



**Inspired by Paul Hellermann**

Heat-shrinkable tubes have always made it easy to repair cables and pipes. Strictly speaking, however, Paul Hellermann used rubber bike valves to bring the insulation of damaged household cables to a mass market from 1935. The idea is the only thing that our modern heat-shrinkable tubes have in common with these simple chloroprene sleeves. Take the SA47 (see page 252), which was specially developed in line with customer specifications and offers outstanding protection against moisture and corrosion, thus enabling vehicles to retain their functionality.

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## 2.1 Heat Shrinkable Tubing

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### Standard wall with adhesive liner

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|------------------------|-----|

### Medium wall with adhesive liner

|                                     |     |
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## 2.2 Heat Shrinkable Moulded Shapes

|                                          |                                                     |     |
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## 2.3 Non 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<sup>®</sup>-E, TK20, TK29, TFE-2, TR27, TCN20, SE28

| Shrink ratio 2:1<br>Size mm |           | Cable/Wire Diameter |
|-----------------------------|-----------|---------------------|
| 1.2/0.6                     |           | 0.7 mm              |
|                             |           | 1.1 mm              |
|                             |           | 1.4 mm              |
| 3.2/1.6                     | 2.4/1.2   | 1.9 mm              |
|                             |           | 2.2 mm              |
|                             |           | 2.9 mm              |
| 6.4/3.2                     | 4.8/2.4   | 3.8 mm              |
|                             |           | 4.3 mm              |
|                             |           | 5.7 mm              |
| 12.7/6.4                    | 9.5/4.7   | 5.8 mm              |
|                             |           | 7.7 mm              |
|                             |           | 8.6 mm              |
| 25.4/12.7                   | 19.1/9.5  | 11.4 mm             |
|                             |           | 15.2 mm             |
|                             |           | 17.2 mm             |
| 50.8/25.4                   | 38.1/19.1 | 22.9 mm             |
|                             |           | 30.5 mm             |
|                             |           | 34.3 mm             |
| 101.6/50.8                  | 76.2/38.1 | 45.7 mm             |
|                             |           | 61.0 mm             |
|                             |           | 68.6 mm             |
|                             |           | 91.4 mm             |

### Heat Shrinkable Tubing with a shrink ratio of 3:1

With the optimal shrink 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 3:1<br>Size mm |      | Cable/Wire Diameter |
|-----------------------------|------|---------------------|
| 1,5/0,5                     |      | 0.7 mm              |
|                             |      | 1.3 mm              |
|                             |      | 1.4 mm              |
| 6/2                         | 3/1  | 2.6 mm              |
|                             |      | 2.8 mm              |
|                             |      | 5.2 mm              |
| 18/6                        | 12/4 | 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 |

VITON<sup>®</sup> is a registered trademark of DuPont.

## The Right Heat Shrink Tube

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

### For example:

A cable with a diameter of 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 %)



Shrinkage of 4 mm

##### Optimum shrinkage max. (80 %)



Shrinkage of 3.2 mm

##### Optimum shrinkage min. (20 %)



Shrinkage of 0.8 mm

#### Size 12/4

##### Maximum shrink (100 %)



Shrinkage of 8 mm

##### Optimum shrinkage max. (80 %)



Shrinkage of 6.4 mm

##### Optimum shrinkage min. (20 %)



Shrinkage of 1.6 mm

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

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

### Calculator tool for Heat Shrink Tubing

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

Find more information under [www.HellermannTyton.com/heatshrink-calculator](http://www.HellermannTyton.com/heatshrink-calculator)!

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 [www.HellermannTyton.com](http://www.HellermannTyton.com) website.

## Heat Shrinkable Tubing Overview

| TYPE                         | Packaging Type                                                                      | VARIANT                       | Material | Shrink Ratio | Operating Temperature | Dimension (mm) | Halogen-free | Colour                                                   | Specifications                       | Page |
|------------------------------|-------------------------------------------------------------------------------------|-------------------------------|----------|--------------|-----------------------|----------------|--------------|----------------------------------------------------------|--------------------------------------|------|
| ShrinKit 321 Basic           |    | Thin-Wall                     | PO-X     | 3:1          | -55 °C to +135 °C     |                |              | Black                                                    | 12                                   | 205  |
| ShrinKit 321 Universal Basic |    |                               | PO-X     | 3:1          | -55 °C to +135 °C     |                |              | Black, Blue, Green-Yellow, Red, White                    | 12                                   | 206  |
| ShrinKit 321 Universal       |    |                               | PO-X     | 3:1          | -55 °C to +135 °C     |                |              | Black, Blue, Green-Yellow, Red, Transparent              | 12                                   | 207  |
| ShrinKit 321-A Basic         |    | Thin-Wall Hot melt adhesive   | PO-X     | 3:1          | -55 °C to +110 °C     |                |              | Black, Transparent                                       | 12                                   | 208  |
| ShrinKit 321-A               |    |                               | PO-X     | 3:1          | -55 °C to +110 °C     |                |              | Black, Transparent                                       | 12                                   | 209  |
| HIS-PACK                     |    | Thin-Wall                     | PO-X     | 2:1          | -55 °C to +125 °C     | 1.2 - 25.4     |              | Black, Blue, Green-Yellow, Red, Transparent              | 2, 12                                | 210  |
| HIS-3                        |   |                               | PO-X     | 3:1          | -55 °C to +135 °C     | 1.5 - 24.0     |              | Black, Blue, Green-Yellow, Red, Transparent              | 2, 3, 11, 12                         | 212  |
| HIS-A                        |  | Thin-Wall Hot melt adhesive   | PO-X     | 3:1          | -55 °C to +125 °C     | 3.0 - 24.0     |              | Black, Transparent                                       | 2, 3, 12                             | 214  |
| HIS-3 BAG                    |  | Thin-Wall                     | PO-X     | 3:1          | -55 °C to +135 °C     | 1.5 - 12.0     |              | Black, Blue, Brown, Green-Yellow, Grey, Red, Transparent | 2, 12                                | 215  |
| TREDUX                       |  |                               | PO-X     | 2:1, 3:1     | -55 °C to +135 °C     | 1.5 - 101.6    |              | Black, Green-Yellow                                      | 2, 3, 11, 12                         | 218  |
| TREDUX MA47                  |  | Medium-Wall Hot melt adhesive | PO-X     | up to 4:1    | -55 °C to +110 °C     | 12.0 - 95.0    | HF ✓         | Black                                                    |                                      | 219  |
| TREDUX HA47                  |  | Thick-Wall Hot melt adhesive  | PO-X     | up to 4:1    | -55 °C to +110 °C     | 19.0 - 85.0    | HF ✓         | Black                                                    |                                      | 220  |
| LVR                          |  | Thin-Wall                     | PVC      | 2:1          | -30 °C to +105 °C     | 2.4 - 25.4     |              | Black                                                    | 11                                   | 221  |
| TL27                         |  |                               | PO-X     | 2:1          | -55 °C to +135 °C     | 1.2 - 50.8     | HF ✓         | Black                                                    |                                      | 222  |
| TCN20                        |  |                               | PO-X     | 2:1          | -55 °C to +125 °C     | 1.2 - 50.8     |              | Black                                                    | 2, 3                                 | 223  |
| TCN20 overexpanded           |  |                               | PO-X     | 3:1          | -55 °C to +125 °C     | 2.4 - 38.0     |              | Black                                                    | 2, 3                                 | 224  |
| HFT-A                        |  |                               | PO-X     | 2:1          | -55 °C to +135 °C     | 1.2 - 101.6    |              | Black, Blue, Green-Yellow, Red, White, Yellow            | 1, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14 | 225  |

## Heat Shrinkable Tubing Overview

| TYPE                  | Packaging Type | VARIANT                       | Material | Shrink Ratio | Operating Temperature | Dimension (mm) | Halogen-free | Colour                                               | Specifications      | Page |
|-----------------------|----------------|-------------------------------|----------|--------------|-----------------------|----------------|--------------|------------------------------------------------------|---------------------|------|
| TF21                  |                | Thin-Wall                     | PO-X     | 2:1          | -55 °C to +135 °C     | 1.2 - 101.6    |              | Black, Blue, Green-Yellow, Red, White, Yellow        | 3, 6, 9, 11, 12, 15 | 228  |
| TF24                  |                |                               | PO-X     | 2:1          | -55 °C to +135 °C     | 1.2 - 101.6    | HF ✓         | Transparent                                          | 4, 12, 13, 14       | 231  |
| TF31                  |                |                               | PO-X     | 3:1          | -55 °C to +135 °C     | 1.5 - 40.0     |              | Black, Blue, Green, Green-Yellow, Red, White, Yellow | 3, 11               | 232  |
| TF34                  |                |                               | PO-X     | 3:1          | -55 °C to +135 °C     | 1.5 - 40.0     | HF ✓         | Transparent                                          |                     | 235  |
| TA32                  |                | Thin-Wall Hot melt adhesive   | PO-X     | 3:1          | -55 °C to +125 °C     | 3.2 - 40.0     |              | Black                                                | 3, 11, 12           | 236  |
| TA42                  |                |                               | PO-X     | 4:1          | -55 °C to +125 °C     | 4.0 - 52.0     |              | Black                                                | 11, 12              | 237  |
| EPS-300               |                |                               | PO-X     | 3:1          | -55 °C to +125 °C     | 3.0 - 40.0     |              | Black                                                | 12                  | 238  |
| EPS-400               |                |                               | PO-X     | 4:1          | -55 °C to +125 °C     | 4.0 - 32.0     |              | Black                                                | 12                  | 238  |
| MA40                  |                | Medium-Wall Hot melt adhesive | PO-X     | up to 4:1    | -55 °C to +110 °C     | 8.0 - 55.0     |              | Black                                                |                     | 239  |
| MA47                  |                |                               | PO-X     | up to 4:1    | -55 °C to +110 °C     | 8.0 - 140.0    | HF ✓         | Black                                                |                     | 240  |
| MU47                  |                | Medium-Wall                   | PO-X     | up to 4:1    | -55 °C to +110 °C     | 12.0 - 140.0   | HF ✓         | Black                                                |                     | 242  |
| LVRK                  |                | Thin-Wall Hot melt adhesive   | PO-X     | 4:1          | -55 °C to +125 °C     |                |              | Black                                                |                     | 243  |
| RMS                   |                | Medium-Wall Hot melt adhesive | PO-X     | up to 4.5:1  | -40 °C to +120 °C     | 43.0 - 185.0   | HF ✓         | Black                                                |                     | 244  |
| LVK                   |                | Thick-Wall Hot melt adhesive  | PO-X     | up to 4:1    | -55 °C to +110 °C     |                | HF ✓         | Black                                                |                     | 245  |
| LVK-C with connectors |                |                               | PO-X     | up to 4:1    | -55 °C to +110 °C     |                | HF ✓         | Black                                                |                     | 246  |
| HA40                  |                |                               | PO-X     | up to 4:1    | -55 °C to +110 °C     | 9.0 - 92.0     |              | Black                                                |                     | 247  |



## Heat Shrinkable Tubing Overview

| TYPE     | Packaging Type                                                                      | VARIANT                               | Material | Shrink Ratio | Operating Temperature | Dimension (mm) | Halogen-free | Colour              | Specifications    | Page |
|----------|-------------------------------------------------------------------------------------|---------------------------------------|----------|--------------|-----------------------|----------------|--------------|---------------------|-------------------|------|
| HA47     |    | Thick-Wall<br>Hot melt<br>adhesive    | PO-X     | up to 4:1    | -55 °C to +110 °C     | 9.0 - 180.0    | HF ✓         | Black               |                   | 248  |
| HA67     |    |                                       | PO-X     | 6:1          | -55 °C to +110 °C     | 19.0 - 235.0   | HF ✓         | Black               |                   | 249  |
| TR27     |    | Thin-Wall                             | PO-X     | 2:1          | -40 °C to +105 °C     | 3.2 - 50.8     | HF ✓         | Black               | 4, 15             | 250  |
| TA37     |    | Thin-Wall<br>Hot melt<br>adhesive     | PO-X     | 3:1          | -40 °C to +105 °C     | 3.0 - 120.0    | HF ✓         | Black               | 15                | 251  |
| SA47     |    | Standard-Wall<br>Hot melt<br>adhesive | PO-X     | 4:1          | -40 °C to +125 °C     | 5.75 - 32.0    | HF ✓         | Transparent – Black |                   | 252  |
| SA47-LA  |    |                                       | PO-X     | 4:1          | -40 °C to +125 °C     | 5.75 - 52.0    | HF ✓         | Transparent – Black |                   | 253  |
| SA47-HT  |   |                                       | PO-X     | 4:1          | -40 °C to +150 °C     | 7.6 - 32.0     |              | Black               |                   | 254  |
| SE28     |  | Standard-Wall                         | POA      | 2:1          | -75 °C to +150 °C     | 3.2 - 101.2    |              | Black               | 9, 12, 13, 14     | 255  |
| TK20     |  | Thin-Wall                             | PVDF     | 2:1          | -55 °C to +175 °C     | 1.2 - 50.8     |              | Transparent         | 1, 11, 12, 13, 14 | 256  |
| Viton®-E |  | Standard-Wall                         | FPMX     | 2:1          | -55 °C to +220 °C     | 3.2 - 50.8     |              | Black               | 7, 14             | 257  |
| TFE2     |  | Thin-Wall                             | PTFE     | 2:1          | -70 °C to +260 °C     | 0.86 - 11.94   |              | Transparent         |                   | 258  |
| TFE4     |  |                                       | PTFE     | 4:1          | -70 °C to +260 °C     | 1.98 - 31.75   |              | Transparent         | 10                | 259  |

## CERTIFICATION / SPECIFICATION

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1                                                                                   | 2                                                                                   | 3                                                                                   | 4                                                                                   | 5                                                                                    | 6                                                                                     | 7                                                                                     |
|  |  |  |  |  |  |  |
| 8                                                                                   | 9                                                                                   | 10                                                                                  | 11                                                                                  | 12                                                                                   | 13                                                                                    | 14                                                                                    |
|  |  |  |  |  |  |  |
| 15                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|  |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |

Please refer to the Approvals Overview for further information, see page: 591 - 595.



### Heat shrinkable tubing 3:1 in a kit

#### ShrinKit 321 Basic - black

The compact and handy kit belongs to the basic equipment for every assembler. Its ideal shrink ratio of 3:1 replaces many differently sized tubing.

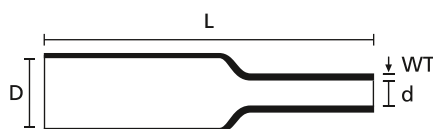
#### Features and benefits

- Compact and handy kit
- Black tubing
- Application range from 1 mm to 16 mm
- 220 precut pieces in five sizes
- Case can be re-used for storing nails, screws, nuts, fish hooks, etc.



ShrinKit 321 Basic.

|                                            |                                   |
|--------------------------------------------|-----------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)   |
| <b>Shrink Ratio</b>                        | 3:1                               |
| <b>Operating Temperature</b>               | -55 °C to +135 °C                 |
| <b>Min. Shrink Temperature</b>             | +90 °C                            |
| <b>Longitudinal change after shrinkage</b> | +5 %/-10 % max.                   |
| <b>Dielectric Strength</b>                 | 20 kV/mm according to ASTM D 2671 |
| <b>Flammability</b>                        | self-extinguishing                |
| <b>Insulation Class</b>                    | B (VDE 0530)                      |



Heat Shrinkable Tubing 3:1

RoHS

| COMP. | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Length<br>(L) | Wall<br>(WT) | Colour     | Content | Tools | Article-No. |
|-------|----------------------|--------------------|---------------|--------------|------------|---------|-------|-------------|
| 1     | 1.5                  | 0.5                | 35.0          | 0.45         | Black (BK) | 50 pcs. | 30-32 | 380-03001   |
| 2     | 6.0                  | 2.0                | 35.0          | 0.70         | Black (BK) | 30 pcs. |       |             |
| 3     | 3.0                  | 1.0                | 35.0          | 0.55         | Black (BK) | 25 pcs. |       |             |
| 4     | 6.0                  | 2.0                | 35.0          | 0.70         | Black (BK) | 15 pcs. |       |             |
| 5     | 6.0                  | 2.0                | 35.0          | 0.70         | Black (BK) | 15 pcs. |       |             |
| 6     | 3.0                  | 1.0                | 35.0          | 0.55         | Black (BK) | 25 pcs. |       |             |
| 7     | 1.5                  | 0.5                | 35.0          | 0.45         | Black (BK) | 50 pcs. |       |             |
| 8     | 12.0                 | 4.0                | 80.0          | 0.70         | Black (BK) | 5 pcs.  |       |             |
| 8     | 18.0                 | 6.0                | 80.0          | 0.80         | Black (BK) | 5 pcs.  |       |             |

All dimensions in mm. Subject to technical changes.

| Recommended Tools |             |             |             |
|-------------------|-------------|-------------|-------------|
|                   | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
|                   | 568         | 568         | 567         |

For more information on toolings please refer to the Application Tooling chapter.



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



## Heat shrinkable tubing 3:1 in a kit

### ShrinkKit 321 Universal Basic

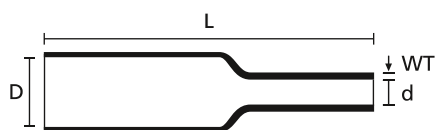
With ShrinkKit 321 HellermannTyton has set a new standard in heat shrink tubing: ShrinkKit tubings cover many applications with their ideal shrink ratio of 3:1.

#### Features and benefits

- Compact and handy kit
- Black and coloured tubing
- Application range from 1 mm up to 16 mm
- 177 precut pieces in five sizes
- Case can be re-used for storing nails, screws, nuts, fish hooks, etc.



ShrinkKit 321 Universal Basic.



Heat Shrinkable Tubing 3:1

|                                            |                                   |
|--------------------------------------------|-----------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)   |
| <b>Shrink Ratio</b>                        | 3:1                               |
| <b>Operating Temperature</b>               | -55 °C to +135 °C                 |
| <b>Min. Shrink Temperature</b>             | +90 °C                            |
| <b>Longitudinal change after shrinkage</b> | +5 %/-10 % max.                   |
| <b>Dielectric Strength</b>                 | 20 kV/mm according to ASTM D 2671 |
| <b>Flammability</b>                        | self-extinguishing                |
| <b>Insulation Class</b>                    | B (VDE 0530)                      |

RoHS



| COMP. | Supplied Ø D min. | Recov. Ø d max. | Length (L) | Wall (WT) | Colour              | Content | Tools | Article-No. |
|-------|-------------------|-----------------|------------|-----------|---------------------|---------|-------|-------------|
| 1     | 12.0              | 4.0             | 35.0       | 0.70      | Black (BK)          | 12 pcs. | 30-32 | 380-03005   |
| 2     | 6.0               | 2.0             | 80.0       | 0.70      | Blue (BU)           | 5 pcs.  |       |             |
|       | 6.0               | 2.0             | 80.0       | 0.70      | Red (RD)            | 5 pcs.  |       |             |
|       | 6.0               | 2.0             | 80.0       | 0.70      | White (WH)          | 5 pcs.  |       |             |
|       | 12.0              | 4.0             | 80.0       | 0.70      | Black (BK)          | 2 pcs.  |       |             |
|       | 12.0              | 4.0             | 80.0       | 0.70      | Blue (BU)           | 2 pcs.  |       |             |
|       | 12.0              | 4.0             | 80.0       | 0.70      | Red (RD)            | 2 pcs.  |       |             |
| 3     | 6.0               | 2.0             | 35.0       | 0.70      | Blue (BU)           | 10 pcs. |       |             |
|       | 6.0               | 2.0             | 35.0       | 0.70      | Red (RD)            | 10 pcs. |       |             |
|       | 6.0               | 2.0             | 35.0       | 0.70      | White (WH)          | 10 pcs. |       |             |
| 4     | 9.0               | 3.0             | 35.0       | 0.70      | Green/Yellow (GNYE) | 15 pcs. |       |             |
| 5     | 9.0               | 3.0             | 35.0       | 0.70      | Black (BK)          | 20 pcs. |       |             |
| 6     | 3.0               | 1.0             | 35.0       | 0.55      | Black (BK)          | 10 pcs. |       |             |
|       | 3.0               | 1.0             | 35.0       | 0.55      | Blue (BU)           | 10 pcs. |       |             |
|       | 3.0               | 1.0             | 35.0       | 0.55      | Red (RD)            | 10 pcs. |       |             |
|       | 3.0               | 1.0             | 35.0       | 0.55      | White (WH)          | 10 pcs. |       |             |
| 7     | 6.0               | 2.0             | 35.0       | 0.70      | Black (BK)          | 20 pcs. |       |             |
|       | 6.0               | 2.0             | 35.0       | 0.70      | Green/Yellow (GNYE) | 10 pcs. |       |             |
| 8     | 18.0              | 6.0             | 160.0      | 0.80      | Black (BK)          | 3 pcs.  |       |             |
|       | 18.0              | 6.0             | 160.0      | 0.80      | Green/Yellow (GNYE) | 3 pcs.  |       |             |
|       | 18.0              | 6.0             | 160.0      | 0.80      | White (WH)          | 3 pcs.  |       |             |

All dimensions in mm. Subject to technical changes.

| Recommended Tools |             |             |             |
|-------------------|-------------|-------------|-------------|
|                   | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
|                   | 568         | 568         | 567         |

For more information on toolings please refer to the Application Tooling chapter.



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



### Heat shrinkable tubing 3:1 in a kit

#### ShrinkKit 321 Universal

With ShrinkKit 321 HellermannTyton has set a new standard in heat shrink tubing: ShrinkKit tubings cover many applications with their ideal shrink ratio of 3:1.

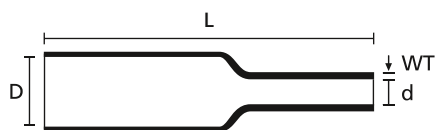
#### Features and benefits

- Wide range of sizes, colours and lengths
- For insulation, bend protection and identification
- Case can be re-used for storing nails, screws, nuts, fish hooks, etc.
- Compartment sizes changeable by simply moving yellow space dividers



ShrinkKit 321 Universal.

|                                            |                                             |
|--------------------------------------------|---------------------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)             |
| <b>Shrink Ratio</b>                        | 3:1                                         |
| <b>Operating Temperature</b>               | -55 °C to +135 °C                           |
| <b>Min. Shrink Temperature</b>             | +90 °C                                      |
| <b>Longitudinal change after shrinkage</b> | +5 %/-10 % max.                             |
| <b>Dielectric Strength</b>                 | 20 kV/mm according to ASTM D 2671           |
| <b>Flammability</b>                        | self-extinguishing (except for transparent) |
| <b>Insulation Class</b>                    | B (VDE 0530)                                |



Heat Shrinkable Tubing 3:1

RoHS

| COMP. | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Length<br>(L) | Wall<br>(WT) | Colour              | Content  | Tools | Article-No. |
|-------|----------------------|--------------------|---------------|--------------|---------------------|----------|-------|-------------|
| 1     | 6.0                  | 2.0                | 60.0          | 0.70         | Black (BK)          | 50 pcs.  | 30-32 | 380-03002   |
| 2     | 12.0                 | 4.0                | 100.0         | 0.70         | Black (BK)          | 15 pcs.  |       |             |
| 3     | 24.0                 | 8.0                | 200.0         | 1.00         | Black (BK)          | 10 pcs.  |       |             |
| 4     | 6.0                  | 2.0                | 60.0          | 0.70         | Green/Yellow (GNYE) | 50 pcs.  |       |             |
| 5     | 3.0                  | 1.0                | 50.0          | 0.55         | Transparent (CL)    | 100 pcs. |       |             |
| 6     | 3.0                  | 1.0                | 50.0          | 0.55         | Black (BK)          | 100 pcs. |       |             |
| 7     | 12.0                 | 4.0                | 100.0         | 0.70         | Transparent (CL)    | 15 pcs.  |       |             |
| 8     | 12.0                 | 4.0                | 100.0         | 0.70         | Red (RD)            | 15 pcs.  |       |             |
| 9     | 3.0                  | 1.0                | 50.0          | 0.55         | Red (RD)            | 100 pcs. |       |             |
| 10    | 3.0                  | 1.0                | 40.0          | 0.55         | Blue (BU)           | 100 pcs. |       |             |
| 11    | 3.0                  | 1.0                | 40.0          | 0.55         | Green/Yellow (GNYE) | 100 pcs. |       |             |
| 12    | 1.5                  | 0.5                | 40.0          | 0.45         | Black (BK)          | 75 pcs.  |       |             |
|       | 1.5                  | 0.5                | 40.0          | 0.45         | Green/Yellow (GNYE) | 75 pcs.  |       |             |
| 13    | 6.0                  | 2.0                | 60.0          | 0.70         | Blue (BU)           | 50 pcs.  |       |             |
| 14    | 6.0                  | 2.0                | 60.0          | 0.70         | Red (RD)            | 50 pcs.  |       |             |
| 15    | 6.0                  | 2.0                | 60.0          | 0.70         | Transparent (CL)    | 50 pcs.  |       |             |
| 16    | 12.0                 | 4.0                | 170.0         | 0.70         | Green/Yellow (GNYE) | 10 pcs.  |       |             |
| 17    | 12.0                 | 4.0                | 170.0         | 0.70         | Blue (BU)           | 10 pcs.  |       |             |

All dimensions in mm. Subject to technical changes.



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





## Heat shrinkable tubing 3:1 in a kit

### ShrinkKit 321-A Basic - with adhesive liner

The black tubing is mainly used for environmental sealing of splices and connectors. The transparent tubing is typically used for protection of cable markers.

#### Features and benefits

- Adhesive lined heat shrink tubing
- Inner wall melts when heated and is forced into gaps
- Adhesive forms seal against moisture as tubing cools
- Black tubes mainly for the protection of connectors and splices
- Clear tubing ideal for protection of printed label markers
- 130 precut pieces in three sizes
- Case can be re-used for storing nails, screws, nuts, fish hooks, etc.



ShrinkKit 321-A Basic.

|                                            |                                             |
|--------------------------------------------|---------------------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)             |
| <b>Shrink Ratio</b>                        | 3:1                                         |
| <b>Operating Temperature</b>               | -55 °C to +110 °C                           |
| <b>Min. Shrink Temperature</b>             | +110 °C                                     |
| <b>Longitudinal change after shrinkage</b> | +1 %/-15 % max.                             |
| <b>Dielectric Strength</b>                 | 15 kV/mm according to ASTM D2671            |
| <b>Flammability</b>                        | self-extinguishing (except for transparent) |
| <b>Insulation Class</b>                    | A (VDE 0530)                                |



Heat Shrinkable Tubing 3:1 with adhesive



| COMP. | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Length<br>(L) | Wall<br>(WT) | Colour           | Content | Tools | Article-No. |
|-------|----------------------|--------------------|---------------|--------------|------------------|---------|-------|-------------|
| 1     | 3.0                  | 1.0                | 35.0          | 1.00         | Black (BK)       | 25 pcs. | 30-32 | 380-03004   |
| 2     | 12.0                 | 4.0                | 35.0          | 1.70         | Black (BK)       | 10 pcs. |       |             |
| 3     | 3.0                  | 1.0                | 35.0          | 1.00         | Transparent (CL) | 25 pcs. |       |             |
| 4     | 6.0                  | 2.0                | 35.0          | 1.10         | Black (BK)       | 15 pcs. |       |             |
| 5     | 6.0                  | 2.0                | 35.0          | 1.10         | Transparent (CL) | 15 pcs. |       |             |
| 6     | 6.0                  | 2.0                | 35.0          | 1.10         | Transparent (CL) | 15 pcs. |       |             |
| 7     | 6.0                  | 2.0                | 35.0          | 1.10         | Black (BK)       | 15 pcs. |       |             |
| 8     | 12.0                 | 4.0                | 80.0          | 1.70         | Black (BK)       | 5 pcs.  |       |             |
|       | 12.0                 | 4.0                | 80.0          | 1.70         | Transparent (CL) | 5 pcs.  |       |             |

All dimensions in mm. Subject to technical changes.

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



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



### Heat shrinkable tubing 3:1 in a kit

#### ShrinkKit 321-A - with adhesive liner

The black tubing is mainly used for environmental sealing of splices and connectors. The transparent tubing is typically used for protection of cable markers.

#### Features and benefits

- Adhesive lined heat shrink tubing
- Inner wall melts when heated and is forced into gaps
- Adhesive forms seal against moisture as tubing cools
- Black tubing mainly for the protection of connectors and splices
- Clear tubing ideal for protection of printed label markers
- Case can be re-used for storing nails, screws, nuts, fish hooks, etc.
- Compartment size changeable by simply moving yellow space dividers



ShrinkKit 321-A.



One Step to the Web!

|                                            |                                             |
|--------------------------------------------|---------------------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)             |
| <b>Shrink Ratio</b>                        | 3:1                                         |
| <b>Operating Temperature</b>               | -55 °C to +110 °C                           |
| <b>Min. Shrink Temperature</b>             | +110 °C                                     |
| <b>Longitudinal change after shrinkage</b> | +1 %/-15 % max.                             |
| <b>Dielectric Strength</b>                 | 15 kV/mm according to IEC 684 P2            |
| <b>Flammability</b>                        | self-extinguishing (except for transparent) |
| <b>Insulation Class</b>                    | A (VDE 0530)                                |

RoHS



Heat Shrinkable Tubing 3:1 with adhesive

| COMP. | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Length<br>(L) | Wall<br>(WT) | Colour           | Content | Tools | Article-No. |
|-------|----------------------|--------------------|---------------|--------------|------------------|---------|-------|-------------|
| 1     | 24.0                 | 8.0                | 200.0         | 2.50         | Black (BK)       | 5 pcs.  | 30-32 | 380-03003   |
| 2     | 12.0                 | 4.0                | 65.0          | 1.70         | Transparent (CL) | 15 pcs. |       |             |
| 3     | 6.0                  | 2.0                | 50.0          | 1.10         | Black (BK)       | 20 pcs. |       |             |
|       | 6.0                  | 2.0                | 50.0          | 1.10         | Transparent (CL) | 20 pcs. |       |             |
| 4     | 12.0                 | 4.0                | 65.0          | 1.70         | Black (BK)       | 15 pcs. |       |             |
| 5     | 3.0                  | 1.0                | 50.0          | 1.00         | Black (BK)       | 50 pcs. |       |             |
|       | 3.0                  | 1.0                | 50.0          | 1.00         | Transparent (CL) | 50 pcs. |       |             |
| 6     | 6.0                  | 2.0                | 35.0          | 1.10         | Black (BK)       | 30 pcs. |       |             |
|       | 6.0                  | 2.0                | 35.0          | 1.10         | Transparent (CL) | 30 pcs. |       |             |
| 7     | 24.0                 | 8.0                | 200.0         | 2.50         | Transparent (CL) | 5 pcs.  |       |             |
| 8     | 12.0                 | 4.0                | 100.0         | 1.70         | Black (BK)       | 15 pcs. |       |             |
| 9     | 12.0                 | 4.0                | 100.0         | 1.70         | Black (BK)       | 15 pcs. |       |             |
| 10    | 12.0                 | 4.0                | 100.0         | 1.70         | Transparent (CL) | 15 pcs. |       |             |
| 11    | 3.0                  | 1.0                | 40.0          | 1.00         | Black (BK)       | 50 pcs. |       |             |
|       | 3.0                  | 1.0                | 40.0          | 1.00         | Transparent (CL) | 50 pcs. |       |             |

All dimensions in mm. Subject to technical changes.



