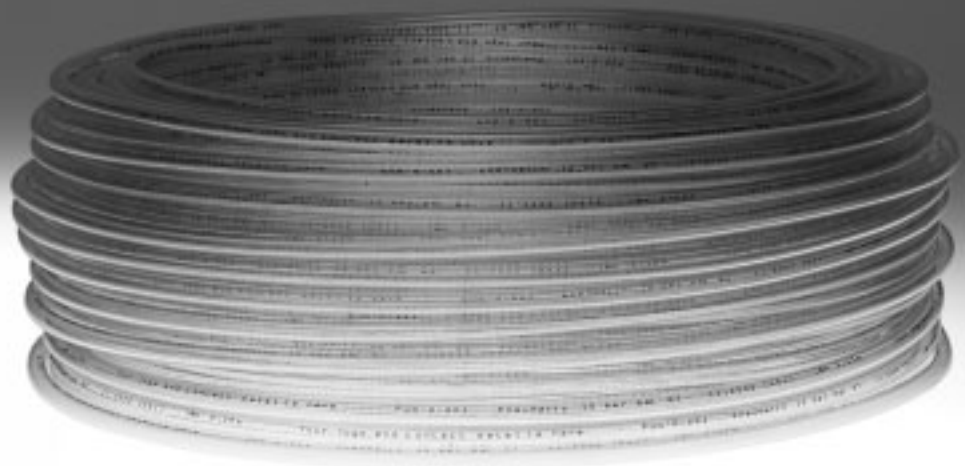


## Plastic tubing, standard O.D.

**FESTO**



Festo core product range  
Covers 80% of your automation tasks

Worldwide:

Always in stock

Superb:

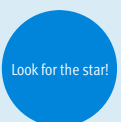
Festo quality at an attractive price

Easy:

Reduces procurement and storing complexity

★ Ready for dispatch from the Festo factory in 24 hours  
Held in stock in 13 service centres worldwide  
More than 2200 products

★ Ready for dispatch in 5 days maximum from stock  
Assembled for you in 4 service centres worldwide  
Up to  $6 \times 10^{12}$  variants per product series



# Plastic tubing, standard O.D.

Features

## Application



The requirements with respect to pressure, temperature, flexibility and environmental influences differ from industry to industry. Users frequently underestimate the risks: around 90%

of all cases of damage can be traced back to the wrong choice of tubing or tubing materials. This can not only result in energy losses, but also

machine downtimes. It is especially important to find a reliable and cost-effective product that prevents tubing degradation during operation.

| Summary of tubing/fitting combinations                     |            |         |   |
|--|------------|---------|---|
| Applications   | Tubing     | Fitting | Description   |
| Standard   | PEN        | QS      | Suitable for a wide range of tasks and attractively priced. Flexible thanks to highly resistant materials, easy to install thanks to optimised bending radii. High level of abrasion resistance in dynamic applications.                    |
|  | PUN        | QS      | Maximum flexibility in standard applications thanks to an extremely wide range of options for combining the different types.  |
|  | PAN        | QS      | Meets all requirements, even for standard applications with increased pressure and temperature ranges.  |
| High pressures   | PAN-MF     | NPQM    | Meets DIN standard 73378: ideal for use in mobile pneumatics. Suitable for increased temperature ranges combined with high pressure ranges.   |
|  | PAN-R      | NPQH    | Powerful in pressure ranges up to 20 bar, for example in applications with the pressure booster DPA.  |
| Resistant to chemicals, food safe and hydrolysis resistant | PLN        | NPQP    | Resistant to cleaning agents, FDA compliant and economical. Can be used instead of the combination with stainless steel fittings.   |
|  | PUN-H      | NPKA    | Hydrolysis resistant and suitable for water applications. Combination suitable for use in clean rooms, FDA compliant and corrosion resistant thanks to 100% polymer construction. Very easy to install thanks to the "one click principle". |
|  | PFAN/PTFEN | NPQH    | For high temperatures up to 150 °C. Suitable for use in the food industry, FDA compliant and resistant to cleaning agents.  |
|  | PFAN/PTFEN | NPCK    | Easy to clean thanks to the union nut's edge-free design. Maximum resistance to corrosion (CRC 4) and FDA compliant. Suitable for a wide range of media.  |
|  | PFAN/PTFEN | CRQS    | Maximum resistance to corrosion (CRC 4) and to aggressive acids and lyes.   |
| Anti-static  | PUN-CM     | NPQM    | Anti-static tubing plus solid metal fitting: maximum protection for electrical and electronic components.   |
| Flame retardant  | PUN-V0     | NPQM    | Very safe in areas where there is a risk of fire thanks to flame-retardant properties. The tubing has been tested to DIN 5510-2.  |
| Resistant to welding spatter                               | PUN-V0-C   | NPQH    | Ideal for applications involving welding spatter. Reliable thanks to a tubing wall thickness of 2 mm for all diameters.   |
|  | PAN-V0     | QS-V0   | Safe even in the mediate vicinity of welding spatter thanks to the double-walled tubing with special fitting.   |

### Note

The ambient conditions and the operating medium transported can have a considerable effect on the service life of plastic tubing. Based on empirical values, Festo recommends the following time specifications for the usage of plastic tubing in general and safety-related applications:

- For general applications, a minimum service life of 10 years can be expected.
- For safety-related applications, we recommend regular inspection at least every 12 months.
- For applications that have an effect

on the material, inspections must be carried out at suitable intervals. We recommend that the interval between inspections should be no more than 6 months, at most half of the period in which failures can occur.

# Plastic tubing, standard O.D.

Technical data

## Note

Tubing diameters that are too big or too small as well as bending radii that are too small result in flow rate losses.

One of the most important rules when selecting tubing is therefore that it should be as long as necessary and as short as possible.

Make sure therefore that in practice tubing is laid loosely and is not stretched.

Tools for bundling tubing or for avoiding bending/pinching tubing are available as accessories:

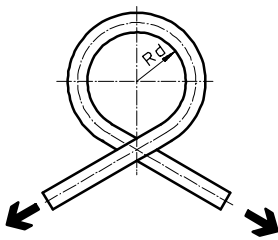
- Tubing strap PB
- Spiral wraps for tubing PKB
- Tubing support NPAW
- Tubing support PKS
- Multi-tube holder KK

Other accessories include connecting tools for tubing:

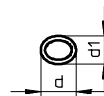
- Pipe and tubing cutter ZRS
- Tubing cutter PAN-VOS for flame-retardant plastic tubing PAN-V0
- Connecting pliers ZMS/disconnecting pliers ZDS for connecting/disconnecting the plastic tubing and barbed fitting

## Measuring methods

### Flow-relevant bending radius Rd



The tubing is bent in the direction of its inherent flexion until a 5% flattening of the tubing O.D. occurs. The Rd is then calculated. There is no reduction in the flow rate up until the Rd is reached.

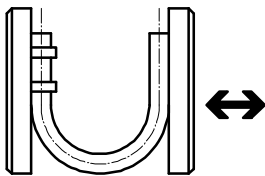


Cross section flattened as a result of bended tubing

d = non deformed tubing OD

d1 = deformed tubing OD

### Minimum bending radius Rmin




The tubing attached to a movable plate is bent until the deformation results in a kink. The measured value is the minimum bending radius Rmin. This Rmin leads to considerable reductions in flow.


# Plastic tubing, standard O.D.

Product range overview



| Version   | Type                                      | Outside Ø<br>[mm]                          | Colour           |                  |                  |                  |                   |                  |                    |                  |                   |                  |                 |                  |                  |                  |                  |   |
|---|---|--|------------------|------------------|------------------|------------------|-------------------|------------------|--------------------|------------------|-------------------|------------------|-----------------|------------------|------------------|------------------|------------------|---|
|   |   |  | Silver           | Blue             | Translucent blue | Black            | Translucent black | Yellow           | Translucent yellow | Green            | Translucent green | Red              | Translucent red | Brown            | White            | Natural          | Blue/black       |   |
|  | <b>PAN</b><br>Polyamide                   | 4, 6, 8, 10, 12,<br>14, 16                 | ■                | ■                | -                | ■                | -                 | ■                | -                  | ■                | -                 | ■                | -               | (■) <sup>1</sup> | (■) <sup>1</sup> | ■                | -                |   |
|   | <b>PAN-R</b><br>Polyamide                 | 4, 6, 8, 10, 12,<br>(14) <sup>1</sup> , 16 | ■                | (■) <sup>1</sup> | -                | (■) <sup>1</sup> | -                 | (■) <sup>1</sup> | -                  | (■) <sup>1</sup> | -                 | (■) <sup>1</sup> | -               | (■) <sup>1</sup> | -                | (■) <sup>1</sup> | (■) <sup>1</sup> | - |
|   |   | 22, 28                                     | -                | -                | -                | ■                | -                 | -                | -                  | -                | -                 | -                | -               | -                | -                | -                | -                | - |
|   | <b>PAN-MF</b><br>Polyamide                | 4, 6, 8, 10, 12,<br>14, 16                 | (■) <sup>1</sup> | (■) <sup>1</sup> | -                | ■                | -                 | (■) <sup>1</sup> | -                  | (■) <sup>1</sup> | -                 | (■) <sup>1</sup> | -               | (■) <sup>1</sup> | (■) <sup>1</sup> | (■) <sup>1</sup> | -                |   |
|   | <b>PAN-VO</b><br>Polyamide                | 4, 6, 8, 10, 12                            | -                | ■                | -                | ■                | -                 | ■                | -                  | ■                | -                 | ■                | -               | ■                | ■                | -                | -                |   |
|   | <b>PFAN</b> Perfluor-<br>alkoxyalkan      | 3, 4, 6, 8, 10, 12                         | -                | -                | -                | -                | -                 | -                | -                  | -                | -                 | -                | -               | -                | -                | ■                | -                |   |
|   | <b>PTFEN</b> Polytetra-<br>fluoroethylene | 4, 6, 8, 10, 12,<br>14, 16                 | -                | -                | -                | -                | -                 | -                | -                  | -                | -                 | -                | -               | -                | -                | ■                | -                |   |
|   | <b>PEN</b><br>Polyethylene                | 4, 6, 8, 10, 12,<br>14, 16                 | ■                | ■                | -                | ■                | -                 | ■                | -                  | ■                | -                 | ■                | -               | (■) <sup>1</sup> | (■) <sup>1</sup> | ■                | -                |   |
|   | <b>PLN</b><br>Polyethylene                | 4, 6, 8, 10, 12,<br>14, 16                 | ■                | ■                | -                | ■                | -                 | (■) <sup>1</sup> | -                  | (■) <sup>1</sup> | -                 | ■                | -               | (■) <sup>1</sup> | (■) <sup>1</sup> | ■                | -                |   |
|   | <b>PUN</b><br>Polyurethane                | 3, 4, 6, 8, 10, 12,<br>14, 16              | ■                | ■                | -                | ■                | -                 | ■                | -                  | ■                | -                 | ■                | -               | (■) <sup>1</sup> | (■) <sup>1</sup> | -                | -                |   |
|   | <b>PUN-DUO</b><br>Polyurethane            | 4, 6, 8, 10                                | ■                | -                | -                | -                | -                 | -                | -                  | -                | -                 | -                | -               | -                | -                | -                | ■                |   |
|   | <b>PUN-CM</b><br>Polyurethane             | 4, 6, 8, 10, 12,<br>(14) <sup>1</sup>      | -                | -                | -                | ■                | -                 | -                | -                  | -                | -                 | -                | -               | -                | -                | -                | -                |   |
|   | <b>PUN-H</b><br>Polyurethane              | 2  | -                | -                | -                | ■                | -                 | -                | -                  | -                | -                 | ■                | -               | -                | -                | ■                | -                |   |
|   |   | 3, 4, 6, 8, 10, 12,<br>14, 16              | ■                | ■                | ■                | ■                | ■                 | ■                | ■                  | ■                | ■                 | ■                | ■               | (■) <sup>1</sup> | (■) <sup>1</sup> | ■                | -                |   |
|   | <b>PUN-H-DUO</b><br>Polyurethane          | 4, 6, 8, 10                                | -                | -                | -                | -                | -                 | -                | -                  | -                | -                 | -                | -               | -                | -                | -                | ■                |   |
|   | <b>PUN-VO</b><br>Polyurethane             | 6, 8, 10, 16                               | -                | ■                | -                | ■                | -                 | ■                | -                  | ■                | -                 | ■                | -               | ■                | ■                | -                | -                |   |
| <b>PUN-VO-C</b><br>Polyurethane   | 4, 6, 8, 10, 12,<br>14, 16                | -  | ■                | -                | ■                | -                | ■                 | -                | ■                  | -                | ■                 | -                | ■               | ■                | -                | -                |                  |   |

1) Please note the information below.

 Note

Product options in brackets can only be ordered using the modular product system. Please note the minimum ordering quantity of 3,000 m for tubing with O.D. ≤ 8 mm and 1,500 m with O.D. > 8 mm.

There is a modular product system for plastic tubing.

- PAN → 16
- PEN → 24
- PLN → 27
- PUN → 47

# Plastic tubing, standard O.D.

Product range overview



| Type      | Operating medium       |       |                 | Food-safe | Material fire test | Antistatic | Halogen-free | Contact with electrical cables | Suitable for chain link trunking | Approved by German Technical Control Board | Maritime classification | Resistance |          |                  |            | Flexibility | Shore hardness <sup>8)</sup>                   | → Page/<br>Internet |
|-----------|------------------------|-------|-----------------|-----------|--------------------|------------|--------------|--------------------------------|----------------------------------|--|-------------------------|------------|----------|------------------|------------|-------------|--|---------------------|
|           | Compressed air, vacuum | Water | Mineral oil     |           |                    |            |              |                                |                                  |  |                         | Chemicals  | Microbes | UV radiation     | Hydrolysis |             |  |                     |
| PAN       | ■                      | -     | -               | -         | -                  | -          | ■            | ■                              | ++                               | ■  | ■ <sup>3)</sup>         | +          | ++       | +                | ++         | ++          | D 55 ±3  | 7                   |
| PAN-R     | ■                      | -     | -               | -         | -                  | -          | ■            | ■                              | ++                               | ■  | -                       | +          | ++       | +                | ++         | +           | D 62 ±3  | 10                  |
|           | ■                      | -     | -               | -         | -                  | -          | ■            | ■                              | ++                               | -  | -                       | +          | ++       | +                | ++         | +           | D 62 ±3  | 11                  |
| PAN-MF    | ■                      | -     | ■ <sup>2)</sup> | -         | -                  | -          | ■            | ■                              | +++                              | -  | -                       | +          | ++       | +                | ++         | +           | D 65 ±3  | 12                  |
| PAN-VO    | ■                      | ■     | ■               | -         | UL94 V0            | -          | -            | ■                              | ++                               | -  | -                       | +          | ++       | ++               | ++         | ++          | A 72 ±4 <sup>5)</sup><br>D 57 ±3 <sup>6)</sup> | 14                  |
| PFAN      | ■                      | ■     | -               | ■         | UL94 V0            | -          | -            | ■                              | -                                | ■  | -                       | +++        | ++       | ++               | +++        | +           | D 60 +5  | 17                  |
| PTFEN     | ■                      | -     | -               | ■         | UL94 V0            | -          | -            | ■                              | -                                | -  | -                       | +++        | ++       | ++               | +++        | +           | D 55 ±5  | 19                  |
| PEN       | ■                      | ■     | -               | -         | -                  | -          | ■            | ■                              | +++                              | ■  | -                       | ++         | ++       | ++ <sup>4)</sup> | +++        | ++          | D 52 ±3  | 21                  |
| PLN       | ■                      | ■     | -               | ■         | -                  | -          | ■            | ■                              | -                                | ■  | -                       | ++         | ++       | ++ <sup>4)</sup> | +++        | +           | D 59 ±3  | 25                  |
| PUN       | ■                      | -     | -               | -         | UL94 HB            | -          | ■            | ■ <sup>7)</sup>                | ++                               | ■  | -                       | -          | -        | ++ <sup>4)</sup> | +          | +++         | D 52 ±3  | 28                  |
| PUN-DUO   | ■                      | -     | -               | -         | UL94 HB            | -          | ■            | ■ <sup>7)</sup>                | ++                               | ■  | -                       | -          | -        | +                | +          | ++          | D 52 ±3  | 31                  |
| PUN-CM    | ■                      | -     | -               | -         | -                  | ■          | ■            | ■                              | +++                              | -  | -                       | +          | ++       | ++               | ++         | ++          | D 52 ±3  | 33                  |
| PUN-H     | ■                      | -     | -               | -         | -                  | -          | ■            | ■                              | ++                               | -  | -                       | +          | ++       | ++ <sup>4)</sup> | ++         | +++         | D 52 ±3  | 35                  |
|           | ■                      | ■     | -               | ■         | -                  | -          | ■            | ■                              | ++                               | ■  | -                       | +          | ++       | ++ <sup>4)</sup> | ++         | +++         | D 52 ±3  | 36                  |
| PUN-H-DUO | ■                      | ■     | -               | ■         | -                  | -          | ■            | ■                              | ++                               | ■  | -                       | +          | ++       | +                | ++         | ++          | D 52 ±3  | 41                  |
| PUN-VO    | ■                      | ■     | -               | -         | UL94 V0...V2       | -          | ■            | ■                              | ++                               | ■  | -                       | +          | ++       | ++ <sup>4)</sup> | ++         | ++          | D 54 ±3  | 43                  |
| PUN-VO-C  | ■                      | ■     | -               | -         | UL94 V0...V2       | -          | ■            | ■                              | ++                               | ■  | -                       | +          | ++       | ++ <sup>4)</sup> | ++         | ++          | D 54 ±3  | 45                  |

- +++ Very well suited
- ++ Well suited
- + Limited suitability (upon request)
- Unsuitable

- 2) As a precaution, please agree the operating medium with Festo.
- 3) Applies for silver and natural colour
- 4) Applies for black colour
- 5) External conduit
- 6) Internal conduit

- 7) Under unfavourable conditions, cables which contain phosphoric acid ester may damage PUN tubing.
- 8) Values are determined using test boards. Values determined using tubing may vary.

