

Steel/PTFE-Pipes and Fittings

DIN 2848/DIN 2874

Blindflanges

Spacers

Elbows 30°, 45°, 60° und 90°

Crosses

Reducing Crosses

Reducers eccentric

Reducers concentric

Pipes (straight)

Tees

Reducing Tees

Lateral Tees 45°- Branch

Instrument - Tappings

Reducing Flanges concentric

Reducing Flanges eccentric

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

Program Overview

<p>Extraordinary chemical resistance of PTFE vis- a-vis corrosive media is regarded as basic criterion to protect effectively against numerous chemical attacks. At temperatures ranging from - 60°C to +230°C PTFE will response as decisive barrier against chemical corrosion.</p> <p>Considering these chemical properties PTFE-lined piping systems give access to numerous technical applications.</p> <p>Isostatic Moulding followed by out bedded sintering process represents a perfectly suitable technology for the lining of steel pipes and fittings. Paste extrusion is considered as supplementary chemical engineering.</p> <p>The designated use of isostatically moulded PTFE provides various advantageous characteristics, such as:</p>	<p>⇒ Commercially available PTFE-Polymers, given that they are adequately processed, deliver liner qualities of high density and favourable crystallinity. These characteristics supported by appropriate liner thicknesses will lead to higher vacuum resistance besides minimized permeation towards gases and steam.</p> <p>⇒ The moulding technology is suitable even for areas with intricated access. Decrease in structural strength and deficit in homogeneity will not become relevant. Significant reductions of lining thicknesses can easily be excluded.</p> <p>⇒ The isostatic moulding process itself ensures an all-around evenly shrinkage after concluding sintering cycle and thus minimizes displacement effects.</p> <p>⇒ Conciliatory workmanship keeps influenceable characteristics, such as tensile strength, bending rigidity and impact strength on a perfectly high level. Appropriate temperature treatments take care for favourable crystallinity.</p> <p>⇒ The mechanical strength of PTFE-liners turns out widely identical in longitudinal and circumferential direction. From this follows a substantial degree of security against demands of vacuum and changes of pressure.</p>
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Dimensional Range	DN 15 to DN 300 (DN 350 – DN 1000)	
Scope of Pressure Ratings	PN 10/16	PN 25 and PN 40 upon request
Applicable Range of Temperature	- 60 °C up to +230 °C	corresponding to - 76 °F to + 446 °F
Pertinent Technical Standards	Pipe and Fitting Conditions of Delivery Lining Technology	DIN 2848 DIN 2874 DIN 28 055 Part 1 and 2
Flanges	Fixed Flange DN 15 up to DN 40 Fixed Flange DN 50 up to DN 150 Fixed Flange DN 200 up to DN 300 Loose Flange	DIN EN 1092-1 Type 11 DIN EN 1092-1 Type 11 DIN EN 1092-1 Type 11 DIN EN 1092-1 Type 34
Flange Connections	DIN EN 1092-1; Sealing Area Type B	
Fittings	Elbows up to DN 40: 5d; from DN 50: 3d	DIN EN 10253-2
	Tee Reducer	DIN EN 10263-2 Type A DIN EN 10263-2 Type B
Metallic Components	Pipes	P235GH (1.0345) DIN EN 10216-2 P265GH (1.0425) DIN EN 10217-2
	Fittings	P235GH (1.0345) DIN EN 10216-2 P265GH (1.0425) DIN EN 10253-2
	Flanges (loose and fixed), stub ends	P235GH (1.0345) DIN EN 10028-2 P245GH (1.0352) DIN EN 10222-2 P250GH (1.0425) DIN EN 10273 P265GH (1.0460) DIN EN 10028-2
Lining Material	„virgin“ PTFE (white) Modified PTFE (TFM) Electrostatically conductive PTFE	acc. to ASTM D 4894 and 4895 or else DIN 28055 Part 1 and 2 Second generation PTFE (Individual make-up)
Lining Technology	Pipes	DN 15 by paste extrusion DN 20 to DN 300 ≤ 3.000 mm Isostatic moulding > 3.000 mm by paste extrusion
	Fittings	isostatic moulding followed by out-bedded sintering

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

Supplementary Details

Diffusion/Permeation

These phenomena characterise the spontaneous mixture of substances to equilibrate differences in concentration. The direction of movement typically follows decreasing concentration. A series of determinants influences this intricate mechanism. Besides specific gravity, void content, crystallinity, temperature, wall thickness and possibly compound proportions run-up effects can influence the magnitude of this process substantially. Besides the definition of wall thicknesses the processing can adjust crystallinity and elasticity to a certain extent. The proportion of crystallinity must be kept on a decisive borderline, so that the mechanical properties remain on their desired level. An adjusted processing will maintain a favourable degree of crystallinity together with satisfying elasticity. In conjunction with appropriate wall thicknesses long term applications can be achieved. Advanced types of PTFE (Second Generation PTFE) will contribute to further improvements to widen the field of applications.

Compliance with food stuff regulations

All applied white PTFE-Types are approved for the contact with food stuff. They are held in accordance with the EU-Directives, meet the requirements of the BgVV besides the FDA-Regulations US FDA 21 CFR 177.1550. Furthermore they correspond with the German BGVO-Regulations (regulation of commodities). The terms of the „Federal Clean Air Amendment“ issued in 1990 are fulfilled in the same manner.

There are no medical approvals in existence. Neither are fluoropolymers listed in the German Pharmaceutical Handbook. In case of necessity a pertinent approach should be submitted.

Suitability together with corresponding proficiency rests on the user eventually.

Packaging, Transport, Storage

All sealing areas of lined pipes and fittings are regularly protected by wooden boards. A disassembly is advised prior to installation only.

