





- **4 materials:**  
Polyamide, polyethylene, polyurethane, perfluoralkoxyalkan
- **Wide range of colours:**  
9 colours
- **7 diameters, standard O.D or I.D., also in the form of DUO tubing**
- **Suitable for every application:**  
Food industry approval, flame retardant to UL 94 V0, antistatic, halogen-free, hydrolysis resistant, suitable for chain link trunking, free of paint-wetting impairment substances to FN 942 010

Specified types in accordance with ATEX directive for potentially explosive atmospheres  
➔ [www.festo.com/en/ex](http://www.festo.com/en/ex)

# Plastic tubing

Product range overview

Version	Type	Ø [mm]	Colour										Operating medium				
			Silver	Blue	Black	Yellow	Green	Red	Brown	White	Natural	Blue/black	Compressed air	Vacuum	Water (not drinking water)	Mineral oil	
<b>Standard O.D. tubing</b>		<b>Outside Ø</b>															
	<b>PAN</b> Polyamide	4, 6, 8, 10, 12, 16	■	-	-	-	-	-	-	-	-	■	-	■	■	-	-
	<b>PAN-R</b> Polyamide	4, 6, 8, 10, 12, 16	■	-	-	-	-	-	-	-	-	-	-	■	■	-	-
	<b>PAN-VO</b> Polyamide	6, 8, 10, 12	-	■	■	■	■	■	■	■	■	-	-	■	■	■	■
	<b>PEN</b> Polyethylene	4, 6, 8, 10, 12, 16	■	■	■	■	■	■	■	-	-	■	-	■	■	-	-
	<b>PFAN</b> Perfluor-alkoxyalkan	4, 6, 8, 10, 12	-	-	-	-	-	-	-	-	-	■	-	■	■	-	-
	<b>PLN</b> Polyethylene	4, 6, 8, 10, 12, 16	-	-	■	-	-	-	-	-	-	■	-	■	■	■	-
	<b>PUN</b> Polyurethane	3, 4, 6, 8, 10, 12, 16	■	■	■	■	■	■	■	-	-	-	-	■	■	-	-
	<b>PUN-DUO</b> Polyurethane	4, 6, 8, 10	■	-	-	-	-	-	-	-	-	-	■	■	■	-	-
	<b>PUN-E</b> Polyurethane	4, 6, 8, 10, 12	■	■	■	-	-	-	-	-	-	-	-	■	■	-	-
	<b>PUN-CM</b> Polyurethane	4, 6, 8, 10, 12	-	-	■	-	-	-	-	-	-	-	-	■	■	-	-
	<b>PUN-H</b> Polyurethane	3, 4, 6, 8, 10, 12, 16	-	■	■	-	-	-	-	-	-	■	-	■	■	■	-
	<b>PUN-H-DUO</b> Polyurethane	4, 6, 8, 10	-	-	-	-	-	-	-	-	-	-	■	■	■	■	-
	<b>PUN-VO/-B</b> Polyurethane	6, 8, 10, 12	-	■	■	■	■	■	■	■	■	■	-	■	■	-	-
<b>Standard I.D. tubing</b>		<b>Inside Ø</b>															
	<b>PL</b> Polyethylene	3, 4, 6	-	■	■	-	-	-	-	-	-	■	-	■	■	-	-
	<b>PL-9/13</b> Polyvinyl chloride <sup>1)</sup>	9, 13	-	■	-	-	-	-	-	-	-	-	-	■	-	-	-
	<b>PP</b> Polyamide	3, 4, 6	-	-	-	-	-	-	-	-	-	■	-	■	■	-	-
	<b>PU</b> Polyurethane	2, 3, 4, 6	-	■	■	-	-	-	-	-	-	-	-	■	■	-	-
	<b>PU-9/13</b> Polyurethane <sup>1)</sup>	9	-	-	■	-	-	-	-	-	-	-	-	■	-	-	-
		13	-	-	-	-	-	-	-	-	-	-	-	-	■	-	-
	<b>PU-DUO</b> Polyurethane	2, 3, 4, 6	-	-	-	-	-	-	-	-	-	-	■	■	■	-	-
	<b>PCN</b> Polyvinyl chloride	4	-	-	-	-	-	-	-	-	-	■	-	■	-	■	-
	<b>P</b> Nitrile rubber	6, 9	-	■	■	-	-	-	-	-	-	-	-	■	■	■	-
		13, 19	-	■	■	-	-	-	-	-	-	-	-	■	■	■	-
	<b>PX</b> Nitrile rubber	4, 6, 9	■	-	-	-	-	-	-	-	-	-	-	■	■	■	-
<b>PM</b> Polyethylene	4, 6	-	-	■	-	-	-	-	-	-	-	-	■	■	-	-	

1) fibre-reinforced



## Plastic tubing

Product range overview





Type	Food approval as per directive 2002/72/EC	Food approval as per directive FDA	Fire protection classification to UL 94	Antistatic	Halogen-free	PWS-free to FN 942 010	Suitable for chain link trunking	Approved by German Technical Control Board	Germanischer Lloyd	Resistance					Shore hardness	→ Page
										Chemicals	Microbes	UV radiation	Hydrolysis	Stress cracks		
<b>Standard O.D. tubing</b>																
PAN	-	-	-	-	■	■	■	■	■ <sup>1)</sup>	+	++	+	+	+	D 55	3 / 5.2-8
PAN-R	-	-	-	-	■	■	■	■	-	+	++	+	+	+	D 62	3 / 5.2-9
PAN-VO	-	-	VO	-	-	■	■	-	-	+	++	++	+	+	A 68 D 53	3 / 5.2-10
PEN	-	-	-	-	-	■	-	■	-	++	-	-	+++	+	D 52	3 / 5.2-13
PFAN	■	■	VO	-	■	■	-	■	-	++	++	++	++	++	D 60	3 / 5.2-12
PLN	■	-	-	-	■	■	-	■	-	++	++	+++ <sup>3)</sup>	++	+	-	3 / 5.2-15
PUN	-	-	-	-	■	■	■	■	-	-	-	+++ <sup>3)</sup>	+	++	D 52	3 / 5.2-16
PUN-DUO	-	-	-	-	■	■	■	■	-	-	-	+	+	+	D 52	3 / 5.2-18
PUN-E	■ <sup>2)</sup>	■ <sup>2)</sup>	-	-	■	■	■	-	-	+	+	++	+	+	D 52	3 / 5.2-19
PUN-CM	-	-	-	■	■	■	■	-	-	-	-	++	+	+	A 95	3 / 5.2-21
PUN-H	■	■	-	-	■	■	■	■	-	+	++	+++ <sup>3)</sup>	++	+	D 52	3 / 5.2-22
PUN-H-DUO	■	■	-	-	■	■	■	■	-	+	++	++	++	+	D 52	3 / 5.2-23
PUN-VO/-B	-	-	VO...V2	-	■	■	■	■	-	+	++	+++ <sup>3)</sup>	++	+	D 54	3 / 5.2-24
<b>Standard I.D. tubing</b>																
PL	■ <sup>4)</sup>	■ <sup>4)</sup>	-	-	■	■	-	■	-	++	++	+++ <sup>3)</sup>	++	+	D 42	3 / 5.2-29
PL-9/13	-	-	-	-	-	■	-	-	-	-	++	+	+	+	A 85	3 / 5.2-30
PP	-	-	-	-	■	■	■	■	■	+	++	+	+	+	D 55	3 / 5.2-31
PU	-	-	-	-	■	■	■	■	-	-	-	+++ <sup>3)</sup>	+	+	D 52	3 / 5.2-32
PU-9	-	-	-	-	■	■	■	-	-	-	-	+++ <sup>3)</sup>	+	+	A 86	3 / 5.2-32
PU-13	-	-	-	-	■	■	■	-	-	-	-	+++ <sup>3)</sup>	+	+	A 91	
PU-DUO	-	-	-	-	■	■	■	■	-	-	-	+	+	+	D 52	3 / 5.2-33
PCN	-	-	-	-	-	-	-	-	-	-	-	-	-	-	76	3 / 5.2-34
P-6/9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	68	3 / 5.2-35
P-13/19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71	
PX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75	3 / 5.2-35
PM	-	-	-	-	-	■	-	-	-	-	-	-	-	-	-	3 / 5.2-36

+++ Very well suited  
++ Well suited+ Limited suitability (upon request)  
- Unsuitable1) Applies for silver colour  
2) Applies for blue or black colour3) Applies for black colour  
4) Applies for natural colour

# Spiral plastic tubing

Product range overview



Version	Type	Ø [mm]	Colour			Operating medium		
			Blue	Black	Blue/black	Compressed air	Vacuum	Water (not drinking water)
<b>Spiral tubing</b>		<b>Outside Ø</b>						
	<b>PUN-S</b> Polyurethane	4, 6, 8, 10, 12	■	■	-	■	■	-
	<b>PUN-S-DUO</b> Polyurethane	4, 6, 8, 10, 12	-	-	■	■	■	-
<b>Spiral tubing, pre-assembled</b>		<b>Inside Ø</b>						
	<b>PUN-SG</b> Polyurethane	6.4; 7.9	■	-	-	■	■	■
	<b>PPS</b> Polyamide	4.75; 6.35	■	-	-	■	■	■

# Spiral plastic tubing

Product range overview

Type	Food industry approval	Fire protection classification to UL 94	Antistatic	Halogen-free	PW/S-free to FN 942 010	Suitable for chain link trunking	Approved by German Technical Control Board	Resistance							→ Page
								Chemicals	Microbes	UV radiation	Hydrolysis	Stress cracks	Corrosion resistance class	Shore hardness	
<b>Spiral tubing</b>															
PUN-S	-	-	-	■	■	■	■	-	-	++ <sup>1)</sup>	+	++	-	D 52	3 / 5.2-38
PUN-S-DUO	-	-	-	■	■	■	■	-	-	+	+	+	-	D 52	3 / 5.2-40
<b>Spiral tubing, pre-assembled</b>															
PUN-SG	-	-	-	■	■	-	-	+	++	+	++	+	1 <sup>2)</sup>	A 87	3 / 5.2-41
PPS	-	-	-	■	■	■	-	+	++	+	+	+	1 <sup>2)</sup>	D 60	3 / 5.2-42

++ Well suited

+ Limited suitability (upon request)

- Unsuitable

1) Applies for black colour

2) Corrosion resistance class 1 to Festo standard 940 070

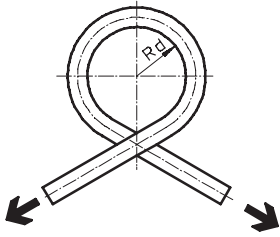
Components with light corrosion exposure. Protection for transport and storage. Components without significant decorative function or surface, e.g. installed out of sight internally or behind covers.