# Plastic tubing, standard O.D.

Type codes

PUN – 12x2 – BL – 200

### Material

|       |                         |
|-------|-------------------------|
| PAN   | Polyamide               |
| PFAN  | Perfluor-alkoxyalkan    |
| PTFEN | Polytetrafluoroethylene |
| PEN   | Polyethylene            |
| PLN   |                         |
| PUN   | Polyurethane            |

### Certification

|    |                                      |
|----|--------------------------------------|
| CM | Antistatic                           |
| H  | Hydrolysis resistant                 |
| VO | Flame retardant                      |
| R  | Heavy-duty                           |
| MF | Automotive certification (DIN 73378) |

### Outside Ø x wall thickness [mm]

### Twin tubing

|     |             |
|-----|-------------|
| DUO | Twin tubing |
|-----|-------------|

### Colour

|     |                    |
|-----|--------------------|
| SW  | Black              |
| TSW | Translucent black  |
| BL  | Blue               |
| TBL | Translucent blue   |
| GN  | Green              |
| TGN | Translucent green  |
| RT  | Red                |
| TRT | Translucent red    |
| GE  | Yellow             |
| TGE | Translucent yellow |
| WS  | White              |
| BR  | Brown              |
| SI  | Silver             |
| NT  | Natural            |
| BS  | Blue/black         |

### Packaging unit [m]

# Plastic tubing PAN

Technical data

FESTO

## Plastic tubing PAN

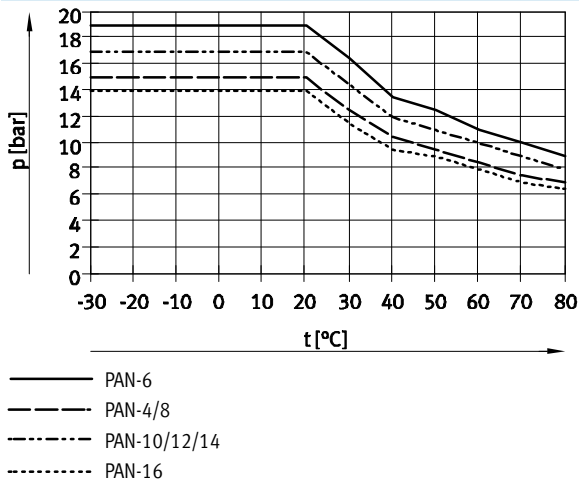
High thermal and mechanical load capacities.




| Operating and environmental conditions         |   |                            |                         |        |  |
|--|---|----------------------------|-------------------------|--------|--|
| Type   | PAN-4/8   | PAN-6                      | PAN-10/12               | PAN-14 | PAN-16   |
| Temperature dependent operating pressure [bar] | -0.95 ... +15<br>→ diagram  | -0.95 ... +19<br>→ diagram | -0.95 ... +17 → diagram |        | -0.95 ... +14<br>→ diagram                                 |
| Operating medium                               | Compressed air in accordance with ISO 8573-1:2010 [7:-:-]               |                            |                         |        |  |
| Ambient temperature [°C]                       | -30 ... +80   |                            |                         |        |  |
| Approval                                       | German Technical Control Board (TÜV)                                    |                            |                         |        |  |
| Maritime classification                        | See certificate (colour: silver and natural) <sup>1)</sup>              |                            |                         | -      | See certificate (colour: silver and natural) <sup>1)</sup> |
| Tubing characteristics                         | Suitable for energy chains for applications with a high cycle rate      |                            |                         |        |  |
| Tubing test conditions                         | Suitable for energy chains: > 5 million cycles to Festo standard 942021 |                            |                         |        |  |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

### Operating pressure p as a function of temperature t



### Accessories

| Type  | → Internet                           |      |
|---|--------------------------------------|------|
|  | Recommended fitting                  |      |
|   | - Push-in fitting QS <sup>1)</sup>   | qs   |
|   | Very suitable                        |      |
|   | - Push-in fitting CRQS <sup>1)</sup> | crqs |
|   | - Push-in fitting NPQH <sup>2)</sup> | npqh |
|   | - Push-in fitting NPQP <sup>3)</sup> | npqp |
|   | - Push-in fitting NPQM <sup>2)</sup> | npqm |
|   | - Click fitting NPKA <sup>4)</sup>   | npka |
|   | - Fitting NPCK <sup>5)</sup>         | npck |
|   | - Quick connector CK <sup>6)</sup>   | ck   |
| - Barbed fitting CN <sup>6)</sup>   | cn                                   |      |
| Limited suitable  |                                      |      |
| - Push-in fitting QS-V0 <sup>3)</sup>   | qs-v0                                |      |

- 1) Not for O.D. 14 mm  
2) Not for O.D. 16 mm  
3) Not for O.D. 14/16 mm

- 4) Only for O.D. 6 mm  
5) Only for O.D. 4/6/8/10 mm  
6) Only for O.D. 4/6/8 mm

### Materials

|                   |                         |
|-------------------|-------------------------|
| Shore hardness    | D 55 ±3                 |
| Tubing            | TPE-A                   |
| Note on materials | Conforms to RoHS        |
|                   | Free of copper and PTFE |

# Plastic tubing PAN

Technical data



| Dimensions and ordering data |      |                     |                              |        |         |          |                   |                  |
|------------------------------|------|---------------------|------------------------------|--------|---------|----------|-------------------|------------------|
| O.D.                         | I.D. | Min. bending radius | Flow-relevant bending radius | Weight | Colour  | Part No. | Type              | PU <sup>1)</sup> |
| [mm]                         | [mm] | [mm]                | [mm]                         | [kg/m] |         |          |                   | [m]              |
| 4                            | 2.9  | 12                  | 18                           | 0.006  | Silver  | 152697   | PAN-4x0,75-SI     | 50               |
|                              |      |                     |                              |        | Silver  | 553888   | PAN-4x0,75-SI-500 | 500              |
|                              |      |                     |                              |        | Blue    | 553906   | PAN-4x0,75-BL     | 50               |
|                              |      |                     |                              |        | Blue    | 553894   | PAN-4x0,75-BL-500 | 500              |
|                              |      |                     |                              |        | Black   | 553912   | PAN-4x0,75-SW     | 50               |
|                              |      |                     |                              |        | Black   | 553900   | PAN-4x0,75-SW-500 | 500              |
|                              |      |                     |                              |        | Natural | 546284   | PAN-4x0,75-NT     | 50               |
|                              |      |                     |                              |        | Green   | 553918   | PAN-4x0,75-GN     | 50               |
|                              |      |                     |                              |        | Red     | 553924   | PAN-4x0,75-RT     | 50               |
|                              |      |                     |                              |        | Yellow  | 553930   | PAN-4x0,75-GE     | 50               |
| 6                            | 4    | 14                  | 32                           | 0.016  | Silver  | 152699   | PAN-6x1-SI        | 50               |
|                              |      |                     |                              |        | Silver  | 553889   | PAN-6x1-SI-500    | 500              |
|                              |      |                     |                              |        | Blue    | 553907   | PAN-6x1-BL        | 50               |
|                              |      |                     |                              |        | Blue    | 553895   | PAN-6x1-BL-500    | 500              |
|                              |      |                     |                              |        | Black   | 553913   | PAN-6x1-SW        | 50               |
|                              |      |                     |                              |        | Black   | 553901   | PAN-6x1-SW-500    | 500              |
|                              |      |                     |                              |        | Natural | 546285   | PAN-6x1-NT        | 50               |
|                              |      |                     |                              |        | Green   | 553919   | PAN-6x1-GN        | 50               |
|                              |      |                     |                              |        | Red     | 553925   | PAN-6x1-RT        | 50               |
|                              |      |                     |                              |        | Yellow  | 553931   | PAN-6x1-GE        | 50               |
| 8                            | 5.9  | 22                  | 43                           | 0.024  | Silver  | 152700   | PAN-8x1,25-SI     | 50               |
|                              |      |                     |                              |        | Silver  | 553890   | PAN-8x1,25-SI-400 | 400              |
|                              |      |                     |                              |        | Blue    | 553908   | PAN-8x1,25-BL     | 50               |
|                              |      |                     |                              |        | Blue    | 553896   | PAN-8x1,25-BL-400 | 400              |
|                              |      |                     |                              |        | Black   | 553914   | PAN-8x1,25-SW     | 50               |
|                              |      |                     |                              |        | Black   | 553902   | PAN-8x1,25-SW-400 | 400              |
|                              |      |                     |                              |        | Natural | 546286   | PAN-8x1,25-NT     | 50               |
|                              |      |                     |                              |        | Green   | 553920   | PAN-8x1,25-GN     | 50               |
|                              |      |                     |                              |        | Red     | 553926   | PAN-8x1,25-RT     | 50               |
|                              |      |                     |                              |        | Yellow  | 553932   | PAN-8x1,25-GE     | 50               |
| 10                           | 7    | 27                  | 58                           | 0.042  | Silver  | 152701   | PAN-10x1,5-SI     | 50               |
|                              |      |                     |                              |        | Silver  | 553891   | PAN-10x1,5-SI-300 | 300              |
|                              |      |                     |                              |        | Blue    | 553909   | PAN-10x1,5-BL     | 50               |
|                              |      |                     |                              |        | Blue    | 553897   | PAN-10x1,5-BL-300 | 300              |
|                              |      |                     |                              |        | Black   | 553915   | PAN-10x1,5-SW     | 50               |
|                              |      |                     |                              |        | Black   | 553903   | PAN-10x1,5-SW-300 | 300              |
|                              |      |                     |                              |        | Natural | 546287   | PAN-10x1,5-NT     | 50               |
|                              |      |                     |                              |        | Green   | 553921   | PAN-10x1,5-GN     | 50               |
|                              |      |                     |                              |        | Red     | 553927   | PAN-10x1,5-RT     | 50               |
|                              |      |                     |                              |        | Yellow  | 553933   | PAN-10x1,5-GE     | 50               |

1) Packaging unit



# Plastic tubing PAN

Technical data



| Dimensions and ordering data |      |                     |                              |        |         |          |                    |                  |
|------------------------------|------|---------------------|------------------------------|--------|---------|----------|--------------------|------------------|
| O.D.                         | I.D. | Min. bending radius | Flow-relevant bending radius | Weight | Colour  | Part No. | Type               | PU <sup>1)</sup> |
| [mm]                         | [mm] | [mm]                | [mm]                         | [kg/m] |         |          |                    | [m]              |
| 12                           | 8.4  | 29                  | 64                           | 0.060  | Silver  | 152702   | PAN-12x1,75-SI     | 50               |
|                              |      |                     |                              |        | Silver  | 553892   | PAN-12x1,75-SI-200 | 200              |
|                              |      |                     |                              |        | Blue    | 553910   | PAN-12x1,75-BL     | 50               |
|                              |      |                     |                              |        | Blue    | 553898   | PAN-12x1,75-BL-200 | 200              |
|                              |      |                     |                              |        | Black   | 553916   | PAN-12x1,75-SW     | 50               |
|                              |      |                     |                              |        | Black   | 553904   | PAN-12x1,75-SW-200 | 200              |
|                              |      |                     |                              |        | Natural | 546288   | PAN-12x1,75-NT     | 50               |
|                              |      |                     |                              |        | Green   | 553922   | PAN-12x1,75-GN     | 50               |
|                              |      |                     |                              |        | Red     | 553928   | PAN-12x1,75-RT     | 50               |
|                              |      |                     |                              |        | Yellow  | 553934   | PAN-12x1,75-GE     | 50               |
| 14                           | 10   | 50                  | 80                           | 0.077  | Silver  | 570392   | PAN-14x2-SI        | 50               |
| 16                           | 12   | 67                  | 94                           | 0.092  | Silver  | 152703   | PAN-16x2-SI        | 50               |
|                              |      |                     |                              |        | Silver  | 553893   | PAN-16x2-SI-100    | 100              |
|                              |      |                     |                              |        | Blue    | 553911   | PAN-16x2-BL        | 50               |
|                              |      |                     |                              |        | Blue    | 553899   | PAN-16x2-BL-100    | 100              |
|                              |      |                     |                              |        | Black   | 553917   | PAN-16x2-SW        | 50               |
|                              |      |                     |                              |        | Black   | 553905   | PAN-16x2-SW-100    | 100              |
|                              |      |                     |                              |        | Natural | 546289   | PAN-16x2-NT        | 50               |
|                              |      |                     |                              |        | Green   | 553923   | PAN-16x2-GN        | 50               |
|                              |      |                     |                              |        | Red     | 553929   | PAN-16x2-RT        | 50               |
|                              |      |                     |                              |        | Yellow  | 553935   | PAN-16x2-GE        | 50               |

1) Packaging unit

# Plastic tubing PAN-R

Technical data



## Plastic tubing PAN-R

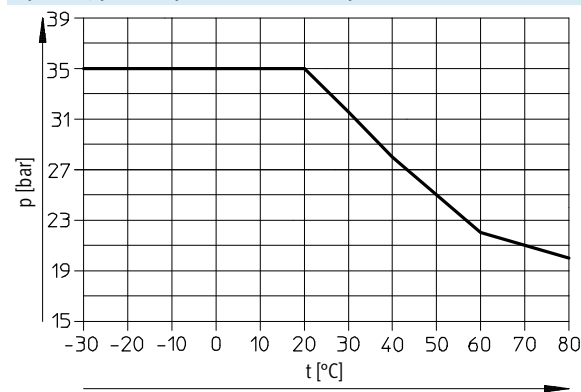
With tubing outside diameters of  
4 ... 16 mm

For high-pressure applications.



| Operating and environmental conditions   |       |   |
|--|-------|---|
| Temperature dependent operating pressure | [bar] | -0.95 ... +35 → diagram   |
| Operating medium                         |       | Compressed air in accordance with ISO 8573-1:2010 [7:--]                |
| Ambient temperature                      | [°C]  | -30 ... +80   |
| Approval                                 |       | German Technical Control Board (TÜV)                                    |
| Tubing characteristics                   |       | Suitable for energy chains for applications with a high cycle rate      |
| Tubing test conditions                   |       | Suitable for energy chains: > 5 million cycles to Festo standard 942021 |

### Operating pressure p as a function of temperature t



### Accessories

| Type | → Internet                            |       |
|------|---------------------------------------|-------|
|      | Recommended fitting                   |       |
|      | - Push-in fitting NPQH <sup>1)</sup>  | npqh  |
|      | Very suitable                         |       |
|      | - Push-in fitting QS                  | qs    |
|      | - Push-in fitting CRQS                | crqs  |
|      | - Push-in fitting NPQP <sup>1)</sup>  | npqp  |
|      | - Push-in fitting NPQM <sup>1)</sup>  | npqm  |
|      | - Click fitting NPKA <sup>2)</sup>    | npka  |
|      | Limited suitable                      |       |
|      | - Push-in fitting QS-V0 <sup>1)</sup> | qs-v0 |

1) Not for O.D. 16 mm

2) Only for O.D. 6 mm

| Materials         |   |
|-------------------|---|
| Shore hardness    | D 62 ±3                                     |
| Tubing            | TPE-A                                       |
| Note on materials | Conforms to RoHS<br>Free of copper and PTFE |

| Dimensions and ordering data |      |                     |                              |        |        |          |                 |                  |
|------------------------------|------|---------------------|------------------------------|--------|--------|----------|-----------------|------------------|
| O.D.                         | I.D. | Min. bending radius | Flow-relevant bending radius | Weight | Colour | Part No. | Type            | PU <sup>1)</sup> |
| [mm]                         | [mm] | [mm]                | [mm]                         | [kg/m] |        |          |                 | [m]              |
| 4                            | 2.5  | 7                   | 16                           | 0.0079 | Silver | 541674   | PAN-R-4x0,75-SI | 50               |
| 6                            | 3.8  | 12                  | 21                           | 0.0174 |        | 541675   | PAN-R-6x1,1-SI  | 50               |
| 8                            | 5    | 16                  | 29                           | 0.0316 |        | 541676   | PAN-R-8x1,5-SI  | 50               |
| 10                           | 6.2  | 18                  | 44                           | 0.0498 |        | 541677   | PAN-R-10x1,9-SI | 50               |
| 12                           | 7.6  | 24                  | 46                           | 0.0698 |        | 541678   | PAN-R-12x2,2-SI | 50               |
| 16                           | 10   | 33                  | 73                           | 0.1262 |        | 541679   | PAN-R-16x3-SI   | 50               |

1) Packaging unit

# Plastic tubing PAN-R

Technical data

## Plastic tubing PAN-R

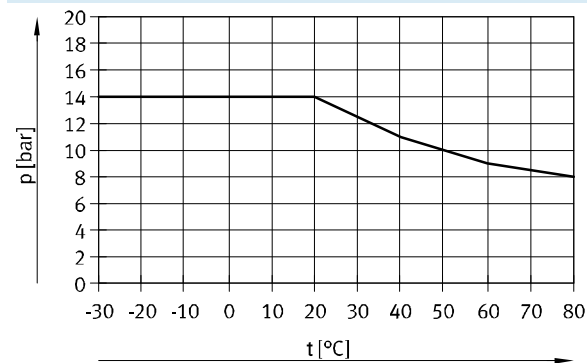
With tubing outside diameters of 22 and 28 mm

High thermal and mechanical load capacities.






| Operating and environmental conditions         |  |  |
|--|--|--|
| Temperature dependent operating pressure [bar] |  | -0.95 ... +14 → diagram                                  |
| Operating medium                               |  | Compressed air in accordance with ISO 8573-1:2010 [7:--] |
| Ambient temperature [°C]                       |  | -30 ... +80  |

### Operating pressure p as a function of temperature t



### Accessories

| Type  |  | → Internet |
|---|--|------------|
|   | Recommended fitting                                    |            |
|   | - Push-in fitting QS-G <sup>3</sup> / <sub>4</sub> -22 | qs         |
|   | - Push-in fitting CQ-...-22/28                         | cq         |
|  | Pipe cutter ZR   | tool       |

 **Note**  
 When using the pipe cutter ZR to cut to length, we recommend rotating the tube through approx. 90° at the start of the cutting process. Rotating the tube gives a drawing cut so that the tube can be cut with a significantly lower force. This also minimises deformation of the tube.

### Materials

|                   |                         |
|-------------------|-------------------------|
| Shore hardness    | D 62 ±3                 |
| Tubing            | TPE-A                   |
| Note on materials | Conforms to RoHS        |
|                   | Free of copper and PTFE |

### Dimensions and ordering data

| O.D.<br>[mm] | I.D.<br>[mm] | Flow-relevant bending radius<br>[mm] | Weight<br>[kg/m] | Colour | Part No.       | Type                   | PU <sup>1)</sup><br>[m] |
|--------------|--------------|--------------------------------------|------------------|--------|----------------|------------------------|-------------------------|
| 22           | 18           | 350                                  | 1.31             | Black  | <b>8036207</b> | <b>PAN-R-22x2-SW</b>   | <b>50</b>               |
| 28           | 23           | 350                                  | 2.07             |        | <b>8036208</b> | <b>PAN-R-28x2,5-SW</b> | <b>50</b>               |

1) Packaging unit

# Plastic tubing PAN-MF

Technical data



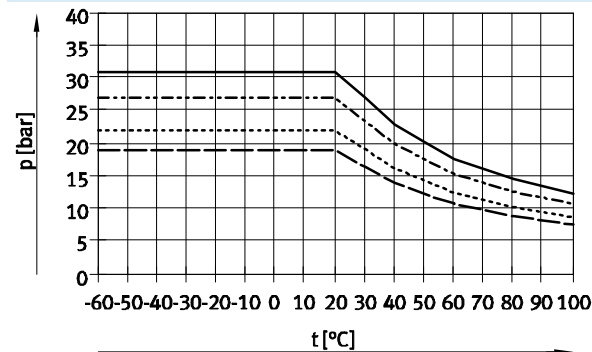
## Plastic tubing PAN-MF

High thermal and mechanical load capacities.  
Meets the requirements according to DIN 73378 "Polyamide tubing for use in motor vehicles".



| Operating and environmental conditions         |   |                            |                            |                            |                            |
|--|---|----------------------------|----------------------------|----------------------------|----------------------------|
| Type   | PAN-MF-4  | PAN-MF-6                   | PAN-MF-8/10/12             | PAN-MF-14                  | PAN-MF-16                  |
| Temperature dependent operating pressure [bar] | -0.95 ... +31<br>→ diagram  | -0.95 ... +27<br>→ diagram | -0.95 ... +19<br>→ diagram | -0.95 ... +22<br>→ diagram | -0.95 ... +19<br>→ diagram |
| Conforms to standard                           | DIN 73378-PA12-PHL  |                            |                            |                            |                            |
| Operating medium                               | Compressed air in accordance with ISO 8573-1:2010 [7:--:-]<br>Mineral oil |                            |                            |                            |                            |
| Ambient temperature [°C]                       | -60 ... +100  |                            |                            |                            |                            |
| Tubing characteristics                         | Suitable for energy chains for applications with a high cycle rate        |                            |                            |                            |                            |
| Tubing test conditions                         | Suitable for energy chains: > 5 million cycles to Festo standard 942021   |                            |                            |                            |                            |

### Operating pressure p as a function of temperature t



- PAN-MF-4
- PAN-MF-6
- PAN-MF-8/10/12/16
- PAN-MF-14

### Accessories

| Type | → Internet                            |       |
|------|---------------------------------------|-------|
|      | Very suitable                         |       |
|      | - Push-in fitting QS <sup>1)</sup>    | qs    |
|      | - Push-in fitting CRQS <sup>1)</sup>  | crqs  |
|      | - Push-in fitting NPQH <sup>2)</sup>  | npqh  |
|      | - Push-in fitting NPQP <sup>3)</sup>  | npqp  |
|      | - Push-in fitting NPQM <sup>2)</sup>  | npqm  |
|      | Limited suitable                      |       |
|      | - Push-in fitting QS-V0 <sup>3)</sup> | qs-v0 |

- 1) Not for O.D. 14 mm
- 2) Not for O.D. 16 mm

- 3) Not for O.D. 14/16 mm

| Materials         |   |
|-------------------|---|
| Shore hardness    | D 65 ±3                                     |
| Tubing            | PA12-P                                      |
| Note on materials | Conforms to RoHS<br>Free of copper and PTFE |

