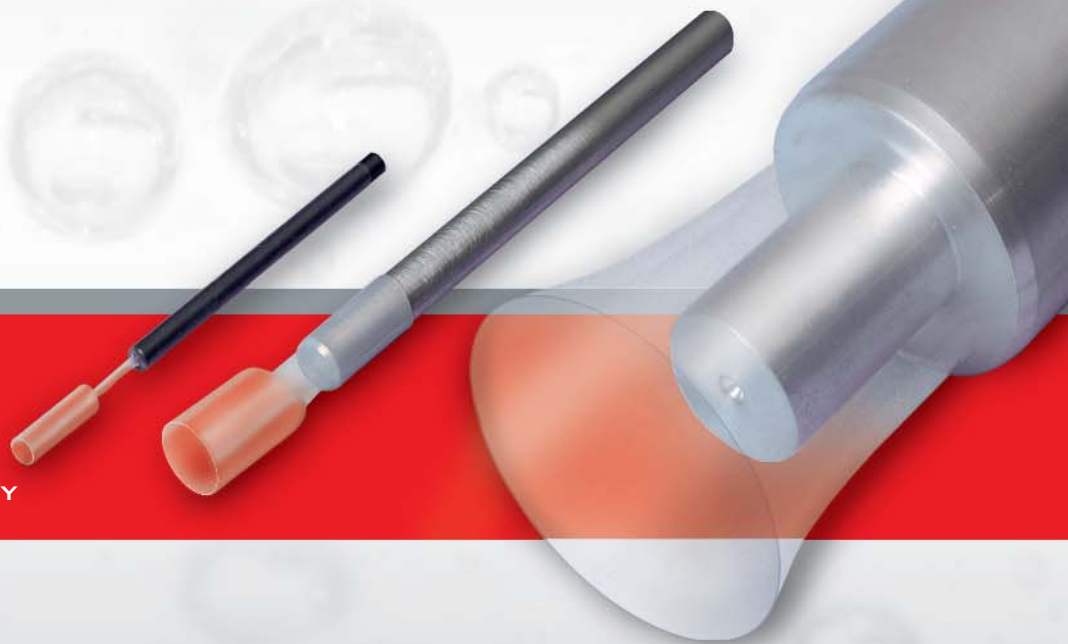


**POLYTETRAFLON®
HEAT-SHRINKABLE TUBING
MADE FROM PTFE - FEP - PFA**

**PLASTICS
WITHOUT
LIMITATIONS
MADE IN GERMANY**



POLYTETRA



POLYTETRAFLON® HEAT-SHRINKABLE TUBING MADE FROM PTFE - FEP - PFA

Plastics and fluoroplastics in particular have been our field of activity for 30 years now. We are considered as reliable partners in the industry because of our experience, creativity and the extensive consultation services provided by us.

We not only offer a complete range of products, but focus also on comprehensive consultation services in the technically challenging field of thermoplastics. We will offer you our support in finding solutions to your application. Just let us know your demands, so that you can benefit from our long-term experience in this area.

► Products and industries

Polytetra GmbH is one of the few manufacturers of heat-shrinkable tubing made from PTFE, FEP and PFA fluoroplastics in the world. Our main expertise lies in the production of customer-specific special sizes, which are dimensioned precisely according to the parts to be covered and their application. This also includes the shrinking-on of parts provided by the customer.

Our products are used all over the world, particularly in the areas of measurement and control technology, medicine, chemical industry, automobile and food industry, in the electro-plating as well as aerospace industry.

► Materials and Production

POLYTETRAFLON® heat-shrinkable tubing is manufactured from selected fluoroplastics. The tubing, which is expanded by a special heat treatment, shrinks back almost to the original diameter when subjected to heat treatment once again.

The most common shrinkage rates are 2:1 or 4:1 for PTFE and 1.3:1 for FEP and PFA. Please contact us if you need special shrinkage rates.

Fluoroplastics and particularly PTFE require a special know-how when used for covering of parts. We will offer you appropriate consultation based on the specific application.