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



## Storage rack for HIS-Boxes

### HIS-Service Station

HIS general purpose heat shrink tubing provides a reliable insulation and protects against corrosion and mechanical influences. The handy dispenser is ideal for small and medium size projects on-site. The sturdy metal HIS-Service Station comes with a cutter and can store all sizes and colours. The Service Station can be mounted to the wall in the work shop or service-van.

#### Features and benefits

- Contains up to 5 dispenser boxes
- Place on bench or mount to wall
- Special cutter included for easily cutting tubing length to size



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

| TYPE                | Description                                                                                                                                                    | Tools | Article-No. |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------|
| HIS Service Station | HIS-Service Station incl. cutter, contents: 5 dispensers HIS-3 (shrink ratio: 3:1), black, sizes are as follows: HIS-3/1, HIS-6/2, HIS-12/4 (2 pcs.), HIS-24/8 | 30-32 | 365-30100   |
|                     | HIS-Service Station incl. cutter, empty                                                                                                                        | -     | 300-30000   |

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

## Heat shrinkable tubing 2:1 on a reel

### HIS-PACK

HIS-PACK is used in general purpose of electrical insulation with a high level of protection against corrosion and mechanical abrasion.

#### Features and benefits

- Cross-linked Polyolefin, thin-wall and flexible
- Handy dispenser box including table showing application size range
- Available in black, red, blue, transparent and yellow/green
- 10 sizes from 1.2 mm to 25.4 mm



HIS-Pack.

|                                            |                                 |
|--------------------------------------------|---------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X) |
| <b>Shrink Ratio</b>                        | 2:1                             |
| <b>Operating Temperature</b>               | -55 °C to +125 °C               |
| <b>Min. Shrink Temperature</b>             | +100 °C                         |
| <b>Longitudinal change after shrinkage</b> | +/-5 %                          |
| <b>Dielectric Strength</b>                 | 20 kV/mm according to IEC 243   |
| <b>Flammability</b>                        | UL224 VW-1 (except transparent) |





### Heat shrinkable tubing 2:1 on a reel

#### HIS-PACK



Heat Shrinkable Tubing 2:1

| TYPE               | Supplied<br>Ø D min. | Size<br>(imperial) | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour              | Tools | Article-No. |
|--------------------|----------------------|--------------------|--------------------|--------------|----------------|---------------------|-------|-------------|
| HIS-PACK-1.2/0.6   | 1.2                  | 3/64 "             | 0.6                | 0.40         | 10 m           | Black (BK)          | 30-32 | 300-30120   |
|                    | 1.2                  | 3/64 "             | 0.6                | 0.40         | 10 m           | Blue (BU)           | 30-32 | 300-30126   |
|                    | 1.2                  | 3/64 "             | 0.6                | 0.40         | 10 m           | Red (RD)            | 30-32 | 300-30122   |
|                    | 1.2                  | 3/64 "             | 0.6                | 0.40         | 10 m           | Transparent (CL)    | 30-32 | 300-30123   |
| HIS-PACK-1.6/0.8   | 1.6                  | 1/16 "             | 0.8                | 0.40         | 10 m           | Black (BK)          | 30-32 | 300-30160   |
|                    | 1.6                  | 1/16 "             | 0.8                | 0.40         | 10 m           | Blue (BU)           | 30-32 | 300-30166   |
|                    | 1.6                  | 1/16 "             | 0.8                | 0.40         | 10 m           | Red (RD)            | 30-32 | 300-30162   |
|                    | 1.6                  | 1/16 "             | 0.8                | 0.40         | 10 m           | Transparent (CL)    | 30-32 | 300-30163   |
| HIS-PACK-2.4/1.2   | 2.4                  | 3/32 "             | 1.2                | 0.50         | 10 m           | Black (BK)          | 30-32 | 300-30240   |
|                    | 2.4                  | 3/32 "             | 1.2                | 0.50         | 10 m           | Blue (BU)           | 30-32 | 300-30246   |
|                    | 2.4                  | 3/32 "             | 1.2                | 0.50         | 10 m           | Red (RD)            | 30-32 | 300-30242   |
|                    | 2.4                  | 3/32 "             | 1.2                | 0.50         | 10 m           | Transparent (CL)    | 30-32 | 300-30243   |
| HIS-PACK-3.2/1.6   | 3.2                  | 1/8 "              | 1.6                | 0.50         | 10 m           | Black (BK)          | 30-32 | 300-30320   |
|                    | 3.2                  | 1/8 "              | 1.6                | 0.50         | 10 m           | Blue (BU)           | 30-32 | 300-30326   |
|                    | 3.2                  | 1/8 "              | 1.6                | 0.50         | 10 m           | Green-Yellow (GNYE) | 30-32 | 300-30327   |
|                    | 3.2                  | 1/8 "              | 1.6                | 0.50         | 10 m           | Red (RD)            | 30-32 | 300-30322   |
| HIS-PACK-4.8/2.4   | 4.8                  | 3/16 "             | 2.4                | 0.50         | 10 m           | Black (BK)          | 30-32 | 300-30480   |
|                    | 4.8                  | 3/16 "             | 2.4                | 0.50         | 10 m           | Blue (BU)           | 30-32 | 300-30486   |
|                    | 4.8                  | 3/16 "             | 2.4                | 0.50         | 10 m           | Green-Yellow (GNYE) | 30-32 | 300-30487   |
|                    | 4.8                  | 3/16 "             | 2.4                | 0.50         | 10 m           | Red (RD)            | 30-32 | 300-30482   |
| HIS-PACK-6.4/3.2   | 6.4                  | 1/4 "              | 3.2                | 0.60         | 5 m            | Black (BK)          | 30-32 | 300-30640   |
|                    | 6.4                  | 1/4 "              | 3.2                | 0.60         | 5 m            | Blue (BU)           | 30-32 | 300-30646   |
|                    | 6.4                  | 1/4 "              | 3.2                | 0.60         | 5 m            | Green-Yellow (GNYE) | 30-32 | 300-30647   |
|                    | 6.4                  | 1/4 "              | 3.2                | 0.60         | 5 m            | Red (RD)            | 30-32 | 300-30642   |
| HIS-PACK-9.5/4.7   | 9.5                  | 3/8 "              | 4.7                | 0.60         | 5 m            | Black (BK)          | 30-32 | 300-30950   |
|                    | 9.5                  | 3/8 "              | 4.7                | 0.60         | 5 m            | Blue (BU)           | 30-32 | 300-30956   |
|                    | 9.5                  | 3/8 "              | 4.7                | 0.60         | 5 m            | Green-Yellow (GNYE) | 30-32 | 300-30957   |
|                    | 9.5                  | 3/8 "              | 4.7                | 0.60         | 5 m            | Red (RD)            | 30-32 | 300-30952   |
| HIS-PACK-12.7/6.4  | 12.7                 | 1/2 "              | 6.4                | 0.60         | 5 m            | Black (BK)          | 30-32 | 300-31270   |
|                    | 12.7                 | 1/2 "              | 6.4                | 0.60         | 5 m            | Blue (BU)           | 30-32 | 300-31276   |
|                    | 12.7                 | 1/2 "              | 6.4                | 0.60         | 5 m            | Green-Yellow (GNYE) | 30-32 | 300-31277   |
|                    | 12.7                 | 1/2 "              | 6.4                | 0.60         | 5 m            | Red (RD)            | 30-32 | 300-31272   |
| HIS-PACK-19.1/9.5  | 19.1                 | 3/4 "              | 9.5                | 0.80         | 5 m            | Black (BK)          | 30-32 | 300-31900   |
|                    | 19.1                 | 3/4 "              | 9.5                | 0.80         | 5 m            | Blue (BU)           | 30-32 | 300-31906   |
|                    | 19.1                 | 3/4 "              | 9.5                | 0.80         | 5 m            | Green-Yellow (GNYE) | 30-32 | 300-31907   |
|                    | 19.1                 | 3/4 "              | 9.5                | 0.80         | 5 m            | Red (RD)            | 30-32 | 300-31902   |
| HIS-PACK-25.4/12.7 | 25.4                 | 1 "                | 12.7               | 0.90         | 5 m            | Black (BK)          | 30-32 | 300-32540   |
|                    | 25.4                 | 1 "                | 12.7               | 0.90         | 5 m            | Blue (BU)           | 30-32 | 300-32546   |
|                    | 25.4                 | 1 "                | 12.7               | 0.90         | 5 m            | Green-Yellow (GNYE) | 30-32 | 300-32547   |
|                    | 25.4                 | 1 "                | 12.7               | 0.90         | 5 m            | Red (RD)            | 30-32 | 300-32542   |
| HIS-PACK-25.4/12.7 | 25.4                 | 1 "                | 12.7               | 0.90         | 5 m            | Transparent (CL)    | 30-32 | 300-32543   |

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

#### Recommended Tools

|  | 30    | 31    | 32    |
|--|-------|-------|-------|
|  | H5002 | H5004 | E4500 |
|  | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



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



## Heat shrinkable tubing 3:1 on a reel

### HIS-3

HIS-3 is used in general purpose of electrical insulation with a high level of protection against corrosion and mechanical abrasion.

#### Features and benefits

- Unlined tubing in handy dispenser packs
- High shrink ratio 3:1
- Fits highly variable cable dimensions
- Only 6 sizes for application diameter range of 1 mm up to 20 mm, reduce inventory by half



One Step to the Web!



HIS-3 can fit highly variable cable dimensions.

|                                            |                                  |
|--------------------------------------------|----------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)  |
| <b>Shrink Ratio</b>                        | 3:1                              |
| <b>Operating Temperature</b>               | -55 °C to +135 °C                |
| <b>Min. Shrink Temperature</b>             | +100 °C                          |
| <b>Longitudinal change after shrinkage</b> | -5 % max.                        |
| <b>Dielectric Strength</b>                 | 20 kV/mm according to ASTM D 150 |
| <b>Flammability</b>                        | UL224 VW-1 (except transparent)  |
| <b>Insulation Class</b>                    | B (VDE 0530)                     |

RoHS



Heat Shrinkable Tubing 3:1

| TYPE          | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour              | Tools | Article-No. |
|---------------|----------------------|--------------------|--------------|----------------|---------------------|-------|-------------|
| HIS-3-1.5/0.5 | 1.5                  | 0.5                | 0.45         | 10 m           | Black (BK)          | 30-32 | 308-30150   |
|               | 1.5                  | 0.5                | 0.45         | 10 m           | Blue (BU)           | 30-32 | 308-30156   |
|               | 1.5                  | 0.5                | 0.45         | 10 m           | Red (RD)            | 30-32 | 308-30152   |
|               | 1.5                  | 0.5                | 0.45         | 10 m           | Transparent (CL)    | 30-32 | 308-30153   |
| HIS-3-3/1     | 3.0                  | 1.0                | 0.55         | 10 m           | Black (BK)          | 30-32 | 308-30300   |
|               | 3.0                  | 1.0                | 0.55         | 10 m           | Blue (BU)           | 30-32 | 308-30306   |
|               | 3.0                  | 1.0                | 0.55         | 10 m           | Green-Yellow (GNYE) | 30-32 | 308-30307   |
|               | 3.0                  | 1.0                | 0.55         | 10 m           | Red (RD)            | 30-32 | 308-30302   |
|               | 3.0                  | 1.0                | 0.55         | 10 m           | Transparent (CL)    | 30-32 | 308-30303   |
| HIS-3-6/2     | 6.0                  | 2.0                | 0.65         | 5 m            | Black (BK)          | 30-32 | 308-30600   |
|               | 6.0                  | 2.0                | 0.65         | 5 m            | Blue (BU)           | 30-32 | 308-30606   |
|               | 6.0                  | 2.0                | 0.65         | 5 m            | Green-Yellow (GNYE) | 30-32 | 308-30607   |
|               | 6.0                  | 2.0                | 0.65         | 5 m            | Red (RD)            | 30-32 | 308-30602   |
|               | 6.0                  | 2.0                | 0.65         | 5 m            | Transparent (CL)    | 30-32 | 308-30603   |

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 on a reel

#### HIS-3



Heat Shrinkable Tubing 3:1

| TYPE       | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour              | Tools | Article-No. |
|------------|----------------------|--------------------|--------------|----------------|---------------------|-------|-------------|
| HIS-3-9/3  | 9.0                  | 3.0                | 0.75         | 5 m            | Black (BK)          | 30-32 | 308-30900   |
|            | 9.0                  | 3.0                | 0.75         | 5 m            | Blue (BU)           | 30-32 | 308-30906   |
|            | 9.0                  | 3.0                | 0.75         | 5 m            | Green-Yellow (GNYE) | 30-32 | 308-30907   |
|            | 9.0                  | 3.0                | 0.75         | 5 m            | Red (RD)            | 30-32 | 308-30902   |
|            | 9.0                  | 3.0                | 0.75         | 5 m            | Transparent (CL)    | 30-32 | 308-30903   |
| HIS-3-12/4 | 12.0                 | 4.0                | 0.80         | 5 m            | Black (BK)          | 30-32 | 308-31200   |
|            | 12.0                 | 4.0                | 0.80         | 5 m            | Blue (BU)           | 30-32 | 308-31206   |
|            | 12.0                 | 4.0                | 0.80         | 5 m            | Green-Yellow (GNYE) | 30-32 | 308-31207   |
|            | 12.0                 | 4.0                | 0.80         | 5 m            | Red (RD)            | 30-32 | 308-31202   |
|            | 12.0                 | 4.0                | 0.80         | 5 m            | Transparent (CL)    | 30-32 | 308-31203   |
| HIS-3-18/6 | 18.0                 | 6.0                | 0.90         | 4 m            | Black (BK)          | 30-32 | 308-31800   |
|            | 18.0                 | 6.0                | 0.90         | 4 m            | Blue (BU)           | 30-32 | 308-31806   |
|            | 18.0                 | 6.0                | 0.90         | 4 m            | Green-Yellow (GNYE) | 30-32 | 308-31807   |
|            | 18.0                 | 6.0                | 0.90         | 4 m            | Red (RD)            | 30-32 | 308-31802   |
|            | 18.0                 | 6.0                | 0.90         | 4 m            | Transparent (CL)    | 30-32 | 308-31803   |
| HIS-3-24/8 | 24.0                 | 8.0                | 1.20         | 3 m            | Black (BK)          | 30-32 | 308-32400   |
|            | 24.0                 | 8.0                | 1.20         | 3 m            | Blue (BU)           | 30-32 | 308-32406   |
|            | 24.0                 | 8.0                | 1.20         | 3 m            | Green-Yellow (GNYE) | 30-32 | 308-32407   |
|            | 24.0                 | 8.0                | 1.20         | 3 m            | Red (RD)            | 30-32 | 308-32402   |
|            | 24.0                 | 8.0                | 1.20         | 3 m            | Transparent (CL)    | 30-32 | 308-32403   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the  
Application Tooling chapter.



## Heat shrinkable tubing 3:1 on a reel

### HIS-A - with adhesive liner

HIS-A forms a seal against moisture and protect against corrosion and mechanical abrasion.

#### Features and benefits

- Adhesive lined heat shrink tubing
- Inner wall melts when heated and is forced into gaps
- Adhesive forms seal against moisture as tubing cools
- Protects components
- Available in black and transparent
- 6 sizes for wide range of applications



HIS-A - with adhesive liner.

|                                            |                                  |
|--------------------------------------------|----------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)  |
| <b>Shrink Ratio</b>                        | 3:1                              |
| <b>Operating Temperature</b>               | -55 °C to +125 °C                |
| <b>Min. Shrink Temperature</b>             | +100 °C                          |
| <b>Longitudinal change after shrinkage</b> | -10 % max.                       |
| <b>Softening Point Adhesive</b>            | +85 °C                           |
| <b>Dielectric Strength</b>                 | 15 kV/mm according to IEC 684 P2 |
| <b>Flammability</b>                        | UL224 VW-1 (except transparent)  |
| <b>Insulation Class</b>                    | A (VDE 0530)                     |



Heat Shrinkable Tubing 3:1 with adhesive



| TYPE       | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour           | Tools | Article-No. |
|------------|----------------------|--------------------|--------------|----------------|------------------|-------|-------------|
| HIS-A-3/1  | 3.0                  | 1.0                | 1.00         | 10 m           | Black (BK)       | 30-32 | 308-10300   |
|            | 3.0                  | 1.0                | 1.00         | 10 m           | Transparent (CL) | 30-32 | 308-10303   |
| HIS-A-6/2  | 6.0                  | 2.0                | 1.00         | 5 m            | Black (BK)       | 30-32 | 308-10600   |
|            | 6.0                  | 2.0                | 1.00         | 5 m            | Transparent (CL) | 30-32 | 308-10603   |
| HIS-A-9/3  | 9.0                  | 3.0                | 1.40         | 5 m            | Black (BK)       | 30-32 | 308-10900   |
|            | 9.0                  | 3.0                | 1.40         | 5 m            | Transparent (CL) | 30-32 | 308-10903   |
| HIS-A-12/4 | 12.0                 | 4.0                | 1.80         | 5 m            | Black (BK)       | 30-32 | 308-11200   |
|            | 12.0                 | 4.0                | 1.80         | 5 m            | Transparent (CL) | 30-32 | 308-11203   |
| HIS-A-18/6 | 18.0                 | 6.0                | 2.25         | 4 m            | Black (BK)       | 30-32 | 308-11800   |
|            | 18.0                 | 6.0                | 2.25         | 4 m            | Transparent (CL) | 30-32 | 308-11803   |
| HIS-A-24/8 | 24.0                 | 8.0                | 2.50         | 3 m            | Black (BK)       | 30-32 | 308-12400   |
|            | 24.0                 | 8.0                | 2.50         | 3 m            | Transparent (CL) | 30-32 | 308-12403   |

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

| Recommended Tools |             |             |             |
|-------------------|-------------|-------------|-------------|
|                   | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
|                   | 568         | 568         | 567         |

For more information on toolings please refer to the Application Tooling chapter.



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



### Heat shrinkable tubing 3:1 in blister bags

#### HIS-3 BAG

HIS-3 BAG tubings are useable for insulation and protection of cables and connectors

#### Features and benefits

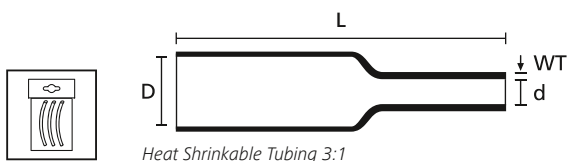
- Thin wall and flexible tubing made of cross-linked Polyolefin
- High shrink ratio 3:1
- Handy, small packaging with 10 pre-cut pieces of 200 mm
- Fits highly variable cable diameters



HIS-3 BAG available in seven colours and four sizes.

|                                            |                                  |
|--------------------------------------------|----------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)  |
| <b>Shrink Ratio</b>                        | 3:1                              |
| <b>Operating Temperature</b>               | -55 °C to +135 °C                |
| <b>Min. Shrink Temperature</b>             | +100 °C                          |
| <b>Longitudinal change after shrinkage</b> | -5 % max.                        |
| <b>Dielectric Strength</b>                 | 20 kV/mm according to ASTM D 150 |
| <b>Flammability</b>                        | UL224 VW-1 (except transparent)  |

**RoHS** ✓



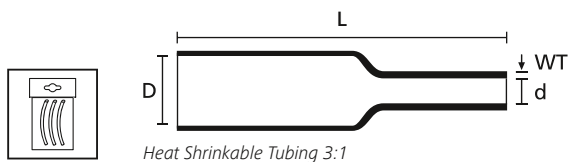
| TYPE                     | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Pack<br>Cont. | Colour              | Tools | Article-No. |
|--------------------------|----------------------|--------------------|--------------|---------------|---------------|---------------------|-------|-------------|
| <b>HIS-3-BAG-1.5/0.5</b> | 1.5                  | 0.5                | 0.45         | 200.0         | 10 pcs.       | Black (BK)          | 30-32 | 308-30151   |
|                          | 1.5                  | 0.5                | 0.45         | 200.0         | 10 pcs.       | Blue (BU)           | 30-32 | 308-30161   |
|                          | 1.5                  | 0.5                | 0.45         | 200.0         | 10 pcs.       | Brown (BN)          | 30-32 | 308-30163   |
|                          | 1.5                  | 0.5                | 0.45         | 200.0         | 10 pcs.       | Green-Yellow (GNYE) | 30-32 | 308-30165   |
|                          | 1.5                  | 0.5                | 0.45         | 200.0         | 10 pcs.       | Grey (GY)           | 30-32 | 308-30162   |
|                          | 1.5                  | 0.5                | 0.45         | 200.0         | 10 pcs.       | Red (RD)            | 30-32 | 308-30160   |
|                          | 1.5                  | 0.5                | 0.45         | 200.0         | 10 pcs.       | Transparent (CL)    | 30-32 | 308-30164   |
| <b>HIS-3-BAG-3/1</b>     | 3.0                  | 1.0                | 0.55         | 200.0         | 10 pcs.       | Black (BK)          | 30-32 | 308-30310   |
|                          | 3.0                  | 1.0                | 0.55         | 200.0         | 10 pcs.       | Blue (BU)           | 30-32 | 308-30312   |
|                          | 3.0                  | 1.0                | 0.55         | 200.0         | 10 pcs.       | Brown (BN)          | 30-32 | 308-30314   |
|                          | 3.0                  | 1.0                | 0.55         | 200.0         | 10 pcs.       | Green-Yellow (GNYE) | 30-32 | 308-30316   |
|                          | 3.0                  | 1.0                | 0.55         | 200.0         | 10 pcs.       | Grey (GY)           | 30-32 | 308-30313   |
|                          | 3.0                  | 1.0                | 0.55         | 200.0         | 10 pcs.       | Red (RD)            | 30-32 | 308-30311   |
|                          | 3.0                  | 1.0                | 0.55         | 200.0         | 10 pcs.       | Transparent (CL)    | 30-32 | 308-30315   |

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



## Heat shrinkable tubing 3:1 in blister bags

## HIS-3 BAG



| TYPE           | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Pack<br>Cont. | Colour              | Tools | Article-No. |
|----------------|----------------------|--------------------|--------------|---------------|---------------|---------------------|-------|-------------|
| HIS-3-BAG-6/2  | 6.0                  | 2.0                | 0.65         | 200.0         | 10 pcs.       | Black (BK)          | 30-32 | 308-30610   |
|                | 6.0                  | 2.0                | 0.65         | 200.0         | 10 pcs.       | Blue (BU)           | 30-32 | 308-30612   |
|                | 6.0                  | 2.0                | 0.65         | 200.0         | 10 pcs.       | Brown (BN)          | 30-32 | 308-30614   |
|                | 6.0                  | 2.0                | 0.65         | 200.0         | 10 pcs.       | Grey (GY)           | 30-32 | 308-30613   |
|                | 6.0                  | 2.0                | 0.65         | 200.0         | 10 pcs.       | Red (RD)            | 30-32 | 308-30611   |
|                | 6.0                  | 2.0                | 0.65         | 200.0         | 10 pcs.       | Transparent (CL)    | 30-32 | 308-30615   |
|                | 6.0                  | 2.0                | 0.65         | 200.0         | 10 pcs.       | Green-Yellow (GNYE) | 30-32 | 308-30617   |
| HIS-3-BAG-12/4 | 12.0                 | 4.0                | 0.80         | 200.0         | 10 pcs.       | Black (BK)          | 30-32 | 308-31210   |
|                | 12.0                 | 4.0                | 0.80         | 200.0         | 10 pcs.       | Blue (BU)           | 30-32 | 308-31212   |
|                | 12.0                 | 4.0                | 0.80         | 200.0         | 10 pcs.       | Brown (BN)          | 30-32 | 308-31214   |
|                | 12.0                 | 4.0                | 0.80         | 200.0         | 10 pcs.       | Grey (GY)           | 30-32 | 308-31213   |
|                | 12.0                 | 4.0                | 0.80         | 200.0         | 10 pcs.       | Red (RD)            | 30-32 | 308-31211   |
|                | 12.0                 | 4.0                | 0.80         | 200.0         | 10 pcs.       | Transparent (CL)    | 30-32 | 308-31215   |
|                | 12.0                 | 4.0                | 0.80         | 200.0         | 10 pcs.       | Green-Yellow (GNYE) | 30-32 | 308-31217   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the  
Application Tooling chapter.



## Point of sale display for TREDUX

### TREDUX-Display

With TREDUX HellermannTyton has set a new standard in heat shrink tubing. TREDUX offers a complete range of thin, medium and thick wall tubing cut into 1 meter length. All tubing are labeled with an EAN barcode securely packed in display boxes. They can be removed individually for occasional use in smaller quantities. With the practical, valuable metal point of sale display is an optimal product presentation guaranteed. The following table is a proposed content for a TREDUX-Display.

### Features and benefits

- Complete range of thin, medium- and thick wall heatshrink tubing in one display
- All tubings can be sold in single 1 meter length or entire carton
- Pick of single tube possible allowing job specific purchasing
- Optimised stock based on usage based display content
- Holder for end user brochures available attached to display



The TREDUX-Display.



One Step to the Web!

| TYPE                                                 | Content | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Pack<br>Cont. | Colour              | Tools | Article-No. |
|------------------------------------------------------|---------|----------------------|--------------------|--------------|---------------|---------------------|-------|-------------|
| <b>TREDUX-Display</b>                                |         |                      |                    |              |               |                     |       |             |
| <b>TREDUX-Display</b>                                | -       | -                    | -                  | -            | 1 pc.         | Blue (BU)           | -     | 319-30000   |
| <b>TREDUX thin wall</b>                              |         |                      |                    |              |               |                     |       |             |
| <b>TREDUX-1.5/0.5</b>                                | 1       | 1.5                  | 0.5                | 0.50         | 20 pcs.       | Black (BK)          | 30-32 | 319-00150   |
| <b>TREDUX-3/1</b>                                    | 1       | 3.0                  | 1.0                | 0.60         | 20 pcs.       | Green-Yellow (GNYE) | 30-32 | 319-00307   |
| <b>TREDUX-6/2</b>                                    | 1       | 6.0                  | 2.0                | 0.70         | 15 pcs.       | Green-Yellow (GNYE) | 30-32 | 319-00607   |
| <b>TREDUX-12/4</b>                                   | 1       | 12.0                 | 4.0                | 0.85         | 10 pcs.       | Green-Yellow (GNYE) | 30-32 | 319-01207   |
| <b>TREDUX-24/8</b>                                   | 1       | 24.0                 | 8.0                | 1.20         | 5 pcs.        | Black (BK)          | 30-32 | 319-02400   |
| <b>TREDUX-3/1</b>                                    | 2       | 3.0                  | 1.0                | 0.60         | 20 pcs.       | Black (BK)          | 30-32 | 319-00300   |
| <b>TREDUX-6/2</b>                                    | 2       | 6.0                  | 2.0                | 0.70         | 15 pcs.       | Black (BK)          | 30-32 | 319-00600   |
| <b>TREDUX-12/4</b>                                   | 4       | 12.0                 | 4.0                | 0.85         | 10 pcs.       | Black (BK)          | 30-32 | 319-01200   |
| <b>TREDUX MA47 medium wall - with adhesive liner</b> |         |                      |                    |              |               |                     |       |             |
| <b>TREDUX-MA47-19/6</b>                              | 1       | 19.0                 | 6.0                | 2.50         | 10 pcs.       | Black (BK)          | 30-32 | 323-50190   |
| <b>TREDUX-MA47-40/12</b>                             | 1       | 40.0                 | 12.0               | 2.50         | 4 pcs.        | Black (BK)          | -     | 323-50400   |
| <b>TREDUX-MA47-30/8</b>                              | 2       | 30.0                 | 8.0                | 2.50         | 6 pcs.        | Black (BK)          | 30-32 | 323-50300   |
| <b>TREDUX HA47 thick wall - with adhesive liner</b>  |         |                      |                    |              |               |                     |       |             |
| <b>TREDUX-HA47-19/6</b>                              | 1       | 19.0                 | 6.0                | 2.70         | 10 pcs.       | Black (BK)          | 30-32 | 321-50190   |
| <b>TREDUX-HA47-33/8</b>                              | 1       | 33.0                 | 8.0                | 3.20         | 5 pcs.        | Black (BK)          | 30-32 | 321-50330   |
| <b>TREDUX-HA47-45/12</b>                             | 1       | 45.0                 | 12.0               | 4.10         | 4 pcs.        | Black (BK)          | -     | 321-50450   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.





## Heat shrinkable tubing up to 3:1 - 1 m lengths

### TREDUX - thin wall

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

#### Features and benefits

- Thin wall, flexible, cross-linked polyolefin tubing
- 1m shrink tubing lengths delivered in handy display carton
- 9 sizes from 1.5 mm to 101.6 mm
- All tubings can be sold in single 1 meter length or entire box



**More colours on request.  
Please contact us!**



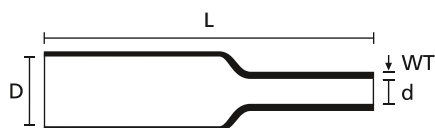
One Step to the Web!



