

Flexible. Precise. Innovative.





We bestow every tube with its own very special character, because no matter how diverse the demands of modern technology are, we have the perfect solution, in the form of a high-performance tube.

We are a leading specialist for extruded tubes and profiles for applications in a wide range of industries. Our range of materials comprises almost all thermoplastically processible plastics.

Through our involvement with the Masterflex Group we combine the flexibility of a medium-sized operation with the strength of an international group. Efficiency and the know-how for responding to individual requests are the results of this alliance and our customers appreciate this.

Customer orientation and creating a high level of satisfaction for each individual customer are not slogans for us, but rather the goals of our daily work. Our aims are achieved thanks to an innovative development department and to a professional sales department. Our tubing is specially tailored to meet your requirements. These demands have led to the development of a series of innovations for the widest variety of applications and branches.

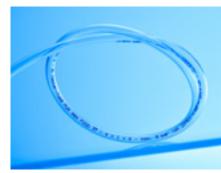
Quality, precision, delivery reliability and competent advice are the cornerstones for the ongoing expansion of our market position.

Starting with the choice of material, cost effectiveness, and operational performance down to matters of design, our experts accompany you in a competent and comprehensive fashion, regardless of whether you require a series product from this catalogue or an individual custom item.

To redect our own everyday high quality requirements, we use special test and measuring equipment as well as laboratory equipment. As a result, we have the latest technology to safeguard the product quality at our disposal, right from the time of your initial inquiry until your product is shipped. Our quality management system which is certified in compliance with DIN EN ISO 9001 and DIN EN 13485 and which is constantly perfected, also vouches for this. Furthermore, our company applies the established Environmental Management System complying with DIN ISO 14001 as well as the Energy Management System complying with DIN ISO 50001.







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Master-Tube PUR 98A

... offers a flexible solution - even under great pressure



Material

• Polyester-Polyurethane

Application Areas

- Mechanical Engineering
- Robotics and Automisation

Applications

- Pneumatic Systems
- Robotics
- Cable carrier
- Control air

Delivery Variants

- Dimensions:
 - Inner diameter: 2 11 mm
 - Outer diameter: 4 16 mm
- Colours:
 - Natural
 - Blue
 - Black
- Other sizes and colours on request
- Possible variations
 - Rolled Goods
 - Cut Goods
 - Multi-tube
 - Spiralised
 - Moulded Form Tubes

Properties

- Low weight
- Extremely flexible at low temperatures
- UV-resistant
- High elasticity
- Good damping behaviour
- Excellent abrasion resistance
- Bending-resistant
- Excellent tear resistance
- Oil and grease resistant
- Quick mounting
- Different colours available
- Small bending radius
- No embrittlement, since free of plasticisers
- Silicone free
- Halogen free
- Push-in connector suitable
- Push-out connector suitable

Temperature range

• -40 °C to +85 °C

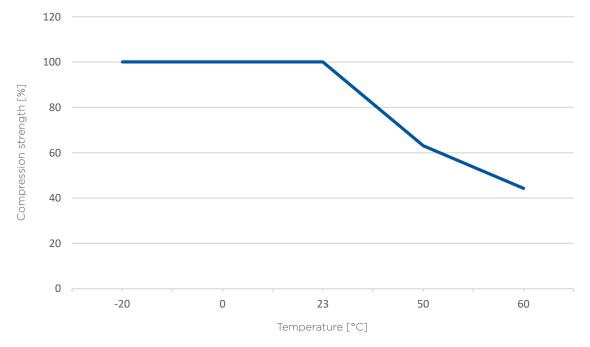
Master-Tube PUR 98A

ID (mm)	WT (mm)	ED (mm)	Tolerance ID & ED (mm)	Weight (g/m)	Max. Working Pressure (bar)	Min. Bending Radius (mm)
2	1	4	± 0.10	11	20	20
2.7	0.65	4	± 0.10	9	11	20
3	1	5	± 0.10	15	15	25
4	1	6	± 0.10	19	12	30
5	1.5	8	± 0.10	37	13	40
5.5	1.25	8	± 0.10	32	11	40
5.7	1.15	8	± 0.10	30	10	40
6	1	8	± 0.10	27	8	40
6.5	1.75	10	± 0.10	55	12	50
7	1.5	10	± 0.10	49	10	50
8	1	10	± 0.10	34	6	50
8	2	12	± 0.10	77	12	60
9	1.5	12	± 0.10	60	8	60
11	2.5	16	± 0.10	129	11	80