# Spiral plastic tubing

Technical data

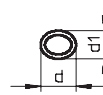
## Measuring methods

### Flow-relevant bending radius $R_d$



The tubing is bent in the direction of its inherent flexion until a 5% flattening of the tubing O.D. occurs. The  $R_d$  is then calculated.

There is no reduction in the flow rate up until the  $R_d$  is reached.

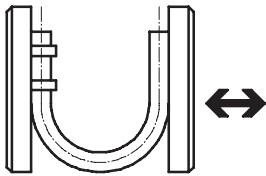


Cross section flattened as a result of bended tubing

$d$  = non deformed tubing OD

$d_1$  = deformed tubing OD

### Minimum bending radius $R_{min}$



The tubing attached to a movable plate is bent until the deformation results in a kink.

The measured value is the minimum bending radius  $R_{min}$ . This  $R_{min}$  leads to considerable reductions in flow.

# Plastic tubing, standard O.D.

Type codes

	PUN		12x2		BL	200
<b>Material</b>						
PAN	Polyamide					
PFAN	Perfluor-alkoxyalkan					
PLN	Polyethylene					
PUN	Polyurethane					
<b>Certification</b>						
E	Economy					
CM	Antistatic					
H	Hydrolysis resistant					
V0	Flame retardant to UL 94 V0					
<b>Outside <math>\varnothing</math> x wall thickness [mm]</b>						
<b>Twin tubing</b>						
DUO	Twin tubing					
<b>Colour</b>						
SW	Black					
BL	Blue					
GN	Green					
RT	Red					
WS	White					
GE	Yellow					
BR	Brown					
SI	Silver					
NT	Natural					
BS	Blue/black					
<b>Packaging unit [m]</b>						


## Plastic tubing PAN, standard O.D.


Technical data

**FESTO**

### Plastic tubing PAN

High thermal and mechanical load capacities.

-  - Ambient temperature  
-30 ... +80 °C

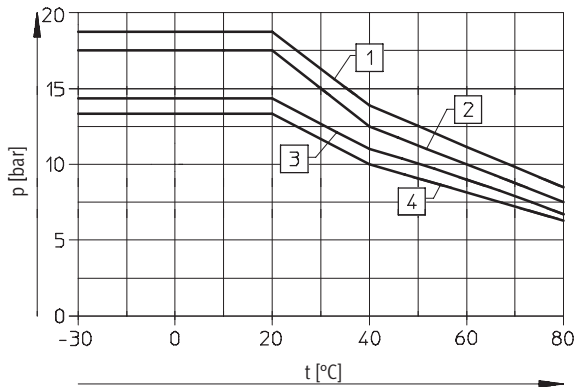
-  - Temperature dependent operating pressure  
-0.95 ... +19 bar

Material: Polyamide

Note on material:  
Free of copper and PTFE



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



1 PAN-6  
2 PAN-10/12

3 PAN-4/8  
4 PAN-16

### Possible fittings



Push-in fittings QS,  
Quick Star<sup>1)</sup>  
→ 3 / 5.4-39



Barbed fittings CN  
→ 3 / 5.4-115









Push-in fittings QS-F,  
Quick Star, metal  
→ 3 / 5.4-87



Quick connectors CK  
→ 3 / 5.5-5

1) Recommended fitting

### Dimensions and ordering data

O.D.	I.D.	Min. bending radius	Flow-relevant bending radius	Weight	Colour	Part No.	Type	PU*
[mm]	[mm]	[mm]	[mm]	[kg/m]				[m]
4	2.9	12	18	0.006	Silver	152 697	PAN-4x0,75-SI	50
					Natural	546 284	PAN-4x0,75-NT	 New
6	4	14	32	0.016	Silver	152 699	PAN-6x1-SI	50
					Natural	546 285	PAN-6x1-NT	 New
8	5.9	22	43	0.024	Silver	152 700	PAN-8x1,25-SI	50
					Natural	546 286	PAN-8x1,25-NT	 New
10	7	27	58	0.042	Silver	152 701	PAN-10x1,5-SI	50
					Natural	546 287	PAN-10x1,5-NT	 New
12	8.4	29	64	0.060	Silver	152 702	PAN-12x1,75-SI	50
					Natural	546 288	PAN-12x1,75-NT	 New
16	12	67	94	0.092	Silver	152 703	PAN-16x2-SI	50
					Natural	546 289	PAN-16x2-NT	 New

\* Packaging unit





# Heavy-duty tubing PAN-R, standard O.D.

Technical data

## Heavy-duty tubing PAN-R

For high-pressure applications.

 Ambient temperature  
-30 ... +80 °C

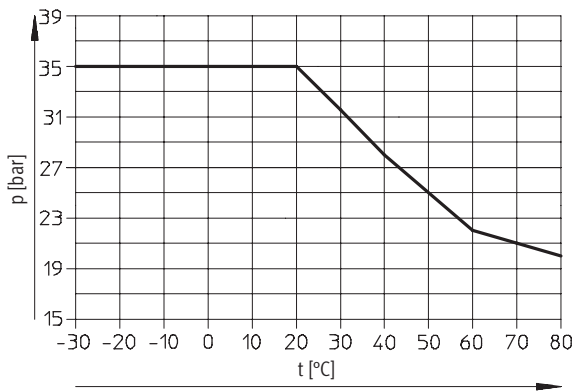
 Temperature dependent  
operating pressure  
-0,95 ... +35 bar

Material: Polyamide

Note on material:  
Free of copper and PTFE



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



### Possible fittings



Push-in fittings QS,  
Quick Star<sup>1)</sup>  
→ 3 / 5.4-39



Push-in fittings QS-F,  
Quick Star, metal  
→ 3 / 5.4-87

### Accessories



Pipe and tubing cutter ZRS  
→ 3 / 5.10-27

1) Note application range of push-in fittings

Dimensions and ordering data								
O.D.	I.D.	Min. bending radius	Flow-relevant bending radius	Weight	Colour	Part No.	Type	PU*
[mm]	[mm]	[mm]	[mm]	[kg/m]				[m]
4	2.5	7	16	0.0079	silver	541 674	PAN-R-4x0,75-SI	50
6	3.8	12	21	0.0174		541 675	PAN-R-6x1,1-SI	50
8	5	16	29	0.0316		541 676	PAN-R-8x1,5-SI	50
10	6.2	18	44	0.0498		541 677	PAN-R-10x1,9-SI	50
12	7.6	24	46	0.0698		541 678	PAN-R-12x2,2-SI	50
16	10	33	73	0.1262		541 679	PAN-R-16x3-SI	50

\* Packaging unit

# Plastic tubing PAN-V0, standard O.D., flame retardant

Technical data



## Plastic tubing PAN-V0

PVC casing, flame retardant to UL 94  
V0. Casing must be cut to length X  
(see table) before assembly.

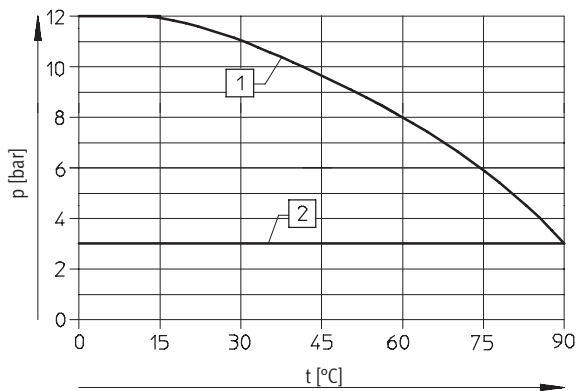
- - Ambient temperature  
-30 ... +90 °C

- - Temperature dependent  
operating pressure  
-0.95 ... +12 bar

Material:  
Outer tubing: Polyvinyl chloride  
Inner tubing: Polyamide



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



- 1 Operating medium air
- 2 Operating medium oil/water

### Possible fittings



Push-in fittings QS-V0,  
Quick Star, flame-retardant  
→ 3 / 5.4-104

### Accessories



Tubing cutter PAN-VOS-...  
→ 3 / 5.10-26

### Dimensions and ordering data

For push-in fitting	O.D.	Min. bending radius	Flow-relevant bending radius	Max. cut length X	Weight	Colour	Part No.	Type	PU*
[mm]	[mm]	[mm]	[mm]	[mm]	[kg/m]				[m]
6	8	13	30	17	0.049	Black	160 550	PAN-V0-6x1-SW	50
						Blue	525 466	PAN-V0-6x1-BL	20
						Green	525 470	PAN-V0-6x1-GN	20
						Red	525 474	PAN-V0-6x1-RT	20
						White	525 478	PAN-V0-6x1-WS	20
						Yellow	525 482	PAN-V0-6x1-GE	20
						Brown	525 486	PAN-V0-6x1-BR	20
8	10	24	45	18	0.065	Black	160 551	PAN-V0-8x1-SW	50
						Blue	525 467	PAN-V0-8x1-BL	20
						Green	525 471	PAN-V0-8x1-GN	20
						Red	525 475	PAN-V0-8x1-RT	20
						White	525 479	PAN-V0-8x1-WS	20
						Yellow	525 483	PAN-V0-8x1-GE	20
						Brown	525 487	PAN-V0-8x1-BR	20

\* Packaging unit

# Plastic tubing PAN-V0, standard O.D., flame retardant

FESTO

Technical data

Dimensions and ordering data									
For push-in fitting O.D. [mm]	O.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Max. cut length X [mm]	Weight [kg/m]	Colour	Part No.	Type	PU*
10	12	34	56	20	0.088	Black	160 552	PAN-V0-10x1,25-SW	50
						Blue	525 468	PAN-V0-10x1,25-BL	20
						Green	525 472	PAN-V0-10x1,25-GN	20
						Red	525 476	PAN-V0-10x1,25-RT	20
						White	525 480	PAN-V0-10x1,25-WS	20
						Yellow	525 484	PAN-V0-10x1,25-GE	20
						Brown	525 488	PAN-V0-10x1,25-BR	20
12	14	43	65	23	0.133	Black	160 553	PAN-V0-12x1,5-SW	50
						Blue	525 469	PAN-V0-12x1,5-BL	20
						Green	525 473	PAN-V0-12x1,5-GN	20
						Red	525 477	PAN-V0-12x1,5-RT	20
						White	525 481	PAN-V0-12x1,5-WS	20
						Yellow	525 485	PAN-V0-12x1,5-GE	20
						Brown	525 489	PAN-V0-12x1,5-BR	20

\* Packaging unit

# Plastic tubing PFAN, standard O.D.

Technical data



## Plastic tubing PFAN

Pneumatic tubing with resistance to high temperatures and chemicals.