Electrical Groundings

Secure transfer of electrical charges will be maintained by electrical groundings welded to the steel body. Either threaded stud bolts or flat metallic stripes as grounding ports are available.

Heating Jackets

Lined pipes and fittings can be outfitted with heating jackets.

Heating connections either by male or female threads or based upon flange connectors.

Electrostatically conductive PTFE

On demand lining with electrostatically conductive PTFE (black). Low concentration of conductive constituent (< 2 %)

Surface Resistance $\leq 10^8 \Omega$ and
Volume Resistivity $\leq 10^8 \Omega \cdot \text{cm}$
(DIN IEC 60093/VDE 0303 Part 30)

Modified PTFE (TFM)

This type of advanced PTFE (2. Generation) is designed for extraordinary demands.

Diminished permeability;
increased specific gravity;
less deformation under load.
Improved resilience at elevated temperatures.

Stainless Steel as steel frame

Besides carbon steel frames, there is a full range of lined pipes and fittings with stainless steel as metallic frame available.

Commonly available materials:
1.4301(V2A), 1.4571 / 1.4408 (V4A)
or comparable materials.

Column sections, manifolds and further special parts

Facilities and equipment available to lined piping parts from DN 350 to DN 1000 and above.

following customer specification

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

Assembly Notes

Assembly Notes for PTFE-lined Pipes and Fittings

All sealing surfaces of lined pipes and fittings are covered with protective boards for transport and storage. They shall be removed prior to assembly only.

Apart from spacers (Type F) the full range of piping elements are furnished with vent holes. They act as control vents and discharge bores during manufacturing and operation and should be kept open as safeguarding measure. In case of necessity welding couplings can be assembled on top of these vent holes to maintain corrosion protective attempts besides insulating measures. For very particular requests they may become secured exceptionally.

For the assembly of lined piping elements supplementary gaskets shall not be considered. Transition to glass, enamel and other material, however, should implement PTFE-enveloped gaskets, particularly in case of uneven and non-parallel sealing areas.

The tightening of flange bolts is preferably achieved by crosswise sequence in consideration of recommended bolting torques (see table underneath). These values may be exceeded up to 50 % without detrimental effect. Superelevated torque values are likely to distort the sealing areas.

Recommended Bolting Torques				
DN	PN 10/16 Number of Bolts /Threads	Bolting Torque [N·m]	PN 25/40 Number of Bolts /Threads	Bolting Torque [N·m]
15	4 x M12	15	4 x M12	17
20	4 x M12	22	4 x M12	25
25	4 x M12	22	4 x M12	25
32	4 x M16	25	4 x M16	30
40	4 x M16	25	4 x M16	30
50	4 x M16	35	4 x M16	40
65	4 x M16	45	4 x M16	50
80	8 x M16	45	8 x M16	50
100	8 x M16	50	8 x M20	55
125	8 x M16	60	8 x M24	80
150	8 x M20	70	8 x M24	95
200	8 x M20	100	12 x M24	120
250	12 x M20	100	12 x M27	120
300	12 x M20	120	16 x M27	140

Supplementary advises

Above stated bolting torques are valid for smooth-running lubricated threads. About 24 hours after installation the applied torque values should be reappraised at operation temperature. Given bolting torques may be exceeded by 50 % without detrimental consequences.

Assuming properly assembled bolts still reveal leakage, by no means excessive torque values shall be applied as sealing measures. Instead the leaking flange connections shall be taken apart and inspected for possible unevenness, inclusions or dirt. Minor damages may be removed by means of emery paper.

Attempts to repair PTFE-Linings are unobjectionable.

Welding or brazing treatment of PTFE-lined piping must be declined because of encountered liner damage.

Undue strain along the bearing areas must be avoided during assembly.

A disassembly of lined piping items shall only be considered at temperatures below 50 °C.

Tightness of flange connections

Flanged PTFE-lined sealing areas represent top-class sealing systems in case of proper assembly. There is ample proof to meet the demanding requirements of the German "Clean Air Act", Chapter 5.2.6.4 (2002) besides the industrial regulation VDI 2440.

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

Operational Limits

Chemical Resistance

As fully fluorinated polymer PTFE features excellent chemical properties. A very few limitations, however, have to be taken into account:

- Alkali metals, such as sodium and potassium, besides alkaline-earth metals (i.e. calcium), either molten or as complex compound lead to destruction of PTFE and to degradation of the polymer structure.
- Fluorinated carbohydrates (Freon®) create swellings, occasionally even at ambient temperature. Limited exposure may turn out reversible, extended contact, however, lead to permanent volume increase with substantially restricted physical properties.
- Elementary fluorine, halogens und chlorine trifluoride reveal no detrimental effect at ambient temperature. At elevated temperature levels intensified reactions up to complete degradation will be very likely.
- Benzyl chloride, dimethylformamide and fuming nitric acid besides nitridic acid create at elevated temperatures a structural degradation.
- Monomers of Styrene, Butadiene, Acrylonitrile and further homologues tend to penetrate the molecular structure giving rise to spontaneous polymerization leading to gain in volume and structural failure (Popcorn-Effect).
- Radiation with boosting energy of >10kGy may diminish the mechanical properties by 50% or more.

Vacuum Resistance

PTFE-lined pipes and fittings reveal limited vacuum resistance. Individual borderlines for Linings in "Standard Duty" and "Heavy Duty" are displayed underneath.

Vacuum Resistance for „Standard Duty“ PTFE-Lining; Values expressed in mbar and in kPa.