All data refer to a medium and ambient temperature of $+23\,^{\circ}\text{C}$ ID: Diameter inside, WT: Wall thickness, OD: Diameter outside Specifications of the operating pressure with 3 times the safety factor and apply to the medium air

Pressure diagram for the Master-Tube PUR 98A

Utilisation of the permissible compressive strength (%) as a function of temperature (°C). Specifications are valid for the medium air.



Master-Tube PUR 98A Food

The first food approved PU tube of this type in Europe



Material

• Polyether-Polyurethane

Application Areas

- Agriculture
- Chemicals
- Food Industry
- Mechanical Engineering
- Robotics and Automation
- Transport

Applications

- Agricultural Engineering
- Food Technology
- Pneumatic Systems
- Pharmaceutical Production
- Robotics
- Cable carrier
- Feeding technology
- Control air

Delivery Variants

- Dimensions:
 - Inner diameter: 2 11 mm
 - Outer diameter: 4 16 mm
- Colours:
 - Natural
- Other sizes and colours on request
- Possible variations en:
 - Rolled Goods
 - Cut Goods

Properties

- Tested and confirmed by an independent testing institute: compliant with Regulation (EU) No. 10/2011 including the amending Regulations 1282/2011, 1183/2012, 202/2014, 2015/174, 2016/1416, 2018/79 and 2018/831 as well as the German Commodity Ordinance (Consumer Goods Ordinance) as amended on 15.02.2016
- Complies with the regulation (EU) No. 1935/2004 and the German Food and Feed Code (LFGB)
- Materials comply with the following food regulations:
 - FDA 21 CFR \$177.2600 FDA 21 CFR \$178.2010
- Approved for food simulant: A, B, C, D1, D2, E (contact times/temp. and suitability according to declaration of conformity)
- Manufacturing process according to GMP EC 2023/2006
- Abrasion resistant and elastic
- Resistant to hydrolysis and microbes
- Flexible at low temperatures
- Bending-resistant
- Temperature resistant
- UV-resistant
- Plasticiser free
- Push-in connector suitable
- Push-out connector suitable

Temperature range

• -40 °C to +85 °C

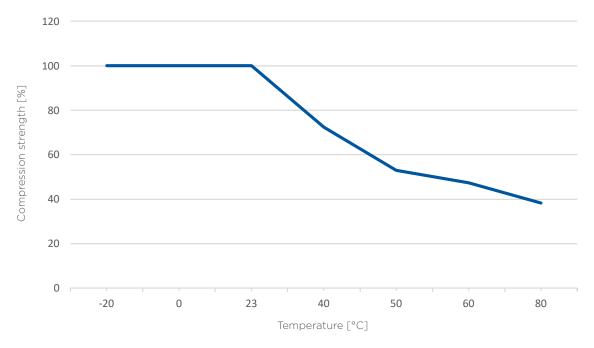
Master-Tube PUR 98A Food

ID (mm)	WT (mm)	OD (mm)	Tolerance ID & ED (mm)	Weight (g/m)	Max. Working Pressure (bar)	Min. Bending Radius (mm)
2	1	4	± 0.10	9.8	15	20
3	1	5	± 0.10	13.1	11	25
4	1	6	± 0.10	16.3	9	30
5	1.5	8	± 0.10	31.9	10	40
5.5	1.25	8	± 0.10	27.6	8	40
6	1	8	± 0.10	22.9	6	40
6	2	10	± 0.10	29.4	11	50
7	1.5	10	± 0.10	41.7	8	50
8	2	12	± 0.15	65.3	9	60
9	1.5	12	± 0.20	51.5	6	60
11	2.5	16	± 0.20	91.5	8	60

All data refer to a medium and ambient temperature of +23 °C ID: Diameter inside, WT: Wall thickness, OD: Diameter outside Specifications of the operating pressure with 3 times the safety factor and apply to the medium air

Pressure diagram for the Master-Tube PUR 98A Food

Utilisation of the permissible compressive strength (%) as a function of temperature (°C). Specifications are valid for the medium air.