- - Ambient temperature  
-20 ... +150 °C

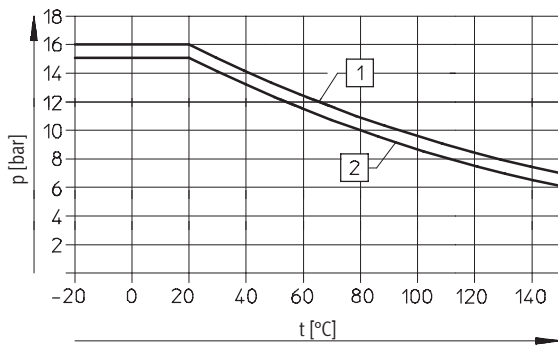
- - Temperature dependent operating pressure  
-0.95 ... +16 bar

Material:  
Perfluor-alkoxyalkan

Note on material:  
RoHS-conform



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



- 1 PFAN-6/10/12
- 2 PFAN-4/8

### Possible fittings



Push-in fittings QS-F,  
Quick Star, metal  
→ 3 / 5.4-87



Quick connectors CK  
→ 3 / 5.5-5



Push-in fittings CRQS, Quick Star,  
stainless steel<sup>1)</sup>  
→ 3 / 5.4-97

1) Recommended fitting

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU*
4	2.9	11	37	0.012	Natural	197 061	PFAN-4x0,75-NT	50
6	4	12	50	0.034		197 062	PFAN-6x1-NT	50
8	5.9	25	110	0.049		197 063	PFAN-8x1,25-NT	50
10	7	22	140	0.087		197 064	PFAN-10x1,5-NT	50
12	8.4	29	165	0.125		197 065	PFAN-12x1,75-NT	50



\* Packaging unit

## Plastic tubing PEN, standard O.D.

Technical data

### 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.

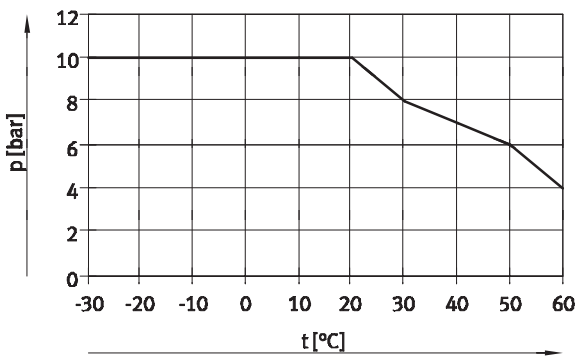
-  - Ambient temperature  
-30 ... +60 °C
-  - Temperature dependent operating pressure  
-0.95 ... +10 bar

Material:  
Polyethylene

Note on material:  
Free of copper and PTFE  
RoHS-conform



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



### Possible fittings









  
Push-in fitting QS-B,  
Quick Star<sup>1)</sup>  
→ 3 / 5.4-73

  
Barbed fitting CN  
→ 3 / 5.4-115

  
Push-in fitting QS-F,  
Quick Star, metal  
→ 3 / 5.4-87

  
Quick connector CK  
→ 3 / 5.5-5









































1) Recommended fitting

Dimensions and ordering data									
O.D.	I.D.	Min. bending radius	Flow-relevant bending radius	Weight	Colour	Part No.	Type	PU*	
[mm]	[mm]	[mm]	[mm]	[kg/m]				[m]	
4	2.7	10	20	0.0064	Black	543 240	PEN-4x0,75-SW	50	
					Black	551 438	PEN-4x0,75-SW-500	 New	500
					Blue	551 456	PEN-4x0,75-BL	 New	50
					Blue	551 444	PEN-4x0,75-BL-500	 New	500
					Silver	551 462	PEN-4x0,75-SI	 New	50
					Silver	551 450	PEN-4x0,75-SI-500	 New	500
					Natural	543 246	PEN-4x0,75-NT		50
					Green	551 468	PEN-4x0,75-GN	 New	50
					Red	551 474	PEN-4x0,75-RT	 New	50
					Yellow	551 480	PEN-4x0,75-GE	 New	50

\* Packaging unit

## Plastic tubing PEN, standard O.D.

Technical data

Dimensions and ordering data								
O.D.	I.D.	Min. bending radius	Flow-relevant bending radius	Weight	Colour	Part No.	Type	PU*
[mm]	[mm]	[mm]	[mm]	[kg/m]				[m]
6	4	13.5	26	0.0148	Black	543 241	PEN-6x1-SW	50
					Black	551 439	PEN-6x1-SW-500	 New 500
					Blue	551 457	PEN-6x1-BL	 New 50
					Blue	551 445	PEN-6x1-BL-500	 New 500
					Silver	551 463	PEN-6x1-SI	 New 50
					Silver	551 451	PEN-6x1-SI-500	 New 500
					Natural	543 247	PEN-6x1-NT	50
					Green	551 469	PEN-6x1-GN	 New 50
					Red	551 475	PEN-6x1-RT	 New 50
					Yellow	551 481	PEN-6x1-GE	 New 50
8	5.7	22.5	35	0.0233	Black	543 242	PEN-8x1,25-SW	50
					Black	551 440	PEN-8x1,25-SW-400	 New 400
					Blue	551 458	PEN-8x1,25-BL	 New 50
					Blue	551 446	PEN-8x1,25-BL-400	 New 400
					Silver	551 464	PEN-8x1,25-SI	 New 50
					Silver	551 452	PEN-8x1,25-SI-400	 New 400
					Natural	543 248	PEN-8x1,25-NT	50
					Green	551 470	PEN-8x1,25-GN	 New 50
					Red	551 476	PEN-8x1,25-RT	 New 50
					Yellow	551 482	PEN-8x1,25-GE	 New 50
10	7	23.5	40	0.0377	Black	543 243	PEN-10x1,5-SW	50
					Black	551 441	PEN-10x1,5-SW-300	 New 300
					Blue	551 459	PEN-10x1,5-BL	 New 50
					Blue	551 447	PEN-10x1,5-BL-300	 New 300
					Silver	551 465	PEN-10x1,5-SI	 New 50
					Silver	551 453	PEN-10x1,5-SI-300	 New 300
					Natural	543 249	PEN-10x1,5-NT	50
					Green	551 471	PEN-10x1,5-GN	 New 50
					Red	551 477	PEN-10x1,5-RT	 New 50
					Yellow	551 483	PEN-10x1,5-GE	 New 50
12	8.4	33	58	0.0542	Black	543 244	PEN-12x1,75-SW	50
					Black	551 442	PEN-12x1,75-SW-200	 New 200
					Blue	551 460	PEN-12x1,75-BL	 New 50
					Blue	551 448	PEN-12x1,75-BL-200	 New 200
					Silver	551 466	PEN-12x1,75-SI	 New 50
					Silver	551 454	PEN-12x1,75-SI-200	 New 200
					Natural	543 250	PEN-12x1,75-NT	50
					Green	551 472	PEN-12x1,75-GN	 New 50
					Red	551 478	PEN-12x1,75-RT	 New 50
					Yellow	551 484	PEN-12x1,75-GE	 New 50
16	10.8	57.5	122	0.1029	Black	543 245	PEN-16x2,5-SW	50
					Black	551 443	PEN-16x2,5-SW-100	 New 100
					Blue	551 461	PEN-16x2,5-BL	 New 50
					Blue	551 449	PEN-16x2,5-BL-100	 New 100
					Silver	551 467	PEN-16x2,5-SI	 New 50
					Silver	551 455	PEN-16x2,5-SI-100	 New 100
					Natural	543 251	PEN-16x2,5-NT	50
					Green	551 473	PEN-16x2,5-GN	 New 50
					Red	551 479	PEN-16x2,5-RT	 New 50
					Yellow	551 485	PEN-16x2,5-GE	 New 50

\* Packaging unit

# Plastic tubing PLN, standard O.D.

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.

- - Ambient temperature  
-30 ... +80 °C

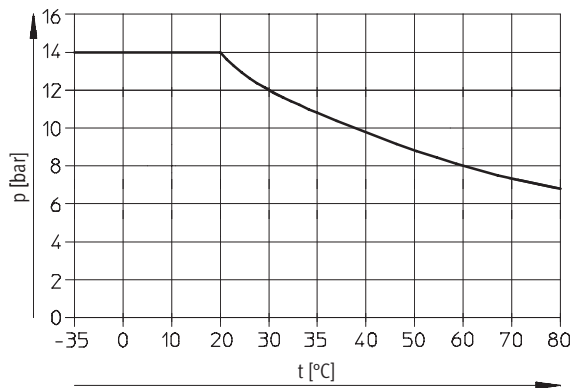
- - Temperature dependent operating pressure  
-0.95 ... +14 bar

Material:  
Polyethylene

Note on material:  
Free of copper and PTFE  
RoHS-conform



Operating pressure p as a function of temperature t



Possible fittings



Push-in fittings QS,  
Quick Star  
→ 3 / 5.4-39



Barbed fittings CN  
→ 3 / 5.4-115



Push-in fittings QS-F,  
Quick Star, metal<sup>1)</sup>  
→ 3 / 5.4-87



Quick connectors CK  
→ 3 / 5.5-5

1) Recommended fitting

Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU*
4	2.9	12	25	0.0056	Natur	193 403	PLN-4x0,75-NT	50
					Black	195 280	PLN-4x0,75-SW	50
6	4	11	32	0.0147	Natur	193 404	PLN-6x1-NT	50
					Black	195 281	PLN-6x1-SW	50
8	5.9	23	50	0.0214	Natur	193 405	PLN-8x1,25-NT	50
					Black	195 282	PLN-8x1,25-SW	50
10	7	22	57	0.0375	Natur	193 406	PLN-10x1,5-NT	50
					Black	195 283	PLN-10x1,5-SW	50
12	8.4	23	65	0.0540	Natur	193 407	PLN-12x1,75-NT	50
					Black	195 284	PLN-12x1,75-SW	50
16	12	55	95	0.0820	Natur	539 064	PLN-16x2-NT	50
					Black	539 065	PLN-16x2-SW	50

\* Packaging unit

# Plastic tubing PUN, standard O.D.

Technical data



## Plastic tubing PUN

Highly flexible plastic tubing.