The POLYTETRAFLON® Dual heat-shrinkable tubing is one of our specialities. Here two tubings are inserted in one another. The outer tubing is always made from PTFE, while the inner tubing can be made from FEP or PFA. Our Dual heat-shrinkable tubing is recommended for a moisture-proof connection or closure.

► **Processing**

The processing temperature must be adapted to the selected fluoroplastic. The processing temperature for PTFE is approx. 330°C.

On reaching the gel temperature, the heat-shrinkable tubing looks clear and transparent. The shrinking temperature of FEP heat-shrinkable tubing should range from approx. 170 - 190°C. If you are processing PFA the ideal temperature is approx. 190 -

220°C. Industrial furnaces or hot air blowers can be used as sources of heat. Please note that there is a possibility of longitudinal shrinkage or expansion of +/- 10% during the manufacturing process.

Special application-specific procedures allow shrinking-on also at low temperatures. Please get in touch with us; we shall be glad to offer you consultation.

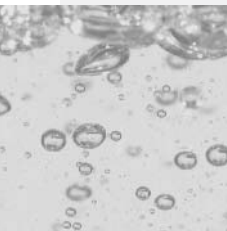
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Recommended shrinking temperature in °C (approx. values)

	PTFE	FEP	PFA	DUAL
Shrinking temperature	330	190	220	330
Melting temperature	-	275	310	275
Operating temperature	260	205	260	205

The shrinking temperature can vary from lot to lot and must be determined in advance during a test procedure.



POLYTETRAFLON®
HEAT-SHRINKABLE TUBING
PTFE 2:1

DIMENSIONS AS PER AWG
(AMERICAN WIRE GAUGE)



Purchase order no. + AWG no.	*min. expanded internal Ø in mm	max. shrunk internal Ø in mm	Wall thickness in mm after maximum shrinkage		
			TW = Standard-walled	LW = Thin-walled	SW = Thick-walled
2S - 30	0.86	0.38	0.23	0.15	0.23
2S - 28	0.97	0.46	0.23	0.15	0.23
2S - 26	1.17	0.56	0.23	0.15	0.23
2S - 24	1.27	0.64	0.25	0.15	0.30
2S - 22	1.40	0.80	0.25	0.15	0.30
2S - 20	1.52	0.97	0.30	0.15	0.40
2S - 19	1.65	1.10	0.30	0.15	0.40
2S - 18	1.93	1.17	0.30	0.15	0.40
2S - 17	2.15	1.38	0.30	0.15	0.40
2S - 16	2.35	1.45	0.30	0.15	0.40
2S - 15	2.80	1.60	0.30	0.15	0.40
2S - 14	3.05	1.82	0.30	0.20	0.40
2S - 13	3.55	2.03	0.30	0.20	0.40
2S - 12	3.81	2.26	0.30	0.20	0.40
2S - 11	4.32	2.50	0.30	0.20	0.40
2S - 10	4.85	2.80	0.30	0.20	0.40
2S - 9	5.20	3.10	0.38	0.20	0.50
2S - 8	6.10	3.55	0.38	0.20	0.50
2S - 7	6.85	3.90	0.38	0.20	0.50
2S - 6	7.67	4.40	0.38	0.25	0.50
2S - 5	8.10	4.90	0.38	0.25	0.50
2S - 4	9.40	5.45	0.38	0.25	0.50
2S - 3	9.90	6.12	0.38	0.25	0.50
2S - 2	10.90	6.90	0.38	0.25	0.50
2S - 1	11.45	7.65	0.38	0.25	0.50
2S - 0	11.95	8.56	0.38	0.25	0.50

* The minimum expansion internal Ø (external Ø) is not tolerated. The dimensions can be much greater than the minimum values. Heat-shrinkable tubing with tolerated ID (OD) is custom-made. We shall be glad to provide you information on this option that comes along with a special manufacturing process.

Please note that heatshrinkable tubing can shrink or expand lengthwise up to 10%. The percentage can increase in case of coloured heat-shrinkable tubing. Contact us for more information.

