOQ required



Heatshrink tubing SA47 for splice application



Heat Shrinkable Tubing 4:1

HF ✓ RoHS ✓

i Developed with our Automotive partners to eliminate risk of corrosion around cable splices and terminations

SA47: Standard Wall (Black)

Type	Supplied IØ(D) min.	Recovery IØ(d) max.	Wall (WT)	Material	Colour	Length (m)	Article-No.
SA47 5,75/1,25	5.75	1.25	1.15	PO-X	Clear (CL) <input type="checkbox"/>	1.2m	301-10000
SA47 7,5/1,65	7.5	1.65	1.40	PO-X	Clear (CL) <input type="checkbox"/>	1.2m	301-10001
SA47 11,0/2,4	11.0	2.4	1.80	PO-X	Clear (CL) <input type="checkbox"/>	1.2m	301-10002
SA47 18,3/4,35	18.3	4.35	2.20	PO-X	Clear (CL) <input type="checkbox"/>	1.2m	301-10003
SA47 24/6	24.0	6.0	2.54	PO-X	Clear (CL) <input type="checkbox"/>	1.2m	301-10005
SA47 32/8	32.0	8.0	2.54	PO-X	Clear (CL) <input type="checkbox"/>	1.2m	301-10004

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

SA47-LA: Standard Wall (Black)

- Specially designed with less adhesive for cable connections



Type	Supplied IØ(D) min.	Recovery IØ(d) max.	Wall (WT)	Length (m)	Colour	Article-No.
SA47-LA 5,75/1,25	5.75	1.25	1.15	1.2m	Clear (CL) <input type="checkbox"/>	301-10020
SA47-LA 7,5/1,65	7.5	1.65	1.40	1.2m	Clear (CL) <input type="checkbox"/>	301-10021
SA47-LA 11,0/2,4	11.0	2.4	1.80	1.2m	Clear (CL) <input type="checkbox"/>	301-10022
SA47-LA 18,3/4,35	18.3	4.35	2.20	1.2m	Clear (CL) <input type="checkbox"/>	301-10023
SA47-LA 24/6	24.0	6.0	2.54	1.2m	Clear (CL) <input type="checkbox"/>	301-10024
SA47-LA 32/8	32.0	8.0	2.54	1.2m	Clear (CL) <input type="checkbox"/>	301-10025
SA47-LA 52/13	52.0	13.0	3.00	1.2m	Clear (CL) <input type="checkbox"/>	301-10026

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

Recommended Industries



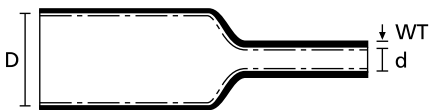
SA47-HT – Standard Wall (Black)

- Operating temperature -40°C to +150°C
- Min. shrink temperature +130°C
- Melting point starting from +120°C
- High temperature applications up to 150°C
- Flame retardant
- Flexible, standard wall polyolefin heat shrink tubing
- Excellent tensile strength and strain relief
- Provides excellent moisture protection
- Tubing is clear and hot melt adhesive black
- Provides an environmental sealing of complex parts
- Cut lengths available on request, MOQ required



Provides optimum protection against moisture in high temperature applications

RoHS ✓



Heat Shrinkable Tubing 4:1 with adhesive

Type	Supplied IØ(D) min.	Recovery IØ(d) max.	Wall (WT)	Material	Colour	Length (m)	Article-No.
SA47-HT 7,6/1,7	7.6	1.7	1.52	PO-X	Black (BK) ■	1.2m	301-10010
SA47-HT 9,0/2,3	9.0	2.3	1.52	PO-X	Black (BK) ■	1.2m	301-10011
SA47-HT 11,6/2,5	11.6	2.5	2.29	PO-X	Black (BK) ■	1.2m	301-10012
SA47-HT 17,8/4,4	17.8	4.4	2.54	PO-X	Black (BK) ■	1.2m	301-10013
SA47-HT 24/6	24.0	6.0	2.54	PO-X	Black (BK) ■	1.2m	301-10015
SA47-HT 32/8	32.0	8.0	2.54	PO-X	Black (BK) ■	1.2m	301-10014

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

Recommended Industries



Straight-Through and Branch Gel Cable Joints with Connectors

RELICON Relilight, PA66V0 and SI (Black)

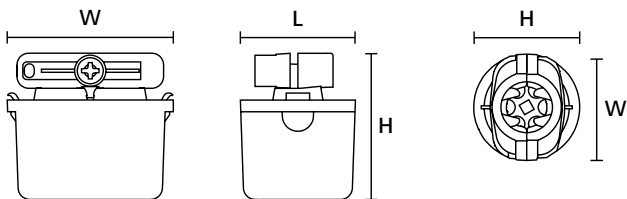
- Operating temperature -30°C to +130°C
- Voltage 250V
- Depends on connector type, used either for straight-through or branch joints
- Designed for low-voltage electrical networks such as light installations, including LED
- Flame retardant shell moulds (UL94 V0)
- Suitable for jointing polymeric cables and wires (e.g. PVC, XLPE, PE, EPR)
- Silicone based gel provides excellent insulation properties
- UV and weather resistant
- Resistant to ageing
- Unlimited storage life
- Simple and effortless to install and can be reopened after use
- Uses include indoor and outdoor lightning, underground, submerged and in wiring ducts
- Certification EN 60998-2-1: 2004