# Plastic tubing PAN-MF

Technical data

| Dimensions and ordering data |              |                                |   |                  |        |          |                      |                         |
|------------------------------|--------------|--------------------------------|---|------------------|--------|----------|----------------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending<br>radius<br>[mm] | Flow-relevant<br>bending radius<br>[mm] | Weight<br>[kg/m] | Colour | Part No. | Type                 | PU <sup>1)</sup><br>[m] |
| 4                            | 2.5          | 10                             | 15                                      | 0.008            | Black  | 570357   | PAN-MF-4x0,75-SW     | 50                      |
|                              |              |                                |   |                  |        | 572091   | PAN-MF-4x0,75-SW-500 | 500                     |
| 6                            | 4            | 15                             | 35                                      | 0.016            |        | 570358   | PAN-MF-6x1-SW        | 50                      |
|                              |              |                                |   |                  |        | 572093   | PAN-MF-6x1-SW-500    | 500                     |
| 8                            | 6            | 35                             | 50                                      | 0.022            |        | 570359   | PAN-MF-8x1-SW        | 50                      |
| 10                           | 7.5          | 45                             | 65                                      | 0.035            |        | 570360   | PAN-MF-10x1,25-SW    | 50                      |
| 12                           | 9            | 50                             | 70                                      | 0.051            |        | 570361   | PAN-MF-12x1,5-SW     | 50                      |
| 14                           | 10           | 50                             | 75                                      | 0.077            |        | 570362   | PAN-MF-14x2-SW       | 50                      |
| 16                           | 12           | 75                             | 130                                     | 0.09             |        | 570363   | PAN-MF-16x2-SW       | 50                      |

1) Packaging unit

# Plastic tubing PAN-V0, flame retardant

Technical data



## Plastic tubing PAN-V0

PVC casing, flame-retardant. The tube casing must be cut to length X (table → 15) before being inserted in the push-in fitting QS-V0. The tubing cut-

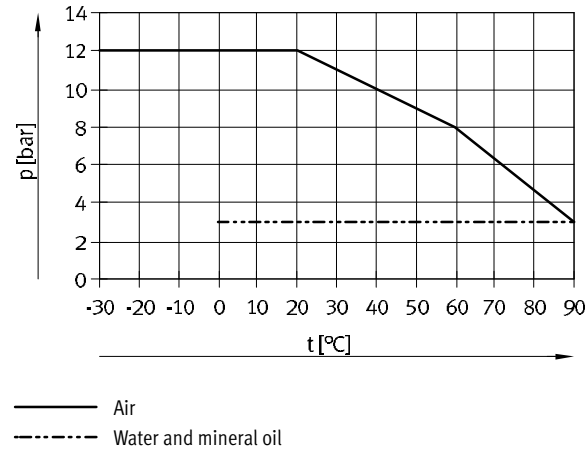
ter PAN-V0S is the perfect tool for this task. The tubing cutter PAN-V0S will always cut the casing to the right length.



| Operating and environmental conditions   |       |  |
|--|-------|--|
| Temperature dependent operating pressure | [bar] | -0.95 ... +12 → diagram                                    |
| Operating medium                         |       | Compressed air in accordance with ISO 8573-1:2010 [7:--:-] |
|  |       | Mineral oil  |
|  |       | Water as per manufacturer's declaration <sup>1)</sup>      |
| Ambient temperature                      | [°C]  | -30 ... +90  |
| Material fire test                       |       | UL94 V-0 (casing)  |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

## Operating pressure p as a function of temperature t




## Accessories

| Type | → Internet              |       |
|------|-------------------------|-------|
|      | Recommended fitting     |       |
|      | - Push-in fitting QS-V0 | qs-v0 |
|      | Limited suitable        |       |
|      | - Push-in fitting QS    | qs    |
|      | - Push-in fitting CRQS  | crqs  |
|      | - Push-in fitting NPQH  | npqh  |
|      | - Push-in fitting NPQP  | npqp  |
|      | - Push-in fitting NPQM  | npqm  |
|      | Tubing cutter PAN-V0S   | tool  |

## Materials

|                   |                  |         |
|-------------------|------------------|---------|
| Shore hardness    | Outer tubing     | A 72 ±4 |
|                   | Inner tubing     | D 57 ±3 |
| Tubing            | Outer tubing     | PVC-P   |
|                   | Inner tubing     | PA12-P  |
| Note on materials | Conforms to RoHS |         |

 Type discontinued  
Available up until 2018

FESTO

## Plastic tubing PAN-V0, flame retardant

Technical data

| Pneumatic connection |  |
|----------------------|--|
| O.D. [mm]            | Pneumatic connection                         |
| 6                    | For push-in connector outside diameter 4 mm  |
| 8                    | For push-in connector outside diameter 6 mm  |
| 10                   | For push-in connector outside diameter 8 mm  |
| 12                   | For push-in connector outside diameter 10 mm |
| 14                   | For push-in connector outside diameter 12 mm |

| Dimensions and ordering data |      |                     |                              |                   |        |        |          |                      |                  |
|------------------------------|------|---------------------|------------------------------|-------------------|--------|--------|----------|----------------------|------------------|
| O.D.                         | I.D. | Min. bending radius | Flow-relevant bending radius | Max. cut length X | Weight | Colour | Part No. | Type                 | PU <sup>1)</sup> |
| [mm]                         | [mm] | [mm]                | [mm]                         | [mm]              | [kg/m] |        |          |                      | [m]              |
| 6                            | 2.5  | 10                  | 20                           | 15                | 0.0335 | Blue   | 132899   | PAN-V0-4x0,75-BL     | 50               |
| 8                            | 4    | 13                  | 30                           | 17                | 0.049  | Black  | 160550   | PAN-V0-6x1-SW        | 50               |
|                              |      |                     |                              |                   |        | Blue   | 525466   | PAN-V0-6x1-BL-20     | 20               |
|                              |      |                     |                              |                   |        | Blue   | 132905   | PAN-V0-6x1-BL        | 50               |
|                              |      |                     |                              |                   |        | Green  | 525470   | PAN-V0-6x1-GN        | 50               |
|                              |      |                     |                              |                   |        | Red    | 525474   | PAN-V0-6x1-RT        | 50               |
|                              |      |                     |                              |                   |        | White  | 525478   | PAN-V0-6x1-WS        | 50               |
|                              |      |                     |                              |                   |        | Yellow | 525482   | PAN-V0-6x1-GE        | 50               |
|                              |      |                     |                              |                   |        | Brown  | 525486   | PAN-V0-6x1-BR-20     | 20               |
| 10                           | 6    | 24                  | 45                           | 18                | 0.065  | Black  | 160551   | PAN-V0-8x1-SW        | 50               |
|                              |      |                     |                              |                   |        | Blue   | 525467   | PAN-V0-8x1-BL-20     | 20               |
|                              |      |                     |                              |                   |        | Blue   | 132906   | PAN-V0-8x1-BL        | 50               |
|                              |      |                     |                              |                   |        | Green  | 525471   | PAN-V0-8x1-GN        | 50               |
|                              |      |                     |                              |                   |        | Red    | 525475   | PAN-V0-8x1-RT        | 50               |
|                              |      |                     |                              |                   |        | White  | 525479   | PAN-V0-8x1-WS        | 50               |
|                              |      |                     |                              |                   |        | Yellow | 525483   | PAN-V0-8x1-GE        | 50               |
|                              |      |                     |                              |                   |        | Brown  | 525487   | PAN-V0-8x1-BR-20     | 20               |
| 12                           | 7.5  | 34                  | 56                           | 20                | 0.088  | Black  | 160552   | PAN-V0-10x1,25-SW    | 50               |
|                              |      |                     |                              |                   |        | Blue   | 525468   | PAN-V0-10x1,25-BL-20 | 20               |
|                              |      |                     |                              |                   |        | Blue   | 132907   | PAN-V0-10x1,25-BL    | 50               |
|                              |      |                     |                              |                   |        | Green  | 525472   | PAN-V0-10x1,25-GN    | 50               |
|                              |      |                     |                              |                   |        | Red    | 525476   | PAN-V0-10x1,25-RT    | 50               |
|                              |      |                     |                              |                   |        | White  | 525480   | PAN-V0-10x1,25-WS    | 50               |
|                              |      |                     |                              |                   |        | Yellow | 525484   | PAN-V0-10x1,25-GE    | 50               |
|                              |      |                     |                              |                   |        | Brown  | 525488   | PAN-V0-10x1,25-BR-20 | 20               |
| 14                           | 9    | 43                  | 65                           | 23                | 0.133  | Black  | 160553   | PAN-V0-12x1,5-SW     | 50               |
|                              |      |                     |                              |                   |        | Blue   | 525469   | PAN-V0-12x1,5-BL     | 50               |
|                              |      |                     |                              |                   |        | Green  | 525473   | PAN-V0-12x1,5-GN     | 50               |
|                              |      |                     |                              |                   |        | Red    | 525477   | PAN-V0-12x1,5-RT     | 50               |
|                              |      |                     |                              |                   |        | White  | 525481   | PAN-V0-12x1,5-WS     | 50               |
|                              |      |                     |                              |                   |        | Yellow | 525485   | PAN-V0-12x1,5-GE     | 50               |
|                              |      |                     |                              |                   |        | Brown  | 525489   | PAN-V0-12x1,5-BR-20  | 20               |

1) Packaging unit

# Plastic tubing PAN

Ordering data – Modular products



| Ordering table (minimum order quantity 3,000 m, rounding-off value 25 m) |                                      |               |   |    |    |    |                   |                 |                   |               |  |
|--|--------------------------------------|---------------|---|----|----|----|-------------------|-----------------|-------------------|---------------|--|
| Size   | 4                                    | 6             | 8 | 10 | 12 | 14 | 16                | Condi-<br>tions | Code              | Enter<br>code |  |
| <b>M</b> Module No.  | <b>553610</b>                        |               |   |    |    |    |                   |                 |                   |               |  |
| Function   | Polyamide tubing, standard O.D.      |               |   |    |    |    |                   |                 | <b>PAN</b>        | PAN           |  |
| <b>O</b> Alternative material characteristic                             | Standard                             |               |   |    |    |    |                   |                 |                   |               |  |
|  | Automotive certification (DIN 73378) |               |   |    |    |    |                   |                 | <b>-MF</b>        |               |  |
|  | Heavy-duty                           |               |   |    |    |    |                   |                 | <b>-R</b>         |               |  |
| <b>M</b> Tubing O.D. [mm]  | 4                                    | –             | – | –  | –  | –  | –                 |                 | <b>-4</b>         |               |  |
|  | –                                    | 6             | – | –  | –  | –  | –                 |                 | <b>-6</b>         |               |  |
|  | –                                    | –             | 8 | –  | –  | –  | –                 |                 | <b>-8</b>         |               |  |
|  | –                                    | –             | – | 10 | –  | –  | –                 |                 | <b>-10</b>        |               |  |
|  | –                                    | –             | – | –  | 12 | –  | –                 |                 | <b>-12</b>        |               |  |
|  | –                                    | –             | – | –  | –  | 14 | –                 |                 | <b>-14</b>        |               |  |
|  | –                                    | –             | – | –  | –  | –  | 16                |                 | <b>-16</b>        |               |  |
|  | Colour                               | Silver        |   |    |    |    |                   |                 |                   | <b>-SI</b>    |  |
|  |                                      | Blue          |   |    |    |    |                   |                 |                   | <b>-BL</b>    |  |
|  |                                      | Black         |   |    |    |    |                   |                 |                   | <b>-SW</b>    |  |
| Yellow   |                                      |               |   |    |    |    |                   | <b>-GE</b>      |                   |               |  |
| Green  |                                      |               |   |    |    |    |                   | <b>-GN</b>      |                   |               |  |
| Red  |                                      |               |   |    |    |    |                   | <b>-RT</b>      |                   |               |  |
| Brown  |                                      |               |   |    |    |    |                   | <b>-BR</b>      |                   |               |  |
| White  |                                      |               |   |    |    |    |                   | <b>-WS</b>      |                   |               |  |
| Natural  |                                      |               |   |    |    |    |                   | <b>-NT</b>      |                   |               |  |
| <b>O</b> Inscription text (on request)                                   | Standard                             |               |   |    |    |    |                   |                 |                   |               |  |
|  | Customer-specific tubing inscription |               |   |    |    |    |                   | <b>1</b>        | <b>-TXT</b>       |               |  |
| <b>M</b> Packaging unit [m]  | 25                                   |               |   |    |    |    |                   |                 | <b>-25</b>        |               |  |
|  | 50                                   |               |   |    |    |    |                   |                 | <b>-50</b>        |               |  |
|  | 100                                  |               |   |    |    |    |                   |                 | <b>-100</b>       |               |  |
|  | 200                                  |               |   |    |    | –  | –                 |                 | <b>-200</b>       |               |  |
|  | 300                                  |               |   |    | –  | –  | –                 |                 | <b>-300</b>       |               |  |
|  | 400                                  |               |   | –  | –  | –  | –                 |                 | <b>-400</b>       |               |  |
|  | 500                                  | –             | – | –  | –  | –  | –                 |                 | <b>-500</b>       |               |  |
|  | Packaging                            | Cardboard box |   |    |    |    |                   |                 | <b>2</b> <b>4</b> | <b>-CB</b>    |  |
| Polyurethane bag   |                                      |               |   |    |    |    | <b>2</b> <b>5</b> | <b>-BA</b>      |                   |               |  |
| Reel   |                                      |               |   |    |    |    | <b>3</b>          | <b>-HA</b>      |                   |               |  |

- |                        |                                 |                    |  |
|------------------------|---------------------------------|--------------------|--|
| <b>1</b> <b>TXT</b>    | Only on request                 | <b>4</b> <b>CB</b> | Not with alternative material characteristic MF  |
| <b>2</b> <b>CB, BA</b> | Only with packaging unit 25, 50 | <b>5</b> <b>BA</b> | Only with alternative material characteristic MF |
| <b>3</b> <b>HA</b>     | Not with packaging unit 25, 50  |                    |  |

### Transfer order code

553610 PAN – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]



## Plastic tubing PFAN

Technical data

### Plastic tubing PFAN

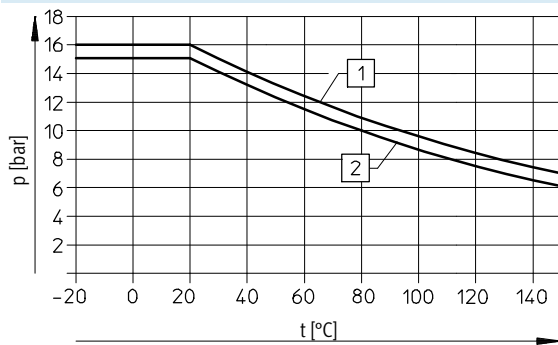
Pneumatic tubing with resistance to high temperatures and chemicals.



| Operating and environmental conditions         |  |                         |
|--|--|-------------------------|
| Type   | PFAN-3/4/8   | PFAN-6/10/12            |
| Temperature dependent operating pressure [bar] | -0.95 ... +15 → diagram  | -0.95 ... +16 → diagram |
| Operating medium                               | Compressed air in accordance with ISO 8573-1:2010 [7:-:-]<br>Water as per manufacturer's declaration <sup>1)</sup> |                         |
| Ambient temperature [°C]                       | -20 ... +150   |                         |
| Food-safe                                      | See supplementary material information <sup>1)</sup><br>See declaration of conformity <sup>1)</sup>                |                         |
| Material fire test                             | UL94 V-0   |                         |
| Approval                                       | German Technical Control Board (TÜV)   |                         |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.


### Operating pressure p as a function of temperature t



1) PFAN-6/10/12

2) PFAN-3/4/8

### Accessories

| Type  | → Internet                            |       |
|---|---------------------------------------|-------|
|  | Recommended fitting                   |       |
|   | - Push-in fitting CRQS <sup>1)</sup>  | crqs  |
|   | - Push-in fitting NPQH <sup>1)</sup>  | npqh  |
|   | - Push-in fitting NPQP <sup>1)</sup>  | npqp  |
|   | - Fitting NPCK <sup>2)</sup>          | npck  |
|   | Very suitable                         |       |
|   | - Push-in fitting QS                  | qs    |
|   | - Push-in fitting NPQM <sup>1)</sup>  | npqm  |
|   | - Click fitting NPKA <sup>3)</sup>    | npka  |
|   | - Quick connector CK <sup>4)</sup>    | ck    |
|   | - Barbed fitting CN <sup>5)</sup>     | cn    |
|   | Limited suitable                      |       |
|   | - Push-in fitting QS-V0 <sup>1)</sup> | qs-v0 |

1) Not for O.D. 3 mm

2) Only for O.D. 4/6/8/10 mm

3) Only for O.D. 6 mm

4) Only for O.D. 4/6/8 mm

5) Only for O.D. 3/4/6/8 mm




Note

Greater force is required when assembling the fittings CK/CN. Flaring the tube ends using a tapered mandrel makes pushing them on easier.

### Materials

|                   |                  |
|-------------------|------------------|
| Shore hardness    | D 60 +5          |
| Tubing            | PFA              |
| Note on materials | Conforms to RoHS |

 **New**  
**PFAN-3X0,5-NT**

**FESTO**

**Plastic tubing PFAN**

Technical data

| Dimensions and ordering data |              |                                |   |                  |         |                |                        |                         |
|------------------------------|--------------|--------------------------------|---|------------------|---------|----------------|------------------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending<br>radius<br>[mm] | Flow-relevant<br>bending radius<br>[mm] | Weight<br>[kg/m] | Colour  | Part No.       | Type                   | PU <sup>1)</sup><br>[m] |
| 3                            | 2.3          | 10                             | 30                                      | 0.0075           | Natural | <b>8061167</b> | <b>PFAN-3x0,5-NT</b>   | <b>50</b>               |
| 4                            | 2.9          | 11                             | 37                                      | 0.012            |         | <b>197061</b>  | <b>PFAN-4x0,75-NT</b>  | <b>50</b>               |
| 6                            | 4            | 12                             | 50                                      | 0.034            |         | <b>197062</b>  | <b>PFAN-6x1-NT</b>     | <b>50</b>               |
| 8                            | 5.9          | 25                             | 110                                     | 0.049            |         | <b>197063</b>  | <b>PFAN-8x1,25-NT</b>  | <b>50</b>               |
| 10                           | 7            | 22                             | 140                                     | 0.087            |         | <b>197064</b>  | <b>PFAN-10x1,5-NT</b>  | <b>50</b>               |
| 12                           | 8.4          | 29                             | 165                                     | 0.125            |         | <b>197065</b>  | <b>PFAN-12x1,75-NT</b> | <b>50</b>               |

1) Packaging unit

# Plastic tubing PTFEN

Technical data

## Plastic tubing PTFEN

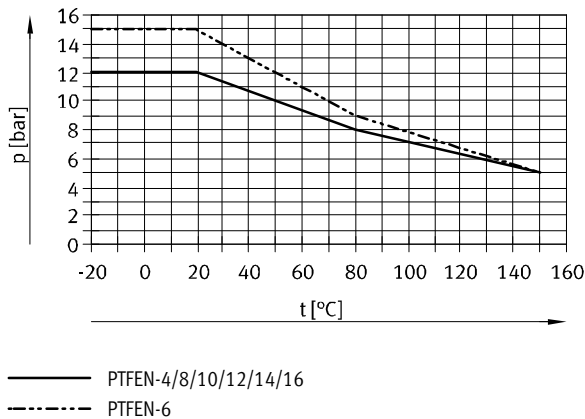
Pneumatic tubing with resistance to high temperatures and chemicals.




| Operating and environmental conditions         |   |                         |
|--|---|-------------------------|
| Type   | PTFEN-4/8/10/12/14/16                                     | PTFEN-6                 |
| Temperature dependent operating pressure [bar] | -0.95 ... +12 → diagram                                   | -0.95 ... +15 → diagram |
| Operating medium                               | Compressed air in accordance with ISO 8573-1:2010 [7:-:-] |                         |
| Ambient temperature [°C]                       | -20 ... +150  |                         |
| Food-safe <sup>1)</sup>                        | See supplementary material information                    |                         |
| Material fire test                             | UL94 V-0  |                         |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

### Operating pressure p as a function of temperature t



### Accessories

| Type  | → Internet                            |       |
|---|---------------------------------------|-------|
|  | <b>Recommended fitting</b>            |       |
|   | - Push-in fitting CRQS <sup>1)</sup>  | crqs  |
|   | - Push-in fitting NPQH <sup>2)</sup>  | npqh  |
|   | - Push-in fitting NPQP <sup>3)</sup>  | npqp  |
|   | - Fitting NPCK <sup>4)</sup>          | npck  |
|   | <b>Very suitable</b>                  |       |
|   | - Push-in fitting QS <sup>1)</sup>    | qs    |
|   | - Push-in fitting NPQM <sup>2)</sup>  | npqm  |
|   | - Click fitting NPKA <sup>5)</sup>    | npka  |
|   | - Quick connector CK <sup>6)</sup>    | ck    |
|   | - Barbed fitting CN <sup>6)</sup>     | cn    |
|   | <b>Limited suitable</b>               |       |
|   | - Push-in fitting QS-V0 <sup>3)</sup> | qs-v0 |

- 1) Not for O.D. 14 mm
- 2) Not for O.D. 16 mm
- 3) Not for O.D. 14/16 mm

- 4) Only for O.D. 4/6/8/10 mm
- 5) Only for O.D. 6 mm
- 6) Only for O.D. 4/6/8 mm

 **Note**

Greater force is required when assembling the fittings CK/NPCK. Flaring the tube ends using a tapered mandrel makes pushing them on easier.