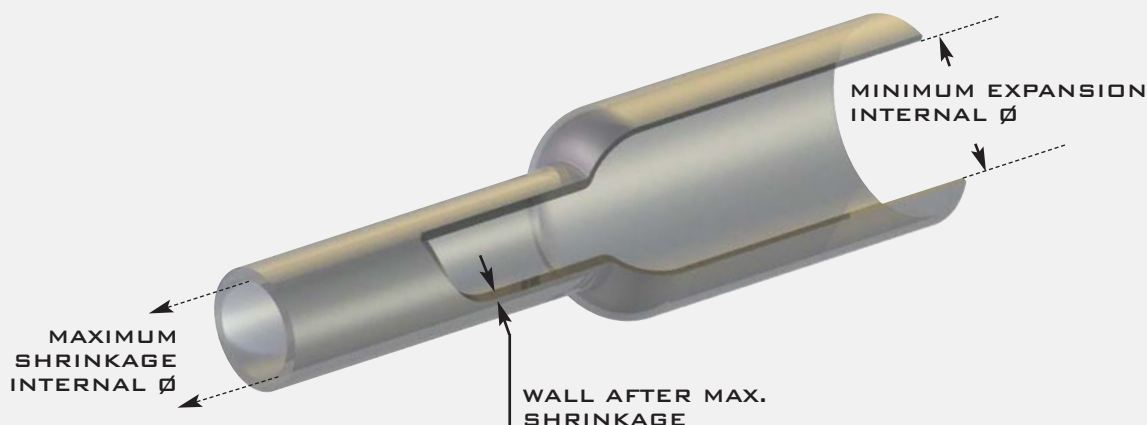
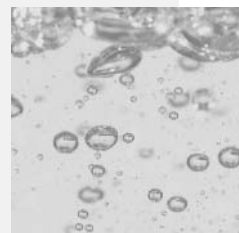
POLYTETRAFLON® heat-shrinkable tubing 2:1 is milky white and POLYTETRAFLON® heat-shrinkable tubing 4:1 is transparent / milky white. The tubing can be manufactured in 10 primary colours, however not as per RAL or HKS. Please note that the chemical stability of coloured heat-shrinkable tubing changes. Benefit from our long-term experience!

On request, we manufacture tubing according to varied specifications, such as FDA or USP class VI; we will be glad to manufacture as per your requirements.

Usually POLYTETRAFLON® heat-shrinkable tubing is manufactured in piece lengths of 1.22 m or in production lengths on spools. Please contact us if you require fixed spool lengths or special piece lengths.

We offer extensive consultation for finding the right solutions to your application.

POLYTETRAFLON®
HEAT-SHRINKABLE TUBING
PTFE 4:1
 DIMENSIONS (IN INCHES)



Often, the users select heat-shrinkable tubing having the shrinkage rate 4:1, since several dimensions can be covered with one size. However, please note that POLYTETRAFLON® heat-shrinkable tubing with rate 2:1 can be processed in a more application-friendly manner as compared to our heat-shrinkable tubing having a shrinkage rate of 4:1.

Purchase order no.	* Min. expansion internal Ø in mm	Max. shrinkage internal Ø in mm	Wall thickness in mm after max. shrinkage	Wall tolerance +/- mm
4S - 5/64"	1.98	0.64	0.22	0.05
4S - 1/8"	3.18	0.94	0.25	0.05
4S - 3/16"	4.75	1.27	0.30	0.08
4S - 1/4"	6.35	1.60	0.30	0.08
4S - 5/16"	7.92	2.00	0.30	0.08
4S - 3/8"	9.52	2.44	0.30	0.08
4S - 7/16"	11.13	2.85	0.30	0.08
4S - 1/2"	12.70	3.66	0.38	0.10
4S - 9/16"	14.27	3.94	0.38	0.10
4S - 5/8"	15.88	4.52	0.38	0.10
4S - 11/16"	17.45	5.03	0.38	0.10
4S - 3/4"	19.05	5.70	0.38	0.10
4S - 7/8"	22.23	6.20	0.38	0.10
4S - 1"	25.40	7.06	0.38	0.10
4S - 1 1/4"	31.75	8.82	0.38	0.10
4S - 1 1/2"	38.10	10.20	0.38	0.10
4S - 1 3/4"	44.45	11.43	0.38	0.10
4S - 2"	50.80	13.20	0.50	0.13
4S - 2 1/4"	57.15	14.85	0.50	0.13