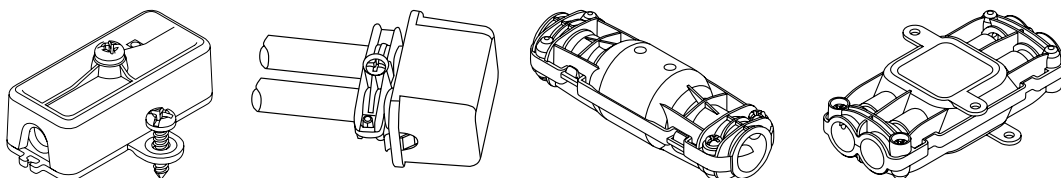
RoHS

IP68 (1.3m)

i With connector!



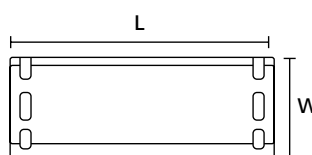
Type	Ø Main Cable	Main Cable (mm ²)		Branch Cable (mm ²)		Voltage (V)	Length (L)	Width (W)	Height (H)	Article-No.
		Min	Max	Min	Max					
Relilight V2.7511	4.8-6	2x0.35	2x0.75			250	44	18	17.5	435-01650
Relilight V31.5U1	8.0-10	3x0.5	3x1.5			250	38	42.5	29.5	435-01653
Relilight V32.5I2	6.5-12	3x0.5	3x2.5			250	100	24	29	435-01651
Relilight V32.5P1	6.5-12	3x0.5	3x2.5	3x0.5	3x2.5	250	105	44	24	435-01655
Relilight V34P2	7.5-16	3x1.5	3x4	3x1.5	3x4	450	138	78	35	435-01657
Relilight V36P2	7.5-16	3x1.5	3x6	3x1.5	3x6	450	138	78	35	435-01658
Relilight V41.5P1	6.5-12	4x0.5	4x1.5	4x0.5	4x1.5	250	105	44	24	435-01656
Relilight V41U1	8.0=10	6x0.35	6x0.5			250	38	42.5	29.5	435-01654
Relilight V61.5I2	6.5-12	6x0.5	6x1.5			250	100	24	29	435-01652



Straight-Through Gel Cable Joints with Connectors

RELICON Relifix V, PI and SI (Green)

- Operating temperature -20°C to +90°C
- Shell: one piece, coloured, re-openable, impact-proof, flame retardant
- Filled with Relicon non-toxic gel, high dielectric strength
- No mixing, easy to install
- UV, ageing and weather resistant
- Unlimited shelf-life
- With connector, ready for assemble
- Tested according to EN 50393 (corresponds to DIN VDE 0278-393)
- IPX8 tested
- Suitable for jointing polymeric cables and wires (e.g. PVC, XLPE, PE, EPR)
- Uses include indoor and outdoor lightning, underground, submerged and in wiring ducts
- Silicone based gel provides excellent insulation properties



Type	Ø Main Cable	Main Cable (mm ²)		Branch Cable (mm ²)		Length (L)	Width (W)	Height (H)	Article-No.
		Min	Max	Min	Max				
Relifix V31.5	9-16	3x0.5	3x2.5			86	47	27	435-00650
Relifix V56	9-20	3x1.5	5x6			146	55	35	435-00654
Relifix V150	9-16	1x10	1x50	1x2.5	1x6	86	47	27	435-00651
Relifix V516	9-22	3x6	5x16			180	69	40	435-00655
Relifix V525	9-30	3x16	5x25			240	75	48	435-00656

Straight-Through Gel Cable Joints with Connectors

RELICON Reliseal V, PP and SI (Green)

- Operating temperature -20°C to +90°C
- Moulding shell: one piece, re-openable, impact-proof, flame retardant
- Perfect strain relief provided by patented cable gland system
- Filled with RELICON non-toxic gel, high dielectric strength
- No mixing, easy to install
- UV, ageing and weather resistant
- Unlimited shelf-life
- With connector, ready to assemble
- Tested according to EN 50393 and EN 60529
- Suitable for jointing polymeric cables and wires (e.g. PVC, XLPE, PE, EPR)
- Uses include indoor and outdoor lightning, underground, submerged and in wiring ducts