XFlame®

... remains steadfast - even when the sparks fly!



Material

• Polyether-Polyurethane

Application Areas

- Mechanical Engineering
- Robotics and Automation

Applications

- Welding systems/machines
- Welding robot/spot welding guns
- Drag chains
- Special cables

Delivery Variants

- Dimensions:
 - Inner diameter: 2 11 mm
 - Outer diameter: 4 16 mm
- Colours:
 - Black
 - Blue
 - Red
 - Green
 - White
- Other sizes and colours on request
- Possible variations
 - Rolled Goods
 - Cut Goods
 - Multi-tube
 - Spiralised
 - Moulded Form Tubes

Properties

- Flame retardant according to UL 94 V2
- UV-resistant
- Silicone free (free from paint wetting inhibiting fabrics)
- Halogen free according to EN 50267-2-1 (corresponds to IEC 60754-1)
- Self-extinguishing in case of fire
- Dielectric properties
- Drag chain capable
- Abrasion resistant
- Small bending radius
- Microbe resistant
- Hydrolysis resistant
- Temperature resistant
- Plasticiser free
- Stress crack resistant
- Flexible
- Flexible at low temperatures
- Elastic
- Bending-resistant
- Good damping behaviour
- Oil and grease resistant
- Impact resistant
- Push-in connector suitable
- Push-out connector suitable

Temperature range

• -40 °C to +90 °C

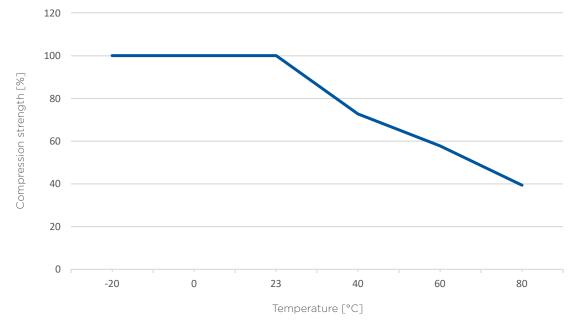
XFlame®

ID (mm)	WT (mm)	OD (mm)	Tolerance OD (mm)	Tolerance WT (mm)	Weight (g/m)	Max. Working Pressure (bar)	Min. Bending Radius (mm)
2	1	4	± 0.10	-0.15	12	24	7
4	1	6	± 0.10	-0.15	19.9	16	8
4	2	8	± 0.15	+0.05/-0.10	47.9	24	9
6	2	10	± 0.15	± 0.10	63.8	20	15
8	2	12	± 0.15	+0.15 /-0.05	79.8	14	26
10	2	14	± 0.15	+0.15 /-0.05	95.8	13	38
11	2.5	16	± 0.15	+0.15 /-0.05	134.7	14	48

All data refer to a medium and ambient temperature of +23 °C ID: Diameter inside, WT: Wall thickness, OD: Diameter outside Specifications of the operating pressure with 3 times the safety factor and apply to the medium air

Pressure diagram for the XFlame®

Utilisation of the permissible compressive strength (%) as a function of temperature (°C). Specifications are valid for the medium air.