TREDUX shrinks a maximum of 3:1.

| MATERIAL                            | Polyolefin, cross-linked (PO-X)  |     |
|-------------------------------------|----------------------------------|-----|
| Shrink Ratio                        | 2:1                              | 3:1 |
| Operating Temperature               | -55 °C to +135 °C                |     |
| Min. Shrink Temperature             | +100 °C                          |     |
| Longitudinal change after shrinkage | +/- 5 % max.                     |     |
| Dielectric Strength                 | 20 kV/mm according to ASTM D 150 |     |
| Flammability                        | UL224 VW-1                       |     |

**RoHS** ✓



Heat Shrinkable Tubing 3:1



Heat Shrinkable Tubing 2:1

| TYPE              | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Pack<br>Cont. | Colour              | Shrink<br>Ratio | Tools | Article-No. |
|-------------------|----------------------|--------------------|--------------|---------------|---------------|---------------------|-----------------|-------|-------------|
| TREDUX-1.5/0.5    | 1.5                  | 0.5                | 0.50         | 1.0 m         | 20 pcs.       | Black (BK)          | 3:1             | 30-32 | 319-00150   |
|                   | 1.5                  | 0.5                | 0.50         | 1.0 m         | 20 pcs.       | Green-Yellow (GNYE) | 3:1             | 30-32 | 319-00157   |
| TREDUX-3/1        | 3.0                  | 1.0                | 0.60         | 1.0 m         | 20 pcs.       | Black (BK)          | 3:1             | 30-32 | 319-00300   |
|                   | 3.0                  | 1.0                | 0.60         | 1.0 m         | 20 pcs.       | Green-Yellow (GNYE) | 3:1             | 30-32 | 319-00307   |
| TREDUX-6/2        | 6.0                  | 2.0                | 0.70         | 1.0 m         | 15 pcs.       | Black (BK)          | 3:1             | 30-32 | 319-00600   |
|                   | 6.0                  | 2.0                | 0.70         | 1.0 m         | 15 pcs.       | Green-Yellow (GNYE) | 3:1             | 30-32 | 319-00607   |
| TREDUX-12/4       | 12.0                 | 4.0                | 0.85         | 1.0 m         | 10 pcs.       | Black (BK)          | 3:1             | 30-32 | 319-01200   |
|                   | 12.0                 | 4.0                | 0.85         | 1.0 m         | 10 pcs.       | Green-Yellow (GNYE) | 3:1             | 30-32 | 319-01207   |
| TREDUX-24/8       | 24.0                 | 8.0                | 1.20         | 1.0 m         | 5 pcs.        | Black (BK)          | 3:1             | 30-32 | 319-02400   |
|                   | 24.0                 | 8.0                | 1.20         | 1.0 m         | 5 pcs.        | Green-Yellow (GNYE) | 3:1             | 30-32 | 319-02407   |
| TREDUX-38.1/19.1  | 38.1                 | 19.1               | 1.02         | 1.0 m         | 6 pcs.        | Black (BK)          | 2:1             | 30-32 | 319-03800   |
|                   | 38.1                 | 19.1               | 1.02         | 1.0 m         | 6 pcs.        | Green-Yellow (GNYE) | 2:1             | 30-32 | 319-03807   |
| TREDUX-50.8/25.4  | 50.8                 | 25.4               | 1.14         | 1.0 m         | 6 pcs.        | Black (BK)          | 2:1             | 30-32 | 319-05100   |
| TREDUX-76.2/38.1  | 76.2                 | 38.1               | 1.27         | 1.0 m         | 3 pcs.        | Black (BK)          | 2:1             | -     | 319-07600   |
| TREDUX-101.6/50.8 | 101.6                | 50.8               | 1.40         | 1.0 m         | 2 pcs.        | Black (BK)          | 2:1             | -     | 319-10200   |

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

#### TREDUX MA47 - medium wall adhesive lined

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

#### Features and benefits

- Medium wall heat shrink tubing
- Thermoplastic adhesive liner for protection from moisture and weathering
- 1 m shrink tubing lengths delivered in handy display carton
- All tubes can be sold in single 1 meter length or entire box

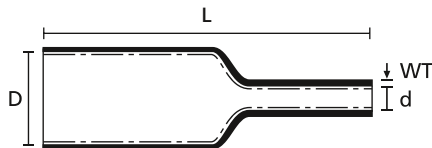


TREDUX MA47 in handy display carton.



One Step to the Web!

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



Heat Shrinkable Tubing 4:1 with adhesive



| TYPE              | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Pack<br>Cont. | Colour     | Tools | Article-No. |
|-------------------|----------------------|--------------------|--------------|---------------|---------------|------------|-------|-------------|
| TREDUX-MA47-12/3  | 12.0                 | 3.0                | 2.00         | 1.0 m         | 6 pcs.        | Black (BK) | 30-32 | 323-50120   |
| TREDUX-MA47-19/6  | 19.0                 | 6.0                | 2.50         | 1.0 m         | 10 pcs.       | Black (BK) | 30-32 | 323-50190   |
| TREDUX-MA47-30/8  | 30.0                 | 8.0                | 2.50         | 1.0 m         | 6 pcs.        | Black (BK) | 30-32 | 323-50300   |
| TREDUX-MA47-40/12 | 40.0                 | 12.0               | 2.50         | 1.0 m         | 4 pcs.        | Black (BK) | -     | 323-50400   |
| TREDUX-MA47-50/16 | 50.0                 | 16.0               | 2.70         | 1.0 m         | 2 pcs.        | Black (BK) | -     | 323-50500   |
| TREDUX-MA47-63/19 | 63.0                 | 19.0               | 2.80         | 1.0 m         | 2 pcs.        | Black (BK) | -     | 323-50630   |
| TREDUX-MA47-75/22 | 75.0                 | 22.0               | 3.00         | 1.0 m         | 2 pcs.        | Black (BK) | -     | 323-50750   |
| TREDUX-MA47-95/30 | 95.0                 | 30.0               | 3.00         | 1.0 m         | 1 pc.         | Black (BK) | -     | 323-50950   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



## Heat shrinkable tubing up to 3.5:1 - 1 m lengths

### TREDUX HA47 - thick wall adhesive lined

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

#### Features and benefits

- Thick wall polyolefin adhesive-lined tubing
- 1 m shrink tubing lengths delivered in handy display carton
- All tubes can be sold in single 1 meter length or entire box



TREDUX HA47 - application below ground.

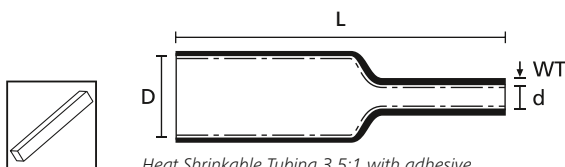


One Step to the Web!

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

HF ✓

RoHS ✓



Heat Shrinkable Tubing 3.5:1 with adhesive

| TYPE              | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Pack<br>Cont. | Colour     | Tools | Article-No. |
|-------------------|----------------------|--------------------|--------------|---------------|---------------|------------|-------|-------------|
| TREDUX-HA47-19/6  | 19.0                 | 6.0                | 2.70         | 1.0 m         | 10 pcs.       | Black (BK) | 30-32 | 321-50190   |
| TREDUX-HA47-33/8  | 33.0                 | 8.0                | 3.20         | 1.0 m         | 5 pcs.        | Black (BK) | 30-32 | 321-50330   |
| TREDUX-HA47-45/12 | 45.0                 | 12.0               | 4.10         | 1.0 m         | 4 pcs.        | Black (BK) | -     | 321-50450   |
| TREDUX-HA47-51/16 | 51.0                 | 16.0               | 4.10         | 1.0 m         | 2 pcs.        | Black (BK) | -     | 321-50510   |
| TREDUX-HA47-68/22 | 68.0                 | 22.0               | 4.10         | 1.0 m         | 1 pc.         | Black (BK) | -     | 321-50680   |
| TREDUX-HA47-85/25 | 85.0                 | 25.4               | 4.30         | 1.0 m         | 1 pc.         | Black (BK) | -     | 321-50850   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



### Heat shrinkable tubing 2:1 - PVC

#### LVR

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

#### Features and benefits

- PVC heat shrinkable tubing
- Self-extinguishing
- Good chemical resistance and mechanical protection



LVR used for mechanical protection.

|                                            |                                                 |
|--------------------------------------------|-------------------------------------------------|
| <b>MATERIAL</b>                            | Flexible Polyvinyl Chloride, cadmium free (PVC) |
| <b>Shrink Ratio</b>                        | 2:1                                             |
| <b>Operating Temperature</b>               | -30 °C to +105 °C                               |
| <b>Min. Shrink Temperature</b>             | +135 °C                                         |
| <b>Longitudinal change after shrinkage</b> | +/-10 % max                                     |
| <b>Dielectric Strength</b>                 | 15 kV/mm according to IEC 243                   |
| <b>Shelf Life</b>                          | 12 months                                       |
| <b>Storage Temperature</b>                 | +25 °C max.                                     |
| <b>Flammability</b>                        | ASTM D2671, UL224 VW-1                          |



Heat Shrinkable Tubing 2:1



| TYPE          | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour     | Tools | Article-No. |
|---------------|----------------------|--------------------|--------------|----------------|------------|-------|-------------|
| LVR-2.4/1.2   | 2.4                  | 1.2                | 0.40         | 250 m          | Black (BK) | 30-32 | 344-00240   |
| LVR-3.2/1.6   | 3.2                  | 1.6                | 0.40         | 250 m          | Black (BK) | 30-32 | 344-00320   |
| LVR-4.8/2.4   | 4.8                  | 2.4                | 0.50         | 250 m          | Black (BK) | 30-32 | 344-00480   |
| LVR-6.4/3.2   | 6.4                  | 3.2                | 0.60         | 250 m          | Black (BK) | 30-32 | 344-00640   |
| LVR-9.5/4.8   | 9.5                  | 4.8                | 0.60         | 125 m          | Black (BK) | 30-32 | 344-00950   |
| LVR-12.7/6.4  | 12.7                 | 6.4                | 0.70         | 75 m           | Black (BK) | 30-32 | 344-01270   |
| LVR-19.1/9.5  | 19.0                 | 9.5                | 0.80         | 100 m          | Black (BK) | 30-32 | 344-01900   |
| LVR-25.4/12.7 | 25.4                 | 12.7               | 1.00         | 100 m          | Black (BK) | 30-32 | 344-02540   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



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



## Heat shrinkable tubing 2:1 - Halogen free

### TL27

TL27 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 applications or applications where halogens cannot be accepted.

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



Heat Shrinkable Tubing 2:1



| TYPE           | Supplied<br>Ø D min. | Size<br>(imperial) | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour     | Tools | Article-No. |
|----------------|----------------------|--------------------|--------------------|--------------|----------------|------------|-------|-------------|
| TL27-1.2/0.6   | 1.2                  | 3/64 "             | 0.6                | 0.31         | 500 m          | Black (BK) | 30-32 | 302-20120   |
| TL27-1.6/0.8   | 1.6                  | 1/16 "             | 0.8                | 0.33         | 500 m          | Black (BK) | 30-32 | 302-20160   |
| TL27-2.4/1.2   | 2.4                  | 3/32 "             | 1.2                | 0.36         | 500 m          | Black (BK) | 30-32 | 302-30240   |
| TL27-3.2/1.6   | 3.2                  | 1/8 "              | 1.6                | 0.39         | 300 m          | Black (BK) | 30-32 | 302-30320   |
| TL27-4.8/2.4   | 4.8                  | 3/16 "             | 2.4                | 0.42         | 150 m          | Black (BK) | 30-32 | 302-30480   |
| TL27-6.4/3.2   | 6.4                  | 1/4 "              | 3.2                | 0.45         | 100 m          | Black (BK) | 30-32 | 302-30640   |
| TL27-9.5/4.8   | 9.5                  | 3/8 "              | 4.8                | 0.48         | 100 m          | Black (BK) | 30-32 | 302-30950   |
| TL27-12.7/6.4  | 12.7                 | 1/2 "              | 6.4                | 0.52         | 100 m          | Black (BK) | 30-32 | 302-21270   |
| TL27-19.1/9.5  | 19.1                 | 3/4 "              | 9.5                | 0.58         | 100 m          | Black (BK) | 30-32 | 302-31900   |
| TL27-25.4/12.7 | 25.4                 | 1 "                | 12.7               | 0.67         | 100 m          | Black (BK) | 30-32 | 302-32540   |
| TL27-38.1/19.1 | 38.1                 | 1-1/2 "            | 19.1               | 0.76         | 100 m          | Black (BK) | 30-32 | 302-23810   |
| TL27-50.8/25.4 | 50.8                 | 2 "                | 25.4               | 0.85         | 100 m          | Black (BK) | 30-32 | 302-25080   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



### Heat shrinkable tubing 2:1 - Self extinguishing

#### TCN20

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

#### Features and benefits

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



Heat shrink tubing TCN20.

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



Heat Shrinkable Tubing 2:1

**RoHS** ✓

| TYPE            | Supplied<br>Ø D min. | Size<br>(imperial) | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour     | Tools | Article-No. |
|-----------------|----------------------|--------------------|--------------------|--------------|----------------|------------|-------|-------------|
| TCN20-1.2/0.6   | 1.2                  | 3/64 "             | 0.6                | 0.30         | 300 m          | Black (BK) | 30-32 | 300-73010   |
| TCN20-1.6/0.8   | 1.6                  | 1/16 "             | 0.8                | 0.35         | 300 m          | Black (BK) | 30-32 | 300-73020   |
| TCN20-2.4/1.2   | 2.4                  | 3/32 "             | 1.2                | 0.45         | 300 m          | Black (BK) | 30-32 | 300-73030   |
| TCN20-3.2/1.6   | 3.2                  | 1/8 "              | 1.6                | 0.45         | 300 m          | Black (BK) | 30-32 | 300-73040   |
| TCN20-4.8/2.4   | 4.8                  | 3/16 "             | 2.4                | 0.50         | 300 m          | Black (BK) | 30-32 | 300-73050   |
| TCN20-6.4/3.2   | 6.4                  | 1/4 "              | 3.2                | 0.55         | 300 m          | Black (BK) | 30-32 | 300-73060   |
| TCN20-9.5/4.8   | 9.5                  | 3/8 "              | 4.8                | 0.55         | 100 m          | Black (BK) | 30-32 | 300-73070   |
| TCN20-12.7/6.4  | 12.7                 | 1/2 "              | 6.4                | 0.65         | 100 m          | Black (BK) | 30-32 | 300-73080   |
| TCN20-19.1/9.5  | 19.1                 | 3/4 "              | 9.5                | 0.80         | 60 m           | Black (BK) | 30-32 | 300-73090   |
| TCN20-25.4/12.7 | 25.4                 | 1 "                | 12.7               | 0.90         | 60 m           | Black (BK) | 30-32 | 300-73100   |
| TCN20-38.1/19.1 | 38.1                 | 1-1/2 "            | 19.1               | 1.02         | 30 m           | Black (BK) | 30-32 | 300-73110   |
| TCN20-50.8/25.4 | 50.8                 | 2 "                | 25.4               | 1.15         | 30 m           | Black (BK) | 30-32 | 300-73120   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



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





## Heat shrinkable tubing 3:1 - Self extinguishing

### TCN20 overexpanded

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

#### Features and benefits

- Thin wall overexpanded polyolefin tubing
- Very fast shrinking and low shrink temperature
- Highly flame-retardant, UL224 VW-1



Heat shrink tubing TCN20 overexpanded.

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



Heat Shrinkable Tubing 3:1

RoHS

| TYPE            | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour     | Tools | Article-No. |
|-----------------|----------------------|--------------------|--------------|----------------|------------|-------|-------------|
| TCN20-2.4/0.8   | 2.4                  | 0.8                | 0.40         | 300 m          | Black (BK) | 30-32 | 300-73130   |
| TCN20-3.2/1.2   | 3.2                  | 1.2                | 0.50         | 300 m          | Black (BK) | 30-32 | 300-73140   |
| TCN20-4.8/1.6   | 4.8                  | 1.6                | 0.50         | 300 m          | Black (BK) | 30-32 | 300-73150   |
| TCN20-6.6/2.4   | 6.6                  | 2.4                | 0.55         | 300 m          | Black (BK) | 30-32 | 300-73160   |
| TCN20-9.5/3.2   | 9.5                  | 3.2                | 0.65         | 100 m          | Black (BK) | 30-32 | 300-73170   |
| TCN20-12.7/4.8  | 12.7                 | 4.8                | 0.75         | 100 m          | Black (BK) | 30-32 | 300-73180   |
| TCN20-19.0/6.4  | 19.0                 | 6.4                | 0.75         | 60 m           | Black (BK) | 30-32 | 300-73190   |
| TCN20-25.4/9.5  | 25.4                 | 9.5                | 0.79         | 60 m           | Black (BK) | 30-32 | 300-73200   |
| TCN20-38.0/12.7 | 38.0                 | 12.7               | 0.95         | 30 m           | Black (BK) | 30-32 | 300-73210   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



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.

#### Features and benefits

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



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



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

|                                            |                                  |
|--------------------------------------------|----------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)  |
| <b>Shrink Ratio</b>                        | 2:1                              |
| <b>Operating Temperature</b>               | -55 °C to +135 °C                |
| <b>Min. Shrink Temperature</b>             | +100 °C                          |
| <b>Longitudinal change after shrinkage</b> | +5 %/-10 %                       |
| <b>Dielectric Strength</b>                 | 20 kV/mm according to IEC 684 P2 |
| <b>Flammability</b>                        | self-extinguishing, UL224 VW-1   |

**RoHS** ✓



Heat Shrinkable Tubing 2:1

| TYPE                 | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour      | Designation as per VG-Norm | Tools | Article-No. |
|----------------------|-------------------|-----------------|-----------------|-----------|-------------|-------------|----------------------------|-------|-------------|
| <b>HFT-A-1.2/0.6</b> | 1.2               | 3/64 "          | 0.6             | 0.40      | 400 m       | Black (BK)  | VG 95343 T05 A 001 A       | 30-32 | 305-01200   |
|                      | 1.2               | 3/64 "          | 0.6             | 0.40      | 400 m       | Blue (BU)   | VG 95343 T05 A 001 G       | 30-32 | 305-01206   |
|                      | 1.2               | 3/64 "          | 0.6             | 0.40      | 400 m       | Red (RD)    | VG 95343 T05 A 001 C       | 30-32 | 305-01202   |
|                      | 1.2               | 3/64 "          | 0.6             | 0.40      | 400 m       | White (WH)  | VG 95343 T05 A 001 L       | 30-32 | 305-01209   |
|                      | 1.2               | 3/64 "          | 0.6             | 0.40      | 400 m       | Yellow (YE) | VG 95343 T05 A 001 E       | 30-32 | 305-01204   |
| <b>HFT-A-1.6/0.8</b> | 1.6               | 1/16 "          | 0.8             | 0.40      | 400 m       | Black (BK)  | VG 95343 T05 A 002 A       | 30-32 | 305-01600   |
|                      | 1.6               | 1/16 "          | 0.8             | 0.40      | 400 m       | Blue (BU)   | VG 95343 T05 A 002 G       | 30-32 | 305-01606   |
|                      | 1.6               | 1/16 "          | 0.8             | 0.40      | 400 m       | Red (RD)    | VG 95343 T05 A 002 C       | 30-32 | 305-01602   |
|                      | 1.6               | 1/16 "          | 0.8             | 0.40      | 400 m       | White (WH)  | VG 95343 T05 A 002 L       | 30-32 | 305-01609   |
|                      | 1.6               | 1/16 "          | 0.8             | 0.40      | 400 m       | Yellow (YE) | VG 95343 T05 A 002 E       | 30-32 | 305-01604   |
| <b>HFT-A-2.4/1.2</b> | 2.4               | 3/32 "          | 1.2             | 0.50      | 100 m       | Blue (BU)   | VG 95343 T05 A 003 G       | 30-32 | 305-02406   |
|                      | 2.4               | 3/32 "          | 1.2             | 0.50      | 100 m       | Red (RD)    | VG 95343 T05 A 003 C       | 30-32 | 305-02402   |
|                      | 2.4               | 3/32 "          | 1.2             | 0.50      | 100 m       | White (WH)  | VG 95343 T05 A 003 L       | 30-32 | 305-02409   |
|                      | 2.4               | 3/32 "          | 1.2             | 0.50      | 100 m       | Yellow (YE) | VG 95343 T05 A 003 E       | 30-32 | 305-02404   |
|                      | 2.4               | 3/32 "          | 1.2             | 0.50      | 400 m       | Black (BK)  | VG 95343 T05 A 003 A       | 30-32 | 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



| TYPE           | Supplied<br>Ø D min. | Size<br>(imperial) | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour                 | Designation as per<br>VG-Norm | Tools | Article-No. |
|----------------|----------------------|--------------------|--------------------|--------------|----------------|------------------------|-------------------------------|-------|-------------|
| HFT-A-3.2/1.6  | 3.2                  | 1/8 "              | 1.6                | 0.50         | 100 m          | Blue (BU)              | VG 95343 T05 A 004 G          | 30-32 | 305-03206   |
|                | 3.2                  | 1/8 "              | 1.6                | 0.50         | 100 m          | Green-Yellow<br>(GNYE) | VG 95343 T05 A 004 N          | 30-32 | 305-03245   |
|                | 3.2                  | 1/8 "              | 1.6                | 0.50         | 100 m          | Red (RD)               | VG 95343 T05 A 004 C          | 30-32 | 305-03202   |
|                | 3.2                  | 1/8 "              | 1.6                | 0.50         | 100 m          | White (WH)             | VG 95343 T05 A 004 L          | 30-32 | 305-03209   |
|                | 3.2                  | 1/8 "              | 1.6                | 0.50         | 100 m          | Yellow (YE)            | VG 95343 T05 A 004 E          | 30-32 | 305-03204   |
|                | 3.2                  | 1/8 "              | 1.6                | 0.50         | 400 m          | Black (BK)             | VG 95343 T05 A 004 A          | 30-32 | 305-03200   |
| HFT-A-4.8/2.4  | 4.8                  | 3/16 "             | 2.4                | 0.50         | 75 m           | Blue (BU)              | VG 95343 T05 A 005 G          | 30-32 | 305-04806   |
|                | 4.8                  | 3/16 "             | 2.4                | 0.50         | 75 m           | Green-Yellow<br>(GNYE) | VG 95343 T05 A 005 N          | 30-32 | 305-04845   |
|                | 4.8                  | 3/16 "             | 2.4                | 0.50         | 75 m           | Red (RD)               | VG 95343 T05 A 005 C          | 30-32 | 305-04802   |
|                | 4.8                  | 3/16 "             | 2.4                | 0.50         | 75 m           | White (WH)             | VG 95343 T05 A 005 L          | 30-32 | 305-04809   |
|                | 4.8                  | 3/16 "             | 2.4                | 0.50         | 75 m           | Yellow (YE)            | VG 95343 T05 A 005 E          | 30-32 | 305-04804   |
|                | 4.8                  | 3/16 "             | 2.4                | 0.50         | 300 m          | Black (BK)             | VG 95343 T05 A 005 A          | 30-32 | 305-04800   |
| HFT-A-6.4/3.2  | 6.4                  | 1/4 "              | 3.2                | 0.60         | 75 m           | Blue (BU)              | VG 95343 T05 A 006 G          | 30-32 | 305-06406   |
|                | 6.4                  | 1/4 "              | 3.2                | 0.60         | 75 m           | Green-Yellow<br>(GNYE) | VG 95343 T05 A 006 N          | 30-32 | 305-06445   |
|                | 6.4                  | 1/4 "              | 3.2                | 0.60         | 75 m           | Red (RD)               | VG 95343 T05 A 006 C          | 30-32 | 305-06402   |
|                | 6.4                  | 1/4 "              | 3.2                | 0.60         | 75 m           | White (WH)             | VG 95343 T05 A 006 L          | 30-32 | 305-06409   |
|                | 6.4                  | 1/4 "              | 3.2                | 0.60         | 75 m           | Yellow (YE)            | VG 95343 T05 A 006 E          | 30-32 | 305-06404   |
|                | 6.4                  | 1/4 "              | 3.2                | 0.60         | 300 m          | Black (BK)             | VG 95343 T05 A 006 A          | 30-32 | 305-06400   |
| HFT-A-9.5/4.8  | 9.5                  | 3/8 "              | 4.8                | 0.60         | 50 m           | Blue (BU)              | VG 95343 T05 A 007 G          | 30-32 | 305-09506   |
|                | 9.5                  | 3/8 "              | 4.8                | 0.60         | 50 m           | Green-Yellow<br>(GNYE) | VG 95343 T05 A 007 N          | 30-32 | 305-09545   |
|                | 9.5                  | 3/8 "              | 4.8                | 0.60         | 50 m           | Red (RD)               | VG 95343 T05 A 007 C          | 30-32 | 305-09502   |
|                | 9.5                  | 3/8 "              | 4.8                | 0.60         | 50 m           | White (WH)             | VG 95343 T05 A 007 L          | 30-32 | 305-09509   |
|                | 9.5                  | 3/8 "              | 4.8                | 0.60         | 50 m           | Yellow (YE)            | VG 95343 T05 A 007 E          | 30-32 | 305-09504   |
|                | 9.5                  | 3/8 "              | 4.8                | 0.60         | 150 m          | Black (BK)             | VG 95343 T05 A 007 A          | 30-32 | 305-09500   |
| HFT-A-12.7/6.4 | 12.7                 | 1/2 "              | 6.4                | 0.60         | 50 m           | Blue (BU)              | VG 95343 T05 A 008 G          | 30-32 | 305-12706   |
|                | 12.7                 | 1/2 "              | 6.4                | 0.60         | 50 m           | Green-Yellow<br>(GNYE) | VG 95343 T05 A 008 N          | 30-32 | 305-12745   |
|                | 12.7                 | 1/2 "              | 6.4                | 0.60         | 50 m           | Red (RD)               | VG 95343 T05 A 008 C          | 30-32 | 305-12702   |
|                | 12.7                 | 1/2 "              | 6.4                | 0.60         | 50 m           | White (WH)             | VG 95343 T05 A 008 L          | 30-32 | 305-12709   |
|                | 12.7                 | 1/2 "              | 6.4                | 0.60         | 50 m           | Yellow (YE)            | VG 95343 T05 A 008 E          | 30-32 | 305-12704   |
|                | 12.7                 | 1/2 "              | 6.4                | 0.60         | 100 m          | Black (BK)             | VG 95343 T05 A 008 A          | 30-32 | 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<br>Ø D min. | Size<br>(imperial) | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour                 | Designation as per<br>VG-Norm | Tools | Article-No. |
|------------------|----------------------|--------------------|--------------------|--------------|----------------|------------------------|-------------------------------|-------|-------------|
| HFT-A-19.0/9.5   | 19.0                 | 3/4 "              | 9.5                | 0.80         | 25 m           | Blue (BU)              | VG 95343 T05 A 009 G          | 30-32 | 305-19006   |
|                  | 19.0                 | 3/4 "              | 9.5                | 0.80         | 25 m           | Green-Yellow<br>(GNYE) | VG 95343 T05 A 009 N          | 30-32 | 305-19045   |
|                  | 19.0                 | 3/4 "              | 9.5                | 0.80         | 25 m           | Red (RD)               | VG 95343 T05 A 009 C          | 30-32 | 305-19002   |
|                  | 19.0                 | 3/4 "              | 9.5                | 0.80         | 25 m           | White (WH)             | VG 95343 T05 A 009 L          | 30-32 | 305-19009   |
|                  | 19.0                 | 3/4 "              | 9.5                | 0.80         | 25 m           | Yellow (YE)            | VG 95343 T05 A 009 E          | 30-32 | 305-19004   |
|                  | 19.0                 | 3/4 "              | 9.5                | 0.80         | 50 m           | Black (BK)             | VG 95343 T05 A 009 A          | 30-32 | 305-19000   |
| HFT-A-25.4/12.7  | 25.4                 | 1 "                | 12.7               | 0.90         | 25 m           | Blue (BU)              | VG 95343 T05 A 010 G          | 30-32 | 305-25406   |
|                  | 25.4                 | 1 "                | 12.7               | 0.90         | 25 m           | Green-Yellow<br>(GNYE) | VG 95343 T05 A 010 N          | 30-32 | 305-25445   |
|                  | 25.4                 | 1 "                | 12.7               | 0.90         | 25 m           | Red (RD)               | VG 95343 T05 A 010 C          | 30-32 | 305-25402   |
|                  | 25.4                 | 1 "                | 12.7               | 0.90         | 25 m           | White (WH)             | VG 95343 T05 A 010 L          | 30-32 | 305-25409   |
|                  | 25.4                 | 1 "                | 12.7               | 0.90         | 25 m           | Yellow (YE)            | VG 95343 T05 A 010 E          | 30-32 | 305-25404   |
|                  | 25.4                 | 1 "                | 12.7               | 0.90         | 50 m           | Black (BK)             | VG 95343 T05 A 010 A          | 30-32 | 305-25400   |
| HFT-A-38.0/19.0  | 38.0                 | 1-1/2 "            | 19.0               | 1.00         | 50 m           | Black (BK)             | VG 95343 T05 A 011 A          | 30-32 | 305-38100   |
|                  | 38.0                 | 1-1/2 "            | 19.0               | 1.00         | 50 m           | Blue (BU)              | VG 95343 T05 A 011 G          | 30-32 | 305-38106   |
|                  | 38.0                 | 1-1/2 "            | 19.0               | 1.00         | 50 m           | Green-Yellow<br>(GNYE) | VG 95343 T05 A 011 N          | 30-32 | 305-38145   |
|                  | 38.0                 | 1-1/2 "            | 19.0               | 1.00         | 50 m           | Red (RD)               | VG 95343 T05 A 011 C          | 30-32 | 305-38102   |
|                  | 38.0                 | 1-1/2 "            | 19.0               | 1.00         | 50 m           | White (WH)             | VG 95343 T05 A 011 L          | 30-32 | 305-38109   |
|                  | 38.0                 | 1-1/2 "            | 19.0               | 1.00         | 50 m           | Yellow (YE)            | VG 95343 T05 A 011 E          | 30-32 | 305-38104   |
| HFT-A-50.8/25.4  | 50.8                 | 2 "                | 25.4               | 1.10         | 35 m           | Black (BK)             | VG 95343 T05 A 012 A          | 30-32 | 305-50800   |
|                  | 50.8                 | 2 "                | 25.4               | 1.10         | 35 m           | Blue (BU)              | VG 95343 T05 A 012 G          | 30-32 | 305-50806   |
|                  | 50.8                 | 2 "                | 25.4               | 1.10         | 35 m           | Red (RD)               | VG 95343 T05 A 012 C          | 30-32 | 305-50802   |
|                  | 50.8                 | 2 "                | 25.4               | 1.10         | 35 m           | White (WH)             | VG 95343 T05 A 012 L          | 30-32 | 305-50809   |
|                  | 50.8                 | 2 "                | 25.4               | 1.10         | 35 m           | Yellow (YE)            | VG 95343 T05 A 012 E          | 30-32 | 305-50804   |
| HFT-A-76.0/38.0  | 76.0                 | 3 "                | 38.0               | 1.30         | 25 m           | Black (BK)             | VG 95343 T05 A 013 A          | -     | 305-76200   |
|                  | 76.0                 | 3 "                | 38.0               | 1.30         | 25 m           | Blue (BU)              | VG 95343 T05 A 013 G          | -     | 305-76206   |
|                  | 76.0                 | 3 "                | 38.0               | 1.30         | 25 m           | Red (RD)               | VG 95343 T05 A 013 C          | -     | 305-76202   |
|                  | 76.0                 | 3 "                | 38.0               | 1.30         | 25 m           | White (WH)             | VG 95343 T05 A 013 L          | -     | 305-76209   |
|                  | 76.0                 | 3 "                | 38.0               | 1.30         | 25 m           | Yellow (YE)            | VG 95343 T05 A 013 E          | -     | 305-76204   |
| HFT-A-101.6/50.8 | 101.6                | 4 "                | 50.8               | 1.40         | 25 m           | Black (BK)             | VG 95343 T05 A 014 A          | -     | 305-91600   |
|                  | 101.6                | 4 "                | 50.8               | 1.40         | 25 m           | Blue (BU)              | VG 95343 T05 A 014 G          | -     | 305-91606   |
|                  | 101.6                | 4 "                | 50.8               | 1.40         | 25 m           | Red (RD)               | VG 95343 T05 A 014 C          | -     | 305-91602   |
|                  | 101.6                | 4 "                | 50.8               | 1.40         | 25 m           | White (WH)             | VG 95343 T05 A 014 L          | -     | 305-91609   |
|                  | 101.6                | 4 "                | 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 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 wall, flexible polyolefin tubing
- Fast shrinking and low shrink temperature
- Meets and exceeds lots of industrial standards
- Big variety of different colours and sizes
- Flame retarded and UL224 VW1 listed



**Cut lengths available on request. Please contact us!**



One Step to the Web!