RoHS ✓

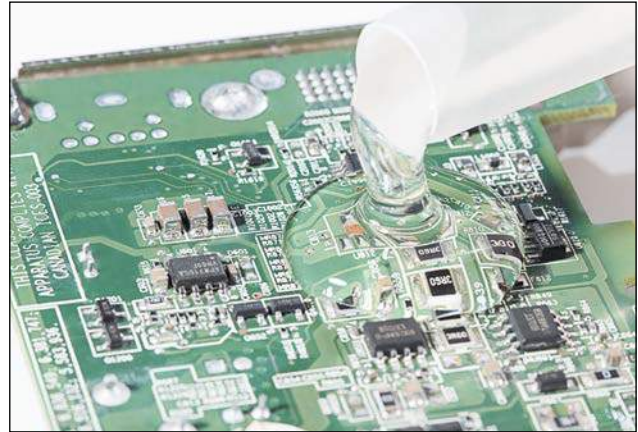
IP88 (10m)

Type	Ø Main Cable	Main Cable (mm ²)		Length (L)	Width (W)	Height (H)	Article-No.
		Min	Max				
Reliseal V56	12-18	3x2.5	5x6	190	60	47	435-01660
Reliseal V510	14-21	3x4	5x10	235	69	49	435-01661
Reliseal V525	20-30	3x10	5x25	310	88	60	435-01662

RELICON Two-Component Gel

RELICON Religel

- Operating temperature -60°C to +200°C
- Dielectric Strength (kV/mm): >25
- Viscosity: 1000 mPa*s, 23 °C (EN ISO 2555)
- Density: 0.97 g/cm³, 20 °C (DIN EN ISO 2811-2)
- Unlimited shelf-life
- Multiple use possible, mixing ratio 1:1
- Excellent flow and insulating properties
- Excellent moisture and chemical resistance
- Soft elastic, vibration absorbing and removable residue-free



RELICON Religel Clear, SI (Transparent)

HF ✓ RoHS ✓

- Soft elastic two-component silicone gel
- Optimal visual control through transparent material
- Crystal clear gel after curing, excellent insulating properties, suitable for LED applications, circuit boards and electrical connectors (below ground or submerged)

Type	Material	Colour	Size (ml)	Article-No
Religel Clear 500	SI	Clear (CL)	500	435-00757
Religel Clear 1.000	SI	Clear (CL)	1000	435-00754

RELICON Religel Plus, SI (Transparent and Green)

HF ✓ RoHS ✓

- Timesaving due to fast curing time
- Stable up to 200 °C
- Visual control of the homogenous mixture indicated by green-coloured component B

Type	Material	Colour	Size (ml)	Article-No
Religel Plus 500	SI	Clear (CL), Green (GR)	500	435-00756
Religel Plus 1.000	SI	Clear (CL), Green (GR)	1000	435-00752
Religel Plus 10.000	SI	Clear (CL), Green (GR)	10 000	435-00753



HG2120E - Professional Steinel Heat Gun

- Thermal cutout
- Temperature indication by thumb wheel in 9 steps

Technical Overview

Output	2200W
Operation hours	750
Temperature (°C)	80 – 630
Airflow rate (3 steps)	150-500l/min
Heating element	Ceramic
Protection class (without earth terminal)	II
Weight (g)	670

Model Specification



Optional Accessories	NOZREF Reflector Nozzle, NOZSUR50 50mm Surface Nozzle, NOZRED9 9mm Reduction Nozzle, NOZRED14 Nozzle Reducer 14mm, NOZREF10 Nozzle Solder Reflector 10mm, NOZSUR75 Nozzle Shaping Surface 75mm, NOZWIDE14 Nozzle Welding Wide-Slit 14mm
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HL1920E – Steinel Heat Gun

- 9 step thumb wheel temperature adjustment
- Thermal fuse

Technical Overview

Output	2000W
Operation hours	600
Temperature (°C)	80 – 600
Airflow rate (3 steps)	150-500l/min
Heating element	Ceramic
Protection class (without earth terminal)	II
Weight (g)	840



Model Specification

Optional Accessories	NOZREF Reflector Nozzle, NOZSUR50 50mm Surface Nozzle, NOZRED9 9mm Reduction Nozzle, NOZSUR75 Nozzle Shaping Surface 75mm
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HL1821S - DIY Steinel Heat Gun

- Thermal fuse
- Two step heating setting

Technical Overview

Output	1800W
Operation hours	600
Temperature (°C)	300 or 550
Airflow rate	350 or 450l/min
Heating element	Micanite
Protection class (without earth terminal)	II
Weight (g)	717



Model Specification

Optional Accessories	NOZREF Reflector Nozzle, NOZSUR50 50mm Surface Nozzle, NOZRED9 9mm Reduction Nozzle
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2.3 Heat Shrinkable Moulded Shapes

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Materials for Heat Shrinkable Moulded Shapes