XFlame hydro®

Your flexible partner for special applications



Material

• Polyether-Polyurethane

Application Areas

- Mechanical Engineering
- Robotics and Automation

Applications

- Welding systems/machines
- Welding robot/spot welding guns
- drag chains
- Special cables
- Pneutrally safe systems
- Welding Technology
- Gluing Technology
- Fire Technology
- Cooling/Hot Water Applications

Delivery Variants

- Dimensions:
 - Inner diameter: 2 11 mm
 - Outer diameter: 4 16 mm
- Colours:
 - Black
 - Blue
 - Red
 - Green
 - White
- Other sizes and colours on request
- Possible variations
 - Rolled Goods
 - Cut Goods
 - Multi-tube
 - Spiralised
 - Moulded Form Tubes

Properties

- Flame retardant according to UL 94 V2
- UV-resistant
- Silicone free (free of paint wetting inhibiting substances)
- Halogen free according to EN 50267-2-1 (corresponds to IEC 60754-1)
- Self-extinguishing in case of fire
- Dielectric properties
- Drag chain capable
- Abrasion resistant
- Small bending radius
- Microbe resistant
- Hydrolysis resistant
- Temperature resistant
- Plasticiser free
- Stress crack
- Flexible
- Flexible at low temperatures
- Elastic
- Bending-resistant
- Good damping behaviour
- Oil and grease resistant
- Impact resistant
- Push-in connector suitable
- Push-out connector suitable

Temperature range

• -40 °C to +90 °C

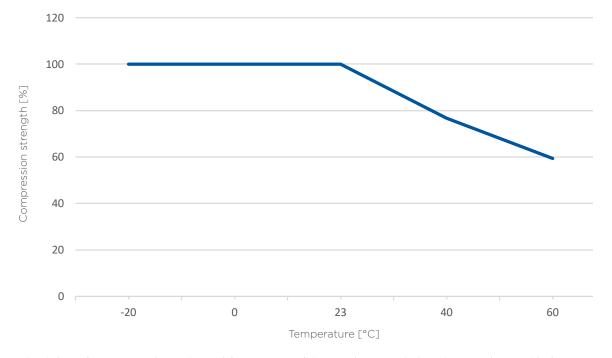
XFlame hydro®

ID (mm)	WT (mm)	OD (mm)	Tolerance OD (mm)	Tolerance WT (mm)	Weight (g/m)	Max. Working Pressure (bar)	Min. Bending Radius (mm)
2	1	4	± 0.10	-0.15	11.9	18	7
4	1	6	± 0.10	-0.15	19.8	12	8
4	2	8	± 0.15	+0.05/-0.10	47.5	21	9
6	2	10	± 0.15	± 0.10	63.3	17	15
8	2	12	± 0.15	+0.15 /-0.05	79.2	12	26
10	2	14	± 0.15	+0.15 /-0.05	95.0	10	38
11	2.5	16	± 0.15	+0.15 /-0.05	133.6	12	48

All data refer to a medium and ambient temperature of +23 °C ID: Diameter inside, WT: Wall thickness, OD: Diameter outside Specifications of the operating pressure with 3 times the safety factor and apply to the medium air

Pressure diagram for the XFlame hydro®

Utilisation of the permissible compressive strength (%) as a function of temperature (°C). Specifications are valid for the medium air.



Master-Tube PA12w

... the solution under pressure under increased Temperatures



Material

• Polyamide

Application Areas

- Mechanical Engineering
- Automotive

Applications

- Pneumatic Systems
- Automotivee Applications

Delivery Variants

- Dimensions:
 - Inner diameter: 2 11 mm
 - Outer diameter: 4 16 mm
- Colours:
 - Natural
 - Blue
 - Black
- Other sizes and colours on request
- Possible variations
 - Rolled Goods
 - Cut Goods
 - Multi-tube
 - Spiralised
 - Moulded Form Tubes

Properties

- Low weight
- Material complies with DIN 73378/74324
- Good temperature resistance
- High impact strength
- Good pressure resistance
- Good chemical resistance to oils, greases, fuels, paint solvents and hydraulic fluids
- Very good UV-resistance
- Good stress crack resistance
- High abrasion resistance
- Water resistant
- Quick mounting
- Exterior calibrated
- Push-in connector suitable
- Conditionally suitable for push-out connector (can lead to white breakage)