### Materials

|                   |                  |
|-------------------|------------------|
| Shore hardness    | D 55 ±5          |
| Tubing            | PTFE             |
| Note on materials | Conforms to RoHS |

## Plastic tubing PTFEN

Technical data

| Pneumatic connection   |                                       |                        |                                       |
|------------------------|---------------------------------------|------------------------|---------------------------------------|
| For push-in connector  |                                       | For barbed connector   |                                       |
| Push-in fitting        | Fitting NPCK                          | Barbed fitting CN      | Quick connector CK                    |
| Outside diameter 4 mm  | Outside diameter 4 mm with union nut  | Internal diameter 3 mm | Internal diameter 3 mm with union nut |
| Outside diameter 6 mm  | Outside diameter 6 mm with union nut  | Internal diameter 4 mm | Internal diameter 4 mm with union nut |
| Outside diameter 8 mm  | Outside diameter 8 mm with union nut  | Internal diameter 6 mm | Internal diameter 6 mm with union nut |
| Outside diameter 10 mm | Outside diameter 10 mm with union nut | –                      | –                                     |
| Outside diameter 12 mm | –                                     | –                      | –                                     |
| Outside diameter 14 mm | –                                     | –                      | –                                     |
| Outside diameter 16 mm | –                                     | –                      | –                                     |

| Ordering data |      |                     |                              |        |         |                |                            |                  |
|---------------|------|---------------------|------------------------------|--------|---------|----------------|----------------------------|------------------|
| O.D.          | I.D. | Min. bending radius | Flow-relevant bending radius | Weight | Colour  | Part No.       | Type                       | PU <sup>1)</sup> |
| [mm]          | [mm] | [mm]                | [mm]                         | [kg/m] |         |                |                            | [m]              |
| 4             | 2.9  | 32                  | 32                           | 0.013  | Natural | <b>8061171</b> | <b>PTFEN-4X0,5-NT-100</b>  | <b>100</b>       |
| 6             | 4    | 38                  | 40                           | 0.034  |         | <b>8061172</b> | <b>PTFEN-6X1-NT-100</b>    | <b>100</b>       |
|               |      |                     |                              |        |         | <b>8061178</b> | <b>PTFEN-6X1-NT-500</b>    | <b>500</b>       |
| 8             | 5.9  | 64                  | 90                           | 0.047  |         | <b>8061173</b> | <b>PTFEN-8X1-NT</b>        | <b>50</b>        |
|               |      |                     |                              |        |         | <b>8061179</b> | <b>PTFEN-8X1-NT-400</b>    | <b>400</b>       |
| 10            | 7    | 70                  | 100                          | 0.086  |         | <b>8061174</b> | <b>PTFEN-10X1,5-NT</b>     | <b>50</b>        |
|               |      |                     |                              |        |         | <b>8061180</b> | <b>PTFEN-10X1,5-NT-300</b> | <b>300</b>       |
| 12            | 8.4  | 84                  | 120                          | 0.124  |         | <b>8061175</b> | <b>PTFEN-12X2-NT</b>       | <b>50</b>        |
| 14            | 10   | 106                 | 120                          | 0.162  |         | <b>8061176</b> | <b>PTFEN-14X2-NT</b>       | <b>50</b>        |
| 16            | 11   | 109                 | 160                          | 0.228  |         | <b>8061177</b> | <b>PTFEN-16X2,5-NT-25</b>  | <b>25</b>        |

1) Packaging unit

 **Note**

### Do not bend tubing!

It is essential that bending of the tubing or excessive constriction when using cable binders is avoided during assembly and operation.

This could cause preliminary damage

to the tubing such that it could split at the bending location after a short while under normal operating conditions.

# Plastic tubing PEN

Technical data

FESTO

## Plastic tubing PEN

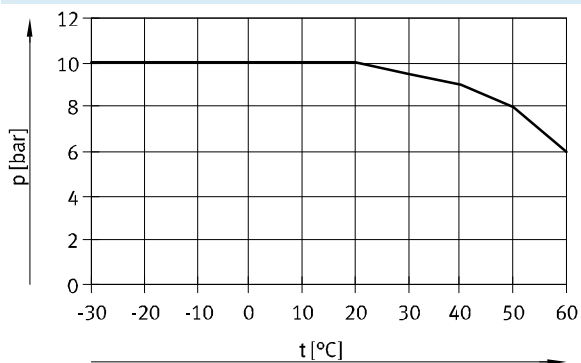
Polyethylene tubing is distinguished by its high resistance to chemicals and hydrolysis. It is also resistant to most cleaning agents and lubricants.



| Operating and environmental conditions   |       |   |
|--|-------|---|
| Temperature dependent operating pressure | [bar] | -0.95 ... +10 → diagram   |
| Operating medium                         |       | Compressed air in accordance with ISO 8573-1:2010 [7:--:-]<br>Water as per manufacturer's declaration <sup>1)</sup> |
| Ambient temperature                      | [°C]  | -30 ... +60   |
| Approval                                 |       | German Technical Control Board (TÜV)  |
| Tubing characteristics                   |       | Suitable for energy chains for applications with a high cycle rate  |
| Tubing test conditions                   |       | Suitable for energy chains: > 5 million cycles to Festo standard 942021   |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

### Operating pressure p as a function of temperature t



### Accessories

| Type                                  | → Internet                           |      |
|---------------------------------------|--------------------------------------|------|
|                                       | <b>Recommended fitting</b>           |      |
|                                       | - Push-in fitting NPQM <sup>2)</sup> | npqm |
|                                       | <b>Very suitable</b>                 |      |
|                                       | - Push-in fitting QS <sup>1)</sup>   | qs   |
|                                       | - Push-in fitting CRQS <sup>1)</sup> | crqs |
|                                       | - Push-in fitting NPQH <sup>2)</sup> | npqh |
|                                       | - Push-in fitting NPQP <sup>3)</sup> | npqp |
|                                       | - Click fitting NPKA <sup>4)</sup>   | npka |
|                                       | - Fitting NPCK <sup>5)</sup>         | npck |
|                                       | - Quick connector CK <sup>6)</sup>   | ck   |
| - Barbed fitting CN <sup>6)</sup>     | cn                                   |      |
| <b>Limited suitable</b>               |                                      |      |
| - Push-in fitting QS-V0 <sup>3)</sup> | qs-v0                                |      |

- 1) Not for O.D. 14 mm  
2) Not for O.D. 16 mm  
3) Not for O.D. 14/16 mm

- 4) Only for O.D. 6 mm  
5) Only for O.D. 4/6/8/10 mm  
6) Only for O.D. 4/6/8 mm

Note

Greater force is required when assembling the fittings CK/CN.

### Materials

|                   |   |
|-------------------|---|
| Shore hardness    | D 52 ±3                                     |
| Tubing            | PE  |
| Note on materials | Conforms to RoHS<br>Free of copper and PTFE |

# Plastic tubing PEN

Technical data



| Dimensions and ordering data |      |                     |                              |        |         |          |                    |                  |
|------------------------------|------|---------------------|------------------------------|--------|---------|----------|--------------------|------------------|
| O.D.                         | I.D. | Min. bending radius | Flow-relevant bending radius | Weight | Colour  | Part No. | Type               | PU <sup>1)</sup> |
| [mm]                         | [mm] | [mm]                | [mm]                         | [kg/m] |         |          |                    | [m]              |
| 4                            | 2.7  | 10                  | 20                           | 0.0064 | Black   | 543240   | PEN-4x0,75-SW      | 50               |
|                              |      |                     |                              |        | Black   | 551438   | PEN-4x0,75-SW-500  | 500              |
|                              |      |                     |                              |        | Blue    | 551456   | PEN-4x0,75-BL      | 50               |
|                              |      |                     |                              |        | Blue    | 551444   | PEN-4x0,75-BL-500  | 500              |
|                              |      |                     |                              |        | Silver  | 551462   | PEN-4x0,75-SI      | 50               |
|                              |      |                     |                              |        | Silver  | 551450   | PEN-4x0,75-SI-500  | 500              |
|                              |      |                     |                              |        | Natural | 543246   | PEN-4x0,75-NT      | 50               |
|                              |      |                     |                              |        | Green   | 551468   | PEN-4x0,75-GN      | 50               |
|                              |      |                     |                              |        | Red     | 551474   | PEN-4x0,75-RT      | 50               |
|                              |      |                     |                              |        | Yellow  | 551480   | PEN-4x0,75-GE      | 50               |
| 6                            | 4    | 13.5                | 26                           | 0.0148 | Black   | 543241   | PEN-6x1-SW         | 50               |
|                              |      |                     |                              |        | Black   | 551439   | PEN-6x1-SW-500     | 500              |
|                              |      |                     |                              |        | Blue    | 551457   | PEN-6x1-BL         | 50               |
|                              |      |                     |                              |        | Blue    | 551445   | PEN-6x1-BL-500     | 500              |
|                              |      |                     |                              |        | Silver  | 551463   | PEN-6x1-SI         | 50               |
|                              |      |                     |                              |        | Silver  | 551451   | PEN-6x1-SI-500     | 500              |
|                              |      |                     |                              |        | Natural | 543247   | PEN-6x1-NT         | 50               |
|                              |      |                     |                              |        | Green   | 551469   | PEN-6x1-GN         | 50               |
|                              |      |                     |                              |        | Red     | 551475   | PEN-6x1-RT         | 50               |
|                              |      |                     |                              |        | Yellow  | 551481   | PEN-6x1-GE         | 50               |
| 8                            | 5.7  | 22.5                | 35                           | 0.0233 | Black   | 543242   | PEN-8x1,25-SW      | 50               |
|                              |      |                     |                              |        | Black   | 551440   | PEN-8x1,25-SW-400  | 400              |
|                              |      |                     |                              |        | Blue    | 551458   | PEN-8x1,25-BL      | 50               |
|                              |      |                     |                              |        | Blue    | 551446   | PEN-8x1,25-BL-400  | 400              |
|                              |      |                     |                              |        | Silver  | 551464   | PEN-8x1,25-SI      | 50               |
|                              |      |                     |                              |        | Silver  | 551452   | PEN-8x1,25-SI-400  | 400              |
|                              |      |                     |                              |        | Natural | 543248   | PEN-8x1,25-NT      | 50               |
|                              |      |                     |                              |        | Green   | 551470   | PEN-8x1,25-GN      | 50               |
|                              |      |                     |                              |        | Red     | 551476   | PEN-8x1,25-RT      | 50               |
|                              |      |                     |                              |        | Yellow  | 551482   | PEN-8x1,25-GE      | 50               |
| 10                           | 7    | 23.5                | 40                           | 0.0377 | Black   | 543243   | PEN-10x1,5-SW      | 50               |
|                              |      |                     |                              |        | Black   | 551441   | PEN-10x1,5-SW-300  | 300              |
|                              |      |                     |                              |        | Blue    | 551459   | PEN-10x1,5-BL      | 50               |
|                              |      |                     |                              |        | Blue    | 551447   | PEN-10x1,5-BL-300  | 300              |
|                              |      |                     |                              |        | Silver  | 551465   | PEN-10x1,5-SI      | 50               |
|                              |      |                     |                              |        | Silver  | 551453   | PEN-10x1,5-SI-300  | 300              |
|                              |      |                     |                              |        | Natural | 543249   | PEN-10x1,5-NT      | 50               |
|                              |      |                     |                              |        | Green   | 551471   | PEN-10x1,5-GN      | 50               |
|                              |      |                     |                              |        | Red     | 551477   | PEN-10x1,5-RT      | 50               |
|                              |      |                     |                              |        | Yellow  | 551483   | PEN-10x1,5-GE      | 50               |
| 12                           | 8.4  | 33                  | 58                           | 0.0542 | Black   | 543244   | PEN-12x1,75-SW     | 50               |
|                              |      |                     |                              |        | Black   | 551442   | PEN-12x1,75-SW-200 | 200              |
|                              |      |                     |                              |        | Blue    | 551460   | PEN-12x1,75-BL     | 50               |
|                              |      |                     |                              |        | Blue    | 551448   | PEN-12x1,75-BL-200 | 200              |
|                              |      |                     |                              |        | Silver  | 551466   | PEN-12x1,75-SI     | 50               |
|                              |      |                     |                              |        | Silver  | 551454   | PEN-12x1,75-SI-200 | 200              |
|                              |      |                     |                              |        | Natural | 543250   | PEN-12x1,75-NT     | 50               |
|                              |      |                     |                              |        | Green   | 551472   | PEN-12x1,75-GN     | 50               |
|                              |      |                     |                              |        | Red     | 551478   | PEN-12x1,75-RT     | 50               |
|                              |      |                     |                              |        | Yellow  | 551484   | PEN-12x1,75-GE     | 50               |

1) Packaging unit

# Plastic tubing PEN

Technical data



| Dimensions and ordering data |              |                                |   |                  |         |               |                          |                         |
|------------------------------|--------------|--------------------------------|---|------------------|---------|---------------|--------------------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending<br>radius<br>[mm] | Flow-relevant<br>bending radius<br>[mm] | Weight<br>[kg/m] | Colour  | Part No.      | Type                     | PU <sup>1)</sup><br>[m] |
| 14                           | 9.5          | 45                             | 80                                      | 0.0773           | Black   | <b>570516</b> | <b>PEN-14x2-SW</b>       | <b>50</b>               |
|                              |              |                                |   |                  | Natural | <b>570517</b> | <b>PEN-14x2-NT</b>       | <b>50</b>               |
| 16                           | 10.8         | 57.5                           | 122                                     | 0.1029           | Black   | <b>543245</b> | <b>PEN-16x2,5-SW</b>     | <b>50</b>               |
|                              |              |                                |   |                  | Black   | <b>551443</b> | <b>PEN-16x2,5-SW-100</b> | <b>100</b>              |
|                              |              |                                |   |                  | Blue    | <b>551461</b> | <b>PEN-16x2,5-BL</b>     | <b>50</b>               |
|                              |              |                                |   |                  | Blue    | <b>551449</b> | <b>PEN-16x2,5-BL-100</b> | <b>100</b>              |
|                              |              |                                |   |                  | Silver  | <b>551467</b> | <b>PEN-16x2,5-SI</b>     | <b>50</b>               |
|                              |              |                                |   |                  | Silver  | <b>551455</b> | <b>PEN-16x2,5-SI-100</b> | <b>100</b>              |
|                              |              |                                |   |                  | Natural | <b>543251</b> | <b>PEN-16x2,5-NT</b>     | <b>50</b>               |
|                              |              |                                |   |                  | Green   | <b>551473</b> | <b>PEN-16x2,5-GN</b>     | <b>50</b>               |
|                              |              |                                |   |                  | Red     | <b>551479</b> | <b>PEN-16x2,5-RT</b>     | <b>50</b>               |
|                              |              |                                |   |                  | Yellow  | <b>551485</b> | <b>PEN-16x2,5-GE</b>     | <b>50</b>               |

1) Packaging unit

# Plastic tubing PEN

Ordering data – Modular products



| Ordering table (minimum order quantity 3,000 m, rounding-off value 25 m) |  |   |   |    |    |    |    |                 |             |               |  |
|--|--|---|---|----|----|----|----|-----------------|-------------|---------------|--|
| Size   | 4  | 6 | 8 | 10 | 12 | 14 | 16 | Condi-<br>tions | Code        | Enter<br>code |  |
| <b>M</b> Module No.  | <b>553769</b>                                  |   |   |    |    |    |    |                 |             |               |  |
| Function   | Polyethylene tubing, standard O.D., economical |   |   |    |    |    |    |                 | <b>PEN</b>  | <b>PEN</b>    |  |
| Tubing O.D. [mm]   | 4  | – | – | –  | –  | –  | –  |                 | <b>-4</b>   |               |  |
|  | –  | 6 | – | –  | –  | –  | –  |                 | <b>-6</b>   |               |  |
|  | –  | – | 8 | –  | –  | –  | –  |                 | <b>-8</b>   |               |  |
|  | –  | – | – | 10 | –  | –  | –  |                 | <b>-10</b>  |               |  |
|  | –  | – | – | –  | 12 | –  | –  |                 | <b>-12</b>  |               |  |
|  | –  | – | – | –  | –  | 14 | –  |                 | <b>-14</b>  |               |  |
|  | –  | – | – | –  | –  | –  | 16 |                 | <b>-16</b>  |               |  |
|  | –  | – | – | –  | –  | –  | –  |                 |             |               |  |
| Colour   | Silver   |   |   |    |    |    |    |                 | <b>-SI</b>  |               |  |
|  | Blue   |   |   |    |    |    |    |                 | <b>-BL</b>  |               |  |
|  | Black  |   |   |    |    |    |    |                 | <b>-SW</b>  |               |  |
|  | Yellow   |   |   |    |    |    |    |                 | <b>-GE</b>  |               |  |
|  | Green  |   |   |    |    |    |    |                 | <b>-GN</b>  |               |  |
|  | Red  |   |   |    |    |    |    |                 | <b>-RT</b>  |               |  |
|  | Brown  |   |   |    |    |    |    |                 | <b>-BR</b>  |               |  |
|  | White  |   |   |    |    |    |    |                 | <b>-WS</b>  |               |  |
|  | Natural  |   |   |    |    |    |    |                 | <b>-NT</b>  |               |  |
| <b>O</b> Inscription text<br>(on request)                                | Standard                                       |   |   |    |    |    |    |                 |             |               |  |
|  | Customer-specific tubing inscription           |   |   |    |    |    |    | <b>1</b>        | <b>-TXT</b> |               |  |
| <b>M</b> Packaging unit [m]  | 25   |   |   |    |    |    |    |                 | <b>-25</b>  |               |  |
|  | 50   |   |   |    |    |    |    |                 | <b>-50</b>  |               |  |
|  | 100  |   |   |    |    |    |    |                 | <b>-100</b> |               |  |
|  | 200  |   |   |    |    |    |    | –               | <b>-200</b> |               |  |
|  | 300  |   |   |    |    |    |    | –               | <b>-300</b> |               |  |
|  | 400  |   |   |    |    |    |    | –               | <b>-400</b> |               |  |
|  | 500  |   |   |    |    |    |    | –               | <b>-500</b> |               |  |
|  | –  |   |   |    |    |    |    | –               |             |               |  |
| Packaging  | Cardboard box                                  |   |   |    |    |    |    | <b>2</b>        | <b>-CB</b>  |               |  |
|  | Reel   |   |   |    |    |    |    | <b>3</b>        | <b>-HA</b>  |               |  |

- 1** **TXT** Only on request
- 2** **CB** Only with packaging unit 25, 50

- 3** **HA** Not with packaging unit 25, 50

Transfer order code



# Plastic tubing PLN

Technical data

## Plastic tubing PLN

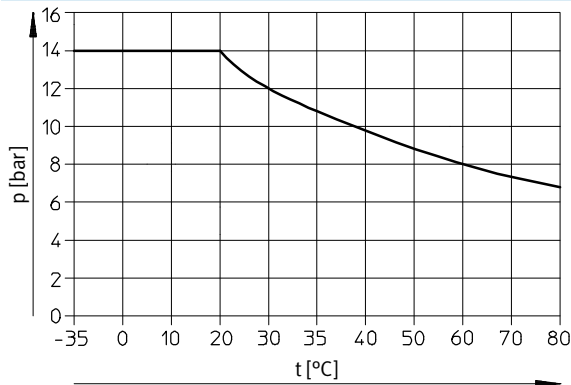
Polyethylene tubing is distinguished by great resistance to chemicals and hydrolysis. It is resistant to most cleaning agents and lubricants.



| Operating and environmental conditions   |       |  |
|--|-------|--|
| Temperature dependent operating pressure | [bar] | -0.95 ... +14 → diagram  |
| Operating medium                         |       | Compressed air in accordance with ISO 8573-1:2010 [7:-:-]<br>Water as per manufacturer's declaration <sup>1)</sup> |
| Ambient temperature                      | [°C]  | -30 ... +80  |
| Food-safe <sup>1)</sup>                  |       | See supplementary material information   |
| Approval                                 |       | German Technical Control Board (TÜV)   |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

### Operating pressure p as a function of temperature t



### Accessories

| Type                                  | → Internet                           |      |
|---------------------------------------|--------------------------------------|------|
|                                       | <b>Recommended fitting</b>           |      |
|                                       | - Push-in fitting NPQP <sup>1)</sup> | npqp |
|                                       | <b>Very suitable</b>                 |      |
|                                       | - Push-in fitting QS <sup>2)</sup>   | qs   |
|                                       | - Push-in fitting CRQS <sup>2)</sup> | crqs |
|                                       | - Push-in fitting NPQH <sup>3)</sup> | npqh |
|                                       | - Push-in fitting NPQM <sup>3)</sup> | npqm |
|                                       | - Click fitting NPKA <sup>4)</sup>   | npka |
|                                       | - Fitting NPCK <sup>5)</sup>         | npck |
|                                       | - Quick connector CK <sup>6)</sup>   | ck   |
| <b>Limited suitable</b>               |                                      |      |
| - Push-in fitting QS-V0 <sup>1)</sup> | qs-v0                                |      |
| - Barbed fitting CN <sup>6)</sup>     | cn                                   |      |

1) Not for O.D. 14/16 mm

2) Not for O.D. 14 mm

3) Not for O.D. 16 mm

4) Only for O.D. 6 mm

5) Only for O.D. 4/6/8/10 mm

6) Only for O.D. 4/6/8 mm



Note

Greater force is required when assembling the fittings CK/CN. Flaring the tube ends using a tapered mandrel makes pushing them on easier.