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

|                                            |                                 |
|--------------------------------------------|---------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X) |
| <b>Shrink Ratio</b>                        | 2:1                             |
| <b>Operating Temperature</b>               | -55 °C to +135 °C               |
| <b>Min. Shrink Temperature</b>             | +90 °C                          |
| <b>Longitudinal change after shrinkage</b> | +/- 5 %                         |
| <b>Dielectric Strength</b>                 | 37 kV/mm                        |
| <b>Flammability</b>                        | ASTM D876                       |

**RoHS** ✓



Heat Shrinkable Tubing 2:1

| TYPE         | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour              | Tools | Article-No. |
|--------------|-------------------|-----------------|-----------------|-----------|-------------|---------------------|-------|-------------|
| TF21-1.2/0.6 | 1.2               | 3/64 "          | 0.6             | 0.41      | 100 m       | Blue (BU)           | 30-32 | 309-20126   |
|              | 1.2               | 3/64 "          | 0.6             | 0.41      | 100 m       | Red (RD)            | 30-32 | 309-20122   |
|              | 1.2               | 3/64 "          | 0.6             | 0.41      | 100 m       | White (WH)          | 30-32 | 309-20129   |
|              | 1.2               | 3/64 "          | 0.6             | 0.41      | 100 m       | Yellow (YE)         | 30-32 | 309-20124   |
|              | 1.2               | 3/64 "          | 0.6             | 0.41      | 300 m       | Black (BK)          | 30-32 | 309-10120   |
| TF21-1.6/0.8 | 1.6               | 1/16 "          | 0.8             | 0.43      | 100 m       | Blue (BU)           | 30-32 | 309-20166   |
|              | 1.6               | 1/16 "          | 0.8             | 0.43      | 100 m       | Red (RD)            | 30-32 | 309-20162   |
|              | 1.6               | 1/16 "          | 0.8             | 0.43      | 100 m       | White (WH)          | 30-32 | 309-20169   |
|              | 1.6               | 1/16 "          | 0.8             | 0.43      | 100 m       | Yellow (YE)         | 30-32 | 309-20164   |
|              | 1.6               | 1/16 "          | 0.8             | 0.43      | 300 m       | Black (BK)          | 30-32 | 309-10160   |
| TF21-2.4/1.2 | 2.4               | 3/32 "          | 1.2             | 0.51      | 100 m       | Blue (BU)           | 30-32 | 309-20246   |
|              | 2.4               | 3/32 "          | 1.2             | 0.51      | 100 m       | Green-Yellow (GNYE) | 30-32 | 309-40247   |
|              | 2.4               | 3/32 "          | 1.2             | 0.51      | 100 m       | Red (RD)            | 30-32 | 309-20242   |
|              | 2.4               | 3/32 "          | 1.2             | 0.51      | 100 m       | White (WH)          | 30-32 | 309-20249   |
|              | 2.4               | 3/32 "          | 1.2             | 0.51      | 100 m       | Yellow (YE)         | 30-32 | 309-20244   |
|              | 2.4               | 3/32 "          | 1.2             | 0.51      | 300 m       | Black (BK)          | 30-32 | 309-10240   |

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

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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<br>Ø D min. | Size<br>(imperial) | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour              | Tools | Article-No. |
|---------------|----------------------|--------------------|--------------------|--------------|----------------|---------------------|-------|-------------|
| TF21-3.2/1.6  | 3.2                  | 1/8 "              | 1.6                | 0.51         | 100 m          | Blue (BU)           | 30-32 | 309-20326   |
|               | 3.2                  | 1/8 "              | 1.6                | 0.51         | 100 m          | Green-Yellow (GNYE) | 30-32 | 309-40327   |
|               | 3.2                  | 1/8 "              | 1.6                | 0.51         | 100 m          | Red (RD)            | 30-32 | 309-20322   |
|               | 3.2                  | 1/8 "              | 1.6                | 0.51         | 100 m          | White (WH)          | 30-32 | 309-20329   |
|               | 3.2                  | 1/8 "              | 1.6                | 0.51         | 100 m          | Yellow (YE)         | 30-32 | 309-20324   |
|               | 3.2                  | 1/8 "              | 1.6                | 0.51         | 300 m          | Black (BK)          | 30-32 | 309-10320   |
| TF21-4.8/2.4  | 4.8                  | 3/16 "             | 2.4                | 0.51         | 60 m           | Blue (BU)           | 30-32 | 309-50486   |
|               | 4.8                  | 3/16 "             | 2.4                | 0.51         | 60 m           | Green-Yellow (GNYE) | 30-32 | 309-50487   |
|               | 4.8                  | 3/16 "             | 2.4                | 0.51         | 60 m           | Red (RD)            | 30-32 | 309-50482   |
|               | 4.8                  | 3/16 "             | 2.4                | 0.51         | 60 m           | White (WH)          | 30-32 | 309-50489   |
|               | 4.8                  | 3/16 "             | 2.4                | 0.51         | 60 m           | Yellow (YE)         | 30-32 | 309-50484   |
|               | 4.8                  | 3/16 "             | 2.4                | 0.51         | 300 m          | Black (BK)          | 30-32 | 309-10480   |
| TF21-6.4/3.2  | 6.4                  | 1/4 "              | 3.2                | 0.64         | 60 m           | Blue (BU)           | 30-32 | 309-50646   |
|               | 6.4                  | 1/4 "              | 3.2                | 0.64         | 60 m           | Green-Yellow (GNYE) | 30-32 | 309-50647   |
|               | 6.4                  | 1/4 "              | 3.2                | 0.64         | 60 m           | Red (RD)            | 30-32 | 309-50642   |
|               | 6.4                  | 1/4 "              | 3.2                | 0.64         | 60 m           | White (WH)          | 30-32 | 309-50649   |
|               | 6.4                  | 1/4 "              | 3.2                | 0.64         | 60 m           | Yellow (YE)         | 30-32 | 309-50644   |
|               | 6.4                  | 1/4 "              | 3.2                | 0.64         | 300 m          | Black (BK)          | 30-32 | 309-10640   |
| TF21-9.5/4.8  | 9.5                  | 3/8 "              | 4.8                | 0.64         | 50 m           | Blue (BU)           | 30-32 | 309-20956   |
|               | 9.5                  | 3/8 "              | 4.8                | 0.64         | 50 m           | Green-Yellow (GNYE) | 30-32 | 309-50957   |
|               | 9.5                  | 3/8 "              | 4.8                | 0.64         | 50 m           | Red (RD)            | 30-32 | 309-20952   |
|               | 9.5                  | 3/8 "              | 4.8                | 0.64         | 50 m           | White (WH)          | 30-32 | 309-20959   |
|               | 9.5                  | 3/8 "              | 4.8                | 0.64         | 50 m           | Yellow (YE)         | 30-32 | 309-20954   |
|               | 9.5                  | 3/8 "              | 4.8                | 0.64         | 150 m          | Black (BK)          | 30-32 | 309-10950   |
| TF21-12.7/6.4 | 12.7                 | 1/2 "              | 6.4                | 0.64         | 50 m           | Blue (BU)           | 30-32 | 309-21276   |
|               | 12.7                 | 1/2 "              | 6.4                | 0.64         | 50 m           | Green-Yellow (GNYE) | 30-32 | 309-41277   |
|               | 12.7                 | 1/2 "              | 6.4                | 0.64         | 50 m           | Red (RD)            | 30-32 | 309-21272   |
|               | 12.7                 | 1/2 "              | 6.4                | 0.64         | 50 m           | White (WH)          | 30-32 | 309-21279   |
|               | 12.7                 | 1/2 "              | 6.4                | 0.64         | 50 m           | Yellow (YE)         | 30-32 | 309-21274   |
|               | 12.7                 | 1/2 "              | 6.4                | 0.64         | 100 m          | Black (BK)          | 30-32 | 309-11270   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.

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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<br>Ø D min. | Size<br>(imperial) | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour              | Tools | Article-No. |
|-----------------|----------------------|--------------------|--------------------|--------------|----------------|---------------------|-------|-------------|
| TF21-19.1/9.5   | 19.1                 | 3/4 "              | 9.5                | 0.76         | 50 m           | Black (BK)          | 30-32 | 309-11900   |
|                 | 19.1                 | 3/4 "              | 9.5                | 0.76         | 50 m           | Blue (BU)           | 30-32 | 309-11906   |
|                 | 19.1                 | 3/4 "              | 9.5                | 0.76         | 50 m           | Green-Yellow (GNYE) | 30-32 | 309-11907   |
|                 | 19.1                 | 3/4 "              | 9.5                | 0.76         | 50 m           | Red (RD)            | 30-32 | 309-11902   |
|                 | 19.1                 | 3/4 "              | 9.5                | 0.76         | 50 m           | White (WH)          | 30-32 | 309-11909   |
|                 | 19.1                 | 3/4 "              | 9.5                | 0.76         | 50 m           | Yellow (YE)         | 30-32 | 309-11904   |
| TF21-25.4/12.7  | 25.4                 | 1 "                | 12.7               | 0.89         | 50 m           | Black (BK)          | 30-32 | 309-12540   |
|                 | 25.4                 | 1 "                | 12.7               | 0.89         | 50 m           | Blue (BU)           | 30-32 | 309-12546   |
|                 | 25.4                 | 1 "                | 12.7               | 0.89         | 50 m           | Green-Yellow (GNYE) | 30-32 | 309-12547   |
|                 | 25.4                 | 1 "                | 12.7               | 0.89         | 50 m           | Red (RD)            | 30-32 | 309-12542   |
|                 | 25.4                 | 1 "                | 12.7               | 0.89         | 50 m           | White (WH)          | 30-32 | 309-12549   |
|                 | 25.4                 | 1 "                | 12.7               | 0.89         | 50 m           | Yellow (YE)         | 30-32 | 309-12544   |
| TF21-38.0/19.0  | 38.1                 | 1-1/2 "            | 19.1               | 1.02         | 60 m           | Black (BK)          | 30-32 | 309-13810   |
|                 | 38.1                 | 1-1/2 "            | 19.1               | 1.02         | 60 m           | Blue (BU)           | 30-32 | 309-13816   |
|                 | 38.1                 | 1-1/2 "            | 19.1               | 1.02         | 60 m           | Green-Yellow (GNYE) | 30-32 | 309-13817   |
|                 | 38.1                 | 1-1/2 "            | 19.1               | 1.02         | 60 m           | Red (RD)            | 30-32 | 309-13812   |
|                 | 38.1                 | 1-1/2 "            | 19.1               | 1.02         | 60 m           | White (WH)          | 30-32 | 309-13819   |
|                 | 38.1                 | 1-1/2 "            | 19.1               | 1.02         | 60 m           | Yellow (YE)         | 30-32 | 309-13814   |
| TF21-50.8/25.4  | 50.8                 | 2 "                | 25.4               | 1.14         | 60 m           | Black (BK)          | 30-32 | 309-15080   |
|                 | 50.8                 | 2 "                | 25.4               | 1.14         | 60 m           | Blue (BU)           | 30-32 | 309-15086   |
|                 | 50.8                 | 2 "                | 25.4               | 1.14         | 60 m           | Green-Yellow (GNYE) | 30-32 | 309-15087   |
|                 | 50.8                 | 2 "                | 25.4               | 1.14         | 60 m           | Red (RD)            | 30-32 | 309-15082   |
|                 | 50.8                 | 2 "                | 25.4               | 1.14         | 60 m           | White (WH)          | 30-32 | 309-15089   |
|                 | 50.8                 | 2 "                | 25.4               | 1.14         | 60 m           | Yellow (YE)         | 30-32 | 309-15084   |
| TF21-76.0/38.0  | 76.2                 | 3 "                | 38.1               | 1.27         | 30 m           | Black (BK)          | -     | 309-17600   |
|                 | 76.2                 | 3 "                | 38.1               | 1.27         | 30 m           | Blue (BU)           | -     | 309-17606   |
|                 | 76.2                 | 3 "                | 38.1               | 1.27         | 30 m           | Red (RD)            | -     | 309-17602   |
|                 | 76.2                 | 3 "                | 38.1               | 1.27         | 30 m           | White (WH)          | -     | 309-17609   |
|                 | 76.2                 | 3 "                | 38.1               | 1.27         | 30 m           | Yellow (YE)         | -     | 309-17604   |
| TF21-101.6/50.8 | 101.6                | 4 "                | 50.8               | 1.40         | 15 m           | Black (BK)          | -     | 309-11020   |
|                 | 101.6                | 4 "                | 50.8               | 1.40         | 15 m           | Blue (BU)           | -     | 309-11026   |
|                 | 101.6                | 4 "                | 50.8               | 1.40         | 15 m           | Red (RD)            | -     | 309-11022   |
|                 | 101.6                | 4 "                | 50.8               | 1.40         | 15 m           | White (WH)          | -     | 309-11029   |
|                 | 101.6                | 4 "                | 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.

| Recommended Tools |             |             |             |
|-------------------|-------------|-------------|-------------|
|                   | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
|                   | 568         | 568         | 567         |

For more information on toolings please refer to the Application Tooling chapter.

EN 45545-2



JAR/FAR

NF F



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!**



One Step to the Web!

|                                            |                                         |
|--------------------------------------------|-----------------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)         |
| <b>Shrink Ratio</b>                        | 2:1                                     |
| <b>Operating Temperature</b>               | -55 °C to +135 °C                       |
| <b>Min. Shrink Temperature</b>             | +110 °C                                 |
| <b>Longitudinal change after shrinkage</b> | +/-5 % max.                             |
| <b>Dielectric Strength</b>                 | ≥ 30 kV/mm min. according to ASTM D2171 |
| <b>Flammability</b>                        | not flame retarded                      |



Heat Shrinkable Tubing 2:1

| TYPE            | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour           | Designation as per VG-Norm | Tools | Article-No. |
|-----------------|-------------------|-----------------|-----------------|-----------|-------------|------------------|----------------------------|-------|-------------|
| TF24-1.2/0.6    | 1.2               | 3/64 "          | 0.6             | 0.41      | 100 m       | Transparent (CL) | VG 95343 T05 B 001 M       | 30-32 | 309-40123   |
| TF24-1.6/0.8    | 1.6               | 1/16 "          | 0.8             | 0.43      | 100 m       | Transparent (CL) | VG 95343 T05 B 002 M       | 30-32 | 309-40163   |
| TF24-2.4/1.2    | 2.4               | 3/32 "          | 1.2             | 0.51      | 100 m       | Transparent (CL) | VG 95343 T05 B 003 M       | 30-32 | 309-40243   |
| TF24-3.2/1.6    | 3.2               | 1/8 "           | 1.6             | 0.51      | 100 m       | Transparent (CL) | VG 95343 T05 B 004 M       | 30-32 | 309-40323   |
| TF24-4.8/2.4    | 4.8               | 3/16 "          | 2.4             | 0.51      | 60 m        | Transparent (CL) | VG 95343 T05 B 005 M       | 30-32 | 309-50483   |
| TF24-6.4/3.2    | 6.4               | 1/4 "           | 3.2             | 0.64      | 60 m        | Transparent (CL) | VG 95343 T05 B 006 M       | 30-32 | 309-50643   |
| TF24-9.5/4.8    | 9.5               | 3/8 "           | 4.8             | 0.64      | 50 m        | Transparent (CL) | VG 95343 T05 B 007 M       | 30-32 | 309-40953   |
| TF24-12.7/6.4   | 12.7              | 1/2 "           | 6.4             | 0.64      | 50 m        | Transparent (CL) | VG 95343 T05 B 008 M       | 30-32 | 309-41273   |
| TF24-19.1/9.5   | 19.1              | 3/4 "           | 9.5             | 0.76      | 50 m        | Transparent (CL) | VG 95343 T05 B 009 M       | 30-32 | 309-31903   |
| TF24-25.4/12.7  | 25.4              | 1 "             | 12.7            | 0.89      | 50 m        | Transparent (CL) | VG 95343 T05 B 010 M       | 30-32 | 309-32543   |
| TF24-38.1/19.1  | 38.1              | 1-1/2 "         | 19.1            | 1.02      | 60 m        | Transparent (CL) | VG 95343 T05 B 011 M       | 30-32 | 309-33813   |
| TF24-50.8/25.4  | 50.8              | 2 "             | 25.4            | 1.14      | 60 m        | Transparent (CL) | VG 95343 T05 B 012 M       | 30-32 | 309-35083   |
| TF24-76.2/38.1  | 76.2              | 3 "             | 38.1            | 1.27      | 30 m        | Transparent (CL) | VG 95343 T05 B 013 M       | -     | 309-37603   |
| TF24-101.6/50.8 | 101.6             | 4 "             | 50.8            | 1.40      | 15 m        | Transparent (CL) | VG 95343 T05 B 014 M       | -     | 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 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 wall, 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



**Cut lengths available on request. Please contact us!**

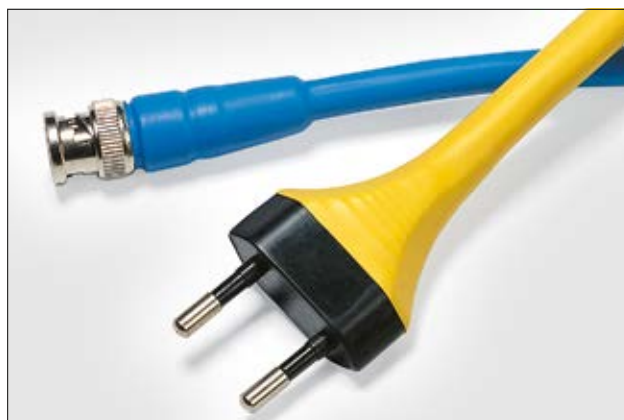


One Step to the Web!



Heat Shrinkable Tubing 3:1

**RoHS** ✓



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

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

| TYPE         | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour              | Tools | Article-No. |
|--------------|----------------------|--------------------|--------------|----------------|---------------------|-------|-------------|
| TF31-1.5/0.5 | 1.5                  | 0.5                | 0.50         | 30 m           | Black (BK)          | 30-32 | 333-30150   |
|              | 1.5                  | 0.5                | 0.50         | 30 m           | Blue (BU)           | 30-32 | 333-30156   |
|              | 1.5                  | 0.5                | 0.50         | 30 m           | Green (GN)          | 30-32 | 333-30155   |
|              | 1.5                  | 0.5                | 0.50         | 30 m           | Green-Yellow (GNYE) | 30-32 | 333-30157   |
|              | 1.5                  | 0.5                | 0.50         | 30 m           | Red (RD)            | 30-32 | 333-30152   |
|              | 1.5                  | 0.5                | 0.50         | 30 m           | White (WH)          | 30-32 | 333-30159   |
|              | 1.5                  | 0.5                | 0.50         | 30 m           | Yellow (YE)         | 30-32 | 333-30154   |
|              | 1.5                  | 0.5                | 0.50         | 300 m          | Black (BK)          | 30-32 | 333-20150   |
| TF31-3/1     | 3.0                  | 1.0                | 0.60         | 30 m           | Black (BK)          | 30-32 | 333-30300   |
|              | 3.0                  | 1.0                | 0.60         | 30 m           | Blue (BU)           | 30-32 | 333-30306   |
|              | 3.0                  | 1.0                | 0.60         | 30 m           | Green (GN)          | 30-32 | 333-30305   |
|              | 3.0                  | 1.0                | 0.60         | 30 m           | Green-Yellow (GNYE) | 30-32 | 333-30307   |
|              | 3.0                  | 1.0                | 0.60         | 30 m           | Red (RD)            | 30-32 | 333-30302   |
|              | 3.0                  | 1.0                | 0.60         | 30 m           | White (WH)          | 30-32 | 333-30309   |
|              | 3.0                  | 1.0                | 0.60         | 30 m           | Yellow (YE)         | 30-32 | 333-30304   |
|              | 3.0                  | 1.0                | 0.60         | 150 m          | Black (BK)          | 30-32 | 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<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour              | Tools | Article-No. |
|-----------|----------------------|--------------------|--------------|----------------|---------------------|-------|-------------|
| TF31-6/2  | 6.0                  | 2.0                | 0.70         | 30 m           | Black (BK)          | 30-32 | 333-30600   |
|           | 6.0                  | 2.0                | 0.70         | 30 m           | Blue (BU)           | 30-32 | 333-30606   |
|           | 6.0                  | 2.0                | 0.70         | 30 m           | Green (GN)          | 30-32 | 333-30605   |
|           | 6.0                  | 2.0                | 0.70         | 30 m           | Green-Yellow (GNYE) | 30-32 | 333-30607   |
|           | 6.0                  | 2.0                | 0.70         | 30 m           | Red (RD)            | 30-32 | 333-30602   |
|           | 6.0                  | 2.0                | 0.70         | 30 m           | White (WH)          | 30-32 | 333-30609   |
|           | 6.0                  | 2.0                | 0.70         | 30 m           | Yellow (YE)         | 30-32 | 333-30604   |
|           | 6.0                  | 2.0                | 0.70         | 150 m          | Black (BK)          | 30-32 | 333-40600   |
| TF31-9/3  | 9.0                  | 3.0                | 0.80         | 30 m           | Black (BK)          | 30-32 | 333-30900   |
|           | 9.0                  | 3.0                | 0.80         | 30 m           | Blue (BU)           | 30-32 | 333-30906   |
|           | 9.0                  | 3.0                | 0.80         | 30 m           | Green (GN)          | 30-32 | 333-30905   |
|           | 9.0                  | 3.0                | 0.80         | 30 m           | Green-Yellow (GNYE) | 30-32 | 333-30907   |
|           | 9.0                  | 3.0                | 0.80         | 30 m           | Red (RD)            | 30-32 | 333-30902   |
|           | 9.0                  | 3.0                | 0.80         | 30 m           | White (WH)          | 30-32 | 333-30909   |
|           | 9.0                  | 3.0                | 0.80         | 30 m           | Yellow (YE)         | 30-32 | 333-30904   |
|           | 9.0                  | 3.0                | 0.80         | 150 m          | Black (BK)          | 30-32 | 333-20900   |
| TF31-12/4 | 12.0                 | 4.0                | 0.85         | 30 m           | Black (BK)          | 30-32 | 333-31200   |
|           | 12.0                 | 4.0                | 0.85         | 30 m           | Blue (BU)           | 30-32 | 333-31206   |
|           | 12.0                 | 4.0                | 0.85         | 30 m           | Green (GN)          | 30-32 | 333-31205   |
|           | 12.0                 | 4.0                | 0.85         | 30 m           | Green-Yellow (GNYE) | 30-32 | 333-31207   |
|           | 12.0                 | 4.0                | 0.85         | 30 m           | Red (RD)            | 30-32 | 333-31202   |
|           | 12.0                 | 4.0                | 0.85         | 30 m           | White (WH)          | 30-32 | 333-31209   |
|           | 12.0                 | 4.0                | 0.85         | 30 m           | Yellow (YE)         | 30-32 | 333-31204   |
|           | 12.0                 | 4.0                | 0.85         | 100 m          | Black (BK)          | 30-32 | 333-21200   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the  
Application Tooling chapter.



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<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour              | Tools | Article-No. |
|------------|----------------------|--------------------|--------------|----------------|---------------------|-------|-------------|
| TF31-18/6  | 18.0                 | 6.0                | 1.00         | 30 m           | Black (BK)          | 30-32 | 333-31800   |
|            | 18.0                 | 6.0                | 1.00         | 30 m           | Blue (BU)           | 30-32 | 333-31806   |
|            | 18.0                 | 6.0                | 1.00         | 30 m           | Green (GN)          | 30-32 | 333-31805   |
|            | 18.0                 | 6.0                | 1.00         | 30 m           | Green-Yellow (GNYE) | 30-32 | 333-31807   |
|            | 18.0                 | 6.0                | 1.00         | 30 m           | Red (RD)            | 30-32 | 333-31802   |
|            | 18.0                 | 6.0                | 1.00         | 30 m           | White (WH)          | 30-32 | 333-31809   |
|            | 18.0                 | 6.0                | 1.00         | 30 m           | Yellow (YE)         | 30-32 | 333-31804   |
|            | 18.0                 | 6.0                | 1.00         | 60 m           | Black (BK)          | 30-32 | 333-41800   |
| TF31-24/8  | 24.0                 | 8.0                | 1.20         | 30 m           | Black (BK)          | 30-32 | 333-32400   |
|            | 24.0                 | 8.0                | 1.20         | 30 m           | Blue (BU)           | 30-32 | 333-32406   |
|            | 24.0                 | 8.0                | 1.20         | 30 m           | Green (GN)          | 30-32 | 333-32405   |
|            | 24.0                 | 8.0                | 1.20         | 30 m           | Green-Yellow (GNYE) | 30-32 | 333-32407   |
|            | 24.0                 | 8.0                | 1.20         | 30 m           | Red (RD)            | 30-32 | 333-32402   |
|            | 24.0                 | 8.0                | 1.20         | 30 m           | White (WH)          | 30-32 | 333-32409   |
|            | 24.0                 | 8.0                | 1.20         | 30 m           | Yellow (YE)         | 30-32 | 333-32404   |
|            | 24.0                 | 8.0                | 1.20         | 60 m           | Black (BK)          | 30-32 | 333-42400   |
| TF31-40/13 | 40.0                 | 13.0               | 1.25         | 30 m           | Black (BK)          | 30-32 | 333-34000   |
|            | 40.0                 | 13.0               | 1.25         | 30 m           | Blue (BU)           | 30-32 | 333-34006   |
|            | 40.0                 | 13.0               | 1.25         | 30 m           | Green (GN)          | 30-32 | 333-34005   |
|            | 40.0                 | 13.0               | 1.25         | 30 m           | Green-Yellow (GNYE) | 30-32 | 333-34007   |
|            | 40.0                 | 13.0               | 1.25         | 30 m           | Red (RD)            | 30-32 | 333-34002   |
|            | 40.0                 | 13.0               | 1.25         | 30 m           | White (WH)          | 30-32 | 333-34009   |
|            | 40.0                 | 13.0               | 1.25         | 30 m           | Yellow (YE)         | 30-32 | 333-34004   |
|            | 40.0                 | 13.0               | 1.25         | 60 m           | Black (BK)          | 30-32 | 333-24000   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the  
Application Tooling chapter.



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



**Cut lengths available on request. Please contact us!**



One Step to the Web!



Heat Shrinkable Tubing 3:1



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

|                                            |                                 |
|--------------------------------------------|---------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X) |
| <b>Shrink Ratio</b>                        | 3:1                             |
| <b>Operating Temperature</b>               | -55 °C to +135 °C               |
| <b>Min. Shrink Temperature</b>             | +110 °C                         |
| <b>Longitudinal change after shrinkage</b> | -5 % max.                       |
| <b>Dielectric Strength</b>                 | 46 kV/mm                        |
| <b>Flammability</b>                        | not flame retarded              |



| TYPE         | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour           | Tools | Article-No. |
|--------------|----------------------|--------------------|--------------|----------------|------------------|-------|-------------|
| TF34-1.5/0.5 | 1.5                  | 0.5                | 0.50         | 30 m           | Transparent (CL) | 30-32 | 333-30153   |
| TF34-3/1     | 3.0                  | 1.0                | 0.50         | 30 m           | Transparent (CL) | 30-32 | 333-30303   |
| TF34-6/2     | 6.0                  | 2.0                | 0.70         | 30 m           | Transparent (CL) | 30-32 | 333-30603   |
| TF34-9/3     | 9.0                  | 3.0                | 0.80         | 30 m           | Transparent (CL) | 30-32 | 333-30903   |
| TF34-12/4    | 12.0                 | 4.0                | 0.85         | 30 m           | Transparent (CL) | 30-32 | 333-31203   |
| TF34-18/6    | 18.0                 | 6.0                | 1.00         | 30 m           | Transparent (CL) | 30-32 | 333-31803   |
| TF34-24/8    | 24.0                 | 8.0                | 1.20         | 30 m           | Transparent (CL) | 30-32 | 333-32403   |
| TF34-40/13   | 40.0                 | 13.0               | 1.25         | 30 m           | Transparent (CL) | 30-32 | 333-34003   |

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

| Recommended Tools |             |             |             |
|-------------------|-------------|-------------|-------------|
|                   | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
|                   | 568         | 568         | 567         |

For more information on toolings please refer to the Application Tooling chapter.





## Heat shrinkable tubing adhesive lined - 1.2 m lengths

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

### Features and benefits

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



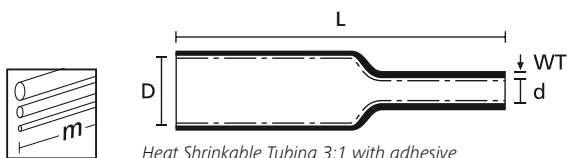
TA32 and TA42 are UL224 listed adhesive lined tubing. Available in 3:1 and 4:1 shrink ratio.



**Cut lengths available on request. Please contact us!**

|                                            |                                  |
|--------------------------------------------|----------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)  |
| <b>Operating Temperature</b>               | -55 °C to +125 °C                |
| <b>Min. Shrink Temperature</b>             | +110 °C                          |
| <b>Softening Point Adhesive</b>            | +110 °C                          |
| <b>Longitudinal change after shrinkage</b> | -15 % max.                       |
| <b>Dielectric Strength</b>                 | 15 kV/mm according to IEC 684 P2 |
| <b>Flammability</b>                        | UL224 VW-1                       |

### TA32 - thin wall, 3:1 shrink ratio



**RoHS** ✓

| TYPE         | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour     | Shrink<br>Ratio | Tools | Article-No. |
|--------------|----------------------|--------------------|--------------|---------------|------------|-----------------|-------|-------------|
| TA32-3/1     | 3.2                  | 0.6                | 0.95         | 1.2 m         | Black (BK) | 3:1             | 30-32 | 318-30300   |
| TA32 4.5/1.5 | 4.5                  | 1.5                | 1.10         | 1.2 m         | Black (BK) | 3:1             | 30-32 | 318-30450   |
| TA32-6/2     | 6.0                  | 2.0                | 1.20         | 1.2 m         | Black (BK) | 3:1             | 30-32 | 318-30600   |
| TA32-9/3     | 9.0                  | 3.0                | 1.30         | 1.2 m         | Black (BK) | 3:1             | 30-32 | 318-30900   |
| TA32-12/4    | 12.0                 | 4.0                | 1.40         | 1.2 m         | Black (BK) | 3:1             | 30-32 | 318-31200   |
| TA32-19/6    | 19.0                 | 6.0                | 1.80         | 1.2 m         | Black (BK) | 3:1             | 30-32 | 318-31900   |
| TA32-24/8    | 24.0                 | 8.0                | 2.50         | 1.2 m         | Black (BK) | 3:1             | 30-32 | 318-32400   |
| TA32-40/13   | 40.0                 | 13.0               | 2.50         | 1.2 m         | Black (BK) | 3:1             | 30-32 | 318-34000   |

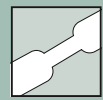
All dimensions in mm. Subject to technical changes.  
Minimum Order Quantity (MOQ) may differ from package content.