Temperature range

• -40 °C to +90 °C

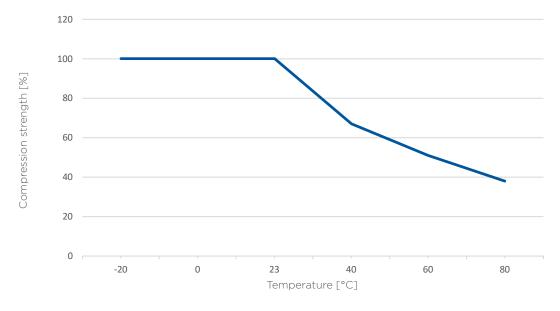
Master-Tube PA12w

ID (mm)	WT (mm)	OD (mm)	Tolerance ID & OD (mm)	Weight (g/m)	Max. Working Pressure (bar)	Min. Bending Radius (mm)
2	1	4	± 0.05	9.7	44	20
2.9	0.55	4	± 0.05	6.1	21	20
3	1	5	± 0.05	12.9	33	25
4	1	6	± 0.10	16.1	26	30
5	1.5	8	± 0.10	31.4	30	40
5.5	1.25	8	± 0.10	27.1	24	40
6	1	8	± 0.10	22.5	19	40
6	2	10	± 0.10	51.5	33	50
7	1.5	10	± 0.10	41.0	23	50
7.5	1.25	10	± 0.10	35.2	19	50
8	1	10	± 0.10	29.0	14	50
8	2	12	± 0.10	64.3	26	60
9	1.5	12	± 0.10	50.7	19	60
10	1	12	± 0.10	35.4	12	60
10	2	14	± 0.10	77.2	22	70
11	1.5	14	± 0,15	60.3	16	70
12	1.5	15	± 0,15	65.1	14	90
12	2	16	± 0,15	90.1	19	90
14	2	18	± 0,15	102.9	16	120
16	2	20	± 0,15	115.8	14	120
18	2	22	± 0.25	128.7	13	150

All data refer to a medium and ambient temperature of $+23\,^{\circ}\text{C}$ ID: Diameter inside, WT: Wall thickness, OD: Diameter outside. Specifications of the operating pressure with 3 times the safety factor and apply to the medium air

Pressure diagram for the Master-Tube PA 12w

Utilisation of the permissible compressive strength (%) as a function of temperature (°C). Specifications are valid for the medium air.



Master-Tube PA 6.12w

... the best alternative for the Master-Tube PA 6.12w



Material

• Polyamide 6.12w

Application Areas

- Automotive
- Agriculture
- Painting technology
- Mechanical engineering
- Robotics and Automation
- Transport

Applications

- Agricultural Engineering
- Pneumatic Systems
- Paint & solvent conveying
- Robotics
- Cable carrier
- Feeding technology
- Control air
- Protective tube

Temperature range

- -40 °C to +90 °C
- Temporary up to +125 °C

Properties

- Flexible, as it contains Plasticisers
- High impact strength
- Good temperature resistance
- Good UV-resistance
- Good chemical resistance
- Externally calibrated
- Good hydrolysis resistance
- Good stress crack resistance
- High abrasion resistance
- Drag chain capable
- Silicone free
- Halogen free
- Push-in connector suitable
- Conditionally suitable for push-out connector (can lead to white breakage)

Delivery Variants

- Dimensions:
 - Inner diameter: 2 18 mm
 - Outer diameter: 4 22 mm
- Colours:
 - Natural
 - Blue
 - Black
- Other sizes and colours on request
- Possible variations
 - Rolled Goods
 - Cut Goods
 - Multi-tube
 - Spiralised
 - Moulded Form Tubes