### Materials

|                   |   |
|-------------------|---|
| Shore hardness    | D 59 ±3                                     |
| Tubing            | PE  |
| Note on materials | Conforms to RoHS<br>Free of copper and PTFE |

# Plastic tubing PLN

Technical data



| Dimensions and ordering data |              |                                |   |                  |         |          |                |                         |
|------------------------------|--------------|--------------------------------|---|------------------|---------|----------|----------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending<br>radius<br>[mm] | Flow-relevant<br>bending radius<br>[mm] | Weight<br>[kg/m] | Colour  | Part No. | Type           | PU <sup>1)</sup><br>[m] |
| 4                            | 2.9          | 12                             | 25                                      | 0.0056           | Natural | 193403   | PLN-4x0,75-NT  | 50                      |
|                              |              |                                |   |                  | Black   | 195280   | PLN-4x0,75-SW  | 50                      |
|                              |              |                                |   |                  | Blue    | 558205   | PLN-4x0,75-BL  | 50                      |
|                              |              |                                |   |                  | Silver  | 558211   | PLN-4x0,75-SI  | 50                      |
|                              |              |                                |   |                  | Red     | 558217   | PLN-4x0,75-RT  | 50                      |
| 6                            | 4            | 11                             | 32                                      | 0.0147           | Natural | 193404   | PLN-6x1-NT     | 50                      |
|                              |              |                                |   |                  | Black   | 195281   | PLN-6x1-SW     | 50                      |
|                              |              |                                |   |                  | Blue    | 558206   | PLN-6x1-BL     | 50                      |
|                              |              |                                |   |                  | Silver  | 558212   | PLN-6x1-SI     | 50                      |
|                              |              |                                |   |                  | Red     | 558218   | PLN-6x1-RT     | 50                      |
| 8                            | 5.9          | 23                             | 50                                      | 0.0214           | Natural | 193405   | PLN-8x1,25-NT  | 50                      |
|                              |              |                                |   |                  | Black   | 195282   | PLN-8x1,25-SW  | 50                      |
|                              |              |                                |   |                  | Blue    | 558207   | PLN-8x1,25-BL  | 50                      |
|                              |              |                                |   |                  | Silver  | 558213   | PLN-8x1,25-SI  | 50                      |
|                              |              |                                |   |                  | Red     | 558219   | PLN-8x1,25-RT  | 50                      |
| 10                           | 7            | 22                             | 57                                      | 0.0375           | Natural | 193406   | PLN-10x1,5-NT  | 50                      |
|                              |              |                                |   |                  | Black   | 195283   | PLN-10x1,5-SW  | 50                      |
|                              |              |                                |   |                  | Blue    | 558208   | PLN-10x1,5-BL  | 50                      |
|                              |              |                                |   |                  | Silver  | 558214   | PLN-10x1,5-SI  | 50                      |
|                              |              |                                |   |                  | Red     | 558220   | PLN-10x1,5-RT  | 50                      |
| 12                           | 8.4          | 23                             | 65                                      | 0.0540           | Natural | 193407   | PLN-12x1,75-NT | 50                      |
|                              |              |                                |   |                  | Black   | 195284   | PLN-12x1,75-SW | 50                      |
|                              |              |                                |   |                  | Blue    | 558209   | PLN-12x1,75-BL | 50                      |
|                              |              |                                |   |                  | Silver  | 558215   | PLN-12x1,75-SI | 50                      |
|                              |              |                                |   |                  | Red     | 558221   | PLN-12x1,75-RT | 50                      |
| 14                           | 10           | 40                             | 80                                      | 0.07             | Natural | 570424   | PLN-14x2-NT    | 50                      |
|                              |              |                                |   |                  | Black   | 570423   | PLN-14x2-SW    | 50                      |
| 16                           | 12           | 55                             | 95                                      | 0.0820           | Natural | 539064   | PLN-16x2-NT    | 50                      |
|                              |              |                                |   |                  | Black   | 539065   | PLN-16x2-SW    | 50                      |
|                              |              |                                |   |                  | Blue    | 558210   | PLN-16x2-BL    | 50                      |
|                              |              |                                |   |                  | Silver  | 558216   | PLN-16x2-SI    | 50                      |
|                              |              |                                |   |                  | Red     | 558222   | PLN-16x2-RT    | 50                      |

1) Packaging unit

# Plastic tubing PLN

Ordering data – Modular products



| Ordering table (minimum order quantity 3,000 m, rounding-off value 25 m) |  |   |   |    |    |    |    |                 |             |               |  |
|--|--|---|---|----|----|----|----|-----------------|-------------|---------------|--|
| Size   | 4  | 6 | 8 | 10 | 12 | 14 | 16 | Condi-<br>tions | Code        | Enter<br>code |  |
| <b>[M]</b> Module No.  | <b>553850</b>  |   |   |    |    |    |    |                 |             |               |  |
| Function   | Polyethylene tubing, standard O.D., resistant to cleaning agents |   |   |    |    |    |    |                 | <b>PLN</b>  | PLN           |  |
| Tubing O.D. [mm]   | 4  | – | – | –  | –  | –  | –  |                 | <b>-4</b>   |               |  |
|  | –  | 6 | – | –  | –  | –  | –  |                 | <b>-6</b>   |               |  |
|  | –  | – | 8 | –  | –  | –  | –  |                 | <b>-8</b>   |               |  |
|  | –  | – | – | 10 | –  | –  | –  |                 | <b>-10</b>  |               |  |
|  | –  | – | – | –  | 12 | –  | –  |                 | <b>-12</b>  |               |  |
|  | –  | – | – | –  | –  | 14 | –  |                 | <b>-14</b>  |               |  |
|  | –  | – | – | –  | –  | –  | 16 |                 | <b>-16</b>  |               |  |
| Colour   | Silver   |   |   |    |    |    |    |                 | <b>-SI</b>  |               |  |
|  | Blue   |   |   |    |    |    |    |                 | <b>-BL</b>  |               |  |
|  | Black  |   |   |    |    |    |    |                 | <b>-SW</b>  |               |  |
|  | Yellow   |   |   |    |    |    |    |                 | <b>-GE</b>  |               |  |
|  | Green  |   |   |    |    |    |    |                 | <b>-GN</b>  |               |  |
|  | Red  |   |   |    |    |    |    |                 | <b>-RT</b>  |               |  |
|  | Brown  |   |   |    |    |    |    |                 | <b>-BR</b>  |               |  |
|  | White  |   |   |    |    |    |    |                 | <b>-WS</b>  |               |  |
|  | Natural  |   |   |    |    |    |    |                 | <b>-NT</b>  |               |  |
| <b>[O]</b> Inscription text<br>(on request)                              | Standard   |   |   |    |    |    |    |                 |             |               |  |
|  | Customer-specific tubing inscription                             |   |   |    |    |    |    | <b>[1]</b>      | <b>-TXT</b> |               |  |
| <b>[M]</b> Packaging unit [m]  | 25   |   |   |    |    |    |    |                 | <b>-25</b>  |               |  |
|  | 50   |   |   |    |    |    |    |                 | <b>-50</b>  |               |  |
|  | 100  |   |   |    |    |    |    |                 | <b>-100</b> |               |  |
|  | 200  |   |   |    |    | –  | –  |                 | <b>-200</b> |               |  |
|  | 300  |   |   |    | –  | –  | –  |                 | <b>-300</b> |               |  |
|  | 400  |   |   | –  | –  | –  | –  |                 | <b>-400</b> |               |  |
|  | 500  |   | – | –  | –  | –  | –  |                 | <b>-500</b> |               |  |
| Packaging  | Cardboard box  |   |   |    |    |    |    | <b>[2]</b>      | <b>-CB</b>  |               |  |
|  | Reel   |   |   |    |    |    |    | <b>[3]</b>      | <b>-HA</b>  |               |  |

- [1] TXT** Only on request
- [2] CB** Only with packaging unit 25, 50

- [3] HA** Not with packaging unit 25, 50

Transfer order code

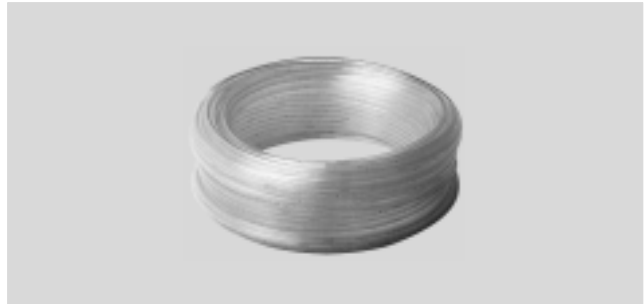
# Plastic tubing PUN

Technical data

FESTO

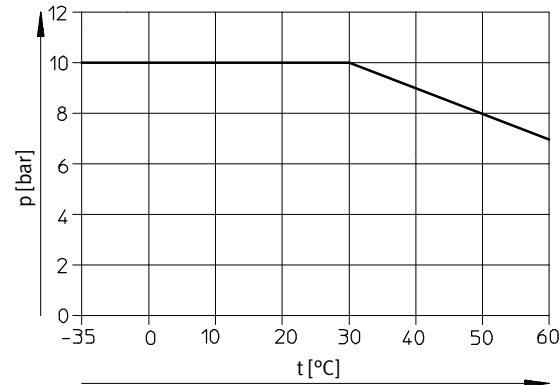
## Plastic tubing PUN

Highly flexible plastic tubing



| Operating and environmental conditions   |       |   |
|--|-------|---|
| Temperature dependent operating pressure | [bar] | -0.95 ... +10 → diagram   |
| Operating medium                         |       | Compressed air in accordance with ISO 8573-1:2010 [7:--:-]              |
| Ambient temperature                      | [°C]  | -35 ... +60   |
| Material fire test                       |       | UL94 HB   |
| Approval                                 |       | German Technical Control Board (TÜV)                                    |
| Tubing characteristics                   |       | Suitable for energy chains for applications with a high cycle rate      |
| Tubing test conditions                   |       | Suitable for energy chains: > 5 million cycles to Festo standard 942021 |

### Operating pressure p as a function of temperature t



### Accessories

| Type                                  | → Internet                           |      |
|---------------------------------------|--------------------------------------|------|
|                                       | <b>Recommended fitting</b>           |      |
|                                       | - Push-in fitting QS <sup>1)</sup>   | qs   |
|                                       | <b>Very suitable</b>                 |      |
|                                       | - Push-in fitting CRQS <sup>3)</sup> | crqs |
|                                       | - Push-in fitting NPQH <sup>2)</sup> | npqh |
|                                       | - Push-in fitting NPQP <sup>4)</sup> | npqp |
|                                       | - Push-in fitting NPQM <sup>2)</sup> | npqm |
|                                       | - Click fitting NPKA <sup>5)</sup>   | npka |
|                                       | - Fitting NPCK <sup>6)</sup>         | npck |
|                                       | - Quick connector CK <sup>7)</sup>   | ck   |
| - Barbed fitting CN <sup>8)</sup>     | cn                                   |      |
| <b>Limited suitable</b>               |                                      |      |
| - Push-in fitting QS-V0 <sup>4)</sup> | qs-v0                                |      |

- 1) Not for O.D. 14 mm
- 2) Not for O.D. 3/16 mm
- 3) Not for O.D. 3/14 mm
- 4) Not for O.D. 3/14/16 mm

- 5) Only for O.D. 6 mm
- 6) Only for O.D. 4/6/8/10 mm
- 7) Only for O.D. 4/6/8 mm
- 8) Only for O.D. 3/4/6/8 mm

- Note

Greater force is required when assembling the fittings CK/CN. Flaring the tube ends using a tapered mandrel makes pushing them on easier.

| Materials         |                         |
|-------------------|-------------------------|
| Shore hardness    | D 52 ±3                 |
| Tubing            | TPE-U(PU)               |
| Note on materials | Conforms to RoHS        |
|                   | Free of copper and PTFE |

# Plastic tubing PUN

Technical data

FESTO

| Dimensions and ordering data |              |                                |   |                  |        |          |                    |                         |
|------------------------------|--------------|--------------------------------|---|------------------|--------|----------|--------------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending<br>radius<br>[mm] | Flow-relevant<br>bending radius<br>[mm] | Weight<br>[kg/m] | Colour | Part No. | Type               | PU <sup>1)</sup><br>[m] |
| 3.0                          | 2.1          | 9                              | 12                                      | 0.0044           | Silver | ★ 152583 | PUN-3x0,5-SI       | 50                      |
|                              |              |                                |   |                  | Silver | 525738   | PUN-3 x 0,5-SI-500 | 500                     |
|                              |              |                                |   |                  | Blue   | ★ 159660 | PUN-3x0,5-BL       | 50                      |
|                              |              |                                |   |                  | Blue   | 525745   | PUN-3x0,5-BL-500   | 500                     |
|                              |              |                                |   |                  | Black  | ★ 159661 | PUN-3x0,5-SW       | 50                      |
|                              |              |                                |   |                  | Black  | 553936   | PUN-3x0,5-SW-500   | 500                     |
|                              |              |                                |   |                  | Yellow | 178416   | PUN-3x0,5-GE       | 50                      |
|                              |              |                                |   |                  | Green  | 178423   | PUN-3x0,5-GN       | 50                      |
|                              |              |                                |   |                  | Red    | 178409   | PUN-3x0,5-RT       | 50                      |
| 4.0                          | 2.6          | 8                              | 17                                      | 0.0089           | Silver | ★ 152584 | PUN-4x0,75-SI      | 50                      |
|                              |              |                                |   |                  | Silver | 525739   | PUN-4x0,75-SI-500  | 500                     |
|                              |              |                                |   |                  | Blue   | ★ 159662 | PUN-4x0,75-BL      | 50                      |
|                              |              |                                |   |                  | Blue   | 525746   | PUN-4x0,75-BL-500  | 500                     |
|                              |              |                                |   |                  | Black  | ★ 159663 | PUN-4x0,75-SW      | 50                      |
|                              |              |                                |   |                  | Black  | 553937   | PUN-4x0,75-SW-500  | 500                     |
|                              |              |                                |   |                  | Yellow | 178417   | PUN-4x0,75-GE      | 50                      |
|                              |              |                                |   |                  | Green  | 178424   | PUN-4x0,75-GN      | 50                      |
|                              |              |                                |   |                  | Red    | 178410   | PUN-4x0,75-RT      | 50                      |
| 6.0                          | 4.0          | 16                             | 26.5                                    | 0.0192           | Silver | ★ 152586 | PUN-6x1-SI         | 50                      |
|                              |              |                                |   |                  | Silver | 525740   | PUN-6x1-SI-500     | 500                     |
|                              |              |                                |   |                  | Blue   | ★ 159664 | PUN-6x1-BL         | 50                      |
|                              |              |                                |   |                  | Blue   | 525747   | PUN-6x1-BL-500     | 500                     |
|                              |              |                                |   |                  | Black  | ★ 159665 | PUN-6x1-SW         | 50                      |
|                              |              |                                |   |                  | Black  | 553938   | PUN-6x1-SW-500     | 500                     |
|                              |              |                                |   |                  | Yellow | 178418   | PUN-6x1-GE         | 50                      |
|                              |              |                                |   |                  | Green  | 178425   | PUN-6x1-GN         | 50                      |
|                              |              |                                |   |                  | Red    | 178411   | PUN-6x1-RT         | 50                      |
| 8.0                          | 5.7          | 24                             | 37                                      | 0.0302           | Silver | ★ 152587 | PUN-8x1,25-SI      | 50                      |
|                              |              |                                |   |                  | Silver | 525741   | PUN-8x1,25-SI-400  | 400                     |
|                              |              |                                |   |                  | Blue   | ★ 159666 | PUN-8x1,25-BL      | 50                      |
|                              |              |                                |   |                  | Blue   | 525748   | PUN-8x1,25-BL-400  | 400                     |
|                              |              |                                |   |                  | Black  | ★ 159667 | PUN-8x1,25-SW      | 50                      |
|                              |              |                                |   |                  | Black  | 553939   | PUN-8x1,25-SW-400  | 400                     |
|                              |              |                                |   |                  | Yellow | 178419   | PUN-8x1,25-GE      | 50                      |
|                              |              |                                |   |                  | Green  | 178426   | PUN-8x1,25-GN      | 50                      |
|                              |              |                                |   |                  | Red    | 178412   | PUN-8x1,25-RT      | 50                      |
| 10.0                         | 7.0          | 28                             | 54                                      | 0.0489           | Silver | ★ 152588 | PUN-10x1,5-SI      | 50                      |
|                              |              |                                |   |                  | Silver | 525742   | PUN-10x1,5-SI-300  | 300                     |
|                              |              |                                |   |                  | Blue   | ★ 159668 | PUN-10x1,5-BL      | 50                      |
|                              |              |                                |   |                  | Blue   | 525749   | PUN-10x1,5-BL-300  | 300                     |
|                              |              |                                |   |                  | Black  | ★ 159669 | PUN-10x1,5-SW      | 50                      |
|                              |              |                                |   |                  | Black  | 553940   | PUN-10x1,5-SW-300  | 300                     |
|                              |              |                                |   |                  | Yellow | 178420   | PUN-10x1,5-GE      | 50                      |
|                              |              |                                |   |                  | Green  | 178427   | PUN-10x1,5-GN      | 50                      |
|                              |              |                                |   |                  | Red    | 178413   | PUN-10x1,5-RT      | 50                      |

1) Packaging unit

Festo core product range

- ★ Ready for dispatch from the Festo factory in 24 hours
- ☆ Ready for dispatch in 5 days maximum from stock

