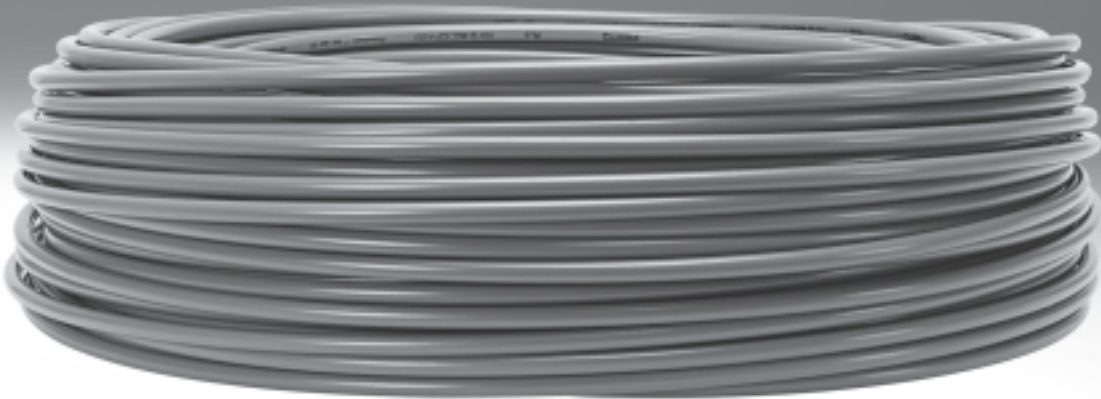


Plastic tubing, standard I.D.

**FESTO**




- 1 - Type discontinued PP  
Available up until 2011

## Plastic tubing, standard I.D.

Product range overview

FESTO

Version	Type	Inside Ø [mm]	Colour				Operating medium		Resistance				
			Blue	Black	Natural	Blue/black	Compressed air	Vacuum	Chemicals	Microbes	UV radiation	Hydrolysis	Stress cracks
	PL Polyethylene	3, 4, 6	■	■	■	-	■	■	++	++	++ <sup>2)</sup>	++	+
	PL-9/13 Polyvinyl chloride <sup>1)</sup>	9, 13	■	-	-	-	■	-	-	++	+	+	+
	PP Polyamide	3, 4, 6	-	-	■	-	■	■	+	++	+	+	+
	PU Polyurethane	2, 3, 4, 6	■	■	-	-	■	■	-	-	++ <sup>2)</sup>	+	+
	PU-9/13 Polyurethane <sup>1)</sup>	9 13	-	■	-	-	■	- ■	-	-	++ <sup>2)</sup>	+	+
	PU-DUO Polyurethane	2, 3, 4, 6	-	-	-	■	■	■	-	-	+	+	+

1) fibre-reinforced

2) Applies for black colour

++ Well suited

+ Limited suitability (upon request)

- Unsuitable

## Plastic tubing, standard I.D.

Product range overview

**FESTO**

Type	Food approval as per directive 2002/72/EC	Food approval as per directive FDA	Halogen-free	PWIS-free to FN 942 010	Suitable for chain link trunking	Approved by German Technical Control Board	Germanischer Lloyd	Shore hardness	→ Page/ Internet
PL	■ <sup>1)</sup>	■ <sup>1)</sup>	■	■	-	■	-	D 42	6
PL-9/13	-	-	-	■	-	-	-	A 85	7
PP	-	-	■	■	■	■	■	D 55	8
PU	-	-	■	■	■	■	-	D 52	9
PU-9	-	-	■	■	■	-	-	A 86	9
PU-13								A 91	
PU-DUO	-	-	■	■	■	■	-	D 52	10

1) Applies for natural colour

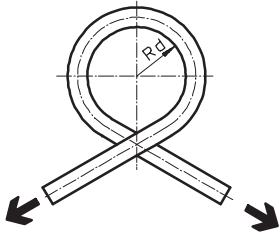
# Plastic tubing

Technical data

FESTO

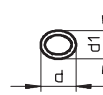
## Measuring methods

### 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.

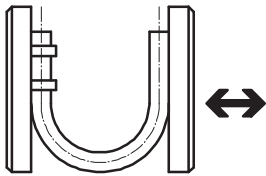


Cross section flattened as a result of bended tubing

$d$  = 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 I.D.