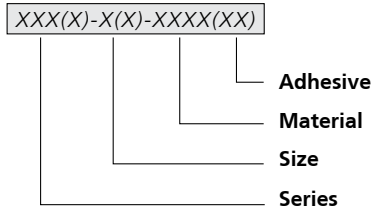
Material Specifications						
	-9	H	G	B7	B8	L
Material	Modified elastomer blend	Flexible limited fire hazard material	Fluid resistant elastomer	Semi-rigid flame retarded polyolefin	Semi-rigid flame retarded polyolefin	Flexible flame retarded fluoroelastomer
Operating Temperature	-55°C to +120°C	-55°C to +105°C	-75°C to +150°C	-55°C to +135°C	-55°C to +100°C	-55°C to +200°C
Min. Shrink Temperature	+135°C	+135°C	+135°C	+135°C	+135°C	+175°C
Specifications	SCX15112	DEF STAN 59-97, BSG198 Part 5, VG 95343 NAVSEA 5617649	DEF STAN 59-97, BSG198 Part 5, VG 95343 Part 6, 18	MIL-I-81765/1 Type 1, DEF STAN 59-97, BSG198 Part 5	EA-TS 09-11	DEF STAN 59-97, BSG198 Part 5, MIL-81765/4
Tensile Strength	12 MPa	10 MPa	15 MPa	13 MPa	15 MPa	12 MPa
Elongation at break	500%	450%	580%	500%	500%	300%
Dielectric Strength	24,5 kV/mm	15 kV/mm	14 kV/mm	14 kV/mm	15 kV/mm	8 kV/mm
Flammability for Material	excellent	excellent	excellent	excellent	good	excellent
Features and benefits	Good physical and reasonable chemical resistance	Low smoke Halogen free	Excellent resistance to fuels	Good physical and chemical resistance	Good physical and reasonable chemical resistance	High temperature excellent chemical resistance
Typical Application	Military and general high performance harnessing	Ships, submarines & railways	Military and general high performance harnessing	Military and general high performance harnessing	Power/utility shapes	Military and high performance harnessing

Adhesive for Heat Shrinkable Moulded Shapes

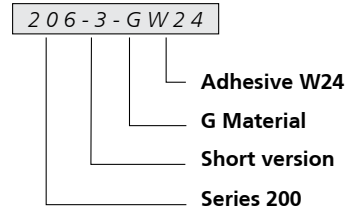
Adhesive Specifications							
	W / W2	W8	W21	W24	WM250	V9500	HMT200A
Adhesive	Hot melt adhesive	Hot melt adhesive	Hot melt adhesive	Hot melt adhesive	Hot melt adhesive	Two part, black, epoxy adhesive	Hot melt adhesive tape
Operating Temperature	-55°C to +80°C	-55°C to +105°C	-55°C to +120°C	-75°C to +200°C	-55°C to +80°C	-75°C to +150°C	-55°C to +105°C
Softening Point Adhesive	+95°C	+110°C	+120°C		+95°C		+110°C
Supplied Form	pre-applied	pre-applied	pre-applied	pre-applied	pre-applied	cardridge	tape
Shelf Life	5 years	5 years	5 years	5 years	5 years	18 months	5 years
Solvent Resistance	Fair under splash conditions	Fair under splash conditions	Saline: Very good De-icing fluid: Good Diesel: Excellent Lubricating Oil: Good Hydraulic Oil: Excellent Aviation Fuel: Good Automotive Fuel: Good	De-icing fluid: Excellent Petrol: Excellent Lubricating Oil: Excellent Hydraulic Oil: Excellent	Fair under splash conditions	De-icing fluid: Excellent, Petrol: Excellent, Lubricating Oil: Excellent, Hydraulic Oil: Excellent	Fair under splash conditions

Order Example

Type:



Example:



Bulbous Boots Product Overview

Bottle Shapes Helashrink 150 Series, with rib, VG	
Bottle Shapes Helashrink 100 Series, without rib	
Bottle Shapes Helashrink 100 Series, with rib, MIL	
Long Outlet Shape Helashrink 130 Series, with rib, low profile, VG	
Bottle Shapes Helashrink 170 Series, with rib, VG	
Bottle Shapes Helashrink 190 Series, with external ribs, VG	
2-Way Outlet Shapes Helashrink 200 Series, low profile	
2-Way Outlet Shapes Helashrink 200 Series, VG	
3-Way Outlet Shapes Helashrink 300 Series, VG	
4-Way Outlet Shapes Helashrink 400 Series, VG	
Right-Angle Shapes Helashrink 1100 Series, with rib, VG	
Right-Angle Shapes Helashrink 1100 Series, without rib	

Bulbous Boots Product Overview

Right-Angle Shapes Helashrink 1100 Series, with rib, MIL	
Right-Angle Shapes Helashrink 1100 Series, with rib, low profile, VG style/MIL style	
Right-Angle Shapes Helashrink 1100 Series, with rib, low profile, high ratio, VG	
T-Shapes Helashrink 1200 Series, VG	
T-Shapes Helashrink 1200 Series, Offset, VG	
Angled T-Shapes Helashrink 1300 Series, 30° & 45° angle, VG	
2-Way Outlet Shapes Helashrink 200 Series, in line, low voltage	
4-Way Outlet Shapes Helashrink 400 Series, in line, low voltage	
5-Way Outlet Shapes Helashrink 500 Series, in line, low voltage	