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.

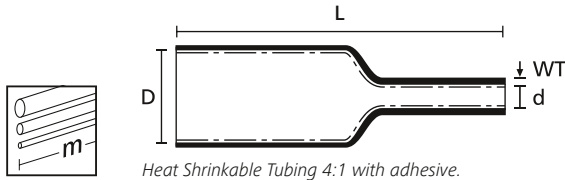


For product specific approvals and specifications please refer to the Appendix.



### Heat shrinkable tubing adhesive lined - 1.2 m lengths

#### TA42 - thin wall, 4:1 shrink ratio



| TYPE       | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour     | Shrink<br>Ratio | Tools | Article-No. |
|------------|----------------------|--------------------|--------------|---------------|------------|-----------------|-------|-------------|
| TA42-4/1   | 4.0                  | 1.0                | 1.00         | 1.2 m         | Black (BK) | 4:1             | 30-32 | 318-40400   |
| TA42-8/2   | 8.0                  | 2.0                | 1.20         | 1.2 m         | Black (BK) | 4:1             | 30-32 | 318-40800   |
| TA42-12/3  | 12.0                 | 3.0                | 1.40         | 1.2 m         | Black (BK) | 4:1             | 30-32 | 318-41200   |
| TA42-16/4  | 16.0                 | 4.0                | 1.80         | 1.2 m         | Black (BK) | 4:1             | 30-32 | 318-41600   |
| TA42-24/6  | 24.0                 | 6.0                | 2.25         | 1.2 m         | Black (BK) | 4:1             | 30-32 | 318-42400   |
| TA42-32/8  | 32.0                 | 8.0                | 2.55         | 1.2 m         | Black (BK) | 4:1             | 30-32 | 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.

| Recommended Tools |             |             |             |
|-------------------|-------------|-------------|-------------|
|                   | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
|                   | 568         | 568         | 567         |

For more information on toolings please refer to the  
Application Tooling chapter.



### Heat shrinkable tubing adhesive lined

**EPS-300 - 3:1 shrink ratio**

**EPS-400 - 4:1 shrink ratio**

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

#### Features and benefits

- Flexible, thin wall polyolefin heat shrink tubing
- With 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.



**Cut lengths available on request. Please contact us!**



Heat Shrinkable Tubing 3:1 with adhesive



Heat Shrinkable Tubing 4:1 with adhesive

|                                            |                                  |
|--------------------------------------------|----------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)  |
| <b>Operating Temperature</b>               | -55 °C to +125 °C                |
| <b>Min. Shrink Temperature</b>             | +120 °C                          |
| <b>Longitudinal change after shrinkage</b> | -10 % max.                       |
| <b>Softening Point Adhesive</b>            | +90 °C                           |
| <b>Dielectric Strength</b>                 | 15 kV/mm according to IEC 684 P2 |
| <b>Flammability</b>                        | ASTM D2671 (outer layer only)    |

**RoHS** ✓

| TYPE          | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour     | Shrink<br>Ratio | Tools | Article-No. |
|---------------|----------------------|--------------------|--------------|----------------|------------|-----------------|-------|-------------|
| EPS-300-3/1   | 3.0                  | 1.0                | 1.00         | 400 m          | Black (BK) | 3:1             | 30-32 | 340-03010   |
| EPS-300-6/2   | 6.0                  | 2.0                | 1.00         | 300 m          | Black (BK) | 3:1             | 30-32 | 340-06020   |
| EPS-300-9/3   | 9.0                  | 3.0                | 1.40         | 150 m          | Black (BK) | 3:1             | 30-32 | 340-09030   |
| EPS-300-12/4  | 12.0                 | 4.0                | 1.80         | 100 m          | Black (BK) | 3:1             | 30-32 | 340-12040   |
| EPS-300-19/6  | 19.0                 | 6.0                | 2.20         | 50 m           | Black (BK) | 3:1             | 30-32 | 340-19060   |
| EPS-300-24/8  | 24.0                 | 8.0                | 2.50         | 25 m           | Black (BK) | 3:1             | 30-32 | 340-24080   |
| EPS-300-40/13 | 40.0                 | 13.0               | 2.50         | 25 m           | Black (BK) | 3:1             | 30-32 | 340-40130   |

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

| TYPE         | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour     | Shrink<br>Ratio | Tools | Article-No. |
|--------------|----------------------|--------------------|--------------|----------------|------------|-----------------|-------|-------------|
| EPS-400-4/1  | 4.0                  | 1.0                | 1.00         | 300 m          | Black (BK) | 4:1             | 30-32 | 341-04010   |
| EPS-400-8/2  | 8.0                  | 2.0                | 1.00         | 150 m          | Black (BK) | 4:1             | 30-32 | 341-08020   |
| EPS-400-12/3 | 12.0                 | 3.0                | 1.40         | 100 m          | Black (BK) | 4:1             | 30-32 | 341-12030   |
| EPS-400-16/4 | 16.0                 | 4.0                | 1.80         | 100 m          | Black (BK) | 4:1             | 30-32 | 341-16040   |
| EPS-400-24/6 | 24.0                 | 6.0                | 2.20         | 50 m           | Black (BK) | 4:1             | 30-32 | 341-24060   |
| EPS-400-32/8 | 32.0                 | 8.0                | 2.50         | 25 m           | Black (BK) | 4:1             | 30-32 | 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 4:1 - Flame retardant

#### MA40 - medium wall adhesive lined

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

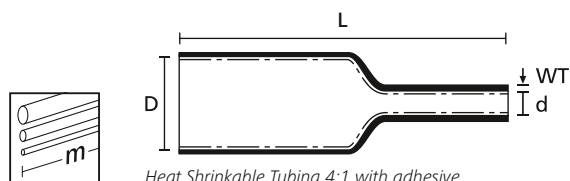
#### Features and benefits

- 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.

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



Heat Shrinkable Tubing 4:1 with adhesive.

LFH ✓

RoHS ✓

| TYPE       | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour     | Tools | Article-No. |
|------------|----------------------|--------------------|--------------|---------------|------------|-------|-------------|
| MA40-8/2   | 8.0                  | 2.0                | 1.70         | 1.0 m         | Black (BK) | 30-32 | 323-00100   |
| MA40-12/3  | 12.0                 | 3.0                | 2.00         | 1.0 m         | Black (BK) | 30-32 | 323-00101   |
| MA40-16/5  | 16.0                 | 5.0                | 2.00         | 1.0 m         | Black (BK) | 30-32 | 323-00103   |
| MA40-22/6  | 22.0                 | 6.0                | 2.40         | 1.0 m         | Black (BK) | 30-32 | 323-00104   |
| MA40-33/8  | 33.0                 | 8.0                | 2.50         | 1.0 m         | Black (BK) | 30-32 | 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.

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



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

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

#### Features and benefits

- Medium wall 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

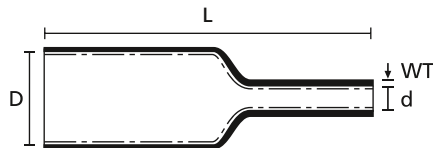


MA47 for above and below ground.



**Cut lengths available on request. Please contact us!**

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



Heat Shrinkable Tubing 4:1 with adhesive

HF ✓

RoHS ✓

| TYPE        | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour     | Tools | Article-No. |
|-------------|----------------------|--------------------|--------------|---------------|------------|-------|-------------|
| MA47-8/2    | 8.0                  | 2.0                | 1.70         | 1.0 m         | Black (BK) | 30-32 | 323-20080   |
| MA47-12/3   | 12.0                 | 3.0                | 2.00         | 1.0 m         | Black (BK) | 30-32 | 323-20120   |
| MA47-19/6   | 19.0                 | 6.0                | 2.50         | 1.0 m         | Black (BK) | 30-32 | 323-20190   |
| MA47-30/8   | 30.0                 | 8.0                | 2.50         | 1.0 m         | Black (BK) | 30-32 | 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.

| Recommended Tools |             |             |             |
|-------------------|-------------|-------------|-------------|
|                   | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
|                   | 568         | 568         | 567         |

For more information on toolings please refer to the Application Tooling chapter.



### Heat shrinkable tubing up to 4:1 - 1 m lengths in a Kit

#### MA47 - medium wall adhesive lined

MA47 heat shrinkable tubing in 4 sizes packed in a handy transportation tube. Insulation and protection of low voltage cable joints and terminations above and below ground.

#### Features and benefits

- Re-usable transportation tube in adjustable length
- 4 sizes of MA47 for different applications in 1 kit
- Medium wall tubing with robust insulation characteristics
- Shrink tubing for above and underground cable applications
- Protects against humidity and other environmental impacts after shrinking



Heatshrink tubing MA47 in a handy, re-usable kit.



**Detailed Information about Heatguns please refer to page 567.**



**Detailed information about MA47 please refer to page 219.**



Heat Shrinkable Tubing 4:1 with adhesive

| TYPE       | Content | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Length (L) | Colour           | Tools | Article-No. |
|------------|---------|-------------------|-----------------|-----------|------------|------------------|-------|-------------|
| MA47 Kit   | -       | -                 | -               | -         | -          | Transparent (CL) | 30-32 | 905-50026   |
| MA47-12/3  | 2       | 12.0              | 3.0             | 2.00      | 1.0 m      | Black (BK)       | 30-32 |             |
| MA47-19/6  | 2       | 19.0              | 6.0             | 2.50      | 1.0 m      | Black (BK)       | 30-32 |             |
| MA47-30/8  | 2       | 30.0              | 8.0             | 2.50      | 1.0 m      | Black (BK)       | 30-32 |             |
| MA47-40/12 | 2       | 40.0              | 12.0            | 2.50      | 1.0 m      | Black (BK)       | -     |             |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.





## Heat shrinkable tubing up to 4:1 - 1 m lengths

### MU47 - medium wall unlined

Insulation and production of low voltage cable joints and terminations.

#### Features and benefits

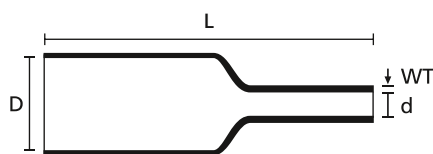
- Medium wall heat shrink tubing
- Not adhesive lined
- Provides good mechanical strength
- Resistant to solvents, acids and alkaline solutions



Detailed Information about Heatguns please refer to page 567.



Cut lengths available on request. Please contact us!



Heat Shrinkable Tubing 4:1



MU47 is resistant against solvents.

|                                            |                                 |
|--------------------------------------------|---------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X) |
| <b>Shrink Ratio</b>                        | up to 4:1                       |
| <b>Operating Temperature</b>               | -55 °C to +110 °C               |
| <b>Min. Shrink Temperature</b>             | +120 °C                         |
| <b>Longitudinal change after shrinkage</b> | -10 % max.                      |
| <b>Dielectric Strength</b>                 | 20 kV/mm                        |
| <b>Flammability</b>                        | not flame retardant             |

HF ✓

RoHS ✓

| TYPE        | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour     | Tools | Article-No. |
|-------------|----------------------|--------------------|--------------|---------------|------------|-------|-------------|
| MU47-12/3   | 12.0                 | 3.0                | 2.00         | 1.0 m         | Black (BK) | 30-32 | 323-10120   |
| MU47-19/6   | 19.0                 | 6.0                | 2.20         | 1.0 m         | Black (BK) | 30-32 | 323-10190   |
| MU47-30/8   | 30.0                 | 8.0                | 2.50         | 1.0 m         | Black (BK) | 30-32 | 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.

#### Recommended Tools

|  |       |       |       |
|--|-------|-------|-------|
|  | 30    | 31    | 32    |
|  | H5002 | H5004 | E4500 |
|  | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



### Cable repair kit

#### LVRK

The Cable Repair Kit LVRK is a solution for the fast and safe repair of damaged cable and wires in electrical installations. Damaged cable jackets and wires can be repaired safely and durably, saving time and labour.

#### Features and benefits

- Fast, safe and labour-saving repair of cable and wires
- No need for concealed sockets or wire insertion, with subsequent cost savings
- Available as a kit for simple and easy handling
- 1x heat shrinkable tubing, length 200 mm, shrink ratio 4:1, excellent insulation and can be cut for installation
- 5x crimp connectors with heat shrinkable insulation and adhesive liner
- 4x Q-tie heat stabilised cable ties with innovative and time-saving open-head design



Cable Repair Kit LVRK.

|                                            |                                 |
|--------------------------------------------|---------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X) |
| <b>Colour</b>                              | Black (BK)                      |
| <b>Shrink Ratio</b>                        | 4:1                             |
| <b>Operating Temperature</b>               | -55 °C to +125 °C               |
| <b>Min. Shrink Temperature</b>             | +110 °C                         |
| <b>Softening Point Adhesive</b>            | +110 °C                         |
| <b>Longitudinal change after shrinkage</b> | -15 % max.                      |
| <b>Dielectric Strength</b>                 | 15 kV/mm                        |



Application video:  
LVRK



| TYPE          | Pack Cont. | Tools | Article-No. |
|---------------|------------|-------|-------------|
| LVRK-24/6-200 | 1 pc.      | 30-32 | 380-04004   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



## Heat shrinkable cable repair sleeves

### RMS

RMS wrap-around sleeves are closed with a steel channel. The sleeve is adhesive lined and will effectively seal the cable after shrinkage. RMS sleeves provide fast, watertight and reliable insulation.

#### Features and benefits

- Fast, moisture proof and permanent repair of cable jackets
- Only 6 sizes for a wide range of cable diameters: from 15 mm up to 160 mm
- Available in 4 standard lengths and also available in custom lengths available on request
- Each RMS kit is ready for use and comes with instruction sheet, abrasive strip and cleaning sachet
- The metal closure is made of 316 stainless steel for high overall corrosion resistance
- Weather resistant and halogen free
- TCP (thermo chromatic paint) spots indicate the sleeve has been sufficiently heated



Application video: RMS

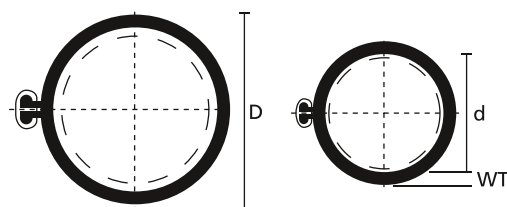
|                                            |                                            |
|--------------------------------------------|--------------------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, chemically cross linked (PO-X) |
| <b>Shrink Ratio</b>                        | up to 4.5:1                                |
| <b>Operating Temperature</b>               | -40 °C to +120 °C                          |
| <b>Min. Shrink Temperature</b>             | +110 °C                                    |
| <b>Softening Point Adhesive</b>            | +105 °C                                    |
| <b>Longitudinal change after shrinkage</b> | -10 % max.                                 |
| <b>Dielectric Strength</b>                 | 30 kV/mm                                   |
| <b>Flammability</b>                        | not flame retarded                         |



RMS wrap-around sleeves for rapid and secure cable repair.



RMS: Repair sleeve, steel closure, abrasive strip, cleaning sachet, instruction sheet.



Cable Repair Sleeve RMS with adhesive

| TYPE       | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Suitable for<br>Cable Ø<br>from/to | Length<br>(L) | Colour     | Article-No. |
|------------|----------------------|--------------------|--------------|------------------------------------|---------------|------------|-------------|
| RMS 43-10  | 43.0                 | 10.0               | 2.30         | 15 - 35                            | 250.0         | Black (BK) | 450-20000   |
|            | 43.0                 | 10.0               | 2.30         | 15 - 35                            | 500.0         | Black (BK) | 450-20001   |
|            | 43.0                 | 10.0               | 2.30         | 15 - 35                            | 750.0         | Black (BK) | 450-20004   |
|            | 43.0                 | 10.0               | 2.30         | 15 - 35                            | 1,000.0       | Black (BK) | 450-20002   |
| RMS 52-15  | 52.0                 | 15.0               | 2.30         | 20 - 45                            | 250.0         | Black (BK) | 450-20010   |
|            | 52.0                 | 15.0               | 2.30         | 20 - 45                            | 500.0         | Black (BK) | 450-20011   |
|            | 52.0                 | 15.0               | 2.30         | 20 - 45                            | 750.0         | Black (BK) | 450-20014   |
|            | 52.0                 | 15.0               | 2.30         | 20 - 45                            | 1,000.0       | Black (BK) | 450-20012   |
| RMS 76-22  | 76.0                 | 22.0               | 2.50         | 28 - 65                            | 500.0         | Black (BK) | 450-20021   |
|            | 76.0                 | 22.0               | 2.50         | 28 - 65                            | 750.0         | Black (BK) | 450-20024   |
|            | 76.0                 | 22.0               | 2.50         | 28 - 65                            | 1,000.0       | Black (BK) | 450-20022   |
| RMS 100-30 | 100.0                | 30.0               | 2.54         | 35 - 85                            | 500.0         | Black (BK) | 450-20030   |
|            | 100.0                | 30.0               | 2.54         | 35 - 85                            | 1,000.0       | Black (BK) | 450-20031   |
| RMS 139-38 | 139.0                | 38.0               | 2.77         | 45 - 120                           | 1,000.0       | Black (BK) | 450-20041   |
| RMS 185-55 | 185.0                | 55.0               | 2.74         | 65 - 160                           | 1,000.0       | Black (BK) | 450-20050   |

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



### Heat shrinkable straight-through joint

#### LVK - adhesive lined

LVK is a heat shrinkable straight-through joint for universal connecting of unarmoured polymeric cables or conductors insulated with PVC, PE and XLPE. Suitable for compression and mechanical connectors on aluminium or copper cables. Voltage level 0.6/1.0 (1.2) kV.

#### Features and benefits

- Universally suitable to connect cables and conductors
- Immediately ready for use
- Using a high-quality thermoplastic inner adhesive
- Good corrosion protection properties with excellent abrasion resistance and weather resistance
- TCP (thermo chromatic paint) spots indicate the sleeve has been sufficiently heated
- Resistant to chemical agents and alkaline earths
- Excellent shrink behavior
- High UV resistance
- Halogen free

#### Content of Set / Kit

Outer sleeve, inner sleeves, cleaning cloth, emery cloth, installation instructions



LVK - Heat shrinkable straight-through joint.

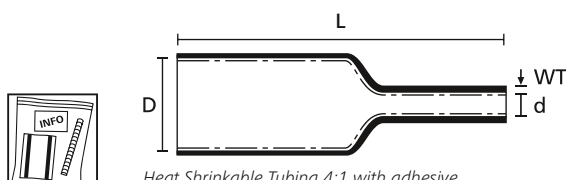
|                                            |                                   |
|--------------------------------------------|-----------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)   |
| <b>Colour</b>                              | Black (BK)                        |
| <b>Shrink Ratio</b>                        | up to 4:1                         |
| <b>Operating Temperature</b>               | -55 °C to +110 °C                 |
| <b>Min. Shrink Temperature</b>             | +120 °C                           |
| <b>Softening Point Adhesive</b>            | +105 °C                           |
| <b>Longitudinal change after shrinkage</b> | -10 % max.                        |
| <b>Dielectric Strength</b>                 | 20 kV/mm according to ASTM D 2671 |



**Without connector!**

**HF** ✓

**RoHS** ✓



Heat Shrinkable Tubing 4:1 with adhesive.

| TYPE         | No. of Inner sleeves | Conductor Size Range mm <sup>2</sup> | Inner Tubing Supplied Ø D min. | Inner Tubing Recov. Ø d max. | Inner Tubing Length (L) | Outer Tubing Supplied Ø D min. | Outer Tubing Recov. Ø d max. | Outer Tubing Length (L) | Article-No. |
|--------------|----------------------|--------------------------------------|--------------------------------|------------------------------|-------------------------|--------------------------------|------------------------------|-------------------------|-------------|
| LVK-4x16-50  | 4                    | 16-50                                | 22.0                           | 6.0                          | 170                     | 55.0                           | 16.0                         | 550                     | 380-04008   |
| LVK-4x25-150 | 4                    | 25-150                               | 33.0                           | 8.0                          | 250                     | 105.0                          | 25.0                         | 800                     | 380-04010   |
| LVK-4x25-95  | 4                    | 25-95                                | 33.0                           | 8.0                          | 250                     | 75.0                           | 20.0                         | 800                     | 380-04009   |
| LVK-4x95-300 | 4                    | 95-300                               | 40.0                           | 12.0                         | 280                     | 130.0                          | 35.0                         | 900                     | 380-04011   |
| LVK-5x1.5-16 | 5                    | 1.5-16                               | 19.0                           | 3.2                          | 125                     | 48.0                           | 12.0                         | 450                     | 380-04006   |
| LVK-5x1.5-6  | 5                    | 1.5-6                                | 12.0                           | 3.0                          | 70                      | 48.0                           | 12.0                         | 250                     | 380-04005   |
| LVK-5x6-25   | 5                    | 6-25                                 | 22.0                           | 6.0                          | 125                     | 55.0                           | 16.0                         | 500                     | 380-04007   |

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



## Heat shrinkable straight-through joint with mechanical connectors

### LVK-C - adhesive lined

LVK-C is a heat shrinkable straight-through joint for universal connecting of unarmoured polymeric cables or conductors insulated with PVC, PE and XLPE. With mechanical connectors for aluminium or copper cables. Voltage level 0.6/1.0 (1.2) kV.

### Features and benefits

- Universally suitable to connect cables and conductors
- Immediately ready for use
- Using a high-quality thermoplastic inner adhesive
- Good corrosion protection properties with excellent abrasion resistance and weather resistance
- TCP (thermo chromatic paint) spots indicate the sleeve has been sufficiently heated
- Resistant to chemical agents and alkaline earths
- Excellent shrink behavior
- High UV resistance
- With mechanical connectors
- Halogen free

### Content of Set / Kit

Outer sleeve, inner sleeves, mechanical connectors, cleaning cloth, emery cloth, installation instructions



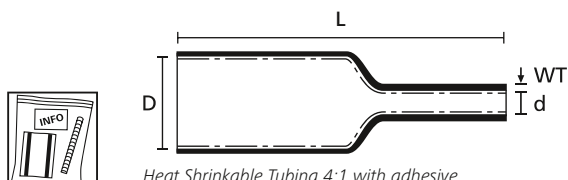
LVK-C - Heat shrinkable straight-through joint with connectors.



LVK-C: Outer sleeve, inner sleeves, mechanical connectors, cleaning cloth, emery cloth, installation instructions.



**With connector!**



Heat Shrinkable Tubing 4:1 with adhesive.

|                                            |                                   |
|--------------------------------------------|-----------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)   |
| <b>Colour</b>                              | Black (BK)                        |
| <b>Shrink Ratio</b>                        | up to 4:1                         |
| <b>Operating Temperature</b>               | -55 °C to +110 °C                 |
| <b>Min. Shrink Temperature</b>             | +120 °C                           |
| <b>Softening Point Adhesive</b>            | +105 °C                           |
| <b>Longitudinal change after shrinkage</b> | -10 % max.                        |
| <b>Dielectric Strength</b>                 | 20 kV/mm according to ASTM D 2671 |

**HF** ✓

**RoHS** ✓

| TYPE           | No. of Inner sleeves | Conductor Size Range mm <sup>2</sup> | Inner Tubing Supplied Ø D min. | Inner Tubing Recov. Ø d max. | Inner Tubing Length (L) | Outer Tubing Supplied Ø D min. | Outer Tubing Recov. Ø d max. | Outer Tubing Length (L) | Article-No. |
|----------------|----------------------|--------------------------------------|--------------------------------|------------------------------|-------------------------|--------------------------------|------------------------------|-------------------------|-------------|
| LVK-C-4x16-50  | 4                    | 16-50                                | 22.0                           | 6.0                          | 170                     | 55.0                           | 16.0                         | 550                     | 380-04016   |
| LVK-C-4x25-150 | 4                    | 25-150                               | 33.0                           | 8.0                          | 250                     | 105.0                          | 25.0                         | 800                     | 380-04018   |
| LVK-C-4x25-95  | 4                    | 25-95                                | 33.0                           | 8.0                          | 250                     | 75.0                           | 20.0                         | 800                     | 380-04017   |
| LVK-C-5x1.5-16 | 5                    | 1.5-16                               | 19.0                           | 3.2                          | 125                     | 48.0                           | 12.0                         | 450                     | 380-04014   |
| LVK-C-5x1.5-6  | 5                    | 1.5-6                                | 12.0                           | 3.0                          | 70                      | 48.0                           | 12.0                         | 250                     | 380-04013   |
| LVK-C-5x6-25   | 5                    | 6-25                                 | 22.0                           | 6.0                          | 125                     | 55.0                           | 16.0                         | 500                     | 380-04015   |

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

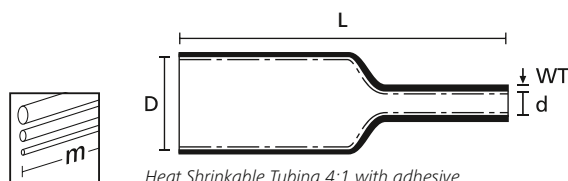
Designed for low voltage cable joints and terminations in shipbuilding. Insulates and protects against moisture.

#### Features and benefits

- Thick 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.



Heat Shrinkable Tubing 4:1 with adhesive.

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

LFH ✓

RoHS ✓

| TYPE       | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour     | Tools | Article-No. |
|------------|----------------------|--------------------|--------------|---------------|------------|-------|-------------|
| HA40-9/3   | 9.0                  | 3.0                | 1.80         | 1.0 m         | Black (BK) | 30-32 | 321-00100   |
| HA40-13/4  | 13.0                 | 4.0                | 2.20         | 1.0 m         | Black (BK) | 30-32 | 321-00101   |
| HA40-22/6  | 22.0                 | 6.0                | 2.70         | 1.0 m         | Black (BK) | 30-32 | 321-00102   |
| HA40-33/8  | 33.0                 | 8.0                | 2.70         | 1.0 m         | Black (BK) | 30-32 | 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.

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



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

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

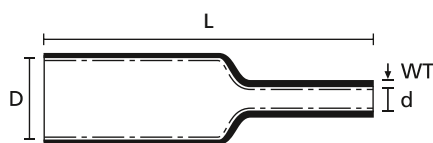
#### Features and benefits

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



Heavy wall tubing.

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



Heat Shrinkable Tubing 3.5:1 with adhesive



| TYPE        | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour     | Tools | Article-No. |
|-------------|----------------------|--------------------|--------------|---------------|------------|-------|-------------|
| HA47-9/3    | 9.0                  | 3.0                | 1.80         | 1.0 m         | Black (BK) | 30-32 | 321-20090   |
| HA47-13/4   | 13.0                 | 4.0                | 2.40         | 1.0 m         | Black (BK) | 30-32 | 321-20130   |
| HA47-19/6   | 19.0                 | 6.0                | 2.70         | 1.0 m         | Black (BK) | 30-32 | 321-20180   |
| HA47-33/8   | 33.0                 | 8.0                | 3.20         | 1.0 m         | Black (BK) | 30-32 | 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.

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.





### Heat shrinkable tubing 6:1 - 1.2 m lengths

#### HA67 - thick wall adhesive lined

Insulates, seals and protects large size differences between connectors and cables.

#### Features and benefits

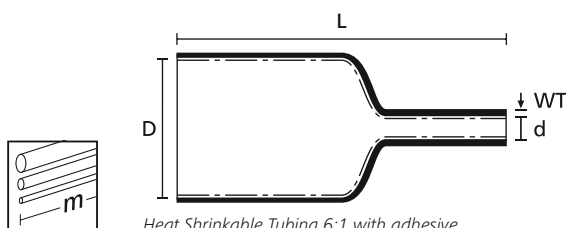
- High shrink ratio, heavy-duty heat shrinkable tubing
- Thermoplastic adhesive-lined tubing
- Conforms well to highly variable substrate dimensions
- Simplifies cable repair
- Passes over large connectors and shrinks onto much smaller cable jackets
- Environmental sealing and excellent insulation
- Resistant to impact and abrasion



Due to the high shrink ratio HA67 is suitable for complex shapes and dimensions.



One Step to the Web!



Heat Shrinkable Tubing 6:1 with adhesive

|                                            |                                 |
|--------------------------------------------|---------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X) |
| <b>Shrink Ratio</b>                        | 6:1                             |
| <b>Operating Temperature</b>               | -55 °C to +110 °C               |
| <b>Min. Shrink Temperature</b>             | +120 °C                         |
| <b>Softening Point Adhesive</b>            | +85 °C                          |
| <b>Longitudinal change after shrinkage</b> | -10 % max.                      |
| <b>Dielectric Strength</b>                 | 20 kV/mm according to IEC 243   |
| <b>Flammability</b>                        | not flame retarded              |



| TYPE            | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour     | Tools | Article-No. |
|-----------------|----------------------|--------------------|--------------|---------------|------------|-------|-------------|
| HA67-19.0/3.2   | 19.0                 | 3.2                | 3.20         | 1,220.0       | Black (BK) | 30-32 | 321-30000   |
| HA67-33.0/5.5   | 33.0                 | 5.5                | 3.40         | 1,220.0       | Black (BK) | 30-32 | 321-30100   |
| HA67-44.4/7.4   | 44.4                 | 7.4                | 3.60         | 1,220.0       | Black (BK) | -     | 321-30200   |
| HA67-50.8/8.3   | 50.8                 | 8.3                | 4.80         | 1,220.0       | Black (BK) | -     | 321-30300   |
| HA67-69.8/11.7  | 69.8                 | 11.7               | 4.80         | 1,220.0       | Black (BK) | -     | 321-30400   |
| HA67-88.9/17.1  | 88.9                 | 17.1               | 4.80         | 1,220.0       | Black (BK) | -     | 321-30500   |
| HA67-119.4/22.9 | 119.4                | 22.9               | 4.80         | 1,220.0       | Black (BK) | -     | 321-30600   |
| HA67-235.0/40.0 | 235.0                | 40.0               | 4.80         | 1,000.0       | Black (BK) | -     | 321-30701   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



## 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. for heavily populated buildings or safety sensitive areas like tunnels, hospitals, schools, theatres, mass transit vehicles and computer centres.