Dimension (DN)	15	20	25	32	40	50	65	80	100	125	150	200	250	300
PTFE-Wall Thickness (mm)	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0
Pressure Rating (lbs/inch ²)	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Minimum Temperature (°C)	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10
Maximum Temperature (°C)	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Vacuum Resistance (mbar)	10	10	10	10	10	10	10	10	200	300	500	600	800	800
Vacuum Resistance (kPa)	1	1	1	1	1	1	1	1	20	30	50	60	80	80

Vacuum Resistance for "Heavy Duty" PTFE-Lining (strengthened PTFE-Wall thickness); Values expressed in mbar and kPa.

Dimension	15	20	25	32	40	50	65	80	100	125	150	200	250	300
PTFE-Wall Thickness (mm)	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	7,0	7,0	8,0	9,5	11,0	11,0
Pressure Rating (lbs/inch ²)	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Minimum Temperature (°C)	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-10
Maximum Temperature (°C)	200	200	200	200	200	200	200	200	200	200	200	200	200	200
Vacuum Resistance (mbar)	10	10	10	10	10	10	10	10	10	20	30	50	80	100
Vacuum Resistance (kPa)	1	1	1	1	1	1	1	1	1	2	3	5	8	10

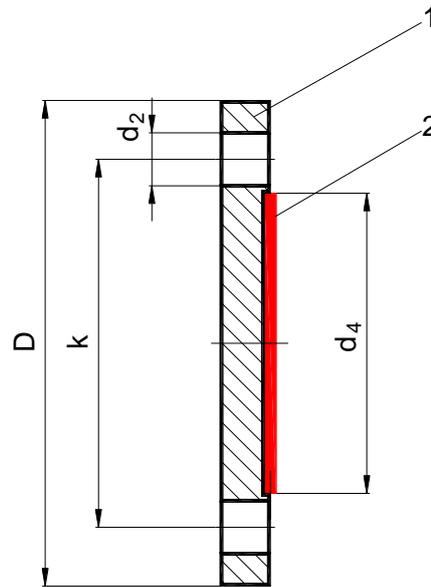
Vacuum Resistance based upon defined operation temperatures; Values expressed in mbar.

Dimension (DN)	PTFE „Standard Duty“					PTFE „Heavy Duty“								
	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Operation Temperature 20 °C	1	1	1	1	1	1	1	1	20	30	50	60	80	80
Operation Temperature 20 °C	1	1	1	1	1	1	1	1	1	2	3	5	8	10
Operation Temperature 50 °C	3	3	3	3	3	3	3	3	50	75	130	150	200	200
Operation Temperature 50 °C	3	3	3	3	3	3	3	3	3	5	10	15	20	30
Operation Temperature 100 °C	5	5	5	5	5	5	5	5	100	150	250	300	400	400
Operation Temperature 100 °C	5	5	5	5	5	5	5	5	5	10	15	30	40	50
Operation Temperature 150 °C	8	8	8	8	8	8	8	8	150	225	380	450	600	600
Operation Temperature 150 °C	8	8	8	8	8	8	8	8	8	15	25	40	60	80
Operation Temperature 200 °C	10	10	10	10	10	10	10	10	200	300	500	600	800	800
Operation Temperature 200 °C	10	10	10	10	10	10	10	10	10	20	30	50	80	100

Electrostatically conductive lining results in reduced vacuum resistance of approximately 15 %.

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874
PN 10
Blank Flanges DIN PN 10
DN 15 – DN 300

Pos.	Component	Materials	Standard
1	Blank Flange	P250GH (1.0460), P265GH (1.0425)	DIN EN 1092-1 Type 05
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyll-Priming	



DN	D	nx d ₂	d ₄	k	kg
15	95	4 x 14	45	65	0,7
20	105	4 x 14	58	75	1,0
25	115	4 x 14	68	85	1,3
32	140	4 x 18	78	100	1,8
40	150	4 x 18	88	110	2,1
50	165	4 x 18	102	125	2,9
65	185	4 x 18	122	145	3,7
80	200	8 x 18	138	160	4,8
100	220	8 x 18	158	180	5,6
125	250	8 x 18	188	210	8,4
150	285	8 x 22	212	240	10,4
200	340	8 x 22	268	295	16,5
250	395	12 x 22	320	350	24,0
300	445	12 x 22	370	400	30,9

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

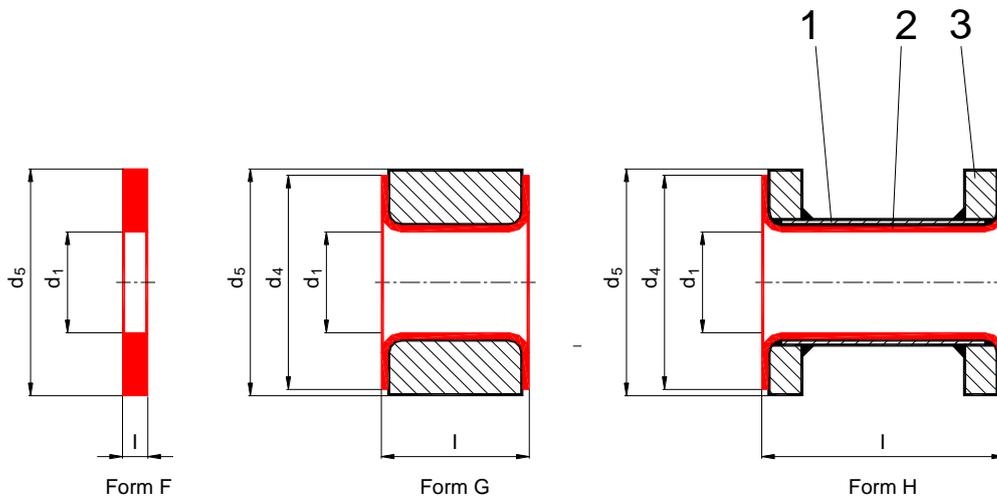
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