# Plastic tubing PUN

Technical data

FESTO

| Dimensions and ordering data |              |                                |   |                  |        |          |                   |                         |
|------------------------------|--------------|--------------------------------|---|------------------|--------|----------|-------------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending<br>radius<br>[mm] | Flow-relevant<br>bending radius<br>[mm] | Weight<br>[kg/m] | Colour | Part No. | Type              | PU <sup>1)</sup><br>[m] |
| 12.0                         | 8.0          | 33                             | 62                                      | 0.0767           | Silver | ★ 152589 | PUN-12x2-SI       | 50                      |
|                              |              |                                |   |                  | Silver | 525743   | PUN-12x2-SI-200   | 200                     |
|                              |              |                                |   |                  | Blue   | ★ 159670 | PUN-12x2-BL       | 50                      |
|                              |              |                                |   |                  | Blue   | 525750   | PUN-12x2-BL-200   | 200                     |
|                              |              |                                |   |                  | Black  | ★ 159671 | PUN-12x2-SW       | 50                      |
|                              |              |                                |   |                  | Black  | 553941   | PUN-12x2-SW-200   | 200                     |
|                              |              |                                |   |                  | Yellow | 178421   | PUN-12x2-GE       | 50                      |
|                              |              |                                |   |                  | Green  | 178428   | PUN-12x2-GN       | 50                      |
|                              |              |                                |   |                  | Red    | 178414   | PUN-12x2-RT       | 50                      |
| 14.0                         | 9.8          | 45                             | 84                                      | 0.0949           | Silver | ★ 570389 | PUN-14x2-SI       | 50                      |
|                              |              |                                |   |                  | Blue   | ★ 570390 | PUN-14x2-BL       | 50                      |
|                              |              |                                |   |                  | Black  | ★ 570391 | PUN-14x2-SW       | 50                      |
| 16.0                         | 11.0         | 45                             | 88                                      | 0.1294           | Silver | ★ 152590 | PUN-16x2,5-SI     | 50                      |
|                              |              |                                |   |                  | Silver | 525744   | PUN-16x2,5-SI-100 | 100                     |
|                              |              |                                |   |                  | Blue   | ★ 159672 | PUN-16x2,5-BL     | 50                      |
|                              |              |                                |   |                  | Blue   | 525751   | PUN-16x2,5-BL-100 | 100                     |
|                              |              |                                |   |                  | Black  | ★ 159673 | PUN-16x2,5-SW     | 50                      |
|                              |              |                                |   |                  | Black  | 553942   | PUN-16x2,5-SW-100 | 100                     |
|                              |              |                                |   |                  | Yellow | 178422   | PUN-16x2,5-GE     | 50                      |
|                              |              |                                |   |                  | Green  | 178429   | PUN-16x2,5-GN     | 50                      |
|                              |              |                                |   |                  | Red    | 178415   | PUN-16x2,5-RT     | 50                      |

1) Packaging unit

Festo core product range

- ★ Ready for dispatch from the Festo factory in 24 hours
- ☆ Ready for dispatch in 5 days maximum from stock

# Plastic tubing PUN-DUO

Technical data

FESTO

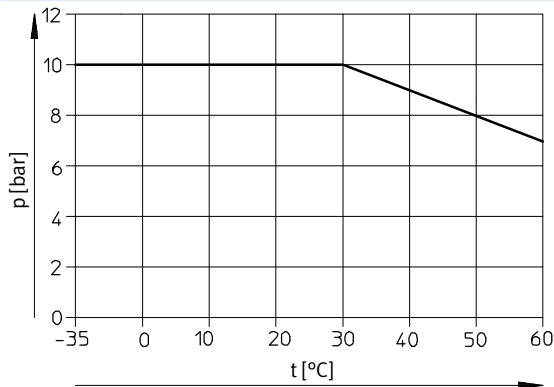
## DUO tubing PUN-DUO

Highly flexible paired plastic tubing distinguished by great resistance to abrasion and kinks. Two lengths of tubing are fused together into a tubing pair. For fitting, the paired tubing is separated as required at both ends.



| Operating and environmental conditions   |       |   |
|--|-------|---|
| Temperature dependent operating pressure | [bar] | -0.95 ... +10 → diagram   |
| Operating medium                         |       | Compressed air in accordance with ISO 8573-1:2010 [7:--:-]              |
| Ambient temperature                      | [°C]  | -35 ... +60   |
| Material fire test                       |       | UL94 HB   |
| Approval                                 |       | German Technical Control Board (TÜV)                                    |
| Tubing characteristics                   |       | Suitable for energy chains for applications with a high cycle rate      |
| Tubing test conditions                   |       | Suitable for energy chains: > 5 million cycles to Festo standard 942021 |

### Operating pressure p as a function of temperature t



### Accessories

| Type                              | → Internet                         |      |
|-----------------------------------|------------------------------------|------|
|                                   | Recommended fitting                |      |
|                                   | - Push-in fitting QS               | qs   |
|                                   | Very suitable                      |      |
|                                   | - Push-in fitting CRQS             | crqs |
|                                   | - Push-in fitting NPQH             | npqh |
|                                   | - Push-in fitting NPQP             | npqp |
|                                   | - Push-in fitting NPQM             | npqm |
|                                   | - Click fitting NPKA <sup>1)</sup> | npka |
|                                   | - Fitting NPCK                     | npck |
|                                   | - Quick connector CK <sup>2)</sup> | ck   |
| - Barbed fitting CN <sup>2)</sup> | cn                                 |      |
| Limited suitable                  |                                    |      |
| - Push-in fitting QS-V0           | qs-v0                              |      |

1) Only for O.D. 6 mm

2) Only for O.D. 4/6/8 mm



Note

Greater force is required when assembling the fittings CK/CN. Flaring the tube ends using a tapered mandrel makes pushing them on easier.

### Materials

|                   |                         |
|-------------------|-------------------------|
| Shore hardness    | D 52 ±3                 |
| Tubing            | TPE-U(PU)               |
| Note on materials | Conforms to RoHS        |
|                   | Free of copper and PTFE |

# Plastic tubing PUN-DUO

Technical data

| Dimensions and ordering data |              |                                |   |                  |            |          |                   |                         |
|------------------------------|--------------|--------------------------------|---|------------------|------------|----------|-------------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending<br>radius<br>[mm] | Flow-relevant<br>bending radius<br>[mm] | Weight<br>[kg/m] | Colour     | Part No. | Type              | PU <sup>1)</sup><br>[m] |
| 4                            | 2.6          | 8                              | 17                                      | 0.018            | Silver     | 152822   | PUN-4x0,75-DUO-SI | 50                      |
|                              |              |                                |   |                  | Blue/black | 159674   | PUN-4x0,75-DUO-BS | 50                      |
| 6                            | 4            | 14                             | 26.5                                    | 0.038            | Silver     | 152823   | PUN-6x1-DUO-SI    | 50                      |
|                              |              |                                |   |                  | Blue/black | 159675   | PUN-6x1-DUO-BS    | 50                      |
| 8                            | 5.7          | 20                             | 37                                      | 0.060            | Silver     | 152824   | PUN-8x1,25-DUO-SI | 50                      |
|                              |              |                                |   |                  | Blue/black | 159676   | PUN-8x1,25-DUO-BS | 50                      |
| 10                           | 7            | 25                             | 54                                      | 0.098            | Silver     | 152825   | PUN-10x1,5-DUO-SI | 50                      |
|                              |              |                                |   |                  | Blue/black | 159677   | PUN-10x1,5-DUO-BS | 50                      |

1) Packaging unit



# Plastic tubing PUN-CM, antistatic

Technical data

FESTO

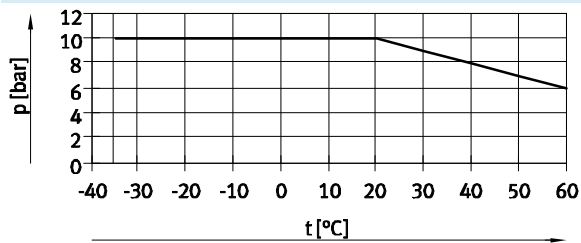
## Plastic tubing PUN-CM

Highly flexible plastic tubing,  
electrically conductive.



| Operating and environmental conditions   |       |   |
|--|-------|---|
| Temperature dependent operating pressure | [bar] | -0.95 ... +10 → diagram   |
| Operating medium                         |       | Compressed air in accordance with ISO 8573-1:2010 [7:-:-]               |
| Ambient temperature                      | [°C]  | -35 ... +60   |
| Surface resistance                       | [Ω]   | 10 <sup>4</sup> ... 10 <sup>7</sup>                                     |
| Tubing characteristics                   |       | Suitable for energy chains for applications with a high cycle rate      |
| Tubing test conditions                   |       | Suitable for energy chains: > 5 million cycles to Festo standard 942021 |

### Operating pressure p as a function of temperature t



### Accessories

| Type                                   | → Internet                                    |
|--|---|
|  | Recommended fitting                           |
|  | - Push-in fitting NPQM   npqm                 |
|  | Very suitable                                 |
|  | - Push-in fitting NPQH   npqh                 |
|  | - Fitting NPCK <sup>1)</sup>   npck           |
|  | Limited suitable                              |
|  | - Push-in fitting QS <sup>2)</sup>   qs       |
|  | - Push-in fitting CRQS <sup>2)</sup>   crqs   |
|  | - Push-in fitting QS-V0 <sup>2)</sup>   qs-v0 |
|  | - Push-in fitting NPQP <sup>2)</sup>   npqp   |
|  | - Click fitting NPKA <sup>3)</sup>   npka     |
|  | - Quick connector CK <sup>4)</sup>   ck       |
| - Barbed fitting CN <sup>4)</sup>   cn |   |

- 1) Only for O.D. 4/6/8/10 mm  
2) Not for O.D. 14 mm

- 3) Only for O.D. 6 mm  
4) Only for O.D. 4/6/8 mm

| Materials         |   |
|-------------------|---|
| Shore hardness    | D 52 ±3                                     |
| Tubing            | TPE-U(PU)                                   |
| Note on materials | Conforms to RoHS<br>Free of copper and PTFE |

# Plastic tubing PUN-CM, antistatic

Technical data

| Dimensions and ordering data |              |                                |   |                  |        |                             |                     |                         |
|------------------------------|--------------|--------------------------------|---|------------------|--------|-----------------------------|---------------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending<br>radius<br>[mm] | Flow-relevant<br>bending radius<br>[mm] | Weight<br>[kg/m] | Colour | Part No.                    | Type                | PU <sup>1)</sup><br>[m] |
| 4                            | 2.5          | 8                              | 17                                      | 0.0089           | Black  | <b>188882</b>               | <b>PUN-CM-4-SW</b>  | <b>50</b>               |
| 6                            | 4            | 14                             | 28                                      | 0.0192           |        | <b>188883</b>               | <b>PUN-CM-6-SW</b>  | <b>50</b>               |
| 8                            | 5.5          | 20                             | 37                                      | 0.0368           |        | <b>130816</b>               | <b>PUN-CM-8-SW</b>  | <b>50</b>               |
| 10                           | 7            | 30                             | 60                                      | 0.0544           |        | <b>130817</b>               | <b>PUN-CM-10-SW</b> | <b>50</b>               |
| 12                           | 8            | 30                             | 70                                      | 0.0754           |        | <b>130818</b>               | <b>PUN-CM-12-SW</b> | <b>50</b>               |
| 14                           | 9.8          | 41                             | 80                                      | 0.095            |        | <b>Modular product → 47</b> |                     |                         |

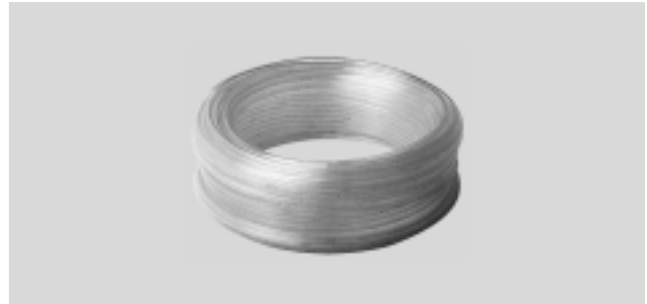
1) Packaging unit

# Plastic tubing PUN-H, hydrolysis resistant

Technical data

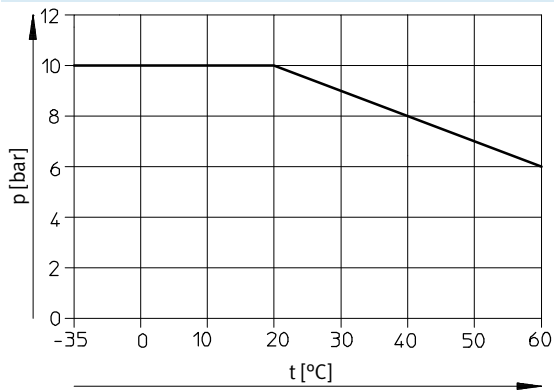
## Plastic tubing PUN-H

With tubing outside diameter of 2 mm



| Operating and environmental conditions         |   |
|--|---|
| Temperature dependent operating pressure [bar] | -0.95 ... +10 → diagram   |
| Operating medium                               | Compressed air in accordance with ISO 8573-1:2010 [7:-:-]               |
| Ambient temperature [°C]                       | -35 ... +60   |
| Tubing characteristics                         | Suitable for energy chains for applications with a high cycle rate      |
| Tubing test conditions                         | Suitable for energy chains: > 5 million cycles to Festo standard 942021 |

### Operating pressure p as a function of temperature t



### Accessories

| Type | → Internet                  |     |
|------|-----------------------------|-----|
|      | Recommended fitting         |     |
|      | - Push-in fitting QSM, mini | qsm |

| Materials         |                         |
|-------------------|-------------------------|
| Shore hardness    | D 52 ±3                 |
| Tubing            | TPE-U(PU)               |
| Note on materials | Conforms to RoHS        |
|                   | Free of copper and PTFE |

| Dimensions and ordering data |              |                             |                                      |                  |         |          |                |                         |
|------------------------------|--------------|-----------------------------|--------------------------------------|------------------|---------|----------|----------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending radius<br>[mm] | Flow-relevant bending radius<br>[mm] | Weight<br>[kg/m] | Colour  | Part No. | Type           | PU <sup>1)</sup><br>[m] |
| 2                            | 1.2          | 5                           | 8                                    | 0.0024           | Natural | ★ 133038 | PUN-H-2x0,4-NT | 50                      |
|                              |              |                             |                                      |                  | Black   | ★ 133039 | PUN-H-2x0,4-SW | 50                      |
|                              |              |                             |                                      |                  | Red     | 133040   | PUN-H-2x0,4-RT | 50                      |

1) Packaging unit

Festo core product range

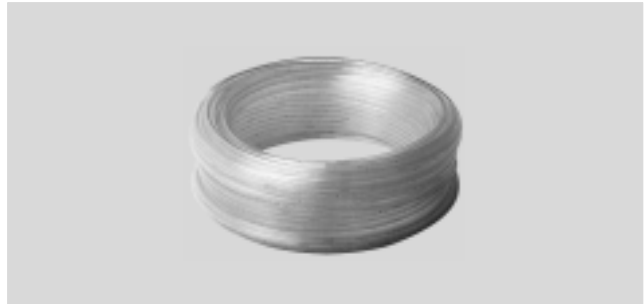
- ★ Ready for dispatch from the Festo factory in 24 hours
- ☆ Ready for dispatch in 5 days maximum from stock

# Plastic tubing PUN-H, hydrolysis resistant

Technical data

## Plastic tubing PUN-H

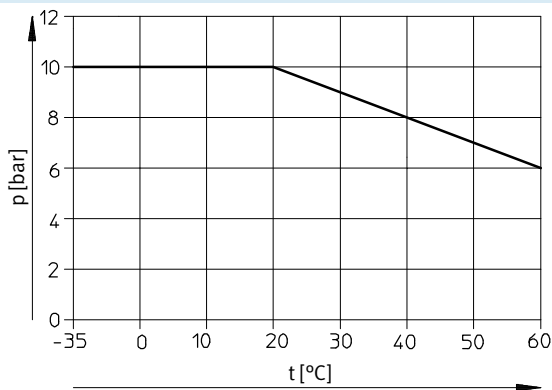
With tubing outside diameters of  
3 ... 16 mm




| Operating and environmental conditions         |   |   |
|--|---|---|
| Colour   | Natural, blue, black, silver, red, green, yellow                        | Translucent blue, translucent black, translucent red, translucent green, translucent yellow |
| Temperature dependent operating pressure [bar] | -0.95 ... +10 → diagram   |   |
| Operating medium                               | Compressed air in accordance with ISO 8573-1:2010 [7:-:-]               |   |
|  | Water as per manufacturer's declaration <sup>1)</sup>                   |   |
| Ambient temperature [°C]                       | -35 ... +60   |   |
| Food-safe <sup>1)</sup>                        | See supplementary material information                                  | -   |
| Approval <sup>1)</sup>                         | German Technical Control Board (TÜV)                                    | -   |
| Tubing characteristics                         | Suitable for energy chains for applications with a high cycle rate      |   |
| Tubing test conditions                         | Suitable for energy chains: > 5 million cycles to Festo standard 942021 |   |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

### Operating pressure p as a function of temperature t



### Accessories

| Type  | → Internet                            |       |
|---|---------------------------------------|-------|
|  | <b>Recommended fitting</b>            |       |
|   | - Push-in fitting QS <sup>1)</sup>    | qs    |
|   | - Push-in fitting NPQH <sup>2)</sup>  | npqh  |
|   | - Click fitting NPKA <sup>5)</sup>    | npka  |
|   | <b>Very suitable</b>                  |       |
|   | - Push-in fitting CRQS <sup>3)</sup>  | crqs  |
|   | - Push-in fitting NPQP <sup>4)</sup>  | npqp  |
|   | - Push-in fitting NPQM <sup>2)</sup>  | npqm  |
|   | - Fitting NPCK <sup>6)</sup>          | npck  |
|   | - Quick connector CK <sup>7)</sup>    | ck    |
|   | <b>Limited suitable</b>               |       |
|   | - Push-in fitting QS-V0 <sup>4)</sup> | qs-v0 |

1) Not for O.D. 14 mm  
2) Not for O.D. 3/16 mm  
3) Not for O.D. 3/14 mm  
4) Not for O.D. 3/14/16 mm

5) Only for O.D. 6 mm  
6) Only for O.D. 4/6/8/10 mm  
7) Only for O.D. 4/6/8 mm

### Materials

|                   |                         |
|-------------------|-------------------------|
| Shore hardness    | D 52 ±3                 |
| Tubing            | TPE-U(PU)               |
| Note on materials | Conforms to RoHS        |
|                   | Free of copper and PTFE |