Type codes

	PU	8		BL
<b>Material</b>				
PL	Polyethylene, I.D. 3, 4, 6			
PL	Polyvinyl chloride, O.D. 9, 13			
PP	Polyamide			
PU	Polyurethane			
<b>Internal Ø [mm]</b>				
<b>Twin tubing</b>				
DUO	Twin tubing			
<b>Colour</b>				
SW	Black			
BL	Blue			
NT	Natural			
BS	Blue/black			

# 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

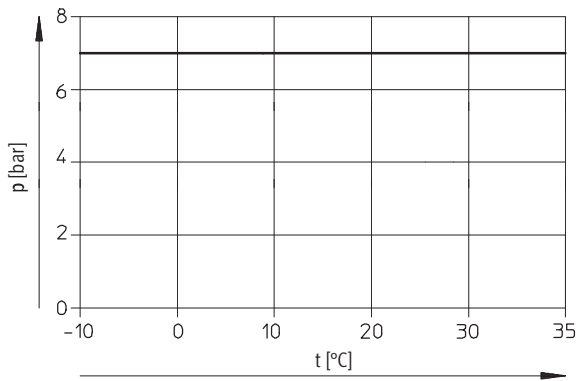
- - Temperature dependent operating pressure  
-0.95 ... +9 bar

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  
→ Internet: cn



Quick connectors CK<sup>1)</sup>  
→ Internet: ck

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 <sup>1)</sup> [m]
4.3	3	18	0.0068	Natural	3856	PL-3-NT	50
				Blue	3453	PL-3-BL	50
				Black	4640	PL-3-SW	50
6.2	4	22.5	0.016	Natural	2236	PL-4-NT	50
				Blue	3861	PL-4-BL	50
				Black	4641	PL-4-SW	50
8.4	6	39	0.025	Natural	2237	PL-6-NT	50
				Blue	3862	PL-6-BL	50
				Black	4642	PL-6-SW	50


1) Packaging unit

# Plastic tubing PL, standard I.D.

Technical data



## Plastic tubing PL

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

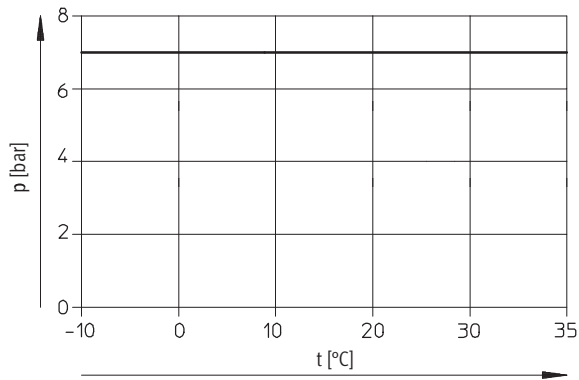
-  - Temperature dependent  
operating pressure  
0 ... 7 bar

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  
→ Internet: ck

### Dimensions and ordering data

O.D. [mm]	I.D. [mm]	Flow-relevant bending radius [mm]	Weight [kg/m]	Colour	Part No.	Type	PU <sup>1)</sup> [m]
11.6	9	85	0.049	Blue	2238	PL-9-BL	50
17.6	13	100	0.135	Blue	4103	PL-13-BL	50

1) Packaging unit


-  - Type discontinued PP  
Available up until 2011


## Plastic tubing PP, standard I.D.

Technical data

**FESTO**

### 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



-  - Note

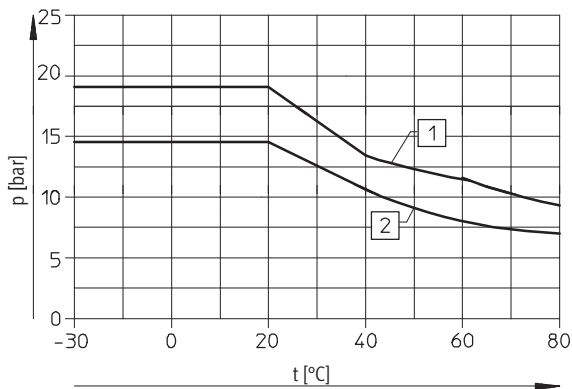
Replaced with standard O.D. plastic  
tubing PAN-...-NT.