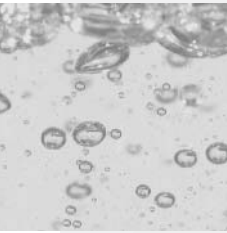
We shall be glad to offer you technical consultation and we will find out the optimum heat-shrinkable tubing suitable for your application.

* The minimum expansion internal Ø (external Ø) is not tolerated. The dimensions can be much greater than the minimum values. We shall be glad to assist you in case of any queries!

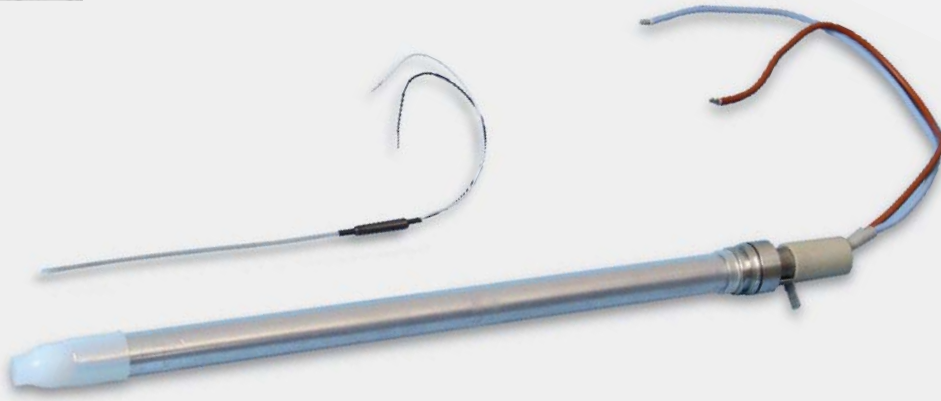
Larger diameters on request; see also our chapter Rollcover on page 11 or request for our special brochure, which provides additional information. Our main expertise lies in designing customer-specific solutions and shrinking on the roller provided by the customer.

▶ For additional information on the Internet, see:
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**POLYTETRAFLON®
HEAT-SHRINKABLE TUBING
DUAL PTFE/FEP
DUAL PTFE/PFA**



► **POLYTETRAFLON® DUAL- HEAT-SHRINKABLE TUBING, WITH STANDARD WALLS**

External heat-shrinkable tubing PTFE, inner tubing FEP or PFA

Purchase order no.	min. expansion internal Ø in mm	max. shrinkage internal Ø in mm	Wall thickness in mm after max. shrinkage
D - 036	0.91	0.10	0.60
D - 060	1.52	0.50	0.70
D - 130	3.30	0.50	0.80
D - 160	4.05	1.00	0.80
D - 190	4.80	1.60	0.90
D - 250	6.40	3.20	0.90
D - 350	8.90	4.80	0.90
D - 450	11.40	7.90	1.40

Do you require Dual heat-shrinkable tubing made from PTFE / PFA? Get in touch with us. Larger dimensions on request. POLYTETRAFLON® Dual heat-shrinkable tubing is also available in a special thin-walled design. We shall be glad to offer you consultation.



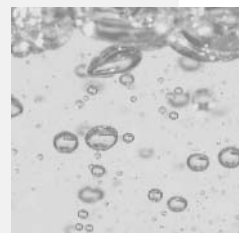
POLYTETRAFLON® Dual heat-shrinkable tubing is specially used in applications, in which the ends have to be closed in a media-tight manner or water-proof joints are necessary.

Their functionality consists of one inner and one outer tubing. The outer heat shrinkable tubing is made from PTFE and is more temperature-resistant than the internal FEP or PFA tubing. When shrink-fitted, the internal tubing liquefies and all the hollows are filled up. The outer tubing shrinks and presses correspondingly.