DIN

Spacers and armored Spacers DIN PN 10

DN 15 - DN 300

Pos.	Component	Materials	Standard
1	Pipe	P235GH (1.0345), P250GH (1.0460)	DIN EN 10028-2, DIN EN 10222-2
2	Lining	Virgin PTFE or PTFE electrostatically conductive	ASTM D 4894 / 4895
3	Stub End	P245GH (1.0352), P250GH (1.0460)	DIN EN 10222-2, DIN EN 10028-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyll-Priming	



DN	d ₁	d ₄	d ₅	I (Form F)	I (Form G)	I (Form H)	kg/100 mm
15	14	45	48				0,4
20	22	58	60				0,6
25	22	68	70				0,8
32	38	78	82				1,0
40	38	88	92				1,2
50	48	102	107				1,4
65	63	122	127				1,8
80	75	138	142	5-20	15-70	60-100	2,3
100	99	158	162				2,8
125	122	188	192				3,7
150	149	212	218				4,2
200	194	268	273				5,9
250	248	320	328				7,1
300	297	370	378				8,8

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	24,0	34,0	34,0	48,3	48,3	60,3	76,1	88,9	114,3	139,7	168,3	219,1	273,0	323,9
Wall Thickness s (Form H)	2,5	3,0	3,0	2,6	2,6	2,9	2,9	3,2	3,6	4,0	4,5	6,3	6,3	7,1
PTFE-Thickness	2,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

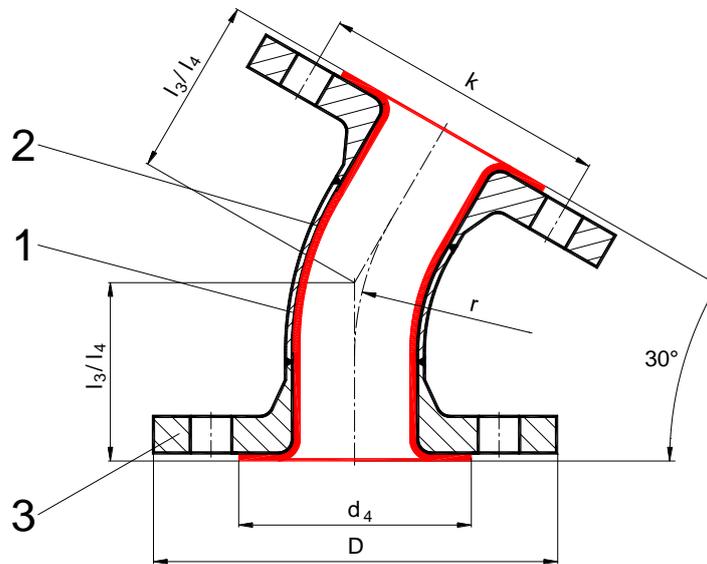
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

DIN

Flanged Elbow 30° DIN PN 10

DN 15 - DN 300

Pos.	Component	Materials	Standard
1	Elbow	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894 / 4895
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Kugelstrahlen nach SIS 05 5900 SA 2 1/2; Epoxivinyll-Grundierung	

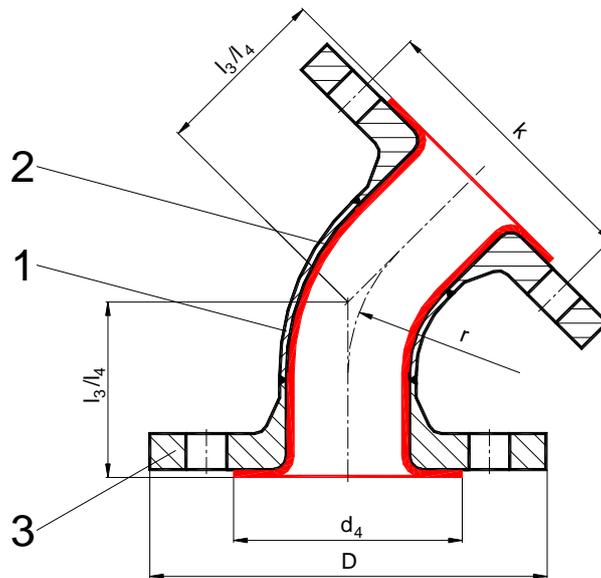


DN	Elbow Type	r	l ₃	l ₄	d ₄	k	D	kg
15	5d	42,5		50	45	65	95	1,5
20	5d	57,5		57	58	75	105	2,0
25	5d	72,5		61	68	85	115	2,5
32	5d	92,5		70	78	100	140	3,7
40	5d	107,5		73	88	110	150	4,1
50	3d	76,0	70		102	125	165	5,4
65	3d	95,0	75		122	145	185	7,1
80	3d	114,5	85		138	160	200	9,4
100	3d	152,5	96		158	180	220	11,6
125	3d	190,5	106		188	210	250	15,3
150	3d	228,5	118		212	240	285	19,5
200	3d	305,0	145		268	295	340	29,8
250	3d	381,0	168		320	350	395	44,0
300	3d	457,0	190		370	400	445	58,0

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	21,3	26,9	33,7	42,4	48,3	60,3	76,1	88,9	114,3	139,7	168,3	219,1	273,0	323,9
Wall Thickness s (DIN EN 10253-2)	2,0	2,3	2,6	2,6	2,6	2,9	2,9	3,2	3,6	4,0	4,5	6,3	6,3	7,1
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874
DIN
Flanged Elbow 45° DIN PN 10
DN 15 - DN 300

Pos.	Component	Materials	Norm
1	Elbow	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Liner	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894 / 4895
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Kugelstrahlen nach SIS 05 5900 SA 2 1/2; Epoxivinyll-Grundierung	