- - Ambient temperature  
-35 ... +60 °C

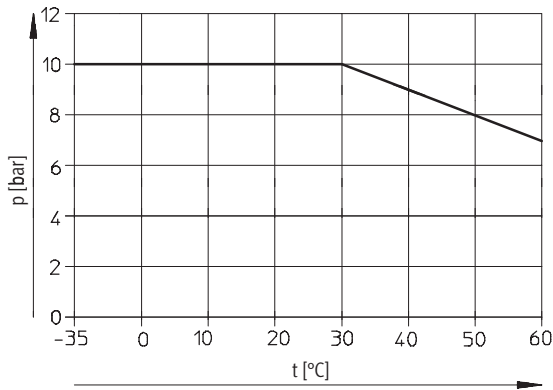
- - Temperature dependent operating pressure  
-0.95 ... +10 bar

Material:  
Polyurethane

Note on material:  
Free of copper and PTFE



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



### Possible fittings



Push-in fittings QS,  
Quick Star<sup>1)</sup>  
→ 3 / 5.4-39



Quick connectors CK  
→ 3 / 5.5-5



Push-in fittings QS-F,  
Quick Star, metal  
→ 3 / 5.4-87

1) Recommended fitting

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
3.0	2.1	9	12	0.004	Silver	152 583	PUN-3x0,5-SI	50
					Silver	525 738	PUN-3 x 0,5-SI-500	500
					Blue	159 660	PUN-3x0,5-BL	50
					Blue	525 745	PUN-3x0,5-BL-500	500
					Black	159 661	PUN-3x0,5-SW	50
					Yellow	178 416	PUN-3x0,5-GE	50
					Green	178 423	PUN-3x0,5-GN	50
					Red	178 409	PUN-3x0,5-RT	50
4.0	2.6	8	17	0.009	Silver	152 584	PUN-4x0,75-SI	50
					Silver	525 739	PUN-4x0,75-SI-500	500
					Blue	159 662	PUN-4x0,75-BL	50
					Blue	525 746	PUN-4x0,75-BL-500	500
					Black	159 663	PUN-4x0,75-SW	50
					Yellow	178 417	PUN-4x0,75-GE	50
					Green	178 424	PUN-4x0,75-GN	50
					Red	178 410	PUN-4x0,75-RT	50

\* Packaging unit



# Plastic tubing PUN, standard O.D.

Technical data



Dimensions and ordering data								
O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
6.0	4.0	14	26.5	0.019	Silver	152 586	PUN-6x1-SI	50
					Silver	525 740	PUN-6x1-SI-500	500
					Blue	159 664	PUN-6x1-BL	50
					Blue	525 747	PUN-6x1-BL-500	500
					Black	159 665	PUN-6x1-SW	50
					Yellow	178 418	PUN-6x1-GE	50
					Green	178 425	PUN-6x1-GN	50
					Red	178 411	PUN-6x1-RT	50
8.0	5.7	20	37	0.030	Silver	152 587	PUN-8x1,25-SI	50
					Silver	525 741	PUN-8x1,25-SI-400	400
					Blue	159 666	PUN-8x1,25-BL	50
					Blue	525 748	PUN-8x1,25-BL-400	400
					Black	159 667	PUN-8x1,25-SW	50
					Yellow	178 419	PUN-8x1,25-GE	50
					Green	178 426	PUN-8x1,25-GN	50
					Red	178 412	PUN-8x1,25-RT	50
10.0	7.0	25	54	0.049	Silver	152 588	PUN-10x1,5-SI	50
					Silver	525 742	PUN-10x1,5-SI-300	300
					Blue	159 668	PUN-10x1,5-BL	50
					Blue	525 749	PUN-10x1,5-BL-300	300
					Black	159 669	PUN-10x1,5-SW	50
					Yellow	178 420	PUN-10x1,5-GE	50
					Green	178 427	PUN-10x1,5-GN	50
					Red	178 413	PUN-10x1,5-RT	50
12.0	8.0	23	62	0.077	Silver	152 589	PUN-12x2-SI	50
					Silver	525 743	PUN-12x2-SI-200	200
					Blue	159 670	PUN-12x2-BL	50
					Blue	252 750	PUN-12x2-BL-200	200
					Black	159 671	PUN-12x2-SW	50
					Yellow	178 421	PUN-12x2-GE	50
					Green	178 428	PUN-12x2-GN	50
					Red	178 414	PUN-12x2-RT	50
16.0	11.0	43	88	0.129	Silver	152 590	PUN-16x2,5-SI	50
					Silver	525 744	PUN-16x2,5-SI-100	100
					Blue	159 672	PUN-16x2,5-BL	50
					Blue	525 751	PUN-16x2,5-BL-100	100
					Black	159 673	PUN-16x2,5-SW	50
					Yellow	178 422	PUN-16x2,5-GE	50
					Green	178 429	PUN-16x2,5-GN	50
					Red	178 415	PUN-16x2,5-RT	50


\* Packaging unit


# Plastic tubing PUN-DUO, standard O.D.

Technical data

## 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.

-  - Ambient temperature  
-35 ... +60 °C

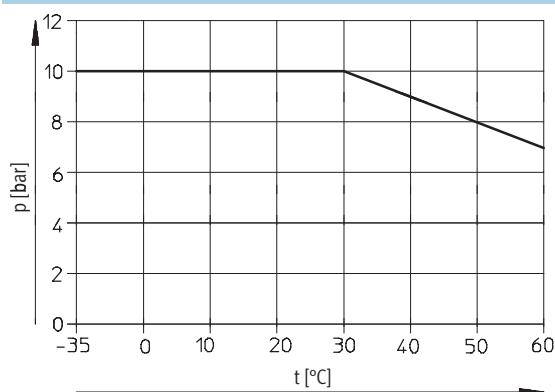
-  - Temperature dependent operating pressure  
-0.95 ... +10 bar

Material:  
Polyurethane

Note on material:  
Free of copper and PTFE



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



### Possible fittings



Push-in fittings QS,  
Quick Star<sup>1)</sup>  
→ 3 / 5.4-39



Quick connectors CK  
→ 3 / 5.5-5



Push-in fittings QS-F,  
Quick Star, metal  
→ 3 / 5.4-87

1) Recommended fitting

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
4	2.6	8	17	0.018	Silver	152 822	PUN-4x0,75-DUO-SI	50
					Blue/black	159 674	PUN-4x0,75-DUO-BS	50
6	4	14	26.5	0.038	Silver	152 823	PUN-6x1-DUO-SI	50
					Blue/black	159 675	PUN-6x1-DUO-BS	50
8	5.7	20	37	0.060	Silver	152 824	PUN-8x1,25-DUO-SI	50
					Blue/black	159 676	PUN-8x1,25-DUO-BS	50
10	7	25	54	0.098	Silver	152 825	PUN-10x1,5-DUO-SI	50
					Blue/black	159 677	PUN-10x1,5-DUO-BS	50

\* Packaging unit

# Plastic tubing PUN-E, standard O.D.



Technical data

## Plastic tubing PUN-E

Highly flexible, hydrolysis and microbe resistant tubing

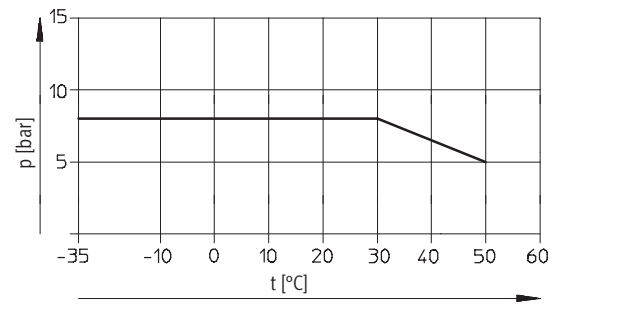
- - Ambient temperature  
-35 ... +50 °C
- - Temperature dependent operating pressure  
-0.95 ... +8 bar

Material:  
Polyurethane

Note on material:  
Free of copper and PTFE  
RoHS-conform



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



### Possible fittings

Push-in fittings QS-B, Quick Star<sup>1)</sup>  
→ 3 / 5.4-39

1) Recommended fittings

Push-in fittings QS-F, Quick Star, metal  
→ 3 / 5.4-87

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
4	2.8	8	30	0.008	Silver	535 320	PUN-E-4x0,6-SI	50
						534 170	PUN-E-4x0,6-SI-500	500
					Blue	535 325	PUN-E-4x0,6-BL	50
						534 171	PUN-E-4x0,6-BL-500	500
					Black	538 465	PUN-E-4x0,6-SW	50
						538 460	PUN-E-4x0,6-SW-500	500
6	4.4	15	45	0.018	Silver	535 321	PUN-E-6x0,8-SI	50
						534 172	PUN-E-6x0,8-SI-500	500
					Blue	535 326	PUN-E-6x0,8-BL	50
						534 173	PUN-E-6x0,8-BL-500	500
					Black	538 466	PUN-E-6x0,8-SW	50
						538 461	PUN-E-6x0,8-SW-500	500
8	6	23	50	0.026	Silver	535 322	PUN-E-8x1-SI	50
						534 174	PUN-E-8x1-SI-400	400
					Blue	535 327	PUN-E-8x1-BL	50
						534 175	PUN-E-8x1-BL-400	400
					Black	538 467	PUN-E-8x1-SW	50
						538 462	PUN-E-8x1-SW-400	400
10	7.5	26	60	0.044	Silver	535 323	PUN-E-10x1,25-SI	50
						534 176	PUN-E-10x1,25-SI-300	300
					Blue	535 328	PUN-E-10x1,25-BL	50
						534 177	PUN-E-10x1,25-BL-300	300
					Black	538 468	PUN-E-10x1,25-SW	50
						538 463	PUN-E-10x1,25-SW-300	300

\* Packaging unit

# Plastic tubing PUN-E, standard O.D.



Technical data

Dimensions and ordering data								
O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
12	8.8	36	80	0.069	Silver	535 324	PUN-E-12x1,6-SI	50
						534 178	PUN-E-12x1,6-SI-200	200
					Blue	535 329	PUN-E-12x1,6-BL	50
						534 179	PUN-E-12x1,6-BL-200	200
					Black	538 469	PUN-E-12x1,6-SW	50
						538 464	PUN-E-12x1,6-SW-200	200

\* Packaging unit


# Plastic tubing PUN-CM, standard O.D., antistatic


Technical data



## Plastic tubing PUN-CM

Highly flexible plastic tubing,  
electrically conductive.  
Surface resistance  $10^4 \dots 10^7 \text{ Ohm}$