The standard length of POLYTETRAFLON® Dual heat-shrinkable tubing is 1.22 m. We produce pre-shrunk standard lengths against an additional charge; else we manufacture the tubing in standard lengths that are not pre-shrunk. In the latter case, the inner and outer lengths are loose and movable. Deviating lengths will be available on special request. If you need special lengths less than 50 cm, we recommend that the tubing should be pre-shrunk.

We also provide PTFE or PFA stoppers for sealing bigger parts. On request, we manufacture as per general specifications, e.g. FDA or USP class VI, and also as per customer specifications.

**POLYTETRAFLON®
HEAT-SHRINKABLE TUBING
FEP 1.3:1**



POLYTETRAFLON® FEP heat-shrinkable tubing is particularly used wherever lower shrinking temperatures are necessary.

Moreover, they feature a great deal of transparency and thereby light transmitting capacity. Benefit from decades of practical experience!

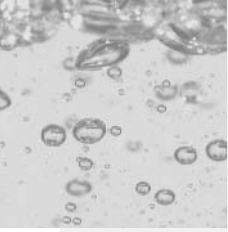
Purchase order no.	*min. expansion internal Ø in mm	max. shrinkage internal Ø in mm	Wall thickness in mm after max. shrinkage	Wall tolerance +/- mm
1.3 F -24	0.78	0.68	0.20	0.05
1.3 F -22	0.91	0.81	0.20	0.05
1.3 F -20	1.14	0.99	0.20	0.05
1.3 F -18	1.52	1.24	0.20	0.05
1.3 F -16	1.90	1.55	0.23	0.05
1.3 F -14	2.34	1.83	0.23	0.05
1.3 F -12	2.92	2.26	0.23	0.05
1.3 F -10	3.58	2.90	0.25	0.08
1.3 F -9	4.00	3.15	0.25	0.08
1.3 F -8	4.57	3.63	0.25	0.08
1.3 F -7	5.00	4.00	0.28	0.10
1.3 F -6	5.70	4.57	0.28	0.10
1.3 F -5	6.30	5.03	0.28	0.10
1.3 F -4	7.36	5.75	0.28	0.10
1.3 F -3	7.85	6.33	0.28	0.10
1.3 F -2	9.30	7.12	0.30	0.10
1.3 F -1	10.16	7.90	0.30	0.10
1.3 F -0	11.17	8.87	0.30	0.10
1.3 F -3/8	12.70	9.73	0.38	0.10
1.3 F -7/16	14.70	11.38	0.50	0.10
1.3 F -1/2	16.93	12.95	0.50	0.10
1.3 F -5/8	21.00	16.20	0.65	0.10
1.3 F -3/4	25.40	19.40	0.75	0.10
1.3 F -7/8	29.70	22.65	0.90	0.10
1.3 F -1	33.80	25.90	0.90	0.10
1.3 F -1 1/8	38.10	29.10	0.90	0.10
1.3 F -1 1/4	42.30	32.30	0.90	0.10
1.3 F -1 3/8	46.50	35.30	0.90	0.10
1.3 F -1 1/2	50.80	38.70	0.90	0.10

► For additional information on the Internet, see:

www.polytetra.com

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The internal Ø (external Ø) is not tolerated. The dimensions can be much greater than the minimum values. We shall be glad to assist you in case of any queries!



**POLYTETRAFLON®
SPECIAL TYPES
APPLICATION EXAMPLES**



One of our core competences lies in encasing delicate technical parts with heatshrinkable tubing. We know how to cover thermal sensors, springs, stirring shafts, cable antennae, heaters, probes and immersion pipes, right up to entire system components. We can tightly heat-seal the covered parts on one side or both the sides, depending upon the application. We look forward to new challenges!



Another specialty is our POLYTETRAFLON® safety heat-shrinkable tubing, which offers splinter protection for fluorescent lamps.