# Plastic tubing PUN-H, hydrolysis resistant

Technical data

| Dimensions and ordering data |         |                      |                              |        |                    |           |                      |                  |
|------------------------------|---------|----------------------|------------------------------|--------|--------------------|-----------|----------------------|------------------|
| O.D.                         | I.D.    | Min. bending radius  | Flow-relevant bending radius | Weight | Colour             | Part No.  | Type                 | PU <sup>1)</sup> |
| [mm]                         | [mm]    | [mm]                 | [mm]                         | [kg/m] |                    |           |                      | [m]              |
| 3                            | 2.1     | 6                    | 12                           | 0.0042 | Natural            | ★ 197375  | PUN-H-3x0,5-NT       | 50               |
|                              |         |                      |                              |        | Natural            | 558263    | PUN-H-3x0,5-NT-500   | 500              |
|                              |         |                      |                              |        | Blue               | ★ 197382  | PUN-H-3x0,5-BL       | 50               |
|                              |         |                      |                              |        | Blue               | 558256    | PUN-H-3x0,5-BL-500   | 500              |
|                              |         |                      |                              |        | Black              | ★ 197389  | PUN-H-3x0,5-SW       | 50               |
|                              |         |                      |                              |        | Black              | 558249    | PUN-H-3x0,5-SW-500   | 500              |
|                              |         |                      |                              |        | Silver             | ★ 558277  | PUN-H-3x0,5-SI       | 50               |
|                              |         |                      |                              |        | Silver             | 558270    | PUN-H-3x0,5-SI-500   | 500              |
|                              |         |                      |                              |        | Red                | 558284    | PUN-H-3x0,5-RT       | 50               |
|                              |         |                      |                              |        | Green              | 558291    | PUN-H-3x0,5-GN       | 50               |
|                              |         |                      |                              |        | Yellow             | 558298    | PUN-H-3x0,5-GE       | 50               |
| 4                            | 2.6     | 8                    | 16                           | 0.0085 | Natural            | ★ 197376  | PUN-H-4x0,75-NT      | 50               |
|                              |         |                      |                              |        | Natural            | 558264    | PUN-H-4x0,75-NT-500  | 500              |
|                              |         |                      |                              |        | Blue               | ★ 197383  | PUN-H-4x0,75-BL      | 50               |
|                              |         |                      |                              |        | Blue               | 558257    | PUN-H-4x0,75-BL-500  | 500              |
|                              |         |                      |                              |        | Translucent blue   | ★ 8048671 | PUN-H-4x0,75-TBL     | 50               |
|                              |         |                      |                              |        | Translucent blue   | 8048672   | PUN-H-4x0,75-TBL-500 | 500              |
|                              |         |                      |                              |        | Black              | ★ 197390  | PUN-H-4x0,75-SW      | 50               |
|                              |         |                      |                              |        | Black              | 558250    | PUN-H-4x0,75-SW-500  | 500              |
|                              |         |                      |                              |        | Translucent black  | 8048673   | PUN-H-4x0,75-TSW     | 50               |
|                              |         |                      |                              |        | Translucent black  | 8048674   | PUN-H-4x0,75-TSW-500 | 500              |
|                              |         |                      |                              |        | Silver             | ★ 558278  | PUN-H-4x0,75-SI      | 50               |
|                              |         |                      |                              |        | Silver             | 558271    | PUN-H-4x0,75-SI-500  | 500              |
|                              |         |                      |                              |        | Red                | 558285    | PUN-H-4x0,75-RT      | 50               |
|                              |         |                      |                              |        | Translucent red    | 8048675   | PUN-H-4x0,75-TRT     | 50               |
|                              |         |                      |                              |        | Translucent red    | 8048676   | PUN-H-4x0,75-TRT-500 | 500              |
|                              |         |                      |                              |        | Green              | 558292    | PUN-H-4x0,75-GN      | 50               |
|                              |         |                      |                              |        | Translucent green  | 8048677   | PUN-H-4x0,75-TGN     | 50               |
|                              |         |                      |                              |        | Translucent green  | 8048678   | PUN-H-4x0,75-TGN-500 | 500              |
|                              |         |                      |                              |        | Yellow             | 558299    | PUN-H-4x0,75-GE      | 50               |
|                              |         |                      |                              |        | Translucent yellow | 8048679   | PUN-H-4x0,75-TGE     | 50               |
| Translucent yellow           | 8048680 | PUN-H-4x0,75-TGE-500 | 500                          |        |                    |           |                      |                  |

1) Packaging unit

Festo core product range

- ★ Ready for dispatch from the Festo factory in 24 hours
- ☆ Ready for dispatch in 5 days maximum from stock

# Plastic tubing PUN-H, hydrolysis resistant

Technical data

| Dimensions and ordering data |         |                      |                              |        |                    |           |                      |                  |
|------------------------------|---------|----------------------|------------------------------|--------|--------------------|-----------|----------------------|------------------|
| O.D.                         | I.D.    | Min. bending radius  | Flow-relevant bending radius | Weight | Colour             | Part No.  | Type                 | PU <sup>1)</sup> |
| [mm]                         | [mm]    | [mm]                 | [mm]                         | [kg/m] |                    |           |                      | [m]              |
| 6                            | 4       | 10                   | 26                           | 0.0183 | Natural            | ★ 197377  | PUN-H-6x1-NT         | 50               |
|                              |         |                      |                              |        | Natural            | 558265    | PUN-H-6x1-NT-500     | 500              |
|                              |         |                      |                              |        | Blue               | ★ 197384  | PUN-H-6x1-BL         | 50               |
|                              |         |                      |                              |        | Blue               | 558258    | PUN-H-6x1-BL-500     | 500              |
|                              |         |                      |                              |        | Translucent blue   | ★ 8048681 | PUN-H-6x1-TBL        | 50               |
|                              |         |                      |                              |        | Translucent blue   | 8048682   | PUN-H-6x1-TBL-500    | 500              |
|                              |         |                      |                              |        | Black              | ★ 197391  | PUN-H-6x1-SW         | 50               |
|                              |         |                      |                              |        | Black              | 558251    | PUN-H-6x1-SW-500     | 500              |
|                              |         |                      |                              |        | Translucent black  | 8048683   | PUN-H-6x1-TSW        | 50               |
|                              |         |                      |                              |        | Translucent black  | 8048684   | PUN-H-6x1-TSW-500    | 500              |
|                              |         |                      |                              |        | Silver             | ★ 558279  | PUN-H-6x1-SI         | 50               |
|                              |         |                      |                              |        | Silver             | 558272    | PUN-H-6x1-SI-500     | 500              |
|                              |         |                      |                              |        | Red                | 558286    | PUN-H-6x1-RT         | 50               |
|                              |         |                      |                              |        | Translucent red    | 8048685   | PUN-H-6x1-TRT        | 50               |
|                              |         |                      |                              |        | Translucent red    | 8048686   | PUN-H-6x1-TRT-500    | 500              |
|                              |         |                      |                              |        | Green              | 558293    | PUN-H-6x1-GN         | 50               |
|                              |         |                      |                              |        | Translucent green  | 8048687   | PUN-H-6x1-TGN        | 50               |
|                              |         |                      |                              |        | Translucent green  | 8048688   | PUN-H-6x1-TGN-500    | 500              |
|                              |         |                      |                              |        | Yellow             | 558300    | PUN-H-6x1-GE         | 50               |
|                              |         |                      |                              |        | Translucent yellow | 8048689   | PUN-H-6x1-TGE        | 50               |
| Translucent yellow           | 8048690 | PUN-H-6x1-TGE-500    | 500                          |        |                    |           |                      |                  |
| 8                            | 5.7     | 21                   | 37                           | 0.0287 | Natural            | ★ 197378  | PUN-H-8x1,25-NT      | 50               |
|                              |         |                      |                              |        | Natural            | 558266    | PUN-H-8x1,25-NT-400  | 400              |
|                              |         |                      |                              |        | Blue               | ★ 197385  | PUN-H-8x1,25-BL      | 50               |
|                              |         |                      |                              |        | Blue               | 558259    | PUN-H-8x1,25-BL-400  | 400              |
|                              |         |                      |                              |        | Translucent blue   | ★ 8048691 | PUN-H-8x1,25-TBL     | 50               |
|                              |         |                      |                              |        | Translucent blue   | 8048692   | PUN-H-8x1,25-TBL-400 | 400              |
|                              |         |                      |                              |        | Black              | ★ 197392  | PUN-H-8x1,25-SW      | 50               |
|                              |         |                      |                              |        | Black              | 558252    | PUN-H-8x1,25-SW-400  | 400              |
|                              |         |                      |                              |        | Translucent black  | 8048693   | PUN-H-8x1,25-TSW     | 50               |
|                              |         |                      |                              |        | Translucent black  | 8048694   | PUN-H-8x1,25-TSW-400 | 400              |
|                              |         |                      |                              |        | Silver             | ★ 558280  | PUN-H-8x1,25-SI      | 50               |
|                              |         |                      |                              |        | Silver             | 558273    | PUN-H-8x1,25-SI-400  | 400              |
|                              |         |                      |                              |        | Red                | 558287    | PUN-H-8x1,25-RT      | 50               |
|                              |         |                      |                              |        | Translucent red    | 8048695   | PUN-H-8x1,25-TRT     | 50               |
|                              |         |                      |                              |        | Translucent red    | 8048696   | PUN-H-8x1,25-TRT-400 | 400              |
|                              |         |                      |                              |        | Green              | 558294    | PUN-H-8x1,25-GN      | 50               |
|                              |         |                      |                              |        | Translucent green  | 8048697   | PUN-H-8x1,25-TGN     | 50               |
|                              |         |                      |                              |        | Translucent green  | 8048698   | PUN-H-8x1,25-TGN-400 | 400              |
|                              |         |                      |                              |        | Yellow             | 558301    | PUN-H-8x1,25-GE      | 50               |
|                              |         |                      |                              |        | Translucent yellow | 8048699   | PUN-H-8x1,25-TGE     | 50               |
| Translucent yellow           | 8048700 | PUN-H-8x1,25-TGE-400 | 400                          |        |                    |           |                      |                  |

1) Packaging unit

Festo core product range

- ★ Ready for dispatch from the Festo factory in 24 hours
- ☆ Ready for dispatch in 5 days maximum from stock

# Plastic tubing PUN-H, hydrolysis resistant

Technical data

| Dimensions and ordering data |         |                      |                              |        |                    |           |                      |                  |
|------------------------------|---------|----------------------|------------------------------|--------|--------------------|-----------|----------------------|------------------|
| O.D.                         | I.D.    | Min. bending radius  | Flow-relevant bending radius | Weight | Colour             | Part No.  | Type                 | PU <sup>1)</sup> |
| [mm]                         | [mm]    | [mm]                 | [mm]                         | [kg/m] |                    |           |                      | [m]              |
| 10                           | 7       | 28                   | 52                           | 0.0465 | Natural            | ★ 197379  | PUN-H-10x1,5-NT      | 50               |
|                              |         |                      |                              |        | Natural            | 558267    | PUN-H-10x1,5-NT-300  | 300              |
|                              |         |                      |                              |        | Blue               | ★ 197386  | PUN-H-10x1,5-BL      | 50               |
|                              |         |                      |                              |        | Blue               | 558260    | PUN-H-10x1,5-BL-300  | 300              |
|                              |         |                      |                              |        | Translucent blue   | ★ 8048701 | PUN-H-10x1,5-TBL     | 50               |
|                              |         |                      |                              |        | Translucent blue   | 8048702   | PUN-H-10x1,5-TBL-300 | 300              |
|                              |         |                      |                              |        | Black              | ★ 197393  | PUN-H-10x1,5-SW      | 50               |
|                              |         |                      |                              |        | Black              | 558253    | PUN-H-10x1,5-SW-300  | 300              |
|                              |         |                      |                              |        | Translucent black  | 8048703   | PUN-H-10x1,5-TSW     | 50               |
|                              |         |                      |                              |        | Translucent black  | 8048704   | PUN-H-10x1,5-TSW-300 | 300              |
|                              |         |                      |                              |        | Silver             | ★ 558281  | PUN-H-10x1,5-SI      | 50               |
|                              |         |                      |                              |        | Silver             | 558274    | PUN-H-10x1,5-SI-300  | 300              |
|                              |         |                      |                              |        | Red                | 558288    | PUN-H-10x1,5-RT      | 50               |
|                              |         |                      |                              |        | Translucent red    | 8048705   | PUN-H-10x1,5-TRT     | 50               |
|                              |         |                      |                              |        | Translucent red    | 8048706   | PUN-H-10x1,5-TRT-300 | 300              |
|                              |         |                      |                              |        | Green              | 558295    | PUN-H-10x1,5-GN      | 50               |
|                              |         |                      |                              |        | Translucent green  | 8048707   | PUN-H-10x1,5-TGN     | 50               |
|                              |         |                      |                              |        | Translucent green  | 8048708   | PUN-H-10x1,5-TGN-300 | 300              |
|                              |         |                      |                              |        | Yellow             | 558302    | PUN-H-10x1,5-GE      | 50               |
|                              |         |                      |                              |        | Translucent yellow | 8048709   | PUN-H-10x1,5-TGE     | 50               |
| Translucent yellow           | 8048710 | PUN-H-10x1,5-TGE-300 | 300                          |        |                    |           |                      |                  |
| 12                           | 8       | 33                   | 62                           | 0.0729 | Natural            | ★ 197380  | PUN-H-12x2-NT        | 50               |
|                              |         |                      |                              |        | Natural            | 558268    | PUN-H-12x2-NT-200    | 200              |
|                              |         |                      |                              |        | Blue               | ★ 197387  | PUN-H-12x2-BL        | 50               |
|                              |         |                      |                              |        | Blue               | 558261    | PUN-H-12x2-BL-200    | 200              |
|                              |         |                      |                              |        | Translucent blue   | ★ 8048711 | PUN-H-12x2-TBL       | 50               |
|                              |         |                      |                              |        | Translucent blue   | 8048712   | PUN-H-12x2-TBL-200   | 200              |
|                              |         |                      |                              |        | Black              | ★ 197394  | PUN-H-12x2-SW        | 50               |
|                              |         |                      |                              |        | Black              | 558254    | PUN-H-12x2-SW-200    | 200              |
|                              |         |                      |                              |        | Translucent black  | 8048713   | PUN-H-12x2-TSW       | 50               |
|                              |         |                      |                              |        | Translucent black  | 8048714   | PUN-H-12x2-TSW-200   | 200              |
|                              |         |                      |                              |        | Silver             | ★ 558282  | PUN-H-12x2-SI        | 50               |
|                              |         |                      |                              |        | Silver             | 558275    | PUN-H-12x2-SI-200    | 200              |
|                              |         |                      |                              |        | Red                | 558289    | PUN-H-12x2-RT        | 50               |
|                              |         |                      |                              |        | Translucent red    | 8048715   | PUN-H-12x2-TRT       | 50               |
|                              |         |                      |                              |        | Translucent red    | 8048716   | PUN-H-12x2-TRT-200   | 200              |
|                              |         |                      |                              |        | Green              | 558296    | PUN-H-12x2-GN        | 50               |
|                              |         |                      |                              |        | Translucent green  | 8048717   | PUN-H-12x2-TGN       | 50               |
|                              |         |                      |                              |        | Translucent green  | 8048718   | PUN-H-12x2-TGN-200   | 200              |
|                              |         |                      |                              |        | Yellow             | 558303    | PUN-H-12x2-GE        | 50               |
|                              |         |                      |                              |        | Translucent yellow | 8048719   | PUN-H-12x2-TGE       | 50               |
| Translucent yellow           | 8048720 | PUN-H-12x2-TGE-200   | 200                          |        |                    |           |                      |                  |

1) Packaging unit

Festo core product range

- ★ Ready for dispatch from the Festo factory in 24 hours
- ☆ Ready for dispatch in 5 days maximum from stock

# Plastic tubing PUN-H, hydrolysis resistant

Technical data

| Dimensions and ordering data |      |                     |                              |        |         |          |                     |                  |
|------------------------------|------|---------------------|------------------------------|--------|---------|----------|---------------------|------------------|
| O.D.                         | I.D. | Min. bending radius | Flow-relevant bending radius | Weight | Colour  | Part No. | Type                | PJ <sup>1)</sup> |
| [mm]                         | [mm] | [mm]                | [mm]                         | [kg/m] |         |          |                     | [m]              |
| 14                           | 9.8  | 38                  | 78                           | 0.091  | Natural | 570388   | PUN-H-14x2-NT       | 50               |
|                              |      |                     |                              |        | Blue    | ★ 570386 | PUN-H-14x2-BL       | 50               |
|                              |      |                     |                              |        | Black   | ★ 570387 | PUN-H-14x2-SW       | 50               |
| 16                           | 11   | 38                  | 88                           | 0.123  | Natural | ★ 197381 | PUN-H-16x2,5-NT     | 50               |
|                              |      |                     |                              |        | Natural | 558269   | PUN-H-16x2,5-NT-100 | 100              |
|                              |      |                     |                              |        | Blue    | ★ 197388 | PUN-H-16x2,5-BL     | 50               |
|                              |      |                     |                              |        | Blue    | 558262   | PUN-H-16x2,5-BL-100 | 100              |
|                              |      |                     |                              |        | Black   | ★ 197395 | PUN-H-16x2,5-SW     | 50               |
|                              |      |                     |                              |        | Black   | 558255   | PUN-H-16x2,5-SW-100 | 100              |
|                              |      |                     |                              |        | Silver  | ★ 558283 | PUN-H-16x2,5-SI     | 50               |
|                              |      |                     |                              |        | Silver  | 558276   | PUN-H-16x2,5-SI-100 | 100              |
|                              |      |                     |                              |        | Red     | 558290   | PUN-H-16x2,5-RT     | 50               |
|                              |      |                     |                              |        | Green   | 558297   | PUN-H-16x2,5-GN     | 50               |
|                              |      |                     |                              |        | Yellow  | 558304   | PUN-H-16x2,5-GE     | 50               |

1) Packaging unit



# Plastic tubing PUN-H-DUO, hydrolysis resistant

Technical data

## DUO tubing PUN-H-DUO

Highly flexible paired plastic tubing distinguished by great resistance to abrasion and kinks. Two lengths of

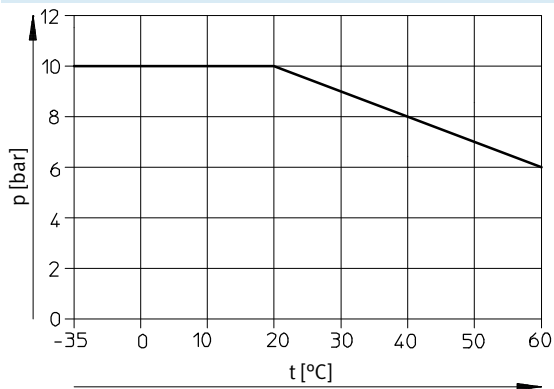
tubing are fused together into a tubing pair. For fitting, the paired tubing is separated as required at both ends.




| Operating and environmental conditions         |  |  |
|--|--|--|
| Temperature dependent operating pressure [bar] |  | -0.95 ... +10 → diagram  |
| Operating medium                               |  | Compressed air in accordance with ISO 8573-1:2010 [7:-:-]<br>Water as per manufacturer's declaration <sup>1)</sup> |
| Ambient temperature [°C]                       |  | -35 ... +60  |
| Food-safe <sup>1)</sup>                        |  | See supplementary material information   |
| Approval <sup>1)</sup>                         |  | German Technical Control Board (TÜV)   |
| Tubing characteristics                         |  | Suitable for energy chains for applications with a high cycle rate   |
| Tubing test conditions                         |  | Suitable for energy chains: > 5 million cycles to Festo standard 942021  |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

### Operating pressure p as a function of temperature t



### Accessories

| Type  | → Internet                         |       |
|---|------------------------------------|-------|
|  | Recommended fitting                |       |
|   | - Push-in fitting QS               | qs    |
|   | - Push-in fitting NPQH             | npqh  |
|   | Very suitable                      |       |
|   | - Push-in fitting CRQS             | crqs  |
|   | - Push-in fitting NPQP             | npqp  |
|   | - Push-in fitting NPQM             | npqm  |
|   | - Click fitting NPKA <sup>1)</sup> | npka  |
|   | - Fitting NPCK                     | npck  |
|   | - Quick connector CK <sup>2)</sup> | ck    |
|   | Limited suitable                   |       |
|   | - Push-in fitting QS-V0            | qs-v0 |

1) Only for O.D. 6 mm

2) Only for O.D. 4/6/8 mm

| Materials         |   |
|-------------------|---|
| Shore hardness    | D 52 ±3                                     |
| Tubing            | TPE-U(PU)                                   |
| Note on materials | Conforms to RoHS<br>Free of copper and PTFE |

# Plastic tubing PUN-H-DUO, hydrolysis resistant

Technical data

| Dimensions and ordering data |              |                                |   |                  |            |               |                         |                         |
|------------------------------|--------------|--------------------------------|---|------------------|------------|---------------|-------------------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending<br>radius<br>[mm] | Flow-relevant<br>bending radius<br>[mm] | Weight<br>[kg/m] | Colour     | Part No.      | Type                    | PU <sup>1)</sup><br>[m] |
| 4                            | 2.6          | 6                              | 16                                      | 0.0170           | Blue/black | <b>197396</b> | <b>PUN-H-4x0,75-DUO</b> | <b>50</b>               |
| 6                            | 4            | 10                             | 26                                      | 0.0366           |            | <b>197397</b> | <b>PUN-H-6x1-DUO</b>    | <b>50</b>               |
| 8                            | 5.7          | 20                             | 37                                      | 0.0574           |            | <b>197398</b> | <b>PUN-H-8x1,25-DUO</b> | <b>50</b>               |
| 10                           | 7            | 25                             | 52                                      | 0.0930           |            | <b>197399</b> | <b>PUN-H-10x1,5-DUO</b> | <b>50</b>               |

1) Packaging unit

# Plastic tubing PUN-V0, flame retardant

Technical data

## Plastic tubing PUN-V0

Highly flexible single-sheath plastic tubing, flame retardant

For use in indirect proximity to welding applications.