#### Features and benefits

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



TR27 is ideal for safety sensitive areas.

|                                            |                                                                                                           |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X)                                                                           |
| <b>Shrink Ratio</b>                        | 2:1                                                                                                       |
| <b>Operating Temperature</b>               | -40 °C to +105 °C                                                                                         |
| <b>Min. Shrink Temperature</b>             | +115 °C                                                                                                   |
| <b>Longitudinal change after shrinkage</b> | +5 %/-10 % max.                                                                                           |
| <b>Dielectric Strength</b>                 | 15 kV/mm according to IEC 684 P2                                                                          |
| <b>Flammability</b>                        | Limited Fire Hazard, halogen free, low generation of toxic gases and corrosive acid, low smoke generation |

HF ✓

LFH ✓

RoHS ✓



TR27 is mainly used in the railway industry.



Heat Shrinkable Tubing 2:1

| TYPE           | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Reel Length | Colour     | Tools | Article-No. |
|----------------|-------------------|-----------------|-----------------|-----------|-------------|------------|-------|-------------|
| TR27-3.2/1.6   | 3.2               | 1/8 "           | 1.6             | 0.51      | 150 m       | Black (BK) | 30-32 | 315-50320   |
| TR27-25.4/12.7 | 3.2               | 1 "             | 1.6             | 0.51      | 60 m        | Black (BK) | 30-32 | 315-52540   |
| TR27-4.8/2.4   | 4.8               | 3/16 "          | 2.4             | 0.51      | 60 m        | Black (BK) | 30-32 | 315-50480   |
| TR27-6.4/3.2   | 6.4               | 1/4 "           | 3.2             | 0.64      | 60 m        | Black (BK) | 30-32 | 315-50640   |
| TR27-9.5/4.8   | 9.5               | 3/8 "           | 4.8             | 0.64      | 60 m        | Black (BK) | 30-32 | 315-50950   |
| TR27-12.7/6.4  | 12.7              | 1/2 "           | 6.4             | 0.64      | 60 m        | Black (BK) | 30-32 | 315-51270   |
| TR27-19.1/9.5  | 19.1              | 3/4 "           | 9.5             | 0.76      | 60 m        | Black (BK) | 30-32 | 315-51900   |
| TR27-38.1/19.1 | 38.1              | 1-1/2 "         | 19.1            | 1.02      | 60 m        | Black (BK) | 30-32 | 315-53810   |
| TR27-50.8/25.4 | 50.8              | 2 "             | 25.4            | 1.14      | 60 m        | Black (BK) | 30-32 | 315-55100   |

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

#### Recommended Tools

|  | 30    | 31    | 32    |
|--|-------|-------|-------|
|  | H5002 | H5004 | E4500 |
|  | 568   | 568   | 567   |

EN 45545-2

DEF STAN

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

For more information on toolings please refer to the Application Tooling chapter.



### 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



TA37 - adhesive lined tubing for safety sensitive areas.

|                                            |                                 |
|--------------------------------------------|---------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X) |
| <b>Shrink Ratio</b>                        | 3:1                             |
| <b>Operating Temperature</b>               | -40 °C to +105 °C               |
| <b>Min. Shrink Temperature</b>             | +150 °C                         |
| <b>Softening Point Adhesive</b>            | +85 °C                          |
| <b>Longitudinal change after shrinkage</b> | -15 % max.                      |
| <b>Flammability</b>                        | self-extinguishing              |

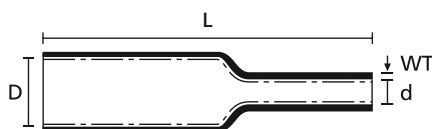
HF ✓

LFH ✓

RoHS ✓



Mainly used in railway applications.



Heat Shrinkable Tubing 3:1 with adhesive



One Step to the Web!

| TYPE         | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour     | Tools | Article-No. |
|--------------|----------------------|--------------------|--------------|---------------|------------|-------|-------------|
| TA37 3-1     | 3.0                  | 1.0                | 0.95         | 1.2 m         | Black (BK) | 30-32 | 315-13000   |
| TA37 4.5-1.5 | 4.5                  | 1.5                | 1.10         | 1.2 m         | Black (BK) | 30-32 | 315-13001   |
| TA37 6-2     | 6.0                  | 2.0                | 1.20         | 1.2 m         | Black (BK) | 30-32 | 315-13002   |
| TA37 9-3     | 9.0                  | 3.0                | 1.30         | 1.2 m         | Black (BK) | 30-32 | 315-13003   |
| TA37 12-4    | 12.0                 | 4.0                | 1.40         | 1.2 m         | Black (BK) | 30-32 | 315-13004   |
| TA37 19-6    | 19.0                 | 6.0                | 1.80         | 1.2 m         | Black (BK) | 30-32 | 315-13005   |
| TA37 24-8    | 24.0                 | 8.0                | 2.50         | 1.2 m         | Black (BK) | 30-32 | 315-13006   |
| TA37 40-13   | 40.0                 | 13.0               | 2.50         | 1.2 m         | Black (BK) | 30-32 | 315-13007   |
| TA37 50-19   | 50.0                 | 19.0               | 4.00         | 1.2 m         | Black (BK) | 30-32 | 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.

**EN 45545-2**

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



## Heat shrinkable tubing 4:1 - 1.2 m lengths

### SA47-LA - standard wall adhesive lined

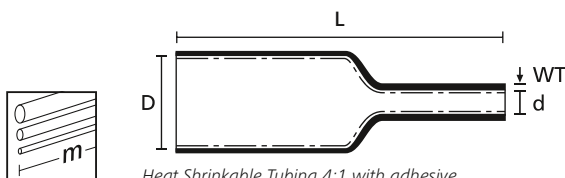
SA47 is a semi-rigid halogen free polyolefin tubing with a thick inner liner of hot melt adhesive. It has excellent tensile strength and strain relief. The adhesive liner provides excellent moisture protection. Ideal for electrical connections and splices in automobiles. Tubing is transparent and hot melt adhesive is black.

#### Features and benefits

- 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
- Halogen free



One Step to the Web!



Heat Shrinkable Tubing 4:1 with adhesive.



Heat shrink tubing SA47 for splice application.

|                                            |                                 |
|--------------------------------------------|---------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X) |
| <b>Shrink Ratio</b>                        | 4:1                             |
| <b>Operating Temperature</b>               | -40 °C to +125 °C               |
| <b>Min. Shrink Temperature</b>             | +110 °C                         |
| <b>Melting Point</b>                       | starting from +110 °C           |
| <b>Longitudinal change after shrinkage</b> | -10 % max.                      |
| <b>Dielectric Strength</b>                 | >20 kV/mm                       |



**i** SA47 has been developed with our Automotive partners to eliminate the risk of corrosion around cable splices and terminations.

**i** Cut lengths available on request. Please contact us!

| TYPE           | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour                       | Tools | Article-No. |
|----------------|----------------------|--------------------|--------------|---------------|------------------------------|-------|-------------|
| SA47 5,75/1,25 | 5.75                 | 1.25               | 1.15         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10000   |
| SA47 7,5/1,65  | 7.5                  | 1.65               | 1.40         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10001   |
| SA47 11,0/2,4  | 11.0                 | 2.4                | 1.80         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10002   |
| SA47 18,3/4,35 | 18.3                 | 4.35               | 2.20         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10003   |
| SA47 24/6      | 24.0                 | 6.0                | 2.54         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10005   |
| SA47 32/8      | 32.0                 | 8.0                | 2.54         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10004   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



## Heat shrinkable tubing 4:1 - 1.2 m lengths

### SA47-LA - standard wall adhesive lined

SA47-LA is a semi-rigid halogen free polyolefin tubing with an inner liner of hot melt adhesive. It has excellent tensile strength and strain relief. The adhesive liner provides excellent moisture protection. Ideal for electrical connections and splices in automobiles. Tubing is transparent and hot melt adhesive is black.

SA47-LA is specially designed with less adhesive for cable connections.

#### Features and benefits

- 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
- Halogen free
- High shrink ratio 4:1



**SA47 has been developed with our Automotive partners to eliminate the risk of corrosion around cable splices and terminations.**



**Cut lengths available on request. Please contact us!**

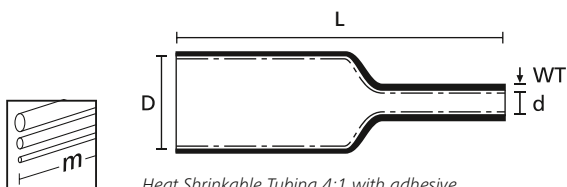


Heat shrink tubing SA47-LA for cable connection.

|                                            |                                 |
|--------------------------------------------|---------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X) |
| <b>Shrink Ratio</b>                        | 4:1                             |
| <b>Operating Temperature</b>               | -40 °C to +125 °C               |
| <b>Min. Shrink Temperature</b>             | +110 °C                         |
| <b>Melting Point</b>                       | starting from +110 °C           |
| <b>Longitudinal change after shrinkage</b> | -10 % max.                      |
| <b>Dielectric Strength</b>                 | >20 kV/mm                       |

HF ✓

RoHS ✓



Heat Shrinkable Tubing 4:1 with adhesive.

| TYPE              | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour                       | Tools | Article-No. |
|-------------------|----------------------|--------------------|--------------|---------------|------------------------------|-------|-------------|
| SA47-LA 5,75/1,25 | 5.75                 | 1.25               | 1.15         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10020   |
| SA47-LA 7,5/1,65  | 7.5                  | 1.65               | 1.40         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10021   |
| SA47-LA 11,0/2,4  | 11.0                 | 2.4                | 1.80         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10022   |
| SA47-LA 18,3/4,35 | 18.3                 | 4.35               | 2.20         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10023   |
| SA47-LA 24/6      | 24.0                 | 6.0                | 2.54         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10024   |
| SA47-LA 32/8      | 32.0                 | 8.0                | 2.54         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10025   |
| SA47-LA 52/13     | 52.0                 | 13.0               | 3.00         | 1.2 m         | Transparent (CL), Black (BK) | 30-32 | 301-10026   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



## Heat shrinkable tubing 4:1 - 1.2 m lengths

### SA47-HT - standard wall adhesive lined

SA47-HT is a semi-rigid flame retardant polyolefin tubing with a thick inner liner of hot melt adhesive. The tubing has excellent tensile strength and strain relief. The adhesive liner provides excellent moisture protection. Ideal for electrical connections and splices in automobiles. Suitable for high temperature applications up to 150 °C. Tubing is black and hot melt adhesive is black.

#### Features and benefits

- Flexible, standard wall polyolefin heat shrink tubing
- Excellent tensile strength and strain relief
- Provides excellent moisture protection
- Tubing and hot melt adhesive is black
- Provides an environmental sealing of complex parts
- For high temperature applications up to 150 °C
- Flame retardant



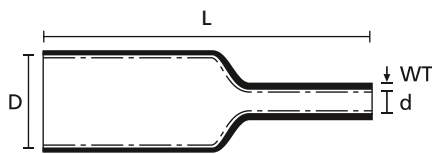
One Step to the Web!



**SA47 has been developed with our Automotive partners to eliminate the risk of corrosion around cable splices and terminations.**



**Cut lengths available on request. Please contact us!**



Heat Shrinkable Tubing 4:1 with adhesive.



Heat shrink tubing SA47-HT for 150 °C application.



SA47-HT provides optimum protection against moisture in high temperature applications.

|                                            |                                 |
|--------------------------------------------|---------------------------------|
| <b>MATERIAL</b>                            | Polyolefin, cross-linked (PO-X) |
| <b>Shrink Ratio</b>                        | 4:1                             |
| <b>Operating Temperature</b>               | -40 °C to +150 °C               |
| <b>Min. Shrink Temperature</b>             | +130 °C                         |
| <b>Melting Point</b>                       | starting from +120 °C           |
| <b>Longitudinal change after shrinkage</b> | -10 % max.                      |
| <b>Dielectric Strength</b>                 | >20 kV/mm                       |
| <b>Flammability</b>                        | self-extinguishing              |



| TYPE             | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Colour     | Tools | Article-No. |
|------------------|----------------------|--------------------|--------------|---------------|------------|-------|-------------|
| SA47-HT 7,6/1,7  | 7.6                  | 1.7                | 1.52         | 1.2 m         | Black (BK) | 30-32 | 301-10010   |
| SA47-HT 9,0/2,3  | 9.0                  | 2.3                | 1.52         | 1.2 m         | Black (BK) | 30-32 | 301-10011   |
| SA47-HT 11,6/2,5 | 11.6                 | 2.5                | 2.29         | 1.2 m         | Black (BK) | 30-32 | 301-10012   |
| SA47-HT 17,8/4,4 | 17.8                 | 4.4                | 2.54         | 1.2 m         | Black (BK) | 30-32 | 301-10013   |
| SA47-HT 24/6     | 24.0                 | 6.0                | 2.54         | 1.2 m         | Black (BK) | 30-32 | 301-10015   |
| SA47-HT 32/8     | 32.0                 | 8.0                | 2.54         | 1.2 m         | Black (BK) | 30-32 | 301-10014   |

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
- For high temperature applications up to 150°C



SE28 tubing.

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

RoHS



Heat Shrinkable Tubing 2:1



SE28 is mainly used in high performance applications.

| TYPE            | Supplied Ø D min. | Recov. Ø d max. | Wall (WT) | Reel Length | Colour     | Designation as per VG-Norm | Tools | Article-No. |
|-----------------|-------------------|-----------------|-----------|-------------|------------|----------------------------|-------|-------------|
| SE28 3,2/1,6    | 3.2               | 1.6             | 0.80      | 150 m       | Black (BK) | VG 95343 T05 D 002 A       | 30-32 | 342-20000   |
| SE28 4,8/2,4    | 4.8               | 2.4             | 0.90      | 60 m        | Black (BK) | VG 95343 T05 D 002 A       | 30-32 | 342-20010   |
| SE28 6,4/3,2    | 6.4               | 3.2             | 1.00      | 60 m        | Black (BK) | VG 95343 T05 D 003 A       | 30-32 | 342-20020   |
| SE28 9,5/4,8    | 9.5               | 4.8             | 1.10      | 60 m        | Black (BK) | VG 95343 T05 D 004 A       | 30-32 | 342-20030   |
| SE28 12,7/6,4   | 12.7              | 6.4             | 1.30      | 60 m        | Black (BK) | VG 95343 T05 D 005 A       | 30-32 | 342-20040   |
| SE28 19,0/9,5   | 19.0              | 9.5             | 1.50      | 30 m        | Black (BK) | VG 95343 T05 D 006 A       | 30-32 | 342-20050   |
| SE28 25,4/12,7  | 25.4              | 12.7            | 1.90      | 30 m        | Black (BK) | VG 95343 T05 D 007 A       | 30-32 | 342-20060   |
| SE28 38,0/19,0  | 38.0              | 19.0            | 2.50      | 30 m        | Black (BK) | VG 95343 T05 D 008 A       | 30-32 | 342-20070   |
| SE28 51,0/25,4  | 51.0              | 25.4            | 3.10      | 30 m        | Black (BK) | VG 95343 T05 D 009 A       | 30-32 | 342-20080   |
| SE28 76,0/38,0  | 76.0              | 38.0            | 3.30      | 15 m        | Black (BK) | VG 95343 T05 D 010 A       | -     | 342-20090   |
| SE28 101,2/51,0 | 101.2             | 51.0            | 3.50      | 10 m        | Black (BK) | VG 95343 T05 D 011 A       | -     | 342-20100   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



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 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.

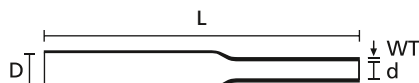
### Features and benefits

- Semi-rigid heat shrinkable tubing made of PVDF
- Thin wall 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



TK20 is often used for chemical applications.

|                                            |                                                                                                           |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>MATERIAL</b>                            | Polyvinylidene Fluoride (PVDF)                                                                            |
| <b>Shrink Ratio</b>                        | 2:1                                                                                                       |
| <b>Operating Temperature</b>               | -55 °C to +175 °C                                                                                         |
| <b>Min. Shrink Temperature</b>             | +175 °C                                                                                                   |
| <b>Longitudinal change after shrinkage</b> | +/-10 % max                                                                                               |
| <b>Dielectric Strength</b>                 | ≥ 30 kV/mm min. according to ASTM D2171                                                                   |
| <b>Flammability</b>                        | UL224 VW-1                                                                                                |
| <b>Specifications</b>                      | Airbus Group   ASNE 0718, PANAVIA Aircraft   PAN6491, SAE - AMS - DTL-23053/8, UL   ANSI/UL 224, VG 95343 |



Heat Shrinkable Tubing 2:1

RoHS

| TYPE           | Supplied Ø D min. | Size (imperial) | Recov. Ø d max. | Wall (WT) | Length (L) | Colour           | Designation as per VG-Norm | Tools | Article-No. |
|----------------|-------------------|-----------------|-----------------|-----------|------------|------------------|----------------------------|-------|-------------|
| TK20-1.2/0.6   | 1.2               | 3/64 "          | 0.6             | 0.25      | 1.2 m      | Transparent (CL) | VG 95343 T05 F 001 M       | 30-32 | 331-00129   |
| TK20-1.6/0.8   | 1.6               | 1/16 "          | 0.8             | 0.25      | 1.2 m      | Transparent (CL) | VG 95343 T05 F 002 M       | 30-32 | 311-00169   |
| TK20-2.4/1.2   | 2.4               | 3/32 "          | 1.2             | 0.25      | 1.2 m      | Transparent (CL) | VG 95343 T05 F 003 M       | 30-32 | 311-00249   |
| TK20-3.2/1.6   | 3.2               | 1/8 "           | 1.6             | 0.25      | 1.2 m      | Transparent (CL) | VG 95343 T05 F 004 M       | 30-32 | 311-00329   |
| TK20-4.8/2.4   | 4.8               | 3/16 "          | 2.4             | 0.25      | 1.2 m      | Transparent (CL) | VG 95343 T05 F 005 M       | 30-32 | 311-00489   |
| TK20-6.4/3.2   | 6.4               | 1/4 "           | 3.2             | 0.30      | 1.2 m      | Transparent (CL) | VG 95343 T05 F 006 M       | 30-32 | 311-00649   |
| TK20-9.5/4.8   | 9.5               | 3/8 "           | 4.8             | 0.30      | 1.2 m      | Transparent (CL) | VG 95343 T05 F 007 M       | 30-32 | 311-00959   |
| TK20-12.7/6.4  | 12.7              | 1/2 "           | 6.4             | 0.30      | 1.2 m      | Transparent (CL) | VG 95343 T05 F 008 M       | 30-32 | 311-01279   |
| TK20-19.1/9.5  | 19.1              | 3/4 "           | 9.5             | 0.43      | 1.2 m      | Transparent (CL) | VG 95343 T05 F 009 M       | 30-32 | 311-01909   |
| TK20-25.4/12.7 | 25.4              | 1 "             | 12.7            | 0.48      | 1.2 m      | Transparent (CL) | VG 95343 T05 F 010 M       | 30-32 | 311-02549   |
| TK20-38.1/19.1 | 38.1              | 1-1/2 "         | 19.1            | 0.51      | 1.2 m      | Transparent (CL) | -                          | 30-32 | 311-03819   |
| TK20-50.8/25.4 | 50.8              | 2 "             | 25.4            | 0.51      | 1.2 m      | Transparent (CL) | -                          | 30-32 | 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 - 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.

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



Heat Shrinkable Tubing 2:1

RoHS

| TYPE               | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Reel<br>Length | Colour     | Designation as per<br>VG-Norm | Tools | Article-No. |
|--------------------|----------------------|--------------------|--------------|----------------|------------|-------------------------------|-------|-------------|
| VITON®-E-3.2/1.6   | 3.2                  | 1.6                | 0.70         | 50 m           | Black (BK) | VG 95343 T05 E 001 A          | 30-32 | 330-00320   |
| VITON®-E-4.8/2.4   | 4.8                  | 2.4                | 0.80         | 50 m           | Black (BK) | VG 95343 T05 E 002 A          | 30-32 | 330-00480   |
| VITON®-E-6.4/3.2   | 6.4                  | 3.2                | 0.90         | 50 m           | Black (BK) | VG 95343 T05 E 003 A          | 30-32 | 330-00640   |
| VITON®-E-9.5/4.8   | 9.5                  | 4.8                | 1.00         | 25 m           | Black (BK) | VG 95343 T05 E 004 A          | 30-32 | 330-00950   |
| VITON®-E-12.7/6.4  | 12.7                 | 6.4                | 1.20         | 25 m           | Black (BK) | VG 95343 T05 E 005 A          | 30-32 | 330-01270   |
| VITON®-E-19.0/9.5  | 19.0                 | 9.5                | 1.40         | 25 m           | Black (BK) | VG 95343 T05 E 006 A          | 30-32 | 330-01900   |
| VITON®-E-25.4/12.7 | 25.4                 | 12.7               | 1.80         | 25 m           | Black (BK) | VG 95343 T05 E 007 A          | 30-32 | 330-02540   |
| VITON®-E-38.0/19.0 | 38.0                 | 19.0               | 2.40         | 15 m           | Black (BK) | VG 95343 T05 E 008 A          | 30-32 | 330-03810   |
| VITON®-E-50.8/25.4 | 50.8                 | 25.4               | 2.80         | 15 m           | Black (BK) | VG 95343 T05 E 009 A          | 30-32 | 330-05080   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the Application Tooling chapter.



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



## Heat shrinkable tubing - PTFE

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

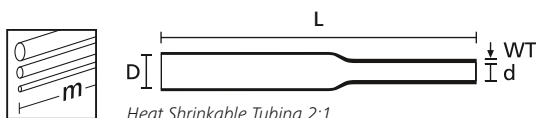


TFE is available in either 2:1 or 4:1 shrink ratios.



**Cut lengths available on request. Please contact us!**

### TFE2 - 2:1 shrink ratio



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

| TYPE    | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wire Size<br>(AWG) | Wall<br>(WT) | Length<br>(L) | Colour           | Shrink<br>Ratio | Tools | Article-No. |
|---------|----------------------|--------------------|--------------------|--------------|---------------|------------------|-----------------|-------|-------------|
| TFE2-30 | 0.86                 | 0.38               | 30                 | 0.23         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00079   |
| TFE2-28 | 0.96                 | 0.46               | 28                 | 0.23         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00099   |
| TFE2-26 | 1.17                 | 0.56               | 26                 | 0.23         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00109   |
| TFE2-24 | 1.27                 | 0.69               | 24                 | 0.25         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00139   |
| TFE2-22 | 1.39                 | 0.82               | 22                 | 0.25         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00149   |
| TFE2-20 | 1.52                 | 0.99               | 20                 | 0.30         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00159   |
| TFE2-18 | 1.93                 | 1.25               | 18                 | 0.30         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00199   |
| TFE2-16 | 2.36                 | 1.55               | 16                 | 0.30         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00249   |
| TFE2-14 | 3.05                 | 1.83               | 14                 | 0.30         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00319   |
| TFE2-12 | 3.81                 | 2.26               | 12                 | 0.30         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00399   |
| TFE2-10 | 4.85                 | 2.85               | 10                 | 0.30         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00489   |
| TFE2-8  | 6.10                 | 3.58               | 8                  | 0.38         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00619   |
| TFE2-6  | 7.67                 | 4.52               | 6                  | 0.38         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00779   |
| TFE2-4  | 9.40                 | 5.69               | 4                  | 0.38         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-00949   |
| TFE2-2  | 10.92                | 7.06               | 2                  | 0.38         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-01109   |
| TFE2-0  | 11.94                | 8.81               | 0                  | 0.38         | 1.2 m         | Transparent (CL) | 2:1             | 30-32 | 336-01209   |

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

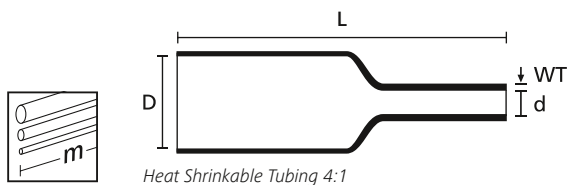
| Recommended Tools |             |             |             |
|-------------------|-------------|-------------|-------------|
|                   | 30<br>H5002 | 31<br>H5004 | 32<br>E4500 |
|                   | 568         | 568         | 567         |

For more information on toolings please refer to the Application Tooling chapter.



### Heat shrinkable tubing - PTFE

#### TFE4 - 4:1 shrink ratio



| TYPE       | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Size<br>(imperial) | Wall<br>(WT) | Length<br>(L) | Colour           | Shrink<br>Ratio | Tools | Article-No. |
|------------|----------------------|--------------------|--------------------|--------------|---------------|------------------|-----------------|-------|-------------|
| TFE4-5/64  | 1.98                 | 0.64               | 5/64 "             | 0.22         | 1.2 m         | Transparent (CL) | 4:1             | 30-32 | 339-00209   |
| TFE4-1/8   | 3.17                 | 0.94               | 1/8 "              | 0.25         | 1.2 m         | Transparent (CL) | 4:1             | 30-32 | 339-00329   |
| TFE4-3/16  | 4.75                 | 1.27               | 3/16 "             | 0.30         | 1.2 m         | Transparent (CL) | 4:1             | 30-32 | 339-00340   |
| TFE4-1/4   | 6.35                 | 1.60               | 1/4 "              | 0.30         | 1.2 m         | Transparent (CL) | 4:1             | 30-32 | 339-00649   |
| TFE4-3/8   | 9.52                 | 2.44               | 3/8 "              | 0.30         | 1.2 m         | Transparent (CL) | 4:1             | 30-32 | 339-00959   |
| TFE4-1/2   | 12.7                 | 3.66               | 1/2 "              | 0.38         | 1.2 m         | Transparent (CL) | 4:1             | 30-32 | 339-01279   |
| TFE4-5/8   | 15.87                | 4.52               | 5/8 "              | 0.38         | 1.2 m         | Transparent (CL) | 4:1             | 30-32 | 339-01599   |
| TFE4-3/4   | 19.05                | 5.69               | 3/4 "              | 0.38         | 1.2 m         | Transparent (CL) | 4:1             | 30-32 | 339-01909   |
| TFE4-1     | 25.4                 | 7.06               | 1 "                | 0.38         | 1.2 m         | Transparent (CL) | 4:1             | 30-32 | 339-02549   |
| TFE4-1 1/4 | 31.75                | 8.82               | 1-1/4 "            | 0.38         | 1.2 m         | Transparent (CL) | 4:1             | 30-32 | 339-03189   |

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

| Recommended Tools |       |       |       |
|-------------------|-------|-------|-------|
|                   | 30    | 31    | 32    |
|                   | H5002 | H5004 | E4500 |
|                   | 568   | 568   | 567   |

For more information on toolings please refer to the  
Application Tooling chapter.

## Materials for Heat Shrinkable Moulded Shapes

| Material Specifications          |                                                  |                                                        |                                                    |                                                     |                                                  |                                                |
|----------------------------------|--------------------------------------------------|--------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------|--------------------------------------------------|------------------------------------------------|
|                                  | -9                                               | H                                                      | G                                                  | B7                                                  | B8                                               | L                                              |
| <b>Material</b>                  | 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        |
| <b>Operating Temperature</b>     | -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                              |
| <b>Min. Shrink Temperature</b>   | +135 °C                                          | +135 °C                                                | +135 °C                                            | +135 °C                                             | +135 °C                                          | +175 °C                                        |
| <b>Specifications</b>            | 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     |
| <b>Tensile Strength</b>          | 12 MPa                                           | 10 MPa                                                 | 15 MPa                                             | 13 MPa                                              | 15 MPa                                           | 12 MPa                                         |
| <b>Elongation at break</b>       | 500 %                                            | 450 %                                                  | 580 %                                              | 500 %                                               | 500 %                                            | 300 %                                          |
| <b>Dielectric Strength</b>       | 20 kV/mm                                         | 15 kV/mm                                               | 14 kV/mm                                           | 14 kV/mm                                            | 15 kV/mm                                         | 8 kV/mm                                        |
| <b>Flammability for Material</b> | excellent                                        | excellent                                              | excellent                                          | excellent                                           | good                                             | excellent                                      |
| <b>Features and Benefits</b>     | Good physical and reasonable chemical resistance | Low smoke<br>Halogen free                              | Excellent resistance to fuels                      | Good physical and chemical resistance               | Good physical and reasonable chemical resistance | High temperature excellent chemical resistance |
| <b>Typical Application</b>       | 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                      |
| <b>Adhesive</b>                 | General purpose hot melt adhesive | High performance EVA hot melt adhesive | Modified polyamide hot melt adhesive                                                                                                                                | High performance, pre-coat, 1 part epoxy                                                                 | Hot melt adhesive            | Two part, black, epoxy adhesive                                                                    | Hot melt adhesive tape       |
| <b>Operating Temperature</b>    | -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            |
| <b>Softening Point Adhesive</b> | +95 °C                            | +110 °C                                | +120 °C                                                                                                                                                             |                                                                                                          | +95 °C                       |                                                                                                    | +110 °C                      |
| <b>Supplied Form</b>            | pre-applied                       | pre-applied                            | pre-applied                                                                                                                                                         | pre-applied                                                                                              | pre-applied                  | cardridge                                                                                          | tape                         |
| <b>Shelf Life</b>               | 5 years                           | 5 years                                | 5 years                                                                                                                                                             | 5 years                                                                                                  | 5 years                      | 18 months                                                                                          | 5 years                      |
| <b>Solvent Resistance</b>       | Fair under splash conditions      | Fair under splash conditions           | Saline: Very good<br>De-icing fluid: Good<br>Diesel: Excellent<br>Lubricating Oil: Good<br>Hydraulic Oil: Excellent<br>Aviation Fuel: Good<br>Automotive Fuel: Good | De-icing fluid: Excellent<br>Petrol: Excellent<br>Lubricating Oil: Excellent<br>Hydraulic Oil: Excellent | Fair under splash conditions | De-icing fluid: Excellent, Petrol: Excellent, Lubricating Oil: Excellent, Hydraulic Oil: Excellent | Fair under splash conditions |

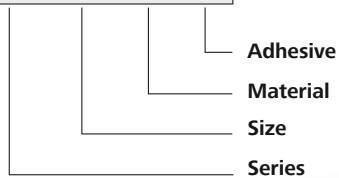


A wider range of material / adhesive combinations are available in the Moulded Shapes Catalogue.

## Order Example

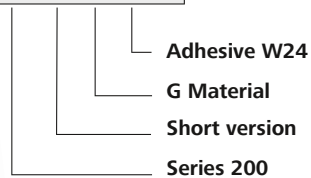
Type:

XXX(X)-X(X)-XXXX(XX)



Example:

2 0 6 - 3 - G W 2 4



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



One Step to the Web!