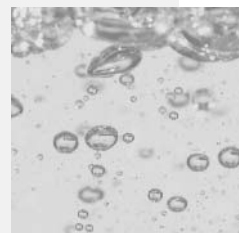
The following standard sizes are available:

- Poly F 5 Ø15 Wand 0,25 mm
- Poly F 8 Ø26 Wand 0,25 mm
- Poly F10 Ø30 Wand 0,25 mm
- Poly F12 Ø38 Wand 0,25 mm

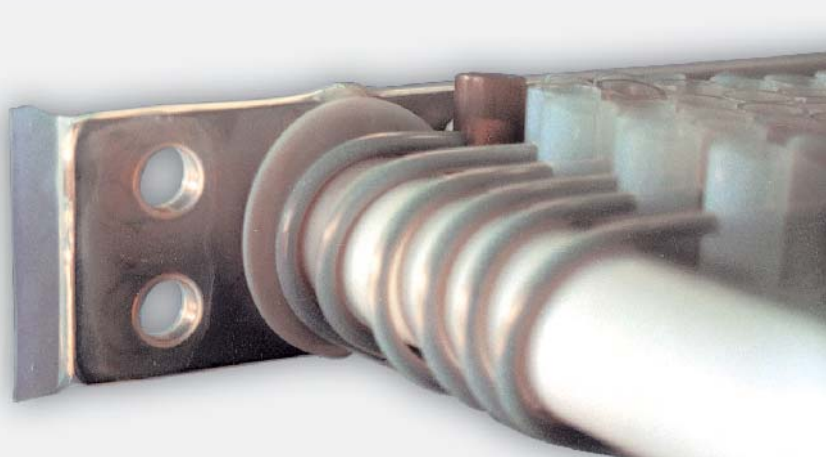
Special dimensions, special thickness on request.

POLYTETRAFLON® safety heat-shrinkable tubing offers splinter protection for fluorescent lamps used in the food and pharmaceutical industry.

**POLYTETRAFLON®
SPECIAL TYPES**



Sheet metal plate encased in PFA tubing, with vertically welded stainless steel pipe encased in PTFE tubing; the holes also have a PFA lining.



PFA tubing sections as spacers. Stainless steel hooks encased in PTFE tubing having heat-sealed ends.



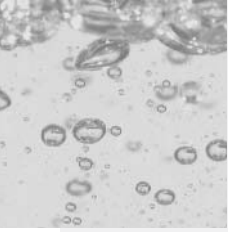
PFA shrunk-on heating devices with heat-sealed head, PFA connecting cable with heat-sealed end.



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POLYTETRAFLON® SPECIAL TYPES

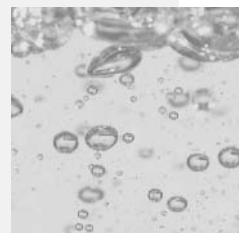


Thick-walled coating of shafts and rollers
with diameters up to 280 mm



Technically delicate electrical
components encased in POLYTETRAFLON®
heat-shrinkable tubing.

**POLYTETRAFLON®
ROLLCOVER
FEP OR PFA**



POLYTETRAFLON® Rollcovers are manufactured in a special manufacturing process with diameters ranging from approx. 25 mm to 450 mm. There are two types of designs, one with internal etching and one without etching. Rollcovers with internal etching can be glued on the roller. Rollcovers are mainly used in the textile industry, paper industry, packaging and food industry.

Our Rollcovers are used wherever hot, sticky or staining goods have to be moved. As against conventional PTFE coatings, POLYTETRAFLON® Rollcovers made from FEP or PFA do not have a micro-porous surface. Because of the chemical stability of fluoroplastics, they can be easily cleaned even with aggressive chemicals. Rollcovers with the following wall thickness can be manufactured:

FEP: 0.50 mm and 1.50 mm

PFA: 0.50 mm, 0.64 mm and 1.50 mm

Request for our special brochure on Rollcovers!



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**DO YOU ALSO REQUIRE TUBING MADE FROM
PTFE, FEP, PFA, PCTFE OR PVDF?
GET IN TOUCH WITH US AND BENEFIT FROM
OUR LONG-TERM EXPERIENCE.**

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