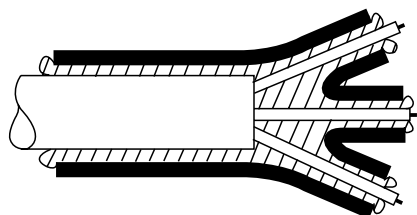
Hot Melt Tape for Heatshrink Tubing and Shapes

HMT200A

- Operating temperature -55°C to +105°C
- Designed for use with heatshrink sleeving and mouldings
- Hot melt tape flows when heated to seal against moisture



Hot melt tape



HMT200A



Adhesive tape HMT200A for sealing against humidity

HF ✓ RoHS ✓

Type	Thickness (T)	Width (W)	Material (p4)	Colour	Length (m)	Article-No.
HMT200A	0.25	25	EVA	Translucent (TT) <input type="checkbox"/>	10	354-02260
	0.25	25	EVA	Translucent (TT) <input type="checkbox"/>	50	354-02259

All dimensions in mm. Subject to technical changes.

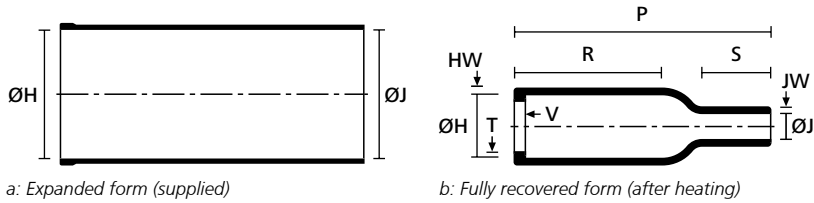
Bottle Shapes, MIL Style

Helashrink 100 Series, with Rib

- With circular grooved adaptor for strain relief
- Combine with complimentary adhesives for environmental sealing
- Suitable for small cable diameters



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	3	1	4.6	401-13480

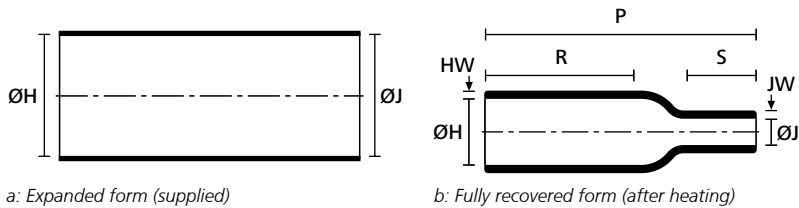
All dimensions in mm. Subject to technical changes.

Helashrink 100 Series, without rib

- Strain relief for connector cable
- Easy re-entry for repair when combined with hot melt adhesive
- For mechanical protection and protection against environment impacts



100 Series supplied / fully recovered



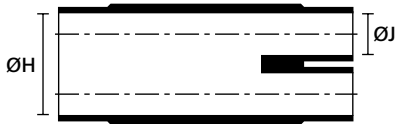
Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10 %	R max.	HW ± 20 %	JW ± 30 %	S nom.	Article-No.
113-1-G	10.7	7.9	4.6	2	25.4	14.5	1.3	1	4.6	401-13180

All dimensions in mm. Subject to technical changes.

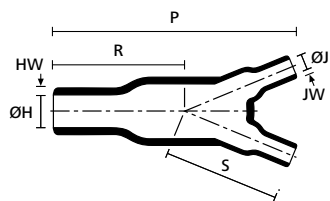
2-Way Outlet Shapes, VG Style

Outlet Shapes

- Mechanical tension relief in cable harnesses



a: Expanded form (supplied)



b: Fully recovered form (after heating)



203-1 Supplied / fully recovered

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	6	7	3	41	19	1.5	1	19	VG 95343 T08 C 001 A	402-06180
212-1-G	14.5	8	8.5	5.5	136	83	2.3	2	63	VG 95343 T08 C 005 A	402-12180
213-1-G	17.3	7.9	11.1	7.9	140	83.1	2.3	1	64	-	402-13180
203-1-G	27	12	13	6	80	38	2.5	1.5	43	VG 95343 T08 C 002 A	402-03180
204-1-G	39	18	27	12	66	81	3.1	2.5	81	VG 95343 T08 C 003 A	402-04180

All dimensions in mm. Subject to technical changes.

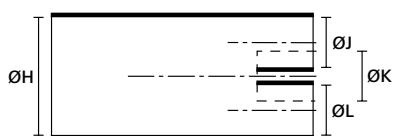
3-Way Outlet Shapes, VG Style

Helashrink 300 Series

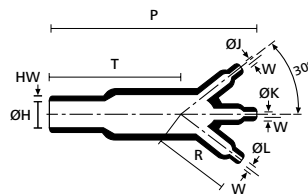
- Cable strain relief and mechanical protection at harness transition points
- All outlets clearly marked to aid orientation during installation



304-1-G Supplied / fully recovered



a: Expanded form (supplied)



b: Fully recovered form (after heating)

Type	ØH min. a	ØH max. b	ØJ/K/L min. a	ØJ/K/L max. b	P ± 10 %	R ± 10 %	HW ± 30 %	W ± 20 %	T ± 10 %	Designation as per VG-Norm	Article-No.
306-1-G	13	6.5	6.5	3.5	46	25.4	1.3	1	20.3	VG 95343 T08 D 001 A	403-06180
304-1-G	27	13.5	13	7	93	50.3	2.5	1.5	42.9	VG 95343 T08 D 002 A	403-04180
310-1-G	38.5	19	19	10	135	73.7	3	1.8	61	VG 95343 T08 D 003 A	403-10180
311-1-G	55.5	25.5	27	12.5	192	103.1	4.6	3.1	88.9	VG 95343 T08 D 004 A	403-11180

All dimensions in mm. Subject to technical changes.