Low Profile Boots  
Product Overview

Page

## Convolute Boots

Helashrink 313C Series,  
with adapter lip

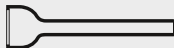
264

## Shim Boots

Helashrink 313E Series,  
without adapter lip

265

## Straight Boots

Helashrink 313F Series,  
with adapter lip

## Right Angle Boots

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

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Low Profile Boots  
Product Overview

Page

## Transition Boots

Helashrink 412H Series,  
side breakout

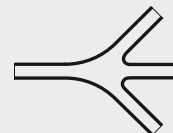
267

## Transition Boots

Helashrink 492H Series,  
1 to 2 cables

268

## Transition Boots

Helashrink 573H Series,  
1 to 3 cables

269

### Bulbous Boots Product Overview

Page

#### Bottle Shapes

Helashrink 150 Series,  
with rib, VG

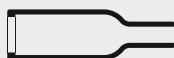

270

#### Bottle Shapes

Helashrink 100 Series,  
without rib


271

#### Bottle Shapes

Helashrink 100 Series,  
with rib, MIL


#### Long Outlet Shape

Helashrink 130 Series,  
with rib, low profile, VG


272

#### Bottle Shapes

Helashrink 170 Series,  
with rib, VG

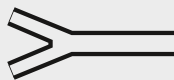

273

#### Bottle Shapes

Helashrink 190 Series,  
with external ribs, VG


274

#### 2-Way Outlet Shapes

Helashrink 200 Series,  
low profile


#### 2-Way Outlet Shapes

Helashrink 200 Series,  
VG


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#### 3-Way Outlet Shapes

Helashrink 300 Series,  
VG


276

#### 4-Way Outlet Shapes

Helashrink 400 Series,  
VG


277

#### Right-Angle Shapes

Helashrink 1100 Series,  
with rib, VG


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#### Right-Angle Shapes

Helashrink 1100 Series,  
without rib


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### Bulbous Boots Product Overview

Page

#### Right-Angle Shapes

Helashrink 1100 Series,  
with rib, MIL


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#### Right-Angle Shapes

Helashrink 1100 Series,  
with rib, low profile,  
VG style/MIL style


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#### Right-Angle Shapes

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


281

#### T-Shapes

Helashrink 1200 Series,  
VG


282

#### T-Shapes

Helashrink 1200 Series,  
Offset, VG


283

#### Angled T-Shapes

Helashrink 1300 Series,  
30° & 45° angle, VG


#### 2-Way Outlet Shapes

Helashrink 200 Series,  
in line, low voltage


284

#### 4-Way Outlet Shapes

Helashrink 400 Series,  
in line, low voltage


#### 5-Way Outlet Shapes

Helashrink 500 Series,  
in line, low voltage


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#### Low Voltage

Helashrink PEC Series,  
pinched


286

#### Low Voltage

Helashrink 1600 Series



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### Low Profile Convolute Boots

Helashrink 313C Series, with adapter lip

#### Features and benefits

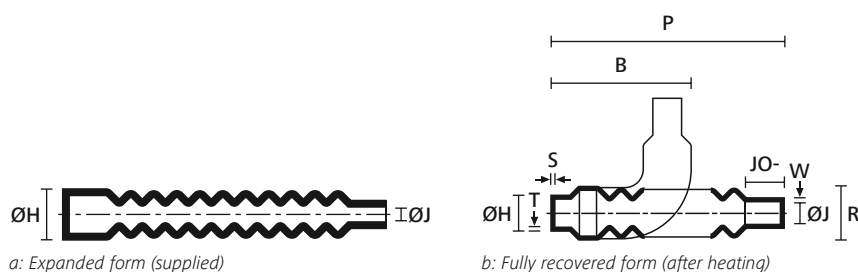
- For circular grooved adapters to provide strain relief
- Excellent environmental sealing with adhesive
- Convoluted design grants flexibility for different cable outlet angles



For Material / Adhesive information please refer to page 260, 261.



313C722-774 Series supplied / fully recovered.



| TYPE      | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R<br>max. | JO ±<br>10 % | W<br>min. | B<br>nom. | T ±<br>0.5 | S ± 0.5 | Article-No. |
|-----------|-----------------|-----------------|-----------------|-----------------|-------------|-----------|--------------|-----------|-----------|------------|---------|-------------|
| 313C722-9 | 14.2            | 6.9             | 11.1            | 4.8             | 120.6       | 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         | 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            | 40.6            | 45.7            | 22.3            | 171.4       | 42.9      | 28.4         | 1.5       | 82.8      | 2.0        | 1.8     | 422-00400   |
| 313C774-9 | 77.2            | 40.6            | 54.6            | 22.8            | 236.2       | 62.2      | 25.4         | 1.5       | 138.4     | 2.0        | 2.0     | 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.

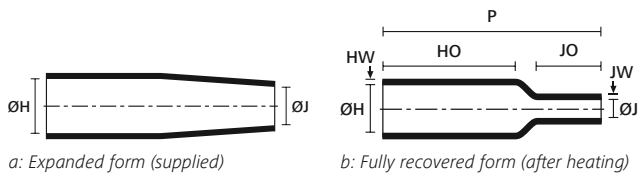


### Low Profile Shim Boots

#### 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



a: Expanded form (supplied)

b: Fully recovered form (after heating)



313E445-457 Series supplied / fully recovered.

| TYPE      | ØH min.<br>a | ØH max.<br>b | ØJ min.<br>a | ØJ max.<br>b | P ±<br>10 % | HO ±<br>10 % | HW ±<br>25 % | JW ±<br>25 % | JO ±<br>10 % | Article-No. |
|-----------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|-------------|
| 313E445-9 | 12.7         | 12.7         | 11.1         | 3.3          | 63.5        | 41.1         | 1.5          | 1.5          | 15.7         | 422-10000   |
| 313E447-9 | 20.8         | 14.7         | 20.6         | 9.9          | 63.5        | 41.1         | 1.5          | 1.5          | 16.5         | 422-10100   |
| 313E455-9 | 22.1         | 22.1         | 11.2         | 3.3          | 53.3        | 27.9         | 2.3          | 1.5          | 15.7         | 422-10200   |
| 313E457-9 | 22.1         | 22.1         | 20.6         | 9.9          | 53.3        | 27.9         | 2.3          | 1.5          | 14.0         | 422-10300   |

All dimensions in mm. Subject to technical changes.

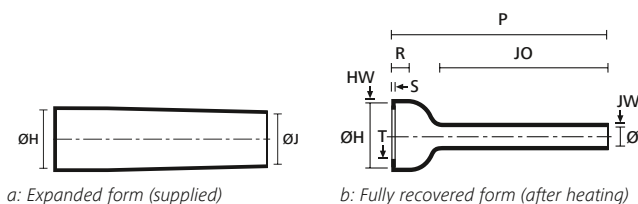
For these moulded shapes a wide range of material / adhesive combinations are available. Please refer to the Moulded Shapes Catalogue.

### Low Profile Straight Boots

#### Helashrink 313F Series, with adapter lip

#### Features and benefits

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



a: Expanded form (supplied)

b: Fully recovered form (after heating)



313F322-396 Series supplied / fully recovered.

| TYPE      | ØH min.<br>a | ØH max.<br>b | ØJ min.<br>a | ØJ max.<br>b | P ±<br>10 % | R ±<br>15 % | T ±<br>0.8 | JO ±<br>10 % | HW ±<br>1.5 | JW ±<br>0.8 | S ±<br>1.5 | Article-No. |
|-----------|--------------|--------------|--------------|--------------|-------------|-------------|------------|--------------|-------------|-------------|------------|-------------|
| 313F322-9 | 23.8         | 9.9          | 17.2         | 6.6          | 105.9       | 11.6        | 1.3        | 86.3         | 1.5         | 1.5         | 1.5        | 422-20000   |
| 313F332-9 | 27.1         | 13.2         | 20.8         | 7.6          | 121.1       | 12.1        | 1.3        | 98.5         | 1.5         | 1.5         | 1.5        | 422-20100   |
| 313F343-9 | 30.9         | 18.5         | 24.3         | 8.9          | 138.6       | 12.1        | 1.3        | 112.7        | 1.7         | 1.5         | 1.7        | 422-20200   |
| 313F353-9 | 35.6         | 22.1         | 28.7         | 10.1         | 159.5       | 12.1        | 1.3        | 130.8        | 1.7         | 1.5         | 1.7        | 422-20300   |
| 313F364-9 | 38.8         | 28.2         | 31.4         | 10.9         | 177.8       | 13.9        | 1.8        | 142.2        | 1.7         | 1.5         | 1.7        | 422-20400   |
| 313F374-9 | 42.2         | 32.2         | 38.3         | 12.7         | 203.2       | 15.2        | 1.8        | 163          | 1.7         | 1.5         | 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         | 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         | 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

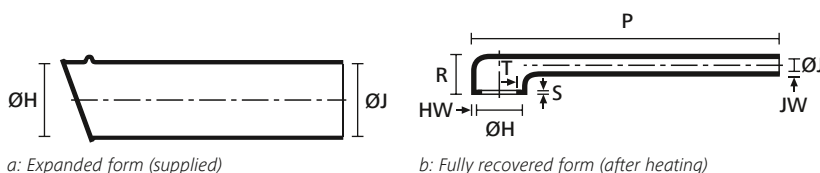
- Connector strain relief for small cable diameters requiring high shrink ratio
- Right angle connector housing with long cable entry and inner lip



For Material / Adhesive information please refer to page 260, 261.



333F322-385 Series supplied / fully recovered.



| TYPE      | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>15 % | T ±<br>0.8 | HW ±<br>1.5 | JW ±<br>0.8 | S ±<br>1.5 | Article-No. |
|-----------|-----------------|-----------------|-----------------|-----------------|-------------|-------------|------------|-------------|-------------|------------|-------------|
| 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            | 20.8            | 7.6             | 115.8       | 19.8        | 1.3        | 1.5         | 1.5         | 1.5        | 422-30004   |
| 333F343-9 | 30.9            | 18.5            | 24.3            | 8.9             | 146.3       | 20.8        | 1.3        | 1.7         | 1.5         | 1.7        | 422-30100   |
| 333F353-9 | 35.3            | 21.6            | 28.7            | 10.1            | 172.2       | 21.8        | 1.3        | 1.7         | 1.5         | 1.7        | 422-30200   |
| 333F364-9 | 38.8            | 27.9            | 31.4            | 10.9            | 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   |

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

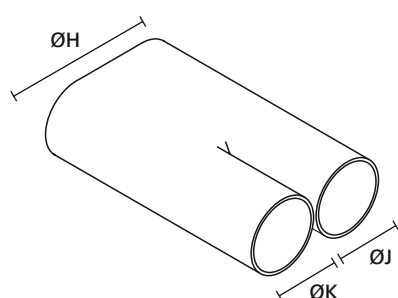
Helashrink 412H Series, side breakout

#### Features and benefits

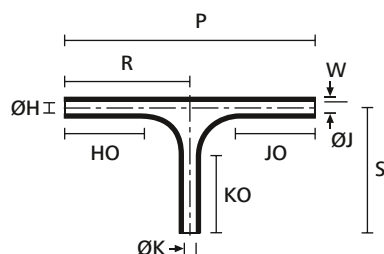
- Connector cable strain relief
- Used with circular adaptors



412H622-625 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

| TYPE      | ØH min.<br>a | ØH max.<br>b | ØJ/K min.<br>a | ØJ/K max.<br>b | HO/JO/KO<br>± 10% | P ±<br>10 % | W<br>nom. | R/S<br>nom. | Article-No. |
|-----------|--------------|--------------|----------------|----------------|-------------------|-------------|-----------|-------------|-------------|
| 412H622-9 | 19.8         | 6.6          | 13.2           | 6.6            | 25.4              | 80.7        | 1.0       | 40.3        | 422-40000   |
| 412H623-9 | 34.2         | 11.4         | 22.8           | 6.6            | 41.1              | 120.3       | 1.3       | 60.1        | 422-40100   |
| 412H624-9 | 60.1         | 20.0         | 40.1           | 20.0           | 63.5              | 175.7       | 1.5       | 87.8        | 422-40200   |
| 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

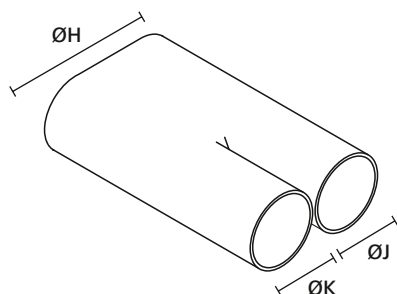
- For cable harness breakouts or transitions
- Strain relief, sealing and mechanical protection



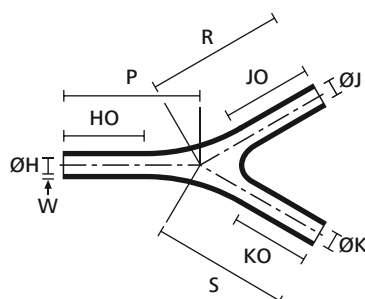
**For Material / Adhesive information  
please refer to page 260, 261.**



492H412-415 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

| TYPE      | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ/K<br>min.<br>a | ØJ/K<br>max.<br>b | HO/JO/KO<br>± 15% | W<br>nom. | P/R/S<br>nom. | Article-No. |
|-----------|-----------------|-----------------|-------------------|-------------------|-------------------|-----------|---------------|-------------|
| 492H412-9 | 19.8            | 6.6             | 13.2              | 6.6               | 25.4              | 1.0       | 40.6          | 422-50000   |
| 492H413-9 | 34.2            | 11.4            | 22.8              | 11.4              | 41.1              | 1.3       | 62.9          | 422-50101   |
| 492H414-9 | 60.1            | 20.0            | 40.1              | 20.0              | 63.5              | 1.5       | 94.7          | 422-50202   |
| 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

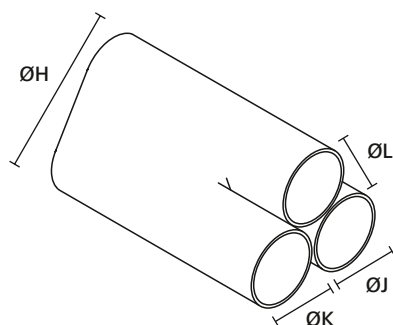
Helashrink 573H Series, 1 to 3 cables

#### Features and benefits

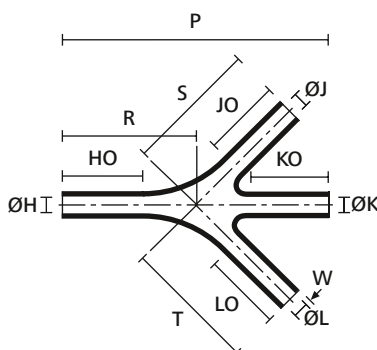
- For cable harness breakouts or transitions
- Strain relief, sealing and mechanical protection



573H532-535 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

| TYPE      | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ/K/L<br>min.<br>a | ØJ/K/L<br>max.<br>b | P<br>nom. | R/S/T<br>nom. | W<br>nom. | HO/JO/<br>KO/LO<br>± 15% | Article-No. |
|-----------|-----------------|-----------------|---------------------|---------------------|-----------|---------------|-----------|--------------------------|-------------|
| 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            | 20.5                | 11.4                | 135.6     | 67.8          | 1.3       | 41.1                     | 422-60100   |
| 573H534-9 | 60.1            | 20.0            | 36.0                | 20.0                | 207.2     | 103.6         | 1.5       | 63.5                     | 422-60202   |
| 573H535-9 | 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

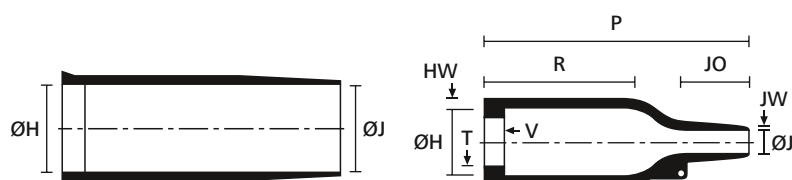
- Use in conjunction with circular grooved adaptors
- Strengthened strain relief by usage of an additional inner lip
- Excellent protection against environment impacts



For Material / Adhesive information please refer to page 260, 261.



150 Series boot recovered onto a connectors.



a: Expanded form (supplied)

b: Fully recovered form (after heating)



150 Series supplied.

| TYPE     | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | JO ±<br>10 % | HW ±<br>20 % | JW ±<br>20 % | V<br>max. | T ±<br>20 % | Designation as per<br>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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 1.0         | VG 95343 T18 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 1.0         | VG 95343 T06 B 003 A          | 401-54880   |
| 155-42-G | 31.0            | 18.0            | 31.0            | 7.0             | 67.0        | 35.0        | 18.0         | 1.8          | 1.0          | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 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          | 3.3       | 2.0         | VG 95343 T06 C 004 A          | 401-60980   |

All dimensions in mm. Subject to technical changes.

DEF STAN

LEA



VG

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



### Bottle Shapes, MIL style

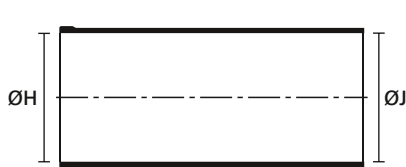
#### Helashrink 100 Series, with rib

##### Features and benefits

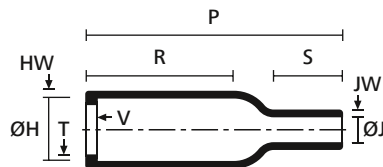
- With circular grooved adaptor for strain relief
- Combine with complementary adhesives for environmental sealing
- Suitable for small cable diameters



100 series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

| TYPE    | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>20 % | V ±<br>10 % | T ±<br>20 % | S<br>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.

### Bottle Shapes

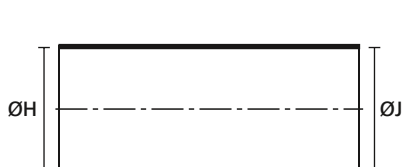
#### Helashrink 100 Series, without rib

##### Features and benefits

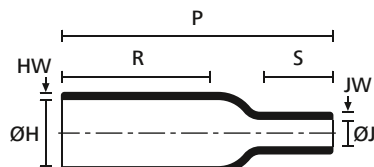
- Strain relief for connector cable
- Easy re-entry for repair when combined with hot melt adhesive
- For mechanical protection and protection against environment impacts



100 series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

| TYPE    | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R<br>max. | HW ±<br>20 % | JW ±<br>30 % | S<br>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.



### Long Outlet Shape, VG style

Helashrink 130 Series, with rib, low profile

#### Features and benefits

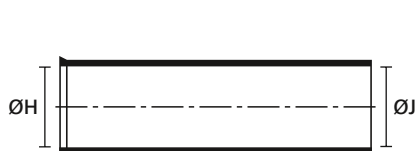
- Low profile and lightweight
- Typically used on airborne harnesses
- Rib locates on circular backshell



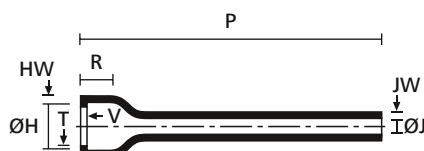
For Material / Adhesive information please refer to page 260, 261.



135-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

| TYPE    | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>20 % | V<br>max. | T ±<br>10 % | Designation as per<br>VG-Norm | Article-No. |
|---------|-----------------|-----------------|-----------------|-----------------|-------------|-------------|--------------|--------------|-----------|-------------|-------------------------------|-------------|
| 129-1-G | 22.0            | 12.0            | 22.0            | 6.5             | 76.0        | 12.0        | 1.5          | 1.1          | 3.3       | 1.0         | VG 95343 T06 D 001 A          | 401-29180   |
| 130-1-G | 25.5            | 15.0            | 25.5            | 7.5             | 83.0        | 12.0        | 1.5          | 1.1          | 3.3       | 1.0         | VG 95343 T06 D 002 A          | 401-30180   |
| 131-1-G | 29.0            | 19.0            | 29.0            | 8.5             | 89.0        | 12.0        | 1.8          | 1.1          | 3.3       | 1.0         | VG 95343 T06 D 003 A          | 401-31180   |
| 132-1-G | 34.0            | 23.0            | 34.0            | 10.0            | 102.0       | 12.0        | 1.8          | 1.1          | 3.3       | 1.0         | VG 95343 T06 D 004 A          | 401-32180   |
| 133-1-G | 37.0            | 30.0            | 37.0            | 11.0            | 108.0       | 14.0        | 2.0          | 1.1          | 3.3       | 1.7         | VG 95343 T06 D 005 A          | 401-33180   |
| 134-1-G | 43.5            | 34.0            | 43.5            | 12.0            | 114.0       | 15.0        | 2.0          | 1.1          | 3.3       | 1.7         | VG 95343 T06 D 006 A          | 401-34180   |
| 135-1-G | 50.0            | 41.0            | 50.0            | 14.5            | 118.0       | 15.0        | 2.3          | 1.4          | 3.3       | 1.7         | VG 95343 T06 D 007 A          | 401-35180   |
| 136-1-G | 62.5            | 47.0            | 62.5            | 1.0             | 121.0       | 16.0        | 2.5          | 1.4          | 3.3       | 2.0         | VG 95343 T06 D 008 A          | 401-36180   |
| 138-1-G | 69.0            | 60.0            | 69.0            | 20.0            | 127.0       | 16.0        | 2.5          | 1.4          | 3.3       | 2.0         | VG 95343 T06 D 009 A          | 401-38180   |

All dimensions in mm. Subject to technical changes.



### Bottle Shapes, VG style

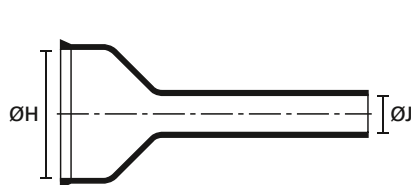
Helashrink 170 Series, with rib

#### Features and benefits

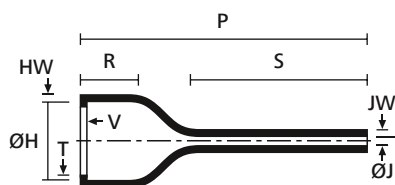
- Cable strain relief for partially loaded connectors
- Small cable diameters
- Use with our W24 adhesive for excellent chemical resistance



177-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

| TYPE    | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | T ±<br>20 % | HW ±<br>20 % | JW<br>nom. | V<br>max. | S<br>nom. | Designation as per<br>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      | VG 95343 T06 D 011 A          | 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      | VG 95343 T06 D 012 A          | 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      | VG 95343 T06 D 013 A          | 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      | VG 95343 T06 D 014 A          | 401-79180   |

All dimensions in mm. Subject to technical changes.



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





## Bottle Shapes, VG style

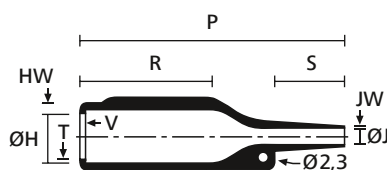
### Helashrink 190 Series, with external ribs

#### 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.<br>a | ØH max.<br>b | ØJ min.<br>a | ØJ max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>20 % | V ±<br>10 % | T ±<br>20 % | S<br>nom. | Designation as per<br>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      | VG 95343 T06 A 010 A          | 401-99480   |

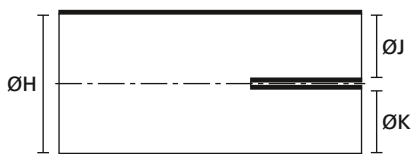
All dimensions in mm. Subject to technical changes.

## 2-Way Outlet Shapes

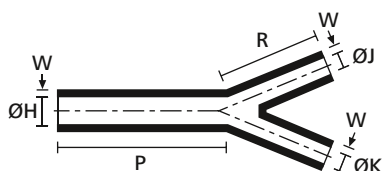
### Helashrink 200 Series, low profile

#### 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.<br>a | ØH max.<br>b | ØJ min.<br>a | ØJ max.<br>b | ØK min.<br>a | ØK max.<br>b | P ±<br>10 % | R ±<br>10 % | W ±<br>20 % | Article-No. |
|---------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|-------------|-------------|
| 201-1-G | 19.0         | 9.4          | 6.4          | 14.0         | 14.0         | 6.4          | 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 product specific approvals and specifications please refer to the Appendix.



### 2-Way Outlet Shapes, VG style

#### Helashrink 200 Series

#### Features and benefits

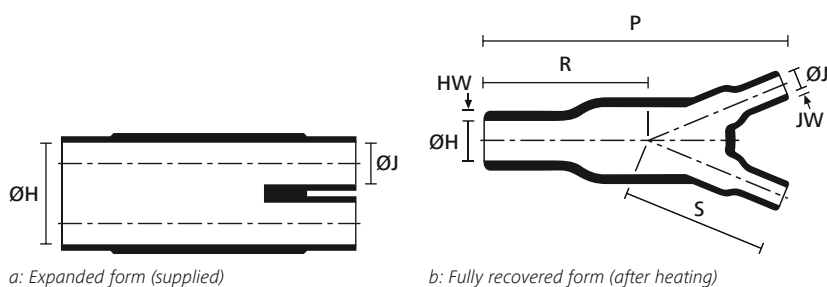
- Mechanical tension relief in cable harnesses



For Material / Adhesive information please refer to page 260, 261.



203-1 supplied / fully recovered.



a: Expanded form (supplied)

b: Fully recovered form (after heating)

| TYPE    | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW<br>nom. | S<br>nom. | Designation as per<br>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      | VG 95343 T08 C 001 A          | 402-06180   |
| 212-1-G | 14.5            | 8.0             | 8.5             | 5.5             | 136.0       | 83.0        | 2.5          | 2.0        | 63.0      | VG 95343 T08 C 005 A          | 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        | 38.0        | 2.5          | 1.5        | 43.0      | VG 95343 T08 C 002 A          | 402-03180   |
| 204-1-G | 39.0            | 18.0            | 27.0            | 12.0            | 66.0        | 81.0        | 3.1          | 2.5        | 81.0      | VG 95343 T08 C 003 A          | 402-04180   |

All dimensions in mm. Subject to technical changes.



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



### 3-Way Outlet Shapes, VG style

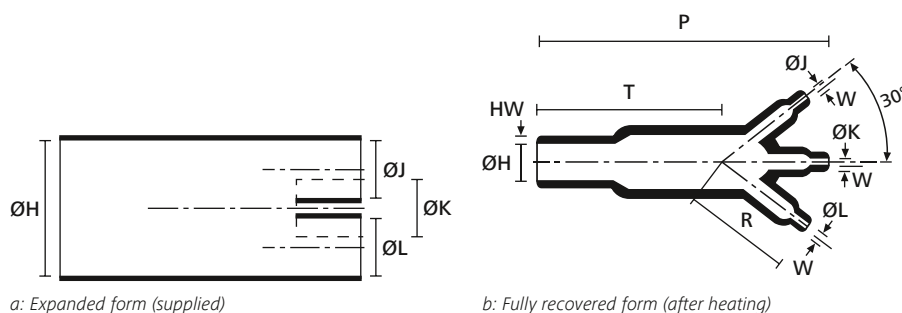
#### Helashrink 300 Series

#### 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)

| TYPE    | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ/K/L<br>min.<br>a | ØJ/K/L<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>30 % | W ±<br>20 % | T ±<br>10 % | Designation as per<br>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        | VG 95343 T08 D 001 A          | 403-06180   |
| 304-1-G | 27.0            | 13.5            | 13.0                | 7.0                 | 93.0        | 50.3        | 2.5          | 1.5         | 42.9        | VG 95343 T08 D 002 A          | 403-04180   |
| 310-1-G | 38.5            | 19.0            | 19.0                | 10.0                | 135.0       | 73.7        | 3.0          | 1.8         | 61.0        | VG 95343 T08 D 003 A          | 403-10180   |
| 311-1-G | 55.5            | 25.5            | 27.0                | 12.5                | 192.0       | 103.1       | 4.6          | 3.1         | 88.9        | VG 95343 T08 D 004 A          | 403-11180   |

All dimensions in mm. Subject to technical changes.



### 4-Way Outlet Shapes, VG style

#### Helashrink 400 Series

#### Features and benefits

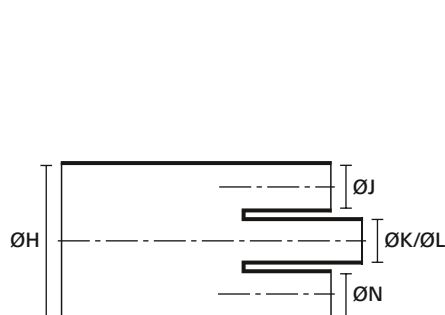
- All outlets clearly marked to aid orientation during installation
- Cable strain relief and mechanical protection at harness transition points



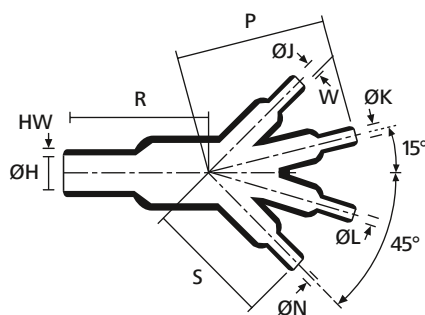
**For Material / Adhesive information please refer to page 260, 261.**



403-1 supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

| TYPE    | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ/K/L/N<br>min.<br>a | ØJ/K/L/N<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | W ±<br>10 % | S<br>nom. | Designation as per<br>VG-Norm | Article-No. |
|---------|-----------------|-----------------|-----------------------|-----------------------|-------------|-------------|--------------|-------------|-----------|-------------------------------|-------------|
| 411-1-G | 19.0            | 10.0            | 9.5                   | 5.5                   | 36.1        | 35.6        | 1.8          | 1.0         | 32.0      | VG 95343 T08 E 002 A          | 404-11180   |
| 403-1-G | 27.0            | 13.0            | 13.0                  | 7.0                   | 51.8        | 49.0        | 2.5          | 1.0         | 45.0      | VG 95343 T08 E 004 A          | 404-03180   |
| 413-1-G | 38.6            | 19.0            | 19.0                  | 10.0                  | 74.9        | 75.0        | 1.8          | 1.0         | 65.0      | VG 95343 T08 E 005 A          | 404-13180   |

All dimensions in mm. Subject to technical changes.



### Right-Angle Shapes, VG style

Helashrink 1100 Series, with rib

#### Features and benefits

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



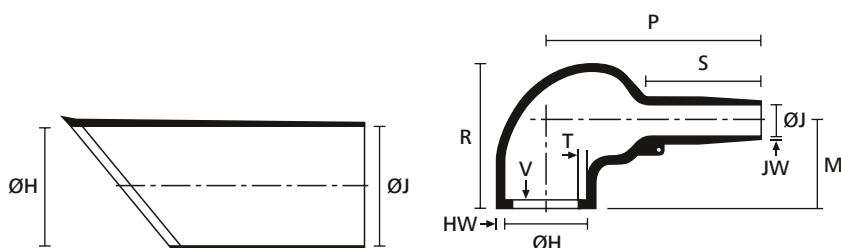
1152-4-G recovered onto a connector.