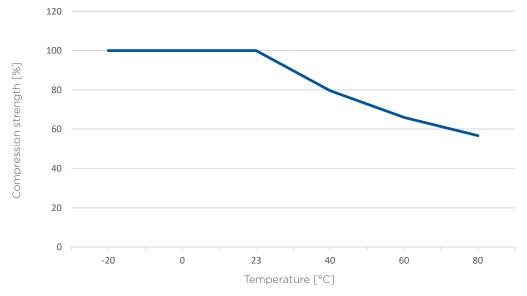
Master-Tube PA 6.12w

ID (mm)	WT (mm)	OD (mm)	Tolerance ID & OD (mm)	Weight (g/m)	Max. Working Pressure (bar)	Min. Bending Radius (mm)
2	1	4	± 0.05	9.8	46	10
2.9	0.55	4	± 0.05	6.2	22	20
3	1	5	± 0.10	13.1	35**	20**
4	1	6	± 0.10	16.3	29	20
5	1.5	8	± 0.10	31.9	35	30
5.5	1.25	8	± 0.10	27.6	25**	40**
6	1	8	± 0.10	22.9	21	40
6	2	10	± 0.10	29.4	35**	70**
7	1.5	10	± 0.10	41.7	25	40
7.5	1.25	10	± 0.10	35.7	20	50
8	1	10	± 0.10	29.4	15	70
8	2	12	± 0.10	65.3	32	40
9	1.5	12	± 0.10	51.5	22	70
10	1	12	± 0.10	35.9	13	90
10	2	14	± 0.10	78.4	25	120**
11	1.5	14	± 0.10	61.3	18	90
12	1.5	15	± 0.15	66.2	15**	140**
12	2	16	± 0.15	91.5	22	90
14	2	18	± 0.15	104.6	17**	170**
16	2	20	± 0.25	117.6	18	170**
18	2	22	± 0.25	130.7	14**	200**

All data refer to a medium and ambient temperature of $+23\,^{\circ}\text{C}$ ID: Diameter inside, WT: Wall thickness, OD: Diameter outside Specifications of the operating pressure with 3 times the safety factor and apply to the medium air

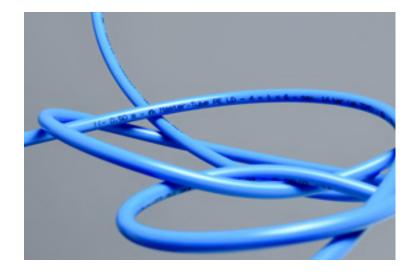
Pressure diagram for the Master-Tube PA 6.12w

Utilisation of the permissible compressive strength (%) as a function of temperature (°C) Specifications are valid for the medium air.



Master-Tube PE LD

The compressed air tube made of polyethylene / impresses by its chemical resistance



Material

• Polyethylene Low Density

Application Areas

- Mechanical Engineering
- Robotics and Automation
- Agriculture
- Painting technology

Applications

- Pneumatic Systems
- Robotics
- Control air
- Agricultural Engineering

Delivery Variants

- Dimensions:
 - Inner diameter: 2 14 mm
 - Outer diameter: 4 18 mm
- Colours:
 - Natural
 - Blue
 - Black
- Other sizes and colours on request
- Possible variations
 - Rolled Goods
 - Cut Goods

Properties

- Low weight
- Material physiologically harmless (corresponds to recommendation III of the BGA as well as FDA regulation 21 CFR 177.1520(c) 2.2 and EU, No. 10/2011)

Low permeation values for water, steam and gases Resistant to a wide range of chemicals (see resistance list)

- Sterilizable (ethylene oxide and gamma rays)
- Good dielectric properties
- Quick mounting
- Exterior calibrated
- Push-in connector suitable
- Conditionally push-out connector suitable (can lead to white breakage and stress cracks)

Temperature range

• -30 °C to +70 °C

Master-Tube PE LD

ID (mm)	WT (mm)	OD (mm)	Tolerance ID & OD (mm)	Weight (g/m)	Max. Working Pressure (bar)	Min. Bending Radius (mm)
2	1	4	± 0.10	8.7	24	20
3	1	5	± 0.10	11.6	18	25
4	1	6	± 0.10	14.5	14	30
5	1.5	8	± 0.10	28.3	16	40
6	1	8	± 0.10	20.3	10	40
6	2	10	± 0.10	46.4	18	50
7	1.5	10	± 0.10	37.0	12	50
8	1	10	± 0.10	26.1	8	40
9	1.5	12	± 0.10	45.7	10	60
10	1	12	± 0.10	31.9	6	60
10	2	14	± 0.15	69.7	12	80
12	2	16	± 0.15	81.3	10	90
14	2	18	± 0.15	92.9	9	120