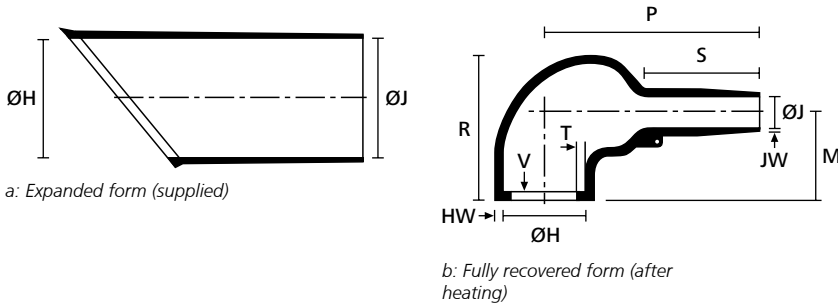
Right-Angle Shapes, VG Style

Helashrink 1100 Series, with Rib

- Used in conjunction with a circular grooved adaptor
- Provides strain relief and an environmental seal



1152-4-G Recovered onto a connector



Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10 %	R ± 10 %	HW ± 20 %	JW ± 20 %	V max.	T ± 20 %	M nom.	S nom.	Designation as per VG-Norm	Article-No.
1152-4-G	24	10.5	24	6	32	25	1.3	0.5	3.3	1	19	10	VG 95343 T06 E 001 A	411-52480
1154-4-G	30	14.5	30	6	41	27	1.5	0.8	3.3	1	19	12	VG 95343 T06 E 002 A	411-54480
1155-4-G	31	18	31	7	51	31	1.8	1	3.3	1	21	15	VG 95343 T06 E 003 A	411-55480
1156-4-G	36	22.5	36	8.5	59	38	1.8	1	3.3	1	26	15	VG 95343 T06 E 004 A	411-56480
1157-4-G	43	28.5	43	10	71	45	2	1	3.3	1.7	30	16	VG 95343 T06 E 005 A	411-57480
1158-4-G	60	35	60	16	80	54	3.3	1.5	3.3	1.7	35	30	VG 95343 T06 E 006 A	411-58480
1159-4-G	66	45	66	17	108	68	3.8	2	3.3	2	42	51	VG 95343 T06 E 007 A	411-59480
1160-4-G	82	61	82	25	118	84	4	4	3.3	2	52	39	VG 95343 T06 E 008 A	411-60480

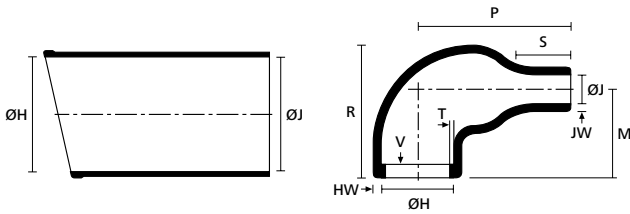
All dimensions in mm. Subject to technical changes.



Right-Angle Shapes, MIL Style

Helashrink 1100 Series, with Rib

- Used in conjunction with a circular grooved adaptor for strain relief



a: Expanded form (supplied)

b: Fully recovered form (after heating)



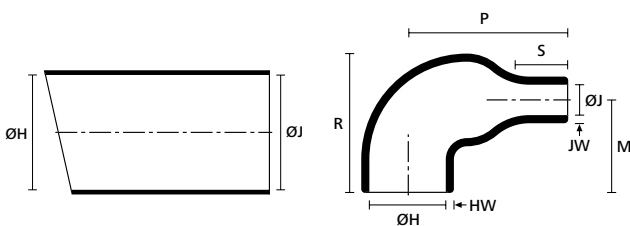
1108-4 Supplied / fully recovered

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	1.6	3.3	1	15.2	5.1	411-08480

All dimensions in mm. Subject to technical changes.

Helashrink 1100 Series, without Rib

- 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)



1108-1 Supplied / fully recovered

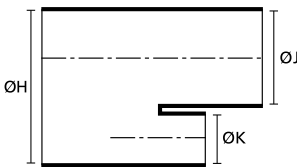
Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10 %	R ± 10 %	HW ± 20 %	JW ± 30 %	M nom.	S nom.	Article-No.
1108-1-G	16.5	7.9	16.5	2.5	18.3	20.1	1	1.6	15.2	5.1	411-08180

All dimensions in mm. Subject to technical changes.