-  - Ambient temperature  
-35 ... +60 °C

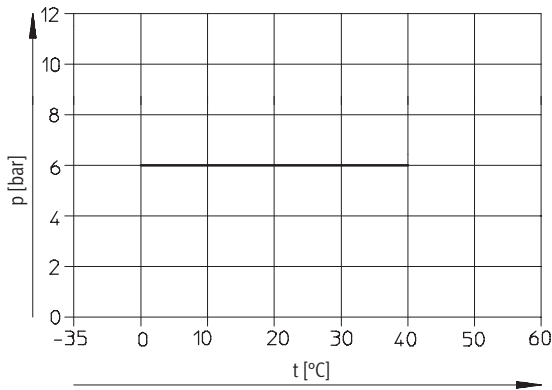
-  - Temperature dependent  
operating pressure  
-0,95 ... +10 bar

Material:  
Polyurethane

Note on material:  
Free of copper and PTFE



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



### Possible fittings



Push-in fittings QS-F,  
Quick Star, metal  
→ 3 / 5.4-87

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
4	2.5	5	17	0.0089	Black	188 882	PUN-CM-4-SW	50
6	4	13	26.5	0.0192		188 883	PUN-CM-6-SW	50
8	5.5	14	37	0.0368		130 816	PUN-CM-8-SW	50
10	7	19	54	0.0544		130 817	PUN-CM-10-SW	50
12	8	22	70	0.0754		130 818	PUN-CM-12-SW	50

\* Packaging unit

# Plastic tubing PUN-H, standard O.D., hydrolysis resistant

Technical data



## Plastic tubing PUN-H

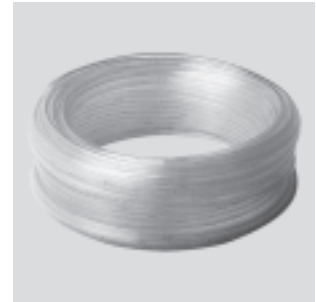
Approved for use in the food industry.

- - Ambient temperature  
-35 ... +60 °C

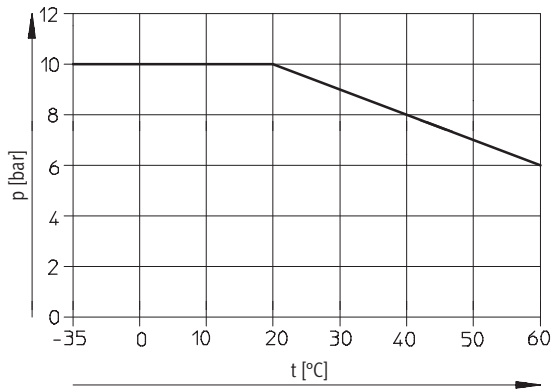
- - Temperature dependent operating pressure  
-0,95 ... +10 bar

Material:  
Polyurethane

Note on material:  
Free of copper and PTFE



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



### Possible fittings



Push-in fittings QS,  
Quick Star  
→ 3 / 5.4-39



Push-in fittings QS-F,  
Quick Star, metal<sup>1)</sup>  
→ 3 / 5.4-87

1) Recommended fitting

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
3	2.1	6	12	0.0042	Natur	197 375	PUN-H-3x0,5 NT	50
					Blue	197 382	PUN-H-3x0,5 BL	50
					Black	197 389	PUN-H-3x0,5 SW	50
4	2.6	6	16	0.0085	Natur	197 376	PUN-H-4x0,75 NT	50
					Blue	197 383	PUN-H-4x0,75 BL	50
					Black	197 390	PUN-H-4x0,75 SW	50
6	4	10	26	0.0183	Natur	197 377	PUN-H-6x1 NT	50
					Blue	197 384	PUN-H-6x1 BL	50
					Black	197 391	PUN-H-6x1 SW	50
8	5.7	20	37	0.0287	Natur	197 378	PUN-H-8x1,25 NT	50
					Blue	197 385	PUN-H-8x1,25 BL	50
					Black	197 392	PUN-H-8x1,25 SW	50
10	7	25	52	0.0465	Natur	197 379	PUN-H-10x1,5 NT	50
					Blue	197 386	PUN-H-10x1,5 BL	50
					Black	197 393	PUN-H-10x1,5 SW	50
12	8	23	62	0.0729	Natur	197 380	PUN-H-12x2 NT	50
					Blue	197 387	PUN-H-12x2 BL	50
					Black	197 394	PUN-H-12x2 SW	50
16	11	38	88	0.1230	Natur	197 381	PUN-H-16x2,5 NT	50
					Blue	197 388	PUN-H-16x2,5 BL	50
					Black	197 395	PUN-H-16x2,5 SW	50

\* Packaging unit

# Plastic tubing PUN-H-DUO, standard O.D., 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.

- - Ambient temperature  
-35 ... +60 °C

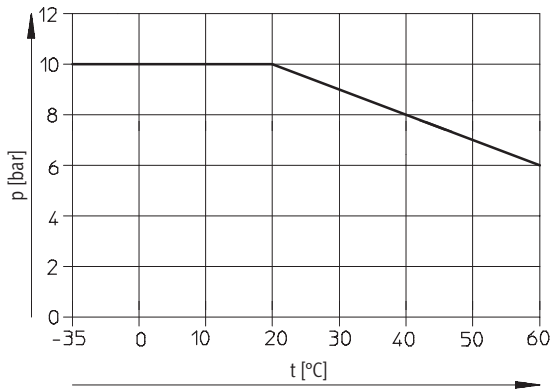
- - Temperature dependent operating pressure  
-0,95 ... +10 bar

Material:  
Polyurethane

Note on material:  
Free of copper and PTFE



Operating pressure p as a function of temperature t



Possible fittings



Push-in fittings QS, Quick Star  
→ 3 / 5.4-39



Push-in fittings QS-F, Quick Star, metal<sup>1)</sup>  
→ 3 / 5.4-87

1) Recommended fitting

Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
4	2.6	6	16	0.0170	Blue/black	197 396	PUN-H-4x0,75-DUO	50
6	4	10	26	0.0366	Blue/black	197 397	PUN-H-6x1-DUO	50
8	5.7	20	37	0.0574	Blue/black	197 398	PUN-H-8x1,25-DUO	50
10	7	25	52	0.0930	Blue/black	197 399	PUN-H-10x1,5-DUO	50

\* Packaging unit

# Plastic tubing PUN-V0, standard O.D., flame retardant

Technical data



## Plastic tubing PUN-V0

Highly flexible plastic tubing, flame retardant to UL 94 V0 ... V2.

- - Ambient temperature  
-35 ... +60 °C

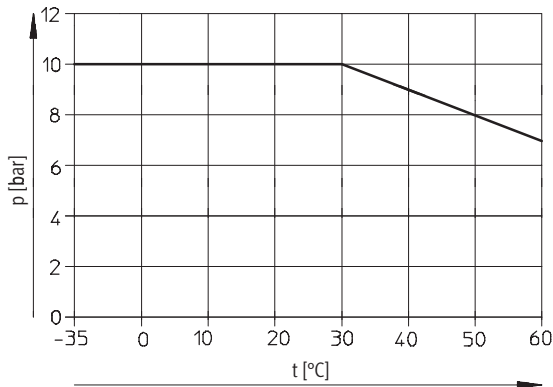
- - Temperature dependent operating pressure  
-0,95 ... +10 bar

Material:  
Polyurethane

Note on material:  
Free of copper, PTFE and silicone



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



### Possible fittings



Push-in fittings QS,  
Quick Star  
→ 3 / 5.4-39



Quick connectors CK  
→ 3 / 5.5-5



Push-in fittings QS-F,  
Quick Star, metal<sup>1)</sup>  
→ 3 / 5.4-87

1) Recommended fitting

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
6	4	12	26.5	0.020	Black	525 438	PUN-V0-6x1-SW	50
					Blue	525 442	PUN-V0-6x1-BL	50
					Green	525 446	PUN-V0-6x1-GN	50
					Red	525 450	PUN-V0-6x1-RT	50
					White	525 454	PUN-V0-6x1-WS	50
					Yellow	525 458	PUN-V0-6x1-GE	50
					Brown	525 462	PUN-V0-6x1-BR	50
8	5.7	18	37	0.031	Black	525 439	PUN-V0-8x1,25-SW	50
					Blue	525 443	PUN-V0-8x1,25-BL	50
					Green	525 447	PUN-V0-8x1,25-GN	50
					Red	525 451	PUN-V0-8x1,25-RT	50
					White	525 455	PUN-V0-8x1,25-WS	50
					Yellow	525 459	PUN-V0-8x1,25-GE	50
					Brown	525 463	PUN-V0-8x1,25-BR	50

\* Packaging unit



# Plastic tubing PUN-V0, standard O.D., flame retardant



Technical data

Dimensions and ordering data								
O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU*
10	7	20	54	0.051	Black	525 440	PUN-V0-10x1,5-SW	50
					Blue	525 444	PUN-V0-10x1,5-BL	50
					Green	525 448	PUN-V0-10x1,5-GN	50
					Red	525 452	PUN-V0-10x1,5-RT	50
					White	525 456	PUN-V0-10x1,5-WS	50
					Yellow	525 460	PUN-V0-10x1,5-GE	50
					Brown	525 464	PUN-V0-10x1,5-BR	50
12	8	21	62	0.080	Black	525 441	PUN-V0-12x2-SW	50
					Blue	525 445	PUN-V0-12x2-BL	50
					Green	525 449	PUN-V0-12x2-GN	50
					Red	525 453	PUN-V0-12x2-RT	50
					White	525 457	PUN-V0-12x2-WS	50
					Yellow	525 461	PUN-V0-12x2-GE	50
					Brown	525 465	PUN-V0-12x2-BR	50

\* Packaging unit


# Plastic tubing PUN-V0-B, standard O.D., flame retardant


Technical data



## Plastic tubing PUN-V0-B

Highly flexible single-sheath plastic tubing, flame retardant to UL 94 V0 ... V2  
For use in the immediate vicinity of welding applications.