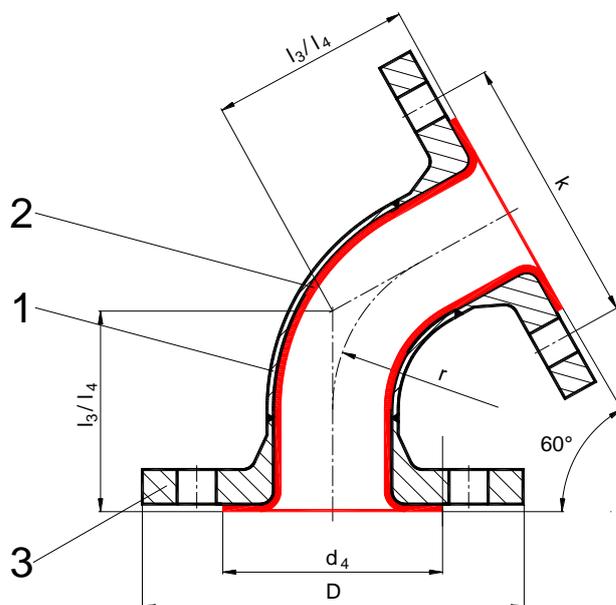


DN	Elbow Type	r	l ₃	l ₄	d ₄	k	D	kg
15	5d	42,5		45	45	65	95	1,9
20	5d	57,5		65	58	75	105	2,2
25	5d	72,5		70	68	85	115	2,6
32	5d	92,5		80	78	100	140	3,8
40	5d	107,5		90	88	110	150	4,2
50	3d	76,0	80		102	125	165	5,5
65	3d	95,0	85		122	145	185	7,2
80	3d	114,5	100		138	160	200	10,0
100	3d	152,5	115		158	180	220	12,0
125	3d	190,5	135		188	210	250	17,1
150	3d	228,5	150		212	240	285	22,3
200	3d	305,0	190		268	295	340	33,0
250	3d	381,0	225		320	350	395	54,0
300	3d	457,0	260		370	400	445	76,0

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	21,3	26,9	33,7	42,4	48,3	60,3	76,1	88,9	114,3	139,7	168,3	219,1	273,0	323,9
Wall Thickness s (DIN EN 10253-2)	2,0	2,3	2,6	2,6	2,6	2,9	2,9	3,2	3,6	4,0	4,5	6,3	6,3	7,1
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874
DIN
Flanged Elbow 60° DIN PN 10
DN 15 - DN 300

Pos.	Component	Materials	Standard
1	Elbow	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894 / 4895
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Kugelstrahlen nach SIS 05 5900 SA 2 1/2; Epoxivinyll-Grundierung	

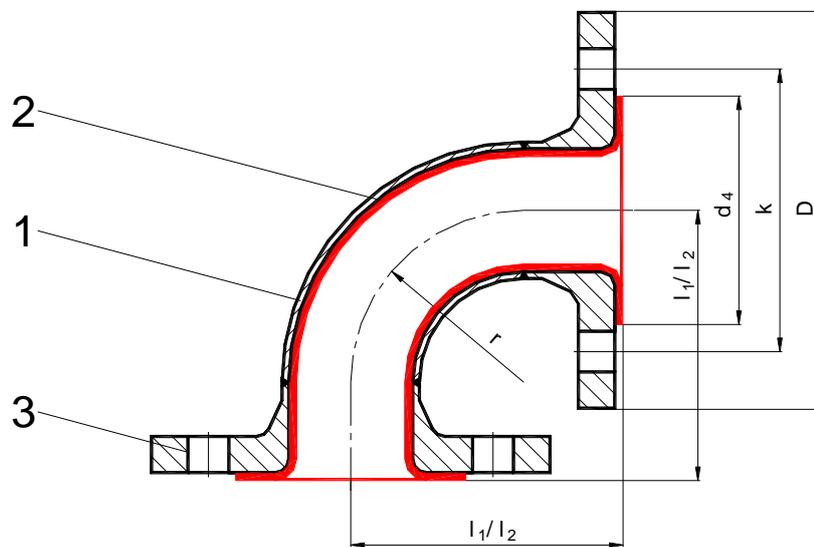


DN	Elbow Type	r	l ₃	l ₄	d ₄	k	D	kg
15	5d	42,5		63	45	65	95	1,6
20	5d	57,5		75	58	75	105	2,1
25	5d	72,5		84	68	85	115	2,6
32	5d	92,5		98	78	100	140	3,9
40	5d	107,5		108	88	110	150	4,7
50	3d	76,0	93		102	125	165	5,9
65	3d	95,0	104		122	145	185	7,5
80	3d	114,5	120		138	160	200	9,6
100	3d	152,5	145		158	180	220	12,4
125	3d	190,5	166		188	210	250	16,8
150	3d	228,5	188		212	240	285	22,2
200	3d	305,0	240		268	295	340	34,8
250	3d	381,0	286		320	350	395	48,0
300	3d	457,0	330		370	400	445	63,0

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	21,3	26,9	33,7	42,4	48,3	60,3	76,1	88,9	114,3	139,7	168,3	219,1	273,0	323,9
Wall Thickness s (DIN EN 10253-2)	2,0	2,3	2,6	2,6	2,6	2,9	2,9	3,2	3,6	4,0	4,5	6,3	6,3	7,1
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874
DIN
Flanged Elbow 90° DIN PN 10
DN 15 - DN 300

Pos.	Component	Materials	Standard
1	Elbow	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894 / 4895
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	P235GH (1.0345), P245GH (1.0352)
Surface Treatment		Kugelstrahlen nach SIS 05 5900 SA 2 1/2; Epoxivinyll-Grundierung	