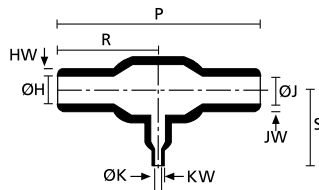
T-Shapes, VG Style/MIL Style

Helashrink 1200 Series

- Strain relief, sealing and mechanical protection on cable harnesses



a: Expanded form (supplied)



b: Fully recovered form (after heating)



1202-1-G Recovered onto a cable harness

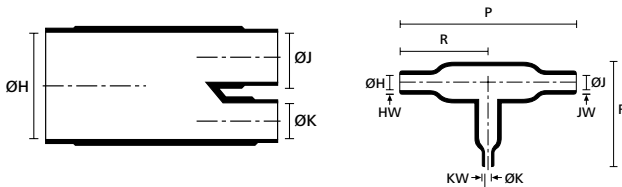
Type	ØH/J min. a	ØH/J max. b	ØK min. a	ØK max. b	P ± 10 %	R ± 10 %	HW ± 20 %	JW ± 30 %	KW ± 20 %	S ± 10 %	Designation as per VG-Norm	Article-No.
1206-1-G	6.6	3	6.6	3	29.7	14.7	1	1	1	14.7	VG 95343 T08 A 009 A	412-06180
1203-1-G	13	6	6.5	3	52	26	1.5	1.5	1	19.3	VG 95343 T08 A 001 A	412-03180
1202-1-G	13.2	6.1	13.2	6.1	58.7	29.2	1.5	1.5	1.5	29.2	VG 95343 T08 A 010 A	412-02180
1205-1-G	17.7	8.9	7.6	3.8	50.8	25.4	1.5	1.5	1	25.4	-	412-05180
1201-1-G	17.7	8.9	10.1	5	47.5	23.6	1.5	1.5	1	23.6	VG 95343 T08 A 007 A	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	VG 95343 T08 A 011 A	412-07180
1209-1-G	27	12.4	13.2	6	108	54	2.5	2.5	1.5	38.6	VG 95343 T08 A 002 A	412-09180

All dimensions in mm. Subject to technical changes.

T-Shapes, VG Style

Helashrink 1200 Series, Offset

- 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

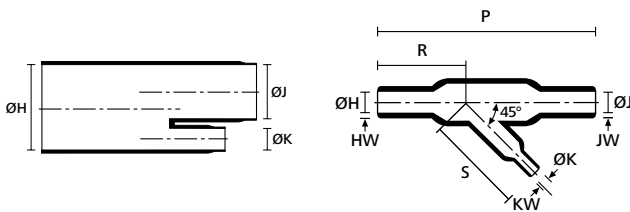
Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	ØK min. a	ØK max. b	P ± 10 %	R ± 10 %	HW ± 20 %	JW ± 20 %	KW ± 20 %	F ± 15 %	Designation as per VG-Norm	Article-No.
1204-1-G	13	7.5	6.5	4	6.5	4	56	33	1.5	1	1	27	VG 95343 T08 A 016 A	412-04180
1216-1-G	33	13	16.5	6.5	16.5	6.5	97	54	2.5	1.5	1.5	-	VG 95343 T08 A 017 A	412-16180

All dimensions in mm. Subject to technical changes.



Helashrink 1300 Series, 30° and 45° Angle

- Strain relief, sealing and mechanical protection on cable harnesses
- Branching part 30° & 45° Y-joint
- Mechanical strain relief for 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	6	6.5	3	6.5	3	45	23	1.5	1	1.5	21.5	4°	VG 95343 T06 B 010 A	413-06180
1301-1-G	13	7	13	7	7	3.5	50	23	1.5	1.5	1	23	45°	VG 95343 T08 B 001 A	413-01180
1302-1-G	27	13	27	13	7	3.5	93	41	2.5	2.5	1	36	45°	VG 95343 T08 B 004 A	413-02180
1303-1-G	27	14	27	14	13	7.5	145	70	1.5	1.5	1.5	54	45°	VG 95343 T08 B 002 A	413-03180
1311-1-G	30.4	15	30.4	15	20.3	10	82.6	32	2.5	2.5	1.8	51	30°	VG 95343 T08 B 003 A	413-11180

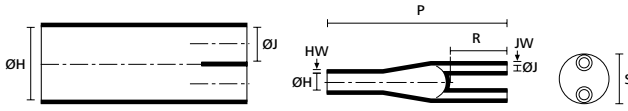
All dimensions in mm. Subject to technical changes.