 Ambient temperature  
-35 ... +60 °C

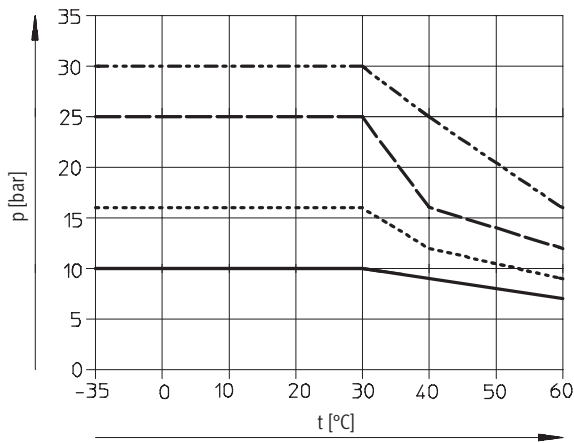
 Temperature dependent operating pressure  
-0.95 ... +10 bar

Material:  
Polyurethane

Note on material:  
Free of copper and PTFE



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



— PUN-V0-.../PUN-V0-...-B

For applications without welding spatter

----- PUN-V0-6x2-...-B

- · - · - PUN-V0-8x2-...-B

· · · · · PUN-V0-10x2-...-B

### Possible fittings



Push-in fitting QS, Quick Star  
→ 3 / 5.4-39



Push-in fitting QS-F, Quick Star, metal<sup>1)</sup>  
→ 3 / 5.4-87

1) Recommended fitting

### Dimensions and ordering data

Outer Ø	Inner Ø	Min. bending radius	Bending radius relevant for flow rate	Weight	Colour	Part No.	Type	PU*
[mm]	[mm]	[mm]	[mm]	[kg/m]				[m]
6	2	7	24	0.032	Black	542 934	PUN-V0-6x2-SW-B	50
					Blue	542 938	PUN-V0-6x2-BL-B	50
					Green	542 942	PUN-V0-6x2-GN-B	50
					Red	542 946	PUN-V0-6x2-RT-B	50
					White	542 950	PUN-V0-6x2-WS-B	50
					Yellow	542 954	PUN-V0-6x2-GE-B	50
					Brown	542 958	PUN-V0-6x2-BR-B	50

\* Packaging unit

## Plastic tubing PUN-V0-B, standard O.D., flame retardant

**FESTO**

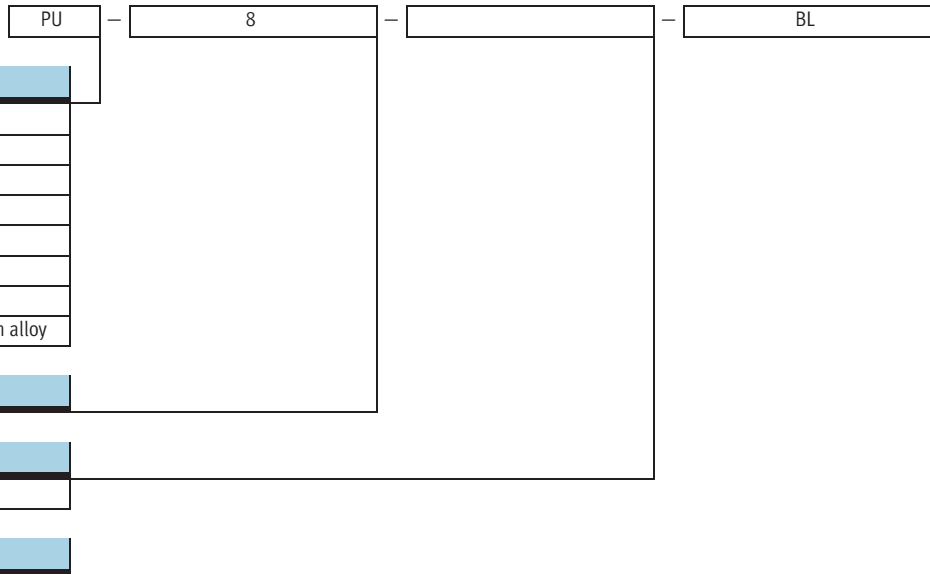
Technical data

Dimensions and ordering data								
Outer Ø	Inner Ø	Min. bending radius	Bending radius relevant for flow rate	Weight	Colour	Part No.	Type	PU*
[mm]	[mm]	[mm]	[mm]	[kg/m]				[m]
8	4	9	35	0.049	Black	542 935	PUN-V0-8x2-SW-B	50
					Blue	542 939	PUN-V0-8x2-BL-B	50
					Green	542 943	PUN-V0-8x2-GN-B	50
					Red	542 947	PUN-V0-8x2-RT-B	50
					White	542 951	PUN-V0-8x2-WS-B	50
					Yellow	542 955	PUN-V0-8x2-GE-B	50
					Brown	542 959	PUN-V0-8x2-BR-B	50
10	6	12	42	0.064	Black	542 936	PUN-V0-10x2-SW-B	50
					Blue	542 940	PUN-V0-10x2-BL-B	50
					Green	542 944	PUN-V0-10x2-GN-B	50
					Red	542 948	PUN-V0-10x2-RT-B	50
					White	542 952	PUN-V0-10x2-WS-B	50
					Yellow	542 956	PUN-V0-10x2-GE-B	50
					Brown	542 960	PUN-V0-10x2-BR-B	50
12	8	19	55	0.080	Black	542 937	PUN-V0-12x2-SW-B	50
					Blue	542 941	PUN-V0-12x2-BL-B	50
					Green	542 945	PUN-V0-12x2-GN-B	50
					Red	542 949	PUN-V0-12x2-RT-B	50
					White	542 953	PUN-V0-12x2-WS-B	50
					Yellow	542 957	PUN-V0-12x2-GE-B	50
					Brown	542 961	PUN-V0-12x2-BR-B	50

\* Packaging unit

# Plastic tubing, standard I.D.

Type codes



# Plastic tubing PL, standard I.D.

Technical data



## Plastic tubing PL

Approved for use with food products in accordance with directive 2002/72/EC and the FDA.

- - Ambient temperature  
-30 ... +60 °C

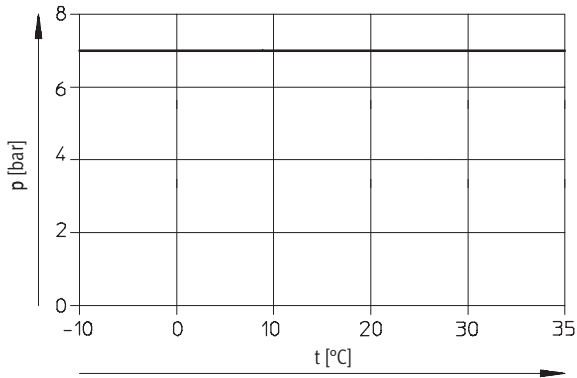
- - Temperature dependent operating pressure  
-0.95 ... +9 bar

Material:  
Polyethylene

Note on material:  
Free of copper and PTFE  
RoHS-conform



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



### Possible fittings



Barbed fittings CN  
→ 3 / 5.4-115



Quick connectors CK<sup>1)</sup>  
→ 3 / 5.5-5

1) Recommended fitting

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU*
4.3	3	18	0.0068	Natural	3 856	PL-3-NT	50
				Blue	3 453	PL-3-BL	50
				Black	4 640	PL-3-SW	50
6.2	4	22.5	0.016	Natural	2 236	PL-4-NT	50
				Blue	3 861	PL-4-BL	50
				Black	4 641	PL-4-SW	50
8.4	6	39	0.025	Natural	2 237	PL-6-NT	50
				Blue	3 862	PL-6-BL	50
				Black	4 642	PL-6-SW	50


\* Packaging unit

# Plastic tubing PL, standard I.D.

Technical data



## Plastic tubing PL

-  - Ambient temperature  
-10 ... +35 °C

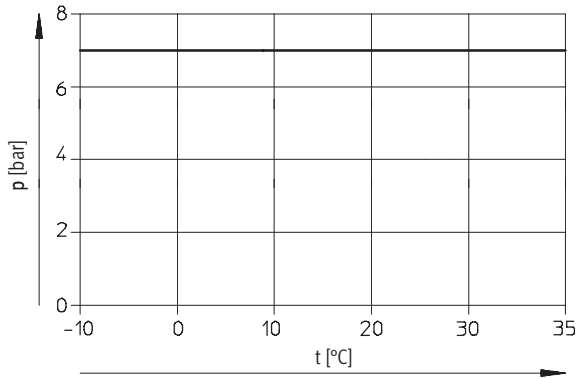
-  - Temperature dependent  
operating pressure  
0 ... 7 bar

Material:  
Plasticiser-containing polyvinyl  
chloride with reinforcing fabric

Note on material:  
Free of copper and PTFE  
RoHS-conform



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



### Possible fittings



Quick connectors CK  
→ 3 / 5.5-5

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU*
11.6	9	85	0.049	Blue	2 238	PL-9-BL	50
17.6	13	100	0.135	Blue	4 103	PL-13-BL	50

\* Packaging unit

# Plastic tubing PP, standard I.D.

Technical data



## Plastic tubing PP

- - Ambient temperature  
-30 ... +80 °C

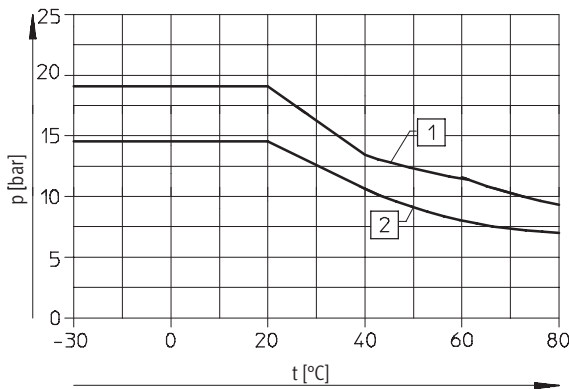
- - Temperature dependent operating pressure  
PP-3/PP-6:  
-0.95 ... +15 bar  
PP-4:  
-0.95 ... +19 bar



Material:  
Polyamide

Note on material:  
Free of copper and PTFE

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



- 1 PP-4
- 2 PP-3/6

### Possible fittings



Barbed fittings CN  
→ 3 / 5.4-115



Quick connectors CK<sup>1)</sup>  
→ 3 / 5.5-5

1) Recommended fitting

### Dimensions and ordering data

O.D.	I.D.	Min. bending radius	Flow-relevant bending radius	Weight	Colour	Part No.	Type	PU*
[mm]	[mm]	[mm]	[mm]	[kg/m]				[m]
4	2.9	12	18	0.0062	Natural	4 572	PP-3-NT	50
6	4	14	32	0.0163	Natural	4 231	PP-4-NT	50
8	5.9	22	43	0.0238	Natural	4 191	PP-6-NT	50

\* Packaging unit

# Plastic tubing PU, standard I.D.

Technical data



## Plastic tubing PU

Highly flexible plastic tubing distinguished by its great resistance to abrasion and kinks.