Note

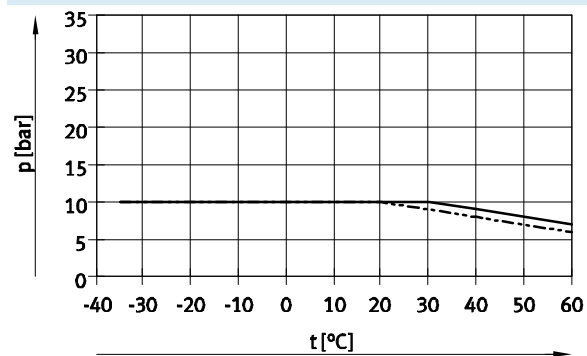
Due to the included flame retardant, the colour of the tubing deviates from the standard colour.



| Operating and environmental conditions         |  |
|--|--|
| Temperature dependent operating pressure [bar] | -0.95 ... +10 → diagram  |
| Operating medium                               | Compressed air in accordance with ISO 8573-1:2010 [7:-:-]<br>Water as per manufacturer's declaration <sup>1)</sup> |
| Ambient temperature [°C]                       | -35 ... +60  |
| Fire test <sup>1)</sup>                        | DIN 5510-2 S4/SR2/ST2  |
| Material fire test                             | UL94 V-0 (3 mm)<br>UL94 V-2 (0.75 mm)  |
| Approval                                       | German Technical Control Board (TÜV)   |
| Tubing characteristics                         | Suitable for energy chains for applications with a high cycle rate   |
| Tubing test conditions                         | Suitable for energy chains: > 5 million cycles to Festo standard 942021  |

1) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

## Operating pressure p as a function of temperature t



— PUN-V0-...  
- - - PUN-V0-16

## Accessories

| Type                                  | → Internet |
|---------------------------------------|------------|
|                                       |            |
| Recommended fitting                   |            |
| - Push-in fitting NPQM <sup>1)</sup>  | npqm       |
| Very suitable                         |            |
| - Push-in fitting CRQS                | crqs       |
| - Push-in fitting NPQH <sup>1)</sup>  | npqh       |
| - Fitting NPCK <sup>2)</sup>          | npck       |
| - Quick connector CK <sup>3)</sup>    | ck         |
| Limited suitable                      |            |
| - Push-in fitting QS                  | qs         |
| - Push-in fitting QS-V0 <sup>1)</sup> | qs-v0      |
| - Push-in fitting NPQP <sup>1)</sup>  | npqp       |
| - Click fitting NPKA <sup>4)</sup>    | npka       |
| - Barbed fitting CN <sup>3)</sup>     | cn         |

1) Not for O.D. 16 mm  
2) Only for O.D. 6/8/10 mm

3) Only for O.D. 6/8 mm  
4) Only for O.D. 6 mm



Note

Greater force is required when assembling the fittings CK/CN.

## Materials

|                   |   |
|-------------------|---|
| Shore hardness    | D 54 ±3                                     |
| Tubing            | TPE-U(PU)                                   |
| Note on materials | Conforms to RoHS<br>Free of copper and PTFE |

# Plastic tubing PUN-V0, flame retardant



Technical data

| Dimensions and ordering data |              |                                |   |                  |        |          |                  |                         |
|------------------------------|--------------|--------------------------------|---|------------------|--------|----------|------------------|-------------------------|
| O.D.<br>[mm]                 | I.D.<br>[mm] | Min. bending<br>radius<br>[mm] | Flow-relevant<br>bending radius<br>[mm] | Weight<br>[kg/m] | Colour | Part No. | Type             | PU <sup>1)</sup><br>[m] |
| 6                            | 4            | 12                             | 26.5                                    | 0.020            | Black  | 525438   | PUN-V0-6x1-SW    | 50                      |
|                              |              |                                |   |                  | Blue   | 525442   | PUN-V0-6x1-BL    | 50                      |
|                              |              |                                |   |                  | Green  | 525446   | PUN-V0-6x1-GN    | 50                      |
|                              |              |                                |   |                  | Red    | 525450   | PUN-V0-6x1-RT    | 50                      |
|                              |              |                                |   |                  | White  | 525454   | PUN-V0-6x1-WS    | 50                      |
|                              |              |                                |   |                  | Yellow | 525458   | PUN-V0-6x1-GE    | 50                      |
|                              |              |                                |   |                  | Brown  | 525462   | PUN-V0-6x1-BR    | 50                      |
| 8                            | 5.7          | 18                             | 37                                      | 0.031            | Black  | 525439   | PUN-V0-8x1,25-SW | 50                      |
|                              |              |                                |   |                  | Blue   | 525443   | PUN-V0-8x1,25-BL | 50                      |
|                              |              |                                |   |                  | Green  | 525447   | PUN-V0-8x1,25-GN | 50                      |
|                              |              |                                |   |                  | Red    | 525451   | PUN-V0-8x1,25-RT | 50                      |
|                              |              |                                |   |                  | White  | 525455   | PUN-V0-8x1,25-WS | 50                      |
|                              |              |                                |   |                  | Yellow | 525459   | PUN-V0-8x1,25-GE | 50                      |
|                              |              |                                |   |                  | Brown  | 525463   | PUN-V0-8x1,25-BR | 50                      |
| 10                           | 7            | 20                             | 54                                      | 0.051            | Black  | 525440   | PUN-V0-10x1,5-SW | 50                      |
|                              |              |                                |   |                  | Blue   | 525444   | PUN-V0-10x1,5-BL | 50                      |
|                              |              |                                |   |                  | Green  | 525448   | PUN-V0-10x1,5-GN | 50                      |
|                              |              |                                |   |                  | Red    | 525452   | PUN-V0-10x1,5-RT | 50                      |
|                              |              |                                |   |                  | White  | 525456   | PUN-V0-10x1,5-WS | 50                      |
|                              |              |                                |   |                  | Yellow | 525460   | PUN-V0-10x1,5-GE | 50                      |
|                              |              |                                |   |                  | Brown  | 525464   | PUN-V0-10x1,5-BR | 50                      |
| 16                           | 11.8         | 50                             | 90                                      | 0.122            | Black  | 570767   | PUN-V0-16x2-SW   | 50                      |
|                              |              |                                |   |                  | Blue   | 570768   | PUN-V0-16x2-BL   | 50                      |

1) Packaging unit


# Plastic tubing PUN-VO-C, flame retardant

Technical data

## Plastic tubing PUN-VO-C

Highly flexible single-sheath plastic tubing, flame retardant

For use in the immediate vicinity of welding applications.

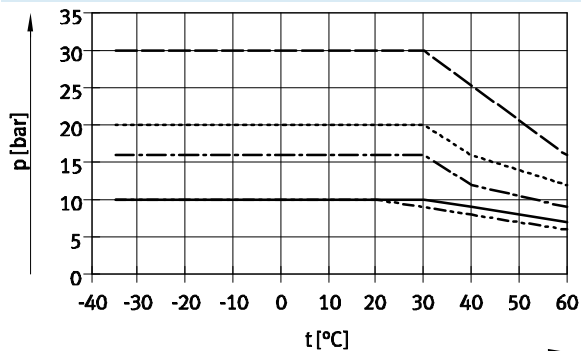
 Note  
Due to the included flame retardant, the colour of the tubing deviates from the standard colour.



| Operating and environmental conditions         |  |  |  |  |                            |                           |                            |
|--|--|--|--|--|----------------------------|---------------------------|----------------------------|
| Type   | PUN-VO-4   | PUN-VO-6                                 | PUN-VO-8                                 | PUN-VO-10                                | PUN-VO-12                  | PUN-VO-14                 | PUN-VO-16                  |
| Temperature dependent operating pressure [bar] | -0.95 ... +10<br>→ diagram   | -0.95 ... +30 <sup>1)</sup><br>→ diagram | -0.95 ... +20 <sup>1)</sup><br>→ diagram | -0.95 ... +16 <sup>1)</sup><br>→ diagram | -0.95 ... +10<br>→ diagram | -0.95 ... +9<br>→ diagram | -0.95 ... +10<br>→ diagram |
| Operating medium                               | Compressed air in accordance with ISO 8573-1:2010 [7:-:-]<br>Water as per manufacturer's declaration <sup>2)</sup> |  |  |  |                            |                           |                            |
| Ambient temperature [°C]                       | -35 ... +60  |  |  |  |                            |                           |                            |
| Fire test <sup>2)</sup>                        | DIN 5510-2 S3/SR2/ST1  |  |  |  |                            |                           |                            |
| Material fire test                             | UL94 V-0 (3 mm)<br>UL94 V-2 (0.75 mm)  |  |  |  |                            |                           |                            |
| Approval <sup>2)</sup>                         | German Technical Control Board (TÜV)   |  |  |  |                            |                           |                            |
| Tubing characteristics                         | Suitable for energy chains for applications with a high cycle rate   |  |  |  |                            |                           |                            |
| Tubing test conditions                         | Suitable for energy chains: > 5 million cycles to Festo standard 942021  |  |  |  |                            |                           |                            |

- 1) Limited to 10 bar in applications with welding spatter.  
2) Additional information [www.festo.com/sp](http://www.festo.com/sp) → Certificates.

### Operating pressure p as a function of temperature t




- PUN-VO-4-C  
- - - PUN-VO-6-C  
- · - PUN-VO-8-C  
· · · PUN-VO-10-C

For applications without welding spatter

- PUN-VO-6x2-C  
- - - PUN-VO-8x2-C  
- · - PUN-VO-10x2-C

### Accessories

| Type  | → Internet                            |       |
|---|---------------------------------------|-------|
|  | Recommended fitting                   |       |
|   | - Push-in fitting NPQH <sup>1)</sup>  | npqh  |
|   | Very suitable                         |       |
|   | - Push-in fitting CRQS <sup>2)</sup>  | crqs  |
|   | - Push-in fitting NPQM <sup>1)</sup>  | npqm  |
|   | Limited suitable                      |       |
|   | - Push-in fitting QS <sup>2)</sup>    | qs    |
|   | - Push-in fitting QS-V0 <sup>3)</sup> | qs-v0 |
|   | - Push-in fitting NPQP <sup>3)</sup>  | npqp  |

- 1) Not for O.D. 16 mm  
2) Not for O.D. 14 mm  
3) Not for O.D. 14/16 mm

### Materials

|                   |   |
|-------------------|---|
| Shore hardness    | D 54 ±3                                     |
| Tubing            | TPE-U(PU)                                   |
| Note on materials | Conforms to RoHS<br>Free of copper and PTFE |

# Plastic tubing PUN-V0-C, flame retardant

Technical data

| Dimensions and ordering data |         |                     |                                       |        |        |          |                    |                  |
|------------------------------|---------|---------------------|---------------------------------------|--------|--------|----------|--------------------|------------------|
| Outer Ø                      | Inner Ø | Min. bending radius | Bending radius relevant for flow rate | Weight | Colour | Part No. | Type               | PU <sup>1)</sup> |
| [mm]                         | [mm]    | [mm]                | [mm]                                  | [kg/m] |        |          |                    | [m]              |
| 4                            | 2       | 10                  | 20                                    | 0.012  | Black  | 570349   | PUN-V0-4x1-SW-C    | 50               |
|                              |         |                     |                                       |        | Blue   | 570350   | PUN-V0-4x1-BL-C    | 50               |
| 6                            | 2       | 7                   | 24                                    | 0.032  | Black  | 561698   | PUN-V0-6x2-SW-C    | 50               |
|                              |         |                     |                                       |        | Blue   | 561702   | PUN-V0-6x2-BL-C    | 50               |
|                              |         |                     |                                       |        | Green  | 561706   | PUN-V0-6x2-GN-C    | 50               |
|                              |         |                     |                                       |        | Red    | 561710   | PUN-V0-6x2-RT-C    | 50               |
|                              |         |                     |                                       |        | White  | 561714   | PUN-V0-6x2-WS-C    | 50               |
|                              |         |                     |                                       |        | Yellow | 561718   | PUN-V0-6x2-GE-C    | 50               |
|                              |         |                     |                                       |        | Brown  | 561722   | PUN-V0-6x2-BR-C    | 50               |
| 8                            | 4       | 9                   | 35                                    | 0.049  | Black  | 561699   | PUN-V0-8x2-SW-C    | 50               |
|                              |         |                     |                                       |        | Blue   | 561703   | PUN-V0-8x2-BL-C    | 50               |
|                              |         |                     |                                       |        | Green  | 561707   | PUN-V0-8x2-GN-C    | 50               |
|                              |         |                     |                                       |        | Red    | 561711   | PUN-V0-8x2-RT-C    | 50               |
|                              |         |                     |                                       |        | White  | 561715   | PUN-V0-8x2-WS-C    | 50               |
|                              |         |                     |                                       |        | Yellow | 561719   | PUN-V0-8x2-GE-C    | 50               |
|                              |         |                     |                                       |        | Brown  | 561723   | PUN-V0-8x2-BR-C    | 50               |
| 10                           | 6       | 12                  | 42                                    | 0.064  | Black  | 561700   | PUN-V0-10x2-SW-C   | 50               |
|                              |         |                     |                                       |        | Blue   | 561704   | PUN-V0-10x2-BL-C   | 50               |
|                              |         |                     |                                       |        | Green  | 561708   | PUN-V0-10x2-GN-C   | 50               |
|                              |         |                     |                                       |        | Red    | 561712   | PUN-V0-10x2-RT-C   | 50               |
|                              |         |                     |                                       |        | White  | 561716   | PUN-V0-10x2-WS-C   | 50               |
|                              |         |                     |                                       |        | Yellow | 561720   | PUN-V0-10x2-GE-C   | 50               |
|                              |         |                     |                                       |        | Brown  | 561724   | PUN-V0-10x2-BR-C   | 50               |
| 12                           | 8       | 19                  | 55                                    | 0.080  | Black  | 561701   | PUN-V0-12x2-SW-C   | 50               |
|                              |         |                     |                                       |        | Blue   | 561705   | PUN-V0-12x2-BL-C   | 50               |
|                              |         |                     |                                       |        | Green  | 561709   | PUN-V0-12x2-GN-C   | 50               |
|                              |         |                     |                                       |        | Red    | 561713   | PUN-V0-12x2-RT-C   | 50               |
|                              |         |                     |                                       |        | White  | 561717   | PUN-V0-12x2-WS-C   | 50               |
|                              |         |                     |                                       |        | Yellow | 561721   | PUN-V0-12x2-GE-C   | 50               |
|                              |         |                     |                                       |        | Brown  | 561725   | PUN-V0-12x2-BR-C   | 50               |
| 14                           | 9.8     | 45                  | 70                                    | 0.096  | Black  | 570351   | PUN-V0-14x2-SW-C   | 50               |
|                              |         |                     |                                       |        | Blue   | 570352   | PUN-V0-14x2-BL-C   | 50               |
| 16                           | 11      | 50                  | 90                                    | 0.147  | Black  | 570353   | PUN-V0-16x2,5-SW-C | 50               |
|                              |         |                     |                                       |        | Blue   | 570354   | PUN-V0-16x2,5-BL-C | 50               |

1) Packaging unit

# Plastic tubing PUN

Ordering data – Modular products

FESTO

| Ordering table (minimum order quantity 3,000 m, rounding-off value 25 m) |                                      |               |   |   |    |    |    |    |   |      |   |      |
|--|--------------------------------------|---------------|---|---|----|----|----|----|---|------|---|------|
| Size   | 3                                    | 4             | 6 | 8 | 10 | 12 | 14 | 16 | Condi-<br>tions   | Code | Enter<br>code                                     |      |
| <b>M</b> Module No.  | 553573                               |               |   |   |    |    |    |    |   |      |   |      |
| Function   | Polyurethane tubing, standard O.D.   |               |   |   |    |    |    |    |   | PUN  | PUN   |      |
| <b>O</b> Alternative material characteristic                             | Standard                             |               |   |   |    |    |    |    |   |      |   |      |
|  | Hydrolysis-resistant                 |               |   |   |    |    |    |    |   |      | -H  |      |
|  | Antistatic                           |               |   |   |    |    |    |    |   |      | -CM   |      |
|  | Flame-retardant                      |               |   |   |    |    |    |    |   |      | -VO   |      |
|  | Resistant to welding spatter         |               |   |   |    |    |    |    |   |      | -VOC  |      |
| <b>M</b> Tubing O.D. [mm]  | 3                                    | -             | - | - | -  | -  | -  | -  | -   | -3   |   |      |
|  | -                                    | 4             | - | - | -  | -  | -  | -  | -   | -4   |   |      |
|  | -                                    | -             | 6 | - | -  | -  | -  | -  | -   | -6   |   |      |
|  | -                                    | -             | - | 8 | -  | -  | -  | -  | -   | -8   |   |      |
|  | -                                    | -             | - | - | 10 | -  | -  | -  | -   | -10  |   |      |
|  | -                                    | -             | - | - | -  | 12 | -  | -  | -   | -12  |   |      |
|  | -                                    | -             | - | - | -  | -  | 14 | -  | -   | -14  |   |      |
|  | -                                    | -             | - | - | -  | -  | -  | 16 | -   | -16  |   |      |
|  | Colour                               | Silver        |   |   |    |    |    |    |   |      | <input type="checkbox"/> <input type="checkbox"/> | -SI  |
|  |                                      | Blue          |   |   |    |    |    |    |   |      | <input type="checkbox"/> <input type="checkbox"/> | -BL  |
| Translucent blue   |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -TBL |   |      |
| Black  |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -SW  |   |      |
| Translucent black  |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -TSW |   |      |
| Yellow   |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -GE  |   |      |
| Translucent yellow   |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -TGE |   |      |
| Green  |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -GN  |   |      |
| Translucent green  |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -TGN |   |      |
| Red  |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -RT  |   |      |
| Translucent red  |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -TRT |   |      |
| Brown  |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -BR  |   |      |
| White  |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -WS  |   |      |
| Natural  |                                      |               |   |   |    |    |    |    | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | -NT  |   |      |
| <b>O</b> Inscription text (on request)                                   | Standard                             |               |   |   |    |    |    |    |   |      |   |      |
|  | Customer-specific tubing inscription |               |   |   |    |    |    |    |   |      | <input type="checkbox"/>                          | -TXT |
| <b>M</b> Packaging unit [m]  | 25                                   |               |   |   |    |    |    |    |   |      |   | -25  |
|  | 50                                   |               |   |   |    |    |    |    |   |      |   | -50  |
|  | 100                                  |               |   |   |    |    |    |    |   |      |   | -100 |
|  | 200                                  |               |   |   |    |    |    |    |   |      | -   | -200 |
|  | 300                                  |               |   |   |    |    |    |    |   |      | -   | -300 |
|  | 400                                  |               |   |   |    |    |    |    |   |      | -   | -400 |
|  | 500                                  |               |   |   |    |    |    |    |   |      | -   | -500 |
|  | Packaging                            | Cardboard box |   |   |    |    |    |    |   |      | <input type="checkbox"/>                          | -CB  |
| Reel   |                                      |               |   |   |    |    |    |    | <input type="checkbox"/>  | -HA  |   |      |

**SI, BL, GE, GN, RT, BR, WS, NT**

Not with alternative material characteristic CM

**SI**

Not with alternative material characteristic VO, VOC

**BL, SW, NT**

In combination with alternative material characteristic H: food-safe

**TBL, TSW, TGE, TGN, TRT, NT**

Only with alternative material characteristic H

**TXT**

Not in the online shop.

**CB**

Only with packaging unit 25, 50

**HA**

Not with packaging unit 25, 50

Not with alternative material characteristic VO, VOC, CM

Transfer order code

-  -  -  -  -  -