DN	Elbow Type	r	l ₁	l ₂	d ₄	k	D	kg
15	5d	42,5		80	45	65	95	2,0
20	5d	57,5		95	58	75	105	2,3
25	5d	72,5		110	68	85	115	2,9
32	5d	92,5		130	78	100	140	4,0
40	5d	107,5		150	88	110	150	4,5
50	3d	76,0	120		102	125	165	6,0
65	3d	95,0	140		122	145	185	7,9
80	3d	114,5	165		138	160	200	10,4
100	3d	152,5	205		158	180	220	12,6
125	3d	190,5	245		188	210	250	19,0
150	3d	228,5	285		212	240	285	26,0
200	3d	305,0	365		268	295	340	48,1
250	3d	381,0	450		320	350	395	76,2
300	3d	457,0	525		370	400	445	110,0

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	21,3	26,9	33,7	42,4	48,3	60,3	76,1	88,9	114,3	139,7	168,3	219,1	273,0	323,9
Wall Thickness S(DIN EN 10253-2)	2,0	2,3	2,6	2,6	2,6	2,9	2,9	3,2	3,6	4,0	4,5	6,3	6,3	7,1
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

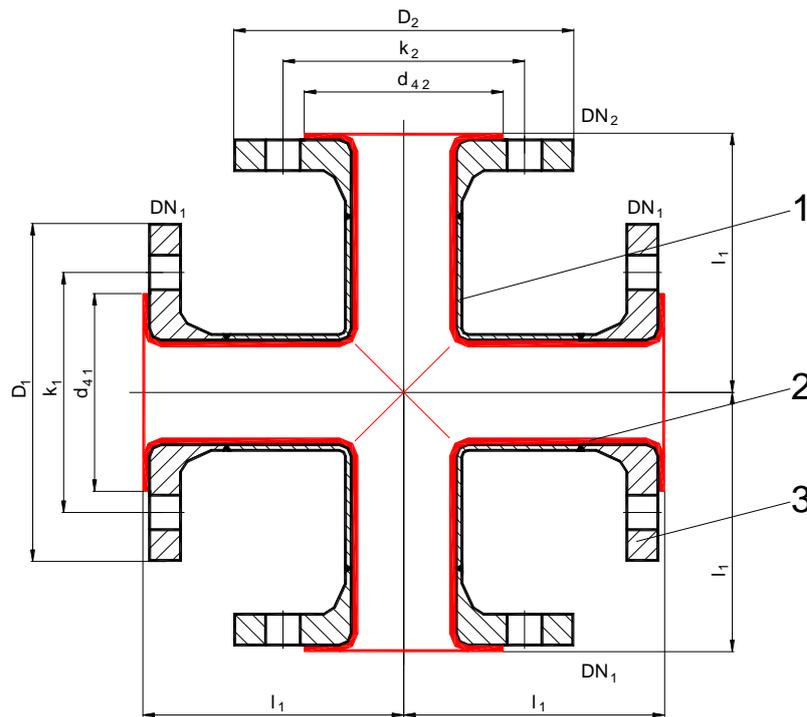
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874 (associated)

DIN

Crosses DIN PN 10

DN 15 - DN 300

Pos.	Component	Materials	Standard
1	Fitting *)	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyll-Priming	



DN ₁	DN ₂	l ₁	l ₂	d _{4.1}	d _{4.2}	k ₁	k ₂	D ₁	D ₂	kg
15	15	80	80	45	45	65	65	95	95	3,0
20	20	95	95	58	58	75	75	105	105	4,1
25	25	110	110	68	68	85	85	115	115	4,8
32	32	130	130	78	78	100	100	140	140	6,1
40	40	150	150	88	88	110	110	150	150	8,2
50	50	120	120	102	102	125	125	165	165	10,7
65	65	140	140	122	122	145	145	185	185	14,4
80	80	165	165	138	138	160	160	200	200	26,8
100	100	205	205	158	158	180	180	220	220	40,2
125	125	245	245	188	188	210	210	250	250	52,0
150	150	285	285	212	212	240	240	285	285	64,5
200	200	365	365	268	268	295	295	340	340	118,0
250	250	450	450	320	320	350	350	395	395	168,0
300	300	525	525	370	370	400	400	445	445	225,0

*) DN 25/DN 50 assembled out of welded pipe. Material: P235GH (1.0345) based upon DIN EN 10028-2

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	33,7	33,7	33,7	42,2	48,3	60,3	73,0	88,9	114,3	141,3	168,3	219,1	273,0	323,8
Wall Thickness S (ANSI Sched. 40)	3,38	3,38	3,38	3,56	3,68	3,91	5,16	5,49	6,02	6,55	7,11	8,18	9,27	10,31
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

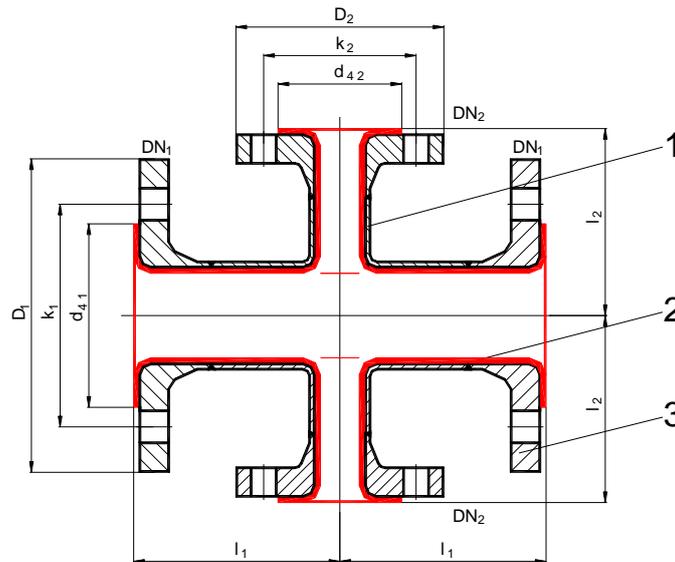
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874 (associated)