- - Ambient temperature  
-35 ... +60 °C

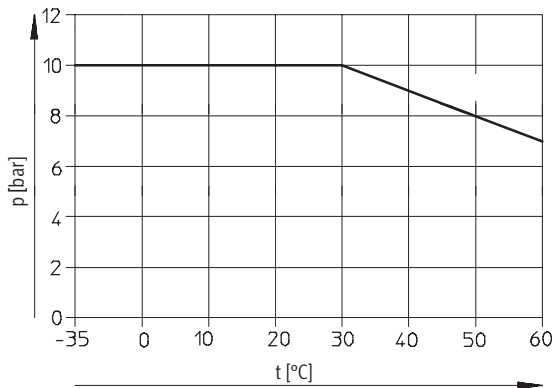
- - Temperature dependent operating pressure  
-0.95 ... +10 bar  
PU-9:  
0 ... 10 bar

Material:  
Polyurethane  
PU-9 and PU-13 Polyurethane with reinforcing fabric

Note on material:  
Free of copper and PTFE  
RoHS-conform



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



### Possible fittings



Barbed fittings CN  
→ 3 / 5.4-115



Quick connectors CK<sup>1)</sup>  
→ 3 / 5.5-5

1) Recommended fitting

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
3.2	2.3	13	0.005	Blue	13 365	PU-2-BL	50
				Black	13 366	PU-2-SW	50
4.4	2.9	14	0.0096	Blue	5 732	PU-3-BL	50
				Black	5 731	PU-3-SW	50
6.1	4	20	0.021	Blue	6 204	PU-4-BL	50
				Black	5 733	PU-4-SW	50
8.3	6	36	0.033	Blue	9 159	PU-6-BL	50
				Black	6 731	PU-6-SW	50
<b>Fibre-reinforced</b>							
11.6	9	76	0.051	Black	12 134	PU-9-SW	50
17.6	13	83	0.140	Black	12 133	PU-13-SW	50

\* Packaging unit



# Plastic tubing PU-DUO, standard I.D.

Technical data



## DUO tubing PU-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.

- - Ambient temperature  
-35 ... +60 °C

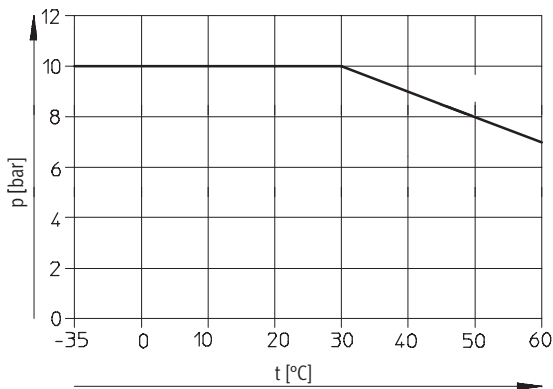
- - Temperature dependent operating pressure  
-0.95 ... +10 bar

Material:  
Polyurethane

Note on material:  
Free of copper, PTFE and silicone



Operating pressure p as a function of temperature t



Possible fittings



Barbed fittings CN  
→ 3 / 5.4-115



Quick connectors CK<sup>1)</sup>  
→ 3 / 5.5-5

1) Recommended fitting

Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
3.2	2.3	13	0.010	Blue/black	19 581	PU-2-DUO-BS	50
4.4	2.9	14	0.0192	Blue/black	11 958	PU-3-DUO-BS	50
6.1	4	20	0.042	Blue/black	11 959	PU-4-DUO-BS	50
8.3	6	36	0.066	Blue/black	11 960	PU-6-DUO-BS	50

\* Packaging unit


## Plastic tubing PCN


Technical data

FESTO

### Plastic tubing PCN

for use with condensate drains on D series service units

-  - Ambient temperature  
-10 ... +60 °C

-  - Temperature dependent  
operating pressure  
-0.5 ... +0.25 bar

Material:  
Polyvinyl chloride with reinforcing  
fabric



Dimensions and ordering data						
O.D. [mm]	I.D. [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
6.5	4	0.025	Natural	7 134	PCN-4-NT	50


\* Packaging unit


# Metal braided shielded hoses P/PX

Technical data

## Plastic tubing P

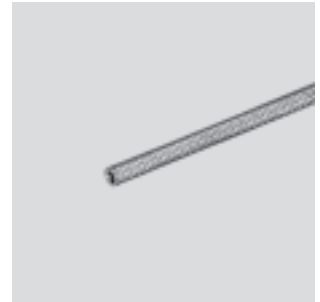
Tubing for barbed hose fitting N

-  - Ambient temperature  
-20 ... +80 °C

-  - Temperature dependent  
operating pressure  
-0.95 ... 16 bar

Material:  
P-6/P-9: Nitrile rubber  
P-13/P-19: Ethylene propylene  
rubber, styrene-butadiene rubber


Note on material:  
Free of copper and PTFE  
RoHS-conform




Dimensions and ordering data								
O.D. [mm]	I.D. [mm]	Min. bending radius [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]
13	6	20	45	0.144	Blue	2 231	P-6-BL	40
16	9	30	60	0.186	Blue	2 232	P-9-BL	40
23	13	50	100	0.400	Black	2 234	P-13-SW	40
31	19	60	200	0.649	Black	2 235	P-19-SW	40

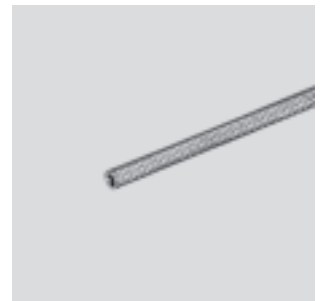
## Metal braided shielded hose PX

for fitting CX  
Heavy duty tubing

-  - Ambient temperature  
-20 ... +80 °C

-  - Temperature dependent  
operating pressure  
0 ... 12 bar

Material:  
Nitrile rubber with metal braiding



Dimensions and ordering data								
O.D. [mm]	I.D. [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU* [m]	
7	4	20	0.101	Silver	4 093	PX-4	40	
9	6	30	0.140	Silver	4 094	PX-6	40	
12	9	45	0.171	Silver	4 095	PX-9	40	


\* Packaging unit


# Plastic-coated metal tube PM, standard I.D.

Technical data

## Plastic-coated metal tube PM

The PM tube features the corrosion resistance of plastic and the deformation resistance of metal. It can be bent straight and reshaped several times without a pipe-bending device and without being damaged.

-  - Ambient temperature  
-29 ... +65 °C

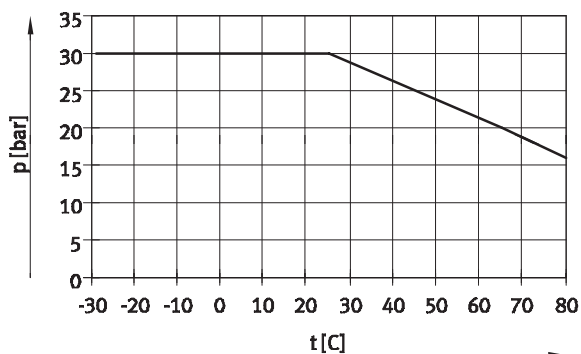
-  - Temperature dependent operating pressure  
-0,95 ... +30 bar

Material:  
Polyethylene  
Wrought aluminium alloy

Note on material:  
Free of copper and PTFE  
RoHS-conform



Operating pressure p as a function of temperature t



Possible fittings



Push-in fittings QS,  
Quick Star  
→ 3 / 5.4-39

Dimensions and ordering data

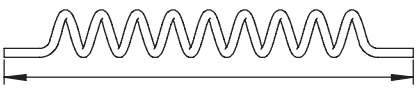
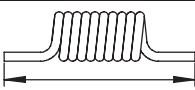
O.D. [mm]	I.D. [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU*
6	3.92	19	0.024	Black	9 084	PM-4	50
8	5.2	25	0.032	Black	9 087	PM-6	50


\* Packaging unit

# Spiral plastic tubing

Type codes

		PUN	-	8	x	1.25	-	S	-	1	-	DUO	-	BL
<b>Material</b>														
PUN	Polyurethane													
PPS	Polyamide													
<b>Outside Ø [mm]</b>														
<b>Wall thickness [mm]</b>														
<b>Design</b>														
S	Spiral													
<b>Working length [m]</b>														
<b>Twin tubing</b>														
DUO	Twin tubing													
<b>Colour</b>														
SW	Black													
BL	Blue													
BS	Blue/black													

Length specifications		
	Working length	With tensile load, 80% of the maximum section length
	Block length	Without tensile load

 - Note  
The working length represents 80% of the maximum permissible expansion. This maximum expansion is the limiting value before permanent deformation takes place.

# Spiral plastic tubing PUN-S

Technical data



## Spiral plastic tubing PUN-S

Highly flexible plastic tubing.

- - Ambient temperature  
-35 ... +60 °C

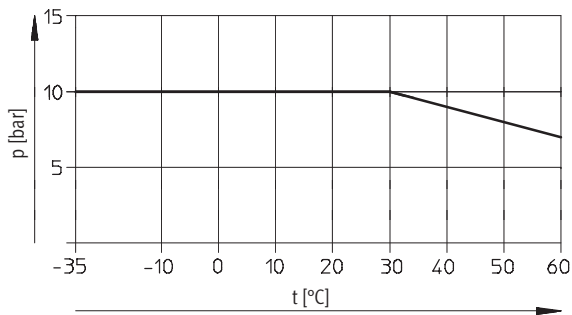
- - Temperature dependent  
operating pressure  
-0.95 ... +10 bar

Material:  
Polyurethane

Note on material:  
Free of copper and PTFE



Operating pressure p as a function of temperature t



Possible fittings



Push-in fitting QS,  
Quick Star<sup>1)</sup>  
→ 3 / 5.4-39



Quick connector CK  
→ 3 / 5.5-5



Push-in fitting QS-F,  
Quick Star, metal  
→ 3 / 5.4-87

1) Recommended fitting

Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Winding $\varnothing$ [mm]	Number of windings	Working length [m]	Block length [m]	Weight [g/m]	Colour	Part No.	Type
4	2.6	25	20	0.5	0.184	13	Blue	197 587	PUN-4x0,75-S-0,5-BL
							Black	197 602	PUN-4x0,75-S-0,5-SW
			45	1	0.284	27	Blue	197 588	PUN-4x0,75-S-1-BL
							Black	197 603	PUN-4x0,75-S-1-SW
			70	1.5	0.384	42	Blue	197 589	PUN-4x0,75-S-1,5-BL
							Black	197 604	PUN-4x0,75-S-1,5-SW
6	4	46	23	1	0.344	51	Blue	197 590	PUN-6x1-S-1-BL
							Black	197 605	PUN-6x1-S-1-SW
			52	2	0.518	110	Blue	197 591	PUN-6x1-S-2-BL
							Black	197 606	PUN-6x1-S-2-SW
			168	6	1.214	350	Blue	197 592	PUN-6x1-S-6-BL
							Black	197 607	PUN-6x1-S-6-SW
8	5.7	60	12	1	0.304	650	Blue	197 593	PUN-8x1,25-S-1-BL
							Black	197 608	PUN-8x1,25-S-1-SW
			27	2	0.424	140	Blue	197 594	PUN-8x1,25-S-2-BL
							Black	197 609	PUN-8x1,25-S-2-SW
			87	6	0.904	440	Blue	197 595	PUN-8x1,25-S-6-BL
							Black	197 610	PUN-8x1,25-S-6-SW