All data refer to a medium and ambient temperature of +23 °C ID: Diameter inside, WT: Wall thickness, OD: Diameter outside Specifications of the operating pressure with 3 times the safety factor and apply to the medium air

Master-Tube PE Ultra

Abrasion-resistant hose with low coefficient of friction and good chemical resistance / especially suitable for feeding technology and chemical industry

New: Can be produced in endless lengths by continuous tube extrusion



Material

Polyethlyene

Application Areas

- Chemicals
- Painting technology
- Automotivee
- Agriculture

Applications

- Cable carrier
- Paint & solvent conveying
- Liquid merchant
- Automotivee, shaft and Bowden cable guide
- Agricultural Engineering
- Pneumatic Systems
- Feeding technology

Delivery Variants

- Dimensions:
 - Inner diameter: 2 10 mm
 - Outer diameter: 4 12 mm
- Colours:
 - Natural
 - Blue
 - Black
- Other sizes and colours on request
- Possible variations
 - Rolled Goods
 - Cut Goods
 - Multi-tube
 - Spiralised
 - Moulded Form Tubes

Properties

- Very good abrasion resistance
- High surface hardness
- Very good stress crack resistance
- Low water absorption
- Low coefficient of friction
- Structured surface
- Very good chemical resistance
- Externally calibrated
- Good hydrolysis resistance
- Flexible at low temperatures
- Plasticiser free
- Solvent resistant
- Drag chain capable
- Silicone free
- Halogen free
- Push-in connector suitable
- Conditionally suitable for push-out connector (can lead to white breakage)

Temperature range

• -40 °C to +80 °C

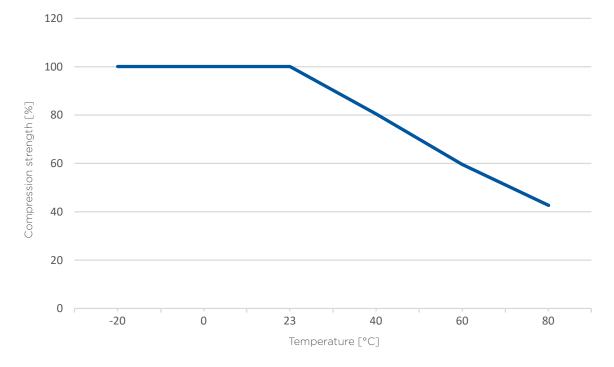
Master-Tube PE Ultra

ID (mm)	WT (mm)	OD (mm)	Tolerance ID & OD (mm)	Weight (g/m)	Max. Working Pressure (bar)	Min. Bending Radius (mm)
2	1	4	± 0.10	9.1	57*	20
2.5	0.75	4	± 0,10	7.4	40	20
3	1	5	± 0.10	12.1	44*	25
4	1	6	± 0.10	15.2	38	25
5	1.5	8	± 0.10	29.6	40*	40
5.7	1.25	8	± 0.10	23.9	32	40
6	1	8	± 0.10	21.2	25*	40
6	2	10	± 0.10	48.6	44*	50
7	1.5	10	± 0.10	38.7	31*	50
8	1	10	± 0.10	27.3	19*	40
9	1.5	12	± 0.15	47.8	25*	60
10	1	12	± 0.15	33.4	18	60

*Values are calculated. All data refer to a medium and ambient temperature of +23 °C ID: Diameter inside, WT: Wall thickness, OD: Diameter outside Specifications of the operating pressure with 3 times the safety factor and apply to the medium air

Pressure diagram for the Master-Tube PE Ultra

Degree of utilisation of the permissible compressive strength (%) as a function of the temperature (°C). Specifications are valid for the input medium air.









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