DIN

Reducing Crosses DIN PN 10

DN 20 - DN 300

Pos.	Component	Materials	Standard
1	Fitting *)	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyll-Priming	



DN ₁	DN ₂	l ₁	l ₂	d _{4.1}	d _{4.2}	k ₁	k ₂	D ₁	D ₂	kg
20	15	95	80	58	45	75	65	105	95	2,7
25	20	110	95	68	58	85	75	115	105	4,0
40	25	150	110	88	68	110	85	150	115	7,1
50	40	120	150	102	88	125	110	165	150	8,4
50	25	120	110	102	68	125	85	165	115	7,6
80	50	165	120	138	102	160	125	200	165	13,8
80	40	165	150	138	88	160	110	200	150	13,0
80	25	165	110	138	68	160	85	200	115	12,2
100	80	205	165	158	138	180	160	220	200	19,2
100	50	205	120	158	102	180	125	220	165	17,1
150	100	285	205	212	158	240	180	285	220	36,2
150	80	285	165	212	138	240	160	285	200	34,8
200	150	365	285	268	212	295	240	340	285	61,0
200	100	365	205	268	158	295	180	340	220	56,0
250	200	450	365	320	268	350	295	395	340	94,0
250	150	450	285	320	212	350	240	395	285	89,0
300	250	525	450	370	320	400	350	445	395	134,0
300	200	525	365	370	268	400	295	445	340	126,0
300	150	525	285	370	212	400	240	445	285	121,0

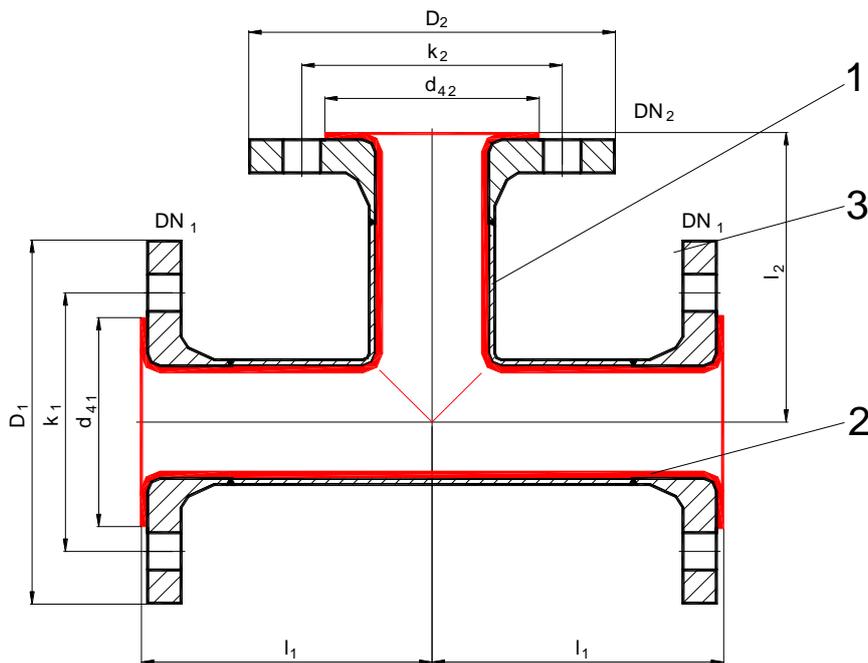
Further reducing crosses besides reduced crosses with varying outgoing branch dimensions available upon request.

*) DN 25/DN 50 assembled out of flaired pipe. Material: P235GH (1.0345) based upon Standard EN 10028-2

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	33,7	33,7	33,7	42,2	48,3	60,3	73,0	88,9	114,3	141,3	168,3	219,1	273,0	323,8
Wall Thickness (ANSI Sched. 40)	3,38	3,38	3,38	3,56	3,68	3,91	5,16	5,49	6,02	6,55	7,11	8,18	9,27	10,31
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874
DIN
Flanged Tees DIN PN 10
DN 15 - DN 300

Pos.	Component	Materials	Standard
1	Tee-Fitting *)	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyll-Priming	



DN ₁	DN ₂	l ₁	l ₂	d ₄₁	d ₄₂	k ₁	k ₂	D ₁	D ₂	kg
15	15	80	80	45	45	65	65	95	95	2,4
20	20	95	95	58	58	75	75	105	105	3,3
25	25	110	110	68	68	85	85	115	115	4,4
32	32	130	130	78	78	100	100	140	140	6,4
40	40	150	150	88	88	110	110	150	150	7,8
50	50	120	120	102	102	125	125	165	165	9,6
65	65	140	140	122	122	145	145	185	185	11,7
80	80	165	165	138	138	160	160	200	200	16,9
100	100	205	205	158	158	180	180	220	220	20,7
125	125	245	245	188	188	210	210	250	250	31,3
150	150	285	285	212	212	240	240	285	285	41,8
200	200	365	365	268	268	295	295	340	340	68,0
250	250	450	450	320	320	350	350	395	395	104,0
300	300	525	525	370	370	400	400	445	445	148,0

*) DN 50 assembled by flared pipe (60,3 x 3,91) Material: P235GH (1.0345) or P265GH (1.0425) acc. to EN 10028-2

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	33,7	33,7	33,7	42,2	48,3	60,3	73,0	88,9	114,3	141,3	168,3	219,1	273,0	323,8
Wall Thickness S (ANSI Sched. 40)	3,38	3,38	3,38	3,56	3,68	3,91	5,16	5,49	6,02	6,55	7,11	8,18	9,27	10,31
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