2-Way Outlet Shapes, Breakout Boots

Helashrink 200 Series, In-line, Low Voltage

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



a: Expanded form (supplied)

b: Fully recovered form (after heating)



223-2 Supplied / fully recovered

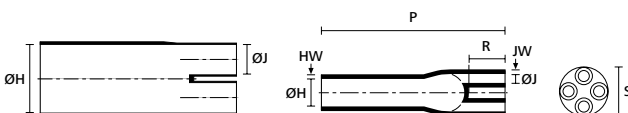
Type	ØH min. a	ØH max. b	ØJ min. a	ØJ max. b	P ± 10 %	R ± 10 %	HW ± 20 %	JW ± 20 %	S nom.	Article-No.
216-3-B8W	21	9.4	9	2.8	76.5	20	1.6	1.6	14	402-16039
223-2-B8W	33	9.4	17.5	4.1	94	30	1.5	1.2	20	402-23058
218-2-B8W	49	22.9	20	7.6	119	34	3.2	3.2	30	402-18051

All dimensions in mm. Subject to technical changes.

4-Way Outlet Shapes, Breakout Boots

Helashrink 400 Series, In-line, Low Voltage

- Easy, time-saving insulation of cable branch point where it splits into single wires
- Made of tough, cross-linked, Polyolefin
- Adhesive is applied 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	9	9	1.8	78	17	2.7	2	20	404-42009
408-2-B8W2	35	12	15	3	95	24	2.5	2	22	404-08022
418-4-B8W2	60	22.9	30	6.4	202	38.1	4.1	3.3	38.1	404-18020

All dimensions in mm. Subject to technical changes.

Two-Component Adhesive for Heatshrink Tubing and Shapes

V9500

- Operating temperature -75°C to +150°C
- Curing temperature +135°C
- Curing time 24 hours at +25°C, 2 hours at +85°C
- Colour (Epoxy) Black (BK)
- High performance, two-part epoxy adhesive
- Very resistant to most solvents and fuels, even at elevated temperatures
- High performance bonding
- Meets military requirements for heat shrinkable components for harnesses



Two-component epoxy adhesive V9500



Applicator gun guarantees the clean and precise coating of special fittings

RoHS ✓

Type	Description	Designation as per VG-Norm	Article-No.
V9500 Epoxy Kit	5 x 10g sachets (50g), 5 x mixing pots, 5 x mixing sticks, 5 x emery papers	VG 95343 T15 A 001 A	627-95000
	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.

Recommended Industries



End Caps

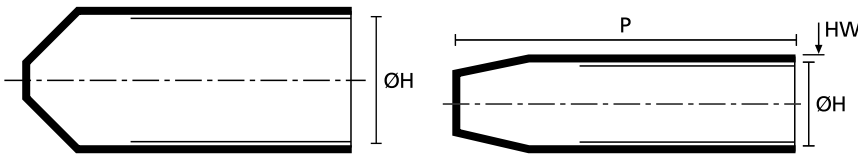
Helashrink 1600 Series, Low Voltage

- Operating temperature -55°C to +80°C
- Shrink ratio 3:1
- Min. shrink temperature +135°C
- Dielectric strength 15 kV/mm
- Flammability ASTM D635
- Seal cables during storage or transportation
- Insulating cap for live LV cables (0.6/1kV)
- Adhesive lining for excellent environmental seal
- High shrink ratio to minimise number of sizes needed
- Can be fitted with air valves for pressurised cable applications
- High shrink ratio to minimise number of sizes needed



Appropriate end caps for every cable diameter and cable type

RoHS ✓



a: Expanded form (supplied)

b: Fully recovered form (after heating)

TYPE	Bundle Ø min.	Bundle Ø max.	ØH min. a	ØH max. b	P ± 10 %	Material (p4)	Article-No.
1612-1-B5W2	4	8	12	4	40	PO-X	416-12046
1613-1-B5W2	6.5	16	20	6	55	PO-X	416-13060
1602-1-B5W2	10	20	25	8.5	65	PO-X	416-02008
1614-1-B5W2	16	32	40	15	75	PO-X	416-14047
1615-1-B5W2	26	51	62	23	132	PO-X	416-15035
1617-1-B5W2	32	61	75	32	140	PO-X	416-17033
1616-1-B5W2	48	80	105	45	135	PO-X	416-16053
1609-1-B5W2	65	110	120	60	150	PO-X	416-09000
1610-1-B5W2	90	135	160	82	135	PO-X	416-10000

All dimensions in mm. Subject to technical changes.

Recommended Industries



ASTM

Heatshrink Moulded Shape Profiles Available on Request

Low Profile Boots Product

Overview

Convolute Boots

Helashrink 313C Series,
with adapter lip



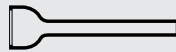
Shim Boots

Helashrink 313E Series,
without adapter lip



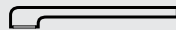
Straight Boots

Helashrink 313F Series,
with adapter lip



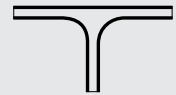
Right Angle Boots

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



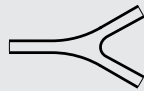
Transition Boots

Helashrink 412H Series,
side breakout



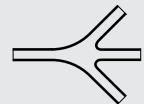
Transition Boots

Helashrink 492H Series,
1 to 2 cables



Transition Boots

Helashrink 573H Series,
1 to 3 cables



All dimensions in mm. Subject to technical changes.