→ Internet: pan-\*-nt

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  
→ Internet: cn



Quick connectors CK<sup>1)</sup>  
→ Internet: ck

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 <sup>1)</sup> [m]
4	2.9	12	18	0.0062	Natural	4572	PP-3-NT	50
6	4	14	32	0.0163	Natural	4231	PP-4-NT	50
8	5.9	22	43	0.0238	Natural	4191	PP-6-NT	50

1) 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

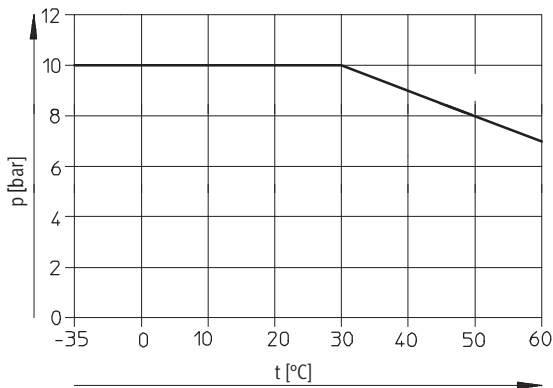
-  - Temperature dependent operating pressure  
-0.95 ... +10 bar  
PU-9:  
0 ... 10 bar

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  
→ Internet: cn



Quick connectors CK<sup>1)</sup>  
→ Internet: ck

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 <sup>1)</sup> [m]
3.2	2.3	13	0.005	Blue	13365	PU-2-BL	50
				Black	13366	PU-2-SW	50
4.4	2.9	14	0.0096	Blue	5732	PU-3-BL	50
				Black	5731	PU-3-SW	50
6.1	4	20	0.021	Blue	6204	PU-4-BL	50
				Black	5733	PU-4-SW	50
8.3	6	36	0.033	Blue	9159	PU-6-BL	50
				Black	6731	PU-6-SW	50
Fibre-reinforced							
11.6	9	76	0.051	Black	12134	PU-9-SW	50
17.6	13	83	0.140	Black	12133	PU-13-SW	50

1) 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

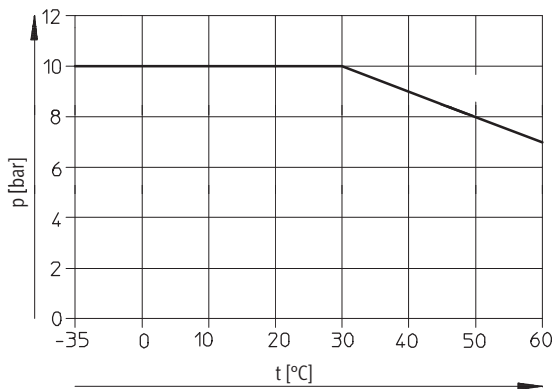
- - Temperature dependent operating pressure  
-0.95 ... +10 bar

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  
→ Internet: cn



Quick connectors CK<sup>1)</sup>  
→ Internet: ck

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 <sup>1)</sup> [m]
3.2	2.3	13	0.010	Blue/black	19581	PU-2-DUO-BS	50
4.4	2.9	14	0.0192	Blue/black	11958	PU-3-DUO-BS	50
6.1	4	20	0.042	Blue/black	11959	PU-4-DUO-BS	50
8.3	6	36	0.066	Blue/black	11960	PU-6-DUO-BS	50

1) Packaging unit