# Spiral plastic tubing PUN-S

Technical data

**FESTO**

Dimensions and ordering data									
O.D.	I.D.	Winding $\varnothing$	Number of windings	Working length	Block length	Weight	Colour	Part No.	Type
[mm]	[mm]	[mm]		[m]	[m]	[g/m]			
10	7	80	9.5	1	0.305	110	Blue	<b>197 596</b>	<b>PUN-10x1,5-S-1-BL</b>
							Black	<b>197 611</b>	<b>PUN-10x1,5-S-1-SW</b>
			22	2	0.43	250	Blue	<b>197 597</b>	<b>PUN-10x1,5-S-2-BL</b>
							Black	<b>197 612</b>	<b>PUN-10x1,5-S-2-SW</b>
			70	6	0.91	760	Blue	<b>197 598</b>	<b>PUN-10x1,5-S-6-BL</b>
							Black	<b>197 613</b>	<b>PUN-10x1,5-S-6-SW</b>
12	8	95	9	1	0.32	200	Blue	<b>197 599</b>	<b>PUN-12x2-S-1-BL</b>
							Black	<b>197 614</b>	<b>PUN-12x2-S-1-SW</b>
			20	2	0.452	420	Blue	<b>197 600</b>	<b>PUN-12x2-S-2-BL</b>
							Black	<b>197 615</b>	<b>PUN-12x2-S-2-SW</b>
			64	6	0.98	1300	Blue	<b>197 601</b>	<b>PUN-12x2-S-6-BL</b>
							Black	<b>197 616</b>	<b>PUN-12x2-S-6-SW</b>

# Spiral plastic tubing PUN-S-DUO

Technical data



**DUO spiral plastic tubing  
PUN-S-DUO**

- - Ambient temperature  
-35 ... +60 °C

Highly flexible plastic tubing

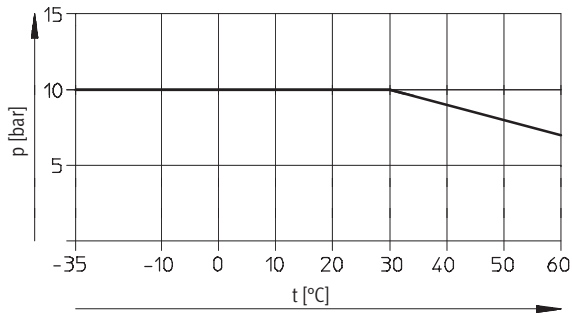
- - Temperature dependent  
operating pressure  
-0.95 ... +10 bar

Material:  
Polyurethane

Note on material:  
Free of copper and PTFE



Operating pressure p as a function of temperature t



Possible fittings



Push-in fitting QS,  
Quick Star<sup>1)</sup>  
→ 3 / 5.4-39



Quick connector CK  
→ 3 / 5.5-5



Push-in fitting QS-F,  
Quick Star, metal  
→ 3 / 5.4-87

1) Recommended fitting

Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Winding Ø [mm]	Number of windings	Working length [m]	Block length [m]	Weight [g/m]	Colour	Part No.	Type
4	2.6	25	20	0.5	0.268	25	Blue/black	197 617	PUN-4x0,75-S-0,5-DUO-BS
			45	1	0.468	55		197 618	PUN-4x0,75-S-1-DUO-BS
			70	1.5	0.668	84		197 619	PUN-4x0,75-S-1,5-DUO-BS
6	4	46	23	1	0.488	102	Blue/black	197 620	PUN-6x1-S-1-DUO-BS
			52	2	0.836	230		197 621	PUN-6x1-S-2-DUO-BS
			168	6	2.228	700		197 622	PUN-6x1-S-6-DUO-BS
8	5.7	60	12	1	0.408	130	Blue/black	197 623	PUN-8x1,25-S-1-DUO-BS
			27	2	0.648	280		197 624	PUN-8x1,25-S-2-DUO-BS
			87	6	1.608	870		197 625	PUN-8x1,25-S-6-DUO-BS
10	7	80	9.5	1	0.41	220	Blue/black	197 626	PUN-10x1,5-S-1-DUO-BS
			22	2	0.66	490		197 627	PUN-10x1,5-S-2-DUO-BS
			70	6	1.62	1520		197 628	PUN-10x1,5-S-6-DUO-BS
12	8	95	9	1	0.44	390	Blue/black	197 629	PUN-12x2-S-1-DUO-BS
			20	2	0.704	830		197 630	PUN-12x2-S-2-DUO-BS
			64	6	1.76	2600		197 631	PUN-12x2-S-6-DUO-BS




# Spiral plastic tubing PUN-SG, pre-assembled


Technical data

FESTO

## Spiral plastic tubing PUN-SG

-  - Ambient temperature  
-40 ... +60 °C

Highly flexible and hydrolysis resistant pneumatic tubing with fabric reinforcing and captive rotatable fittings.

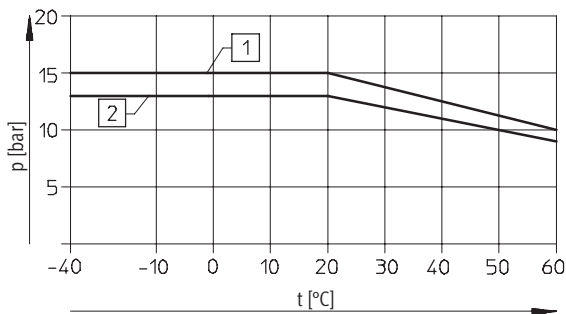
-  - Temperature dependent operating pressure  
-0.95 ... +15 bar

Material:  
Polyurethane, nickel plated brass, polyacetate

Note on material:  
Free of copper and PTFE



Operating pressure p as a function of temperature t



- 1 PUN-10x1,5-SG
- 2 PUN-12x2-SG

Dimensions and ordering data											
O.D.	I.D.	Pneumatic connection	Flow-relevant bending radius	Winding $\varnothing$	Number of windings	Working length	Block length	Weight	Colour	Part No.	Type
[mm]	[mm]		[mm]	[mm]		[m]	[m]	[g/m]			
9.5	6.4	G $\frac{1}{4}$	50	42	21	2.4	0.889	180	Blue	533 463	PUN-10x1,5-SG-2,4-BL- $\frac{1}{4}$
					50	4.8	1.165	340		533 464	PUN-10x1,5-SG-4,8-BL- $\frac{1}{4}$
					66	6	1.317	430		533 465	PUN-10x1,5-SG-6-BL- $\frac{1}{4}$
11.7	7.9	G $\frac{3}{8}$	65	51	41	4.8	1.172	480		533 466	PUN-12x2-SG-4,8-BL- $\frac{3}{8}$
					53	6	1.312	560		533 467	PUN-12x2-SG-6-BL- $\frac{3}{8}$

# Spiral plastic tubing PPS, pre-assembled

Technical data



## Spiral plastic tubing PPS

This hydrolysis resistant plastic tubing demonstrates high thermal and mechanical load capacities. Each length of tubing is delivered ready for installation with 2 rotatable fittings and suitable sealing rings. Kinks at the tubing ends are prevented with the anti-kinking springs.

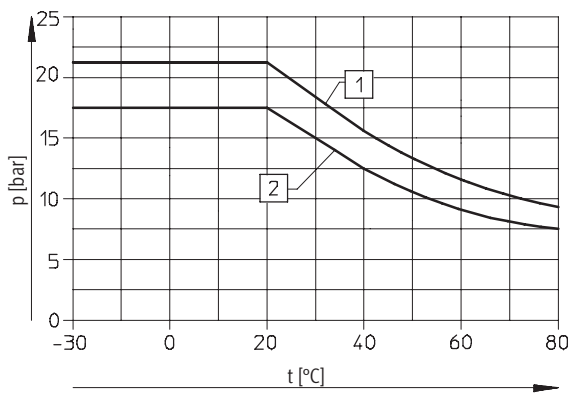
- - Ambient temperature  
-30 ... +80 °C
- - Temperature dependent operating pressure  
-0.95 ... +21.2 bar

Material:  
PPS: Polyamide, brass, galvanised steel  
PPS-...-CT: Polyamide, wrought aluminium alloy, anodised, galvanised steel

Note on material:  
Free of copper and PTFE  
→ Ordering data



Operating pressure p as a function of temperature t



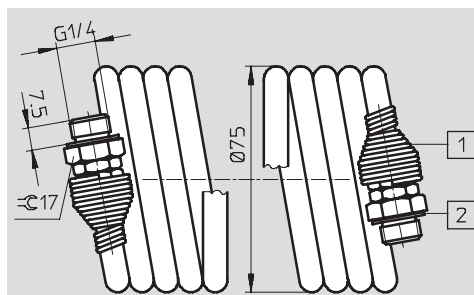
- 1 PPS-4
- 2 PPS-6

## Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Pneumatic connection	Winding Ø [mm]	Number of windings	Working length [m]	Block length [m]	Weight [g/m]	Colour	Part No.	Type
6.36	4.76	G1/4	75	46	7.5	0.34	249	Blue	19 798	PPS-4-7,5-1/4-BL
				94	15	0.67	367		19 799	PPS-4-15-1/4-BL
7.95	6.35			45	7.5	0.43	298		19 796	PPS-6-7,5-1/4-BL
				90	15	0.80	500		19 797	PPS-6-15-1/4-BL

O.D. [mm]	I.D. [mm]	Pneumatic connection	Winding Ø [mm]	Number of windings	Working length [m]	Block length [m]	Weight [g/m]	Colour	Part No.	Type
6.36	4.76	G1/4	75	46	7.5	0.34	191	Blue	165 871	PPS-4-7,5-1/4-CT-BL <sup>1)</sup>
				94	15	0.67	350		165 870	PPS-4-15-1/4-CT-BL <sup>1)</sup>
7.95	6.35			45	7.5	0.43	260		165 873	PPS-6-7,5-1/4-CT-BL <sup>1)</sup>
				90	15	0.80	472		165 872	PPS-6-15-1/4-CT-BL <sup>1)</sup>

1) Free of copper and PTFE



- 1 Kink protection spring
- 2 Captive seal