For Material / Adhesive information please refer to page 260, 261.



1155-4 supplied.



a: Expanded form (supplied)

b: Fully recovered form (after heating)

| TYPE     | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>20 % | V<br>max. | T ±<br>20 % | M<br>nom. | S<br>nom. | Designation as per<br>VG-Norm | Article-No. |
|----------|-----------------|-----------------|-----------------|-----------------|-------------|-------------|--------------|--------------|-----------|-------------|-----------|-----------|-------------------------------|-------------|
| 1152-4-G | 24.0            | 10.5            | 24.0            | 6.0             | 32.0        | 25.0        | 1.3          | 0.5          | 3.3       | 1.0         | 19.0      | 10.0      | VG 95343 T06 E 001 A          | 411-52480   |
| 1154-4-G | 30.0            | 14.5            | 30.0            | 6.0             | 41.0        | 27.0        | 1.5          | 0.8          | 3.3       | 1.0         | 19.0      | 12.0      | VG 95343 T06 E 002 A          | 411-54480   |
| 1155-4-G | 31.0            | 18.0            | 31.0            | 7.0             | 51.0        | 31.0        | 1.8          | 1.0          | 3.3       | 1.0         | 21.0      | 15.0      | VG 95343 T06 E 003 A          | 411-55480   |
| 1156-4-G | 36.0            | 22.5            | 36.0            | 8.5             | 59.0        | 38.0        | 1.8          | 1.0          | 3.3       | 1.0         | 26.0      | 15.0      | VG 95343 T06 E 004 A          | 411-56480   |
| 1157-4-G | 43.0            | 28.5            | 43.0            | 10.0            | 71.0        | 45.0        | 2.0          | 1.0          | 3.3       | 1.7         | 30.0      | 16.0      | VG 95343 T06 E 005 A          | 411-57480   |
| 1158-4-G | 60.0            | 35.0            | 60.0            | 16.0            | 101         | 54.0        | 3.3          | 1.5          | 3.3       | 1.7         | 35.0      | 30.0      | VG 95343 T06 E 006 A          | 411-58480   |
| 1159-4-G | 66.0            | 45.0            | 66.0            | 17.0            | 134         | 68.0        | 3.8          | 2.0          | 3.3       | 2.0         | 42.0      | 51.0      | VG 95343 T06 E 007 A          | 411-59480   |
| 1160-4-G | 82.0            | 61.0            | 82.0            | 25.0            | 152         | 84.0        | 4.0          | 4.0          | 3.3       | 2.0         | 52.0      | 39.0      | VG 95343 T06 E 008 A          | 411-60480   |

All dimensions in mm. Subject to technical changes.



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



### Right-Angle Shapes, MIL style

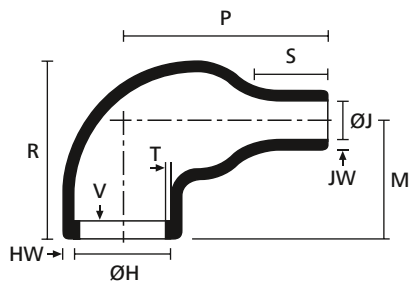
#### Helashrink 1100 Series, with rib

##### Features and benefits

- 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<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>30 % | V<br>max. | T ±<br>20 % | M<br>nom. | S<br>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   |

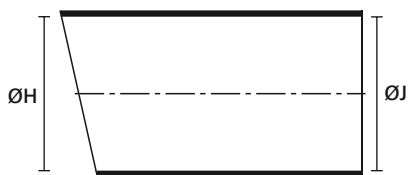
All dimensions in mm. Subject to technical changes.

### Right-Angle Shapes

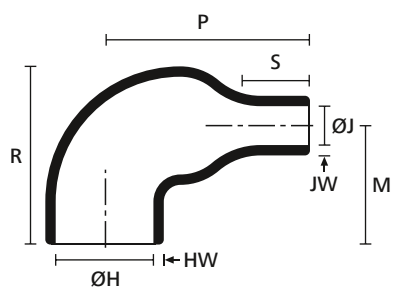
#### Helashrink 1100 Series, without rib

##### Features and benefits

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



a: Expanded form (supplied)



b: Fully recovered form (after heating)



1108-1 supplied / fully recovered.

| TYPE     | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>30 % | M<br>nom. | S<br>nom. | Article-No. |
|----------|-----------------|-----------------|-----------------|-----------------|-------------|-------------|--------------|--------------|-----------|-----------|-------------|
| 1108-1-G | 16.5            | 7.9             | 16.5            | 2.5             | 18.3        | 20.1        | 1.0          | 1.6          | 15.2      | 5.1       | 411-08180   |

All dimensions in mm. Subject to technical changes.



### Right-Angle Shapes, VG style/MIL style

Helashrink 1100 Series, with rib, low profile

#### Features and benefits

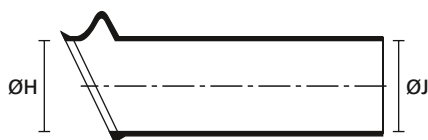
- Lightweight, low profile, compact strain relief and mechanical protection
- Typically used on airborne harnesses



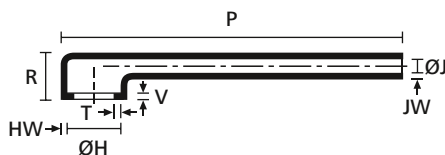
For Material / Adhesive information please refer to page 260, 261.



1123-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)

| TYPE     | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>30 % | T ±<br>10 % | V ±<br>10 % | Designation as per<br>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         | VG 95343 T06 F 001 A          | 411-21180   |
| 1122-1-G | 25.5            | 15.0            | 25.5            | 7.5             | 79.0        | 20.0        | 1.5          | 1.1          | 1.0         | 3.0         | VG 95343 T06 F 002 A          | 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         | VG 95343 T06 F 003 A          | 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         | VG 95343 T06 F 004 A          | 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         | VG 95343 T06 F 005 A          | 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         | VG 95343 T06 F 006 A          | 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         | VG 95343 T06 F 007 A          | 411-27180   |
| 1128-1-G | 62.5            | 47.0            | 62.5            | 1.0             | 133.0       | 33.0        | 2.5          | 1.4          | 2.0         | 3.0         | VG 95343 T06 F 008 A          | 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         | VG 95343 T06 F 009 A          | 411-29180   |

All dimensions in mm. Subject to technical changes.





### Right-Angle Shapes, VG style

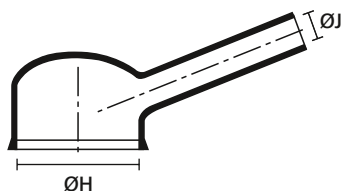
Helashrink 1100 Series, with rib, low profile, high ratio

#### Features and benefits

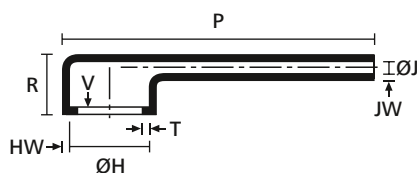
- Use in applications of partially loaded connectors with small cable diameters
- Tail design for easy orientation prior to cooling
- Strain relief for connector cable



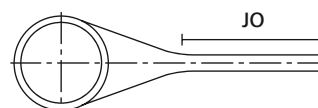
1135-1-G supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)



Fully recovered form (after heating)

| TYPE     | ØH min.<br>a | ØH max.<br>b | ØJ min.<br>a | ØJ max.<br>b | P ± 10 % | R ± 10 % | HW ± 20 % | JW ± 20 % | JO ± 10 % | V max. | T ± 20 % | Designation as per VG-Norm | Article-No. |
|----------|--------------|--------------|--------------|--------------|----------|----------|-----------|-----------|-----------|--------|----------|----------------------------|-------------|
| 1133-1-G | 19.0         | 13.0         | 6.0          | 2.0          | 45.0     | 16.0     | 1.5       | 1.1       | 21.8      | 3.3    | 1.0      | VG 95343 T06 F 011 A       | 411-33180   |
| 1134-1-G | 26.0         | 19.0         | 7.5          | 2.5          | 67.0     | 1.0      | 1.8       | 1.1       | 29.2      | 3.3    | 1.0      | VG 95343 T06 F 012 A       | 411-34180   |
| 1135-1-G | 34.0         | 26.0         | 9.5          | 3.0          | 81.0     | 19.0     | 1.8       | 1.1       | 35.3      | 3.3    | 1.0      | VG 95343 T06 F 013 A       | 411-35180   |
| 1136-1-G | 43.5         | 34.0         | 11.5         | 3.5          | 116      | 21.0     | 1.8       | 1.1       | 47.0      | 3.3    | 1.7      | VG 95343 T06 F 014 A       | 411-36180   |

All dimensions in mm. Subject to technical changes.



## T-Shapes, VG style/MIL style

## Helashrink 1200 Series

## Features and benefits

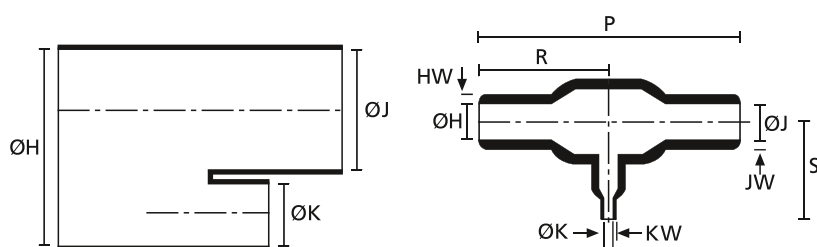
- Strain relief, sealing and mechanical protection on cable harnesses



For Material / Adhesive information please refer to page 260, 261.



1202-1-G recovered onto a cable harness.



a: Expanded form (supplied)

b: Fully recovered form (after heating)

| TYPE     | ØH/J<br>min.<br>a | ØH/J<br>max.<br>b | ØK<br>min.<br>a | ØK<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>30 % | KW ±<br>20 % | S ±<br>10 % | Designation as per<br>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        | VG 95343 T08 A 009 A          | 412-06180   |
| 1203-1-G | 13.0              | 6.0               | 6.5             | 3.0             | 52.0        | 26.0        | 1.5          | 1.5          | 1.0          | 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          | 1.0          | 25.4        | -                             | 412-05180   |
| 1201-1-G | 17.7              | 8.9               | 10.1            | 5.0             | 47.5        | 23.6        | 1.5          | 1.5          | 1.0          | 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 | 27.0              | 12.4              | 13.2            | 6.0             | 108.0       | 54.0        | 2.5          | 2.5          | 1.5          | 38.6        | VG 95343 T08 A 002 A          | 412-09180   |

All dimensions in mm. Subject to technical changes.

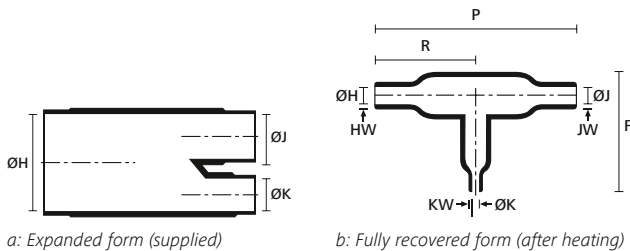


### T-Shapes, VG style

#### Helashrink 1200 Series, Offset

##### 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       | 27.0     | VG 95343 T08 A 016 A       | 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       | -        | VG 95343 T08 A 017 A       | 412-16180   |

All dimensions in mm. Subject to technical changes.

### DEF STAN VG

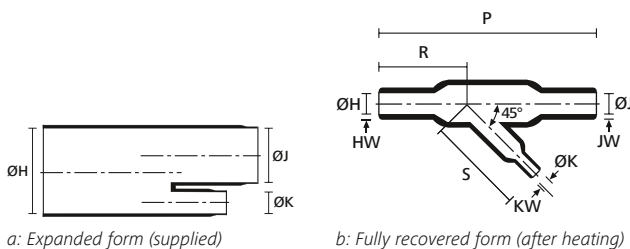
For product specific approvals and specifications please refer to the Appendix.

### Angled T-Shapes, VG style

#### Helashrink 1300 Series, 30° & 45° angle

##### Features and benefits

- 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 | 13.0      | 6.0       | 6.5       | 3.0       | 6.5       | 3.0       | 45.0     | 23.0     | 1.5       | 1.0       | 1.5       | 21.5     | 45 °  | VG 95343 T06 B 010 A       | 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 °  | VG 95343 T08 B 001 A       | 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 °  | VG 95343 T08 B 004 A       | 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 °  | VG 95343 T08 B 002 A       | 413-03180   |
| 1311-1-G | 30.4      | 15.0      | 30.4      | 15.0      | 20.3      | 10.0      | 82.6     | 32.0     | 2.5       | 2.5       | 1.8       | 51.0     | 30 °  | VG 95343 T08 B 003 A       | 413-11180   |

All dimensions in mm. Subject to technical changes.

### JN VG

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



## 2-Way Outlet Shapes, Breakout Boots

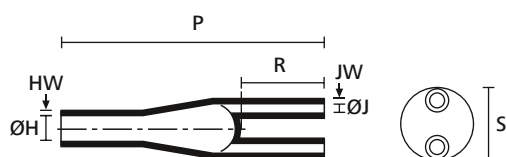
Helashrink 200 Series, in line, low voltage

### 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



a: Expanded form (supplied)



b: Fully recovered form (after heating)



223-2 supplied / fully recovered.

| TYPE      | ØH min.<br>a | ØH max.<br>b | ØJ min.<br>a | ØJ max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>20 % | S<br>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         | 34.0        | 3.2          | 3.2          | 30.0      | 402-18051   |

All dimensions in mm. Subject to technical changes.

## 4-Way Outlet Shapes, Breakout Boots

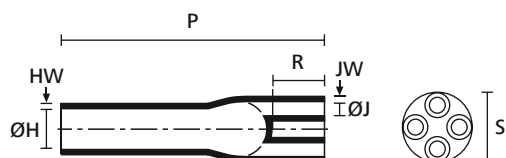
Helashrink 400 Series, in line, low voltage

### Features and benefits

- Easy, time-saving insulation of cable branch point where it splits into single wires
- Made of tough, cross-linked, Polyolefin
- Adhesive 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.<br>a | ØH max.<br>b | ØJ min.<br>a | ØJ max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>20 % | S<br>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   |
| 418-4-B8W2    | 60.0         | 22.9         | 30.0         | 6.4          | 202.0       | 38.1        | 4.1          | 3.3          | 38.1      | 404-18020   |

All dimensions in mm. Subject to technical changes.



### 5-Way Outlet Shapes, Breakout Boots

Helashrink 500 Series, in line, low voltage

#### Features and benefits

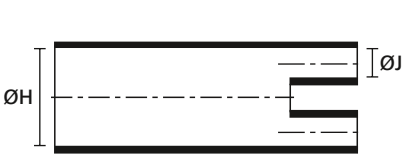
- Cable breakout boots for insulating and sealing cable crotch or conduit system
- Excellent resistance to abrasion and weathering



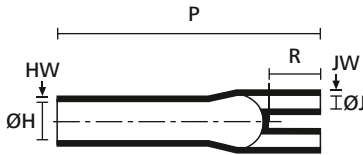
**For Material / Adhesive information please refer to page 260, 261.**



500 Series supplied / fully recovered.



a: Expanded form (supplied)



b: Fully recovered form (after heating)



Fully recovered form (after heating)

| TYPE      | ØH<br>min.<br>a | ØH<br>max.<br>b | ØJ<br>min.<br>a | ØJ<br>max.<br>b | P ±<br>10 % | R ±<br>10 % | HW ±<br>20 % | JW ±<br>20 % | S<br>nom. | Article-No. |
|-----------|-----------------|-----------------|-----------------|-----------------|-------------|-------------|--------------|--------------|-----------|-------------|
| 508-5-B8W | 41.9            | 24.5            | 16.9            | 7.5             | 180.0       | 30.0        | 3.5          | 3.0          | 48.0      | 405-08049   |

All dimensions in mm. Subject to technical changes.



## Pinched End Caps

### Helashrink PEC Series, low voltage

Pinched End Caps can be used for mechanical and environmental protection of stub splices in electrical harnesses. Due to the fast and easy installation, these caps can be used for non-electrical applications as well.

#### Features and benefits

- Small size End Caps
- Fast and easy application
- With Inner adhesive layer for moisture sealing
- 3:1 shrink ratio
- Different diameters for wide application range
- Other lengths available on request



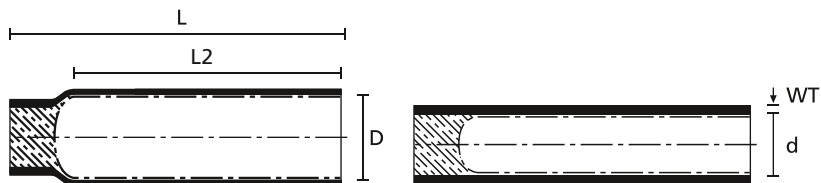
The appropriate end cap for every cable diameter, and cable types.



One Step to the Web!

|                                |                                                                   |
|--------------------------------|-------------------------------------------------------------------|
| <b>MATERIAL</b>                | Polyolefin, cross-linked (PO-X)                                   |
| <b>Colour</b>                  | Black (BK)                                                        |
| <b>Shrink Ratio</b>            | 3:1                                                               |
| <b>Min. Shrink Temperature</b> | +120 °C                                                           |
| <b>Operating Temperature</b>   | -45 °C to +125 °C                                                 |
| <b>Dielectric Strength</b>     | 15 kV/mm according to IEC 684 P2                                  |
| <b>Flammability</b>            | self-extinguishing in 30 seconds according to SAE-AMS-DTL-23053/4 |

RoHS



PEC-Series expanded

PEC-Series recovered

| TYPE        | Supplied<br>Ø D min. | Recov.<br>Ø d max. | Wall<br>(WT) | Length<br>(L) | Length<br>(L2) | Pack<br>Cont. | Article-No. |
|-------------|----------------------|--------------------|--------------|---------------|----------------|---------------|-------------|
| PEC-3/1     | 3.0                  | 1.0                | 1.00         | 25.0          | 20.0           | 50 pcs.       | 416-00000   |
| PEC-4.8/1.5 | 4.8                  | 1.5                | 1.00         | 30.0          | 25.0           | 50 pcs.       | 416-00003   |
| PEC-6/2     | 6.0                  | 2.0                | 1.00         | 30.0          | 25.0           | 50 pcs.       | 416-00001   |
| PEC-9/3     | 9.0                  | 3.0                | 1.40         | 35.0          | 27.0           | 50 pcs.       | 416-00002   |

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



### End Caps

#### Helashrink 1600 Series, low voltage

End caps are suitable for use on both polymeric and paper insulated, lead jacketed cables which may include aluminium or steel armouring.

#### Features and benefits

- 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



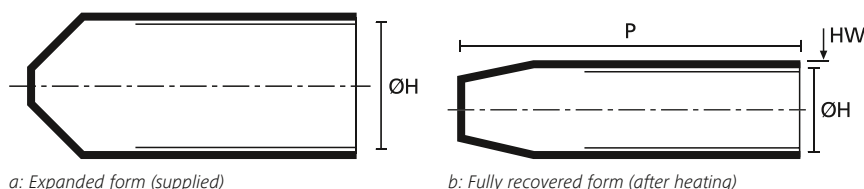
The appropriate end cap for every cable diameter, and cable types.



For Material / Adhesive information please refer to page 260, 261.

|                                |                                 |
|--------------------------------|---------------------------------|
| <b>MATERIAL</b>                | Polyolefin, cross-linked (PO-X) |
| <b>Colour</b>                  | Black (BK)                      |
| <b>Shrink Ratio</b>            | up to 3:1                       |
| <b>Min. Shrink Temperature</b> | +135 °C                         |
| <b>Operating Temperature</b>   | -55 °C to +80 °C                |
| <b>Dielectric Strength</b>     | 15 kV/mm                        |
| <b>Flammability</b>            | ASTM D635                       |

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 % | HW ± 20 % | Article-No. |
|-------------|---------------|---------------|-----------|-----------|----------|-----------|-------------|
| 1612-1-B5W2 | 4.0           | 8.0           | 12.0      | 4.0       | 40.0     | 2.6       | 416-12046   |
| 1613-1-B5W2 | 6.5           | 16.0          | 20.0      | 6.0       | 55.0     | 2.8       | 416-13060   |
| 1602-1-B5W2 | 10.0          | 20.0          | 25.0      | 8.5       | 65.0     | 2.8       | 416-02008   |
| 1614-1-B5W2 | 16.0          | 32.0          | 40.0      | 15.0      | 75.0     | 3.3       | 416-14047   |
| 1615-1-B5W2 | 26.0          | 51.0          | 62.0      | 23.0      | 132.0    | 3.8       | 416-15035   |
| 1617-1-B5W2 | 32.0          | 61.0          | 75.0      | 32.0      | 140.0    | 4.0       | 416-17033   |
| 1616-1-B5W2 | 48.0          | 80.0          | 105.0     | 45.0      | 135.0    | 4.0       | 416-16053   |
| 1609-1-B5W2 | 65.0          | 110.0         | 120.0     | 60.0      | 150.0    | 4.2       | 416-09000   |
| 1610-1-B5W2 | 90.0          | 135.0         | 160.0     | 82.0      | 135.0    | 4.5       | 416-10000   |

All dimensions in mm. Subject to technical changes.





### Hot Melt Tape for Heat Shrinkable Tubing and Shapes

#### HMT200A

Designed for use with heat shrink sleeving and mouldings.

#### Features and benefits

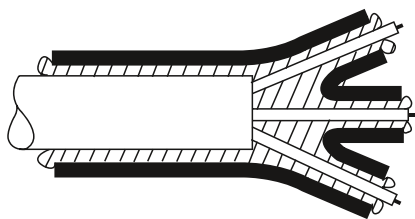
- Hot melt tape flows when heated to seal against moisture
- For heat shrink tubing and mouldings



HMT200A-Tape.



Adhesive tape HMT200A for sealing against humidity.



HMT200A

|                              |                            |
|------------------------------|----------------------------|
| <b>MATERIAL</b>              | Ethylenevinylacetate (EVA) |
| <b>Operating Temperature</b> | -55 °C to +105 °C          |

HF ✓

RoHS ✓

| 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.



### 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 10 g sachets 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



Two-component epoxy adhesive V9500.



For Material / Adhesive information please refer to page 260, 261.



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

|                              |                                       |
|------------------------------|---------------------------------------|
| <b>MATERIAL</b>              | Epoxy resins (EP)                     |
| <b>Colour</b>                | Black (BK)                            |
| <b>Curing Temperature</b>    | +135 °C                               |
| <b>Curing Time</b>           | 24 hours at +25 °C, 2 hours at +85 °C |
| <b>Operating Temperature</b> | -75 °C to +150 °C                     |



| TYPE                           | Description                                                                   | Designation as per VG-Norm | Article-No. |
|--------------------------------|-------------------------------------------------------------------------------|----------------------------|-------------|
| <b>V9500 Epoxy Kit</b>         | 5 x 10 g sachets (50 g), 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   |
| <b>V9500 Epoxy Cartridge</b>   | Two-component adhesive cartridge                                              | VG 95343 T15 A             | 627-95002   |
| <b>V9500 Applicator Gun</b>    | Applicator gun                                                                | VG 95343 T15 DA            | 627-95003   |
| <b>V9500 Applicator Nozzle</b> | 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.



### Chloroprene tubing and grommets

The chloroprene tubings are ideally suited to rigorous environments such as automotive, aerospace, mass transit and defence markets.

As the material is highly elastic, it's original size can be expanded 500 % on application and 200 % in continuous use.

To save time and effort when fitting the tubing, try the HellermannTyton NA three prong tools and the Hellerine lubricant, which are specially designed for use with HellermannTyton chloroprene tubing.

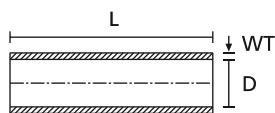
#### Features and benefits

- Highly elastic, easy to fit chloroprene tubing
- Withstands up to 120 °C intermittent temperature
- Covers many cable diameters with one size
- Available in cut lengths



*H rubber tubing is highly flexible and easy to apply.*

#### Helsyn H



*Chloroprene tubing*

|                              |                                        |
|------------------------------|----------------------------------------|
| <b>MATERIAL</b>              | Chloroprene (CR)                       |
| <b>Operating Temperature</b> | -65 °C to +95 °C, intermittent +120 C° |
| <b>Flammability</b>          | UL94 HB                                |
| <b>Elongation at break</b>   | min. 500%                              |



| TYPE       | Supplied<br>Ø D min. | Wall<br>(WT) | Bundle Ø<br>max. | Reel<br>Length | Pack<br>Cont. | Colour     | Tools    | Article-No. |
|------------|----------------------|--------------|------------------|----------------|---------------|------------|----------|-------------|
| H12BKX100M | 1.2                  | 0.80         | 2.0              | 100 m          | 100 m         | Black (BK) | 35       | 608-01200   |
| H15BKX100M | 1.5                  | 0.80         | 3.0              | 100 m          | 100 m         | Black (BK) | 35       | 608-01201   |
| H25BKX100M | 2.5                  | 0.80         | 4.0              | 100 m          | 100 m         | Black (BK) | 36;39    | 608-01203   |
| H30BKX100M | 3.0                  | 0.80         | 6.0              | 100 m          | 100 m         | Black (BK) | 36;39    | 608-01204   |
| H40BKX100M | 4.0                  | 1.00         | 8.0              | 100 m          | 100 m         | Black (BK) | 36;39    | 608-01205   |
| H50BKX100M | 5.0                  | 1.05         | 9.0              | 100 m          | 100 m         | Black (BK) | 36;39    | 608-01206   |
| H75BKX25M  | 7.5                  | 1.25         | 13.0             | 25 m           | 25 m          | Black (BK) | 37;39-40 | 608-01207   |

All dimensions in mm. Subject to technical changes.

Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.



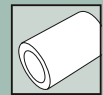
| TYPE     | Supplied<br>Ø D min. | Wall<br>(WT) | Bundle Ø<br>max. | Length<br>(L) | Pack<br>Cont. | Colour     | Tools    | Article-No. |
|----------|----------------------|--------------|------------------|---------------|---------------|------------|----------|-------------|
| H12X20BK | 1.2                  | 0.80         | 2.0              | 20.0          | 1,000 pcs.    | Black (BK) | 35       | 600-02498   |
| H15X20BK | 1.5                  | 0.80         | 3.0              | 20.0          | 1,000 pcs.    | Black (BK) | 35       | 600-02929   |
| H25X25BK | 2.5                  | 0.80         | 4.0              | 25.0          | 1,000 pcs.    | Black (BK) | 36;39    | 600-02934   |
| H30X25BK | 3.0                  | 0.80         | 6.0              | 25.0          | 1,000 pcs.    | Black (BK) | 36;39    | 600-02938   |
| H40X30BK | 4.0                  | 1.00         | 8.0              | 30.0          | 500 pcs.      | Black (BK) | 36;39    | 600-02947   |
| H50X25BK | 5.0                  | 1.05         | 9.0              | 25.0          | 500 pcs.      | Black (BK) | 36;39    | 600-02949   |
| H75X30BK | 7.5                  | 1.25         | 13.0             | 30.0          | 250 pcs.      | Black (BK) | 37;39-40 | 600-02198   |

All dimensions in mm. Subject to technical changes.

Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

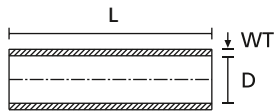


For product specific approvals and specifications please refer to the Appendix.



### Chloroprene tubing and grommets

#### Helsyn TH - thin wall



Chloroprene tubing

| TYPE        | Supplied<br>Ø D min. | Wall<br>(WT) | Bundle Ø<br>max. | Reel<br>Length | Pack<br>Cont. | Colour     | Tools    | Article-No. |
|-------------|----------------------|--------------|------------------|----------------|---------------|------------|----------|-------------|
| TH100BKX25M | 10.0                 | 1.00         | 20.0             | 25 m           | 25 m          | Black (BK) | 37;39-40 | 608-01208   |
| TH120BKX25M | 12.0                 | 1.00         | 23.0             | 25 m           | 25 m          | Black (BK) | 38-39;41 | 608-01209   |
| TH140BKX20M | 14.0                 | 1.10         | 25.0             | 20 m           | 20 m          | Black (BK) | 38-39;41 | 608-01210   |
| TH170BKX20M | 17.0                 | 1.20         | 28.0             | 20 m           | 20 m          | Black (BK) | 38-39;41 | 608-01202   |

All dimensions in mm. Subject to technical changes.

Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.



| TYPE       | Supplied<br>Ø D min. | Wall<br>(WT) | Bundle Ø<br>max. | Length<br>(L) | Pack<br>Cont. | Colour     | Tools    | Article-No. |
|------------|----------------------|--------------|------------------|---------------|---------------|------------|----------|-------------|
| TH100X35BK | 10.0                 | 1.00         | 20.0             | 35.0          | 100 pcs.      | Black (BK) | 37;39-40 | 600-02493   |
| TH120X50BK | 12.0                 | 1.00         | 23.0             | 50.0          | 100 pcs.      | Black (BK) | 38-39;41 | 600-02495   |
| TH140X50BK | 14.0                 | 1.10         | 25.0             | 50.0          | 100 pcs.      | Black (BK) | 38-39;41 | 600-02496   |
| TH170X50BK | 17.0                 | 1.20         | 28.0             | 50.0          | 100 pcs.      | Black (BK) | 38-39;41 | 600-02497   |

All dimensions in mm. Subject to technical changes.

Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

| Recommended Tools |        |         |        |         |           |            |
|-------------------|--------|---------|--------|---------|-----------|------------|
|                   | 35     | 36      | 37     | 39      | 40        | 41         |
|                   | NA-0/1 | NA-1K/3 | NA-4/5 | VA2.5/5 | VA2.5/5+8 | VA2.5/5+18 |
|                   | 569    | 569     | 569    | 570     | 570       | 570        |

For more information on toolings please refer to the Application Tooling chapter.



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



### Installation aid for tubing and grommets

#### Hellerine

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
- Offered in 250 ml bottle or in cans of 5 l or 20 l



Hellerine lubricant in 250 ml plastic bottle.

| TYPE                        | Description                        | Article-No. |
|-----------------------------|------------------------------------|-------------|
| <b>HELLERINE 0.25 LITER</b> | Hellerine assembly aid, 0.25 liter | 625-00250   |
| <b>HELLERINE 5 LITER</b>    | Hellerine assembly aid, 5 liter    | 625-05000   |
| <b>HELLERINE 20 LITER</b>   | Hellerine assembly aid, 20 liter   | 625-06000   |

All dimensions in mm. Subject to technical changes.



Innovative cast resin and gel technology for a reliable cable connection



# RELICON by HellermannTyton



For further information on RELICON  
please contact us via  
[www.HellermannTyton.com](http://www.HellermannTyton.com)



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