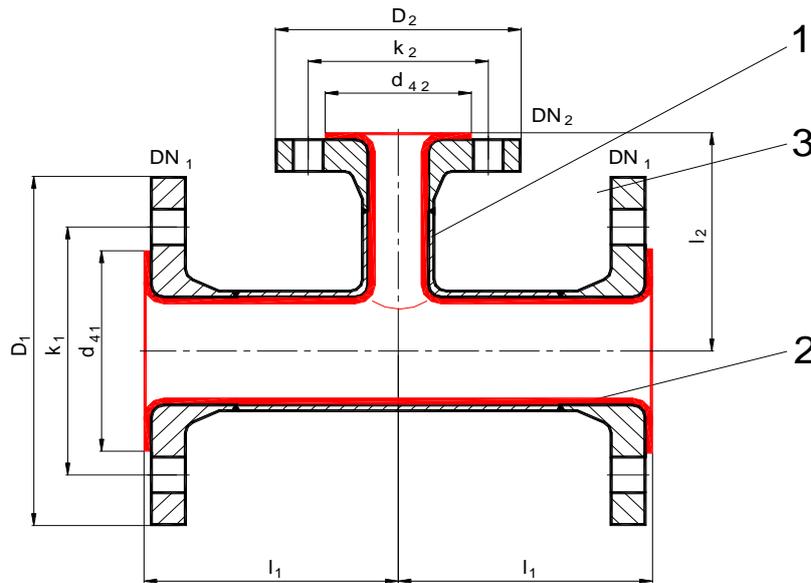
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

DIN

Flanged Reducing Tees DIN PN 10

DN 20 - DN 300

Pos.	Component	Materials	Standard
1	Tee-Fitting *)	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 1/2; Epoxivinyl-Priming	



DN ₁	DN ₂	l ₁	l ₂	d ₄₁	d ₄₂	k ₁	k ₂	D ₁	D ₂	kg
20	15	95	80	58	45	75	65	105	95	2,7
25	20	110	95	68	58	85	75	115	105	4,0
40	25	150	110	88	68	110	85	150	115	7,1
50	40	120	150	102	88	125	110	165	150	8,4
50	25	120	110	102	68	125	85	165	115	7,6
80	50	165	120	138	102	160	125	200	165	13,8
80	40	165	150	138	88	160	110	200	150	13,0
80	25	165	110	138	68	160	85	200	115	11,8
100	80	205	165	158	138	180	160	220	200	19,2
100	50	205	120	158	102	180	125	220	165	17,1
150	100	285	205	212	158	240	180	285	220	36,2
150	80	285	165	212	138	240	160	285	200	34,8
200	150	365	285	268	212	295	240	340	285	61,0
200	100	365	205	268	158	295	180	340	220	56,0
250	200	450	365	320	268	350	295	395	340	94,0
250	150	450	285	320	212	350	240	395	285	89,0
300	250	525	450	370	320	400	350	445	395	134,0
300	200	525	365	370	268	400	295	445	340	126,0
300	150	525	285	370	212	400	240	445	285	121,0

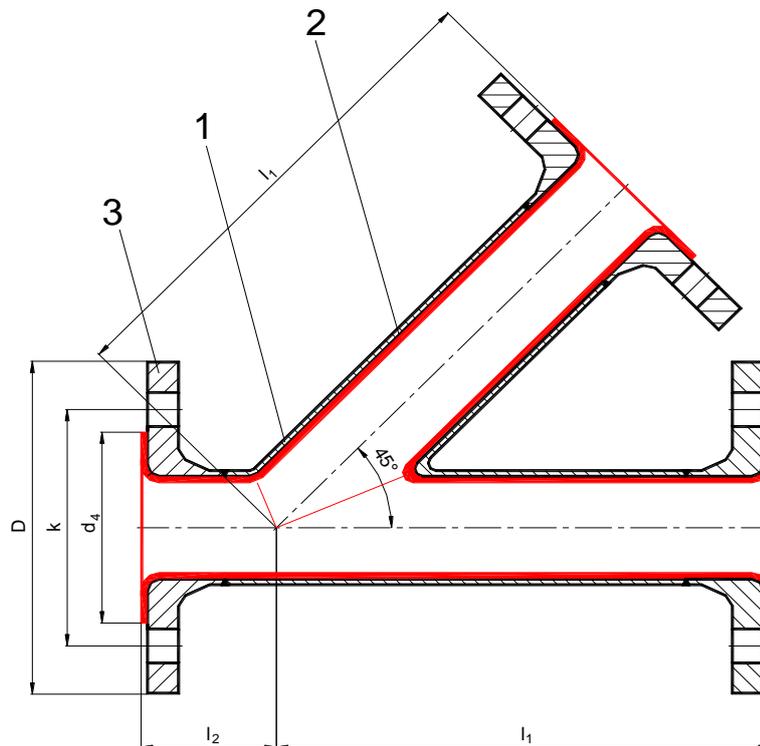
Deviating Reducing-Tees apart from DIN 2848 available upon request.

*) DN 50/DN 25 assembled out of flaired pipe (60,3 x 3,91/35,0 x 3,0). Material: P235GH (1.0345) acc. to DIN EN 10028-2

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	33,7	33,7	33,7	42,2	48,3	60,3	73,0	88,9	114,3	141,3	168,3	219,1	273,0	323,8
Wall Thickness S (ANSI Sched. 40)	3,38	3,38	3,38	3,56	3,68	3,91	5,16	5,49	6,02	6,55	7,11	8,18	9,27	10,31
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874 (associated)
DIN
Flanged Lateral Tees DIN PN 10
DN 25 - DN 200

Pos.	Component	Materials	Standard
1	Flaired Pipe	P235GH (1.0345) bzw. P265GH (1.0425)	DIN EN 10028-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyl-Priming	



DN	l ₁	l ₂	d ₄	k	D	kg
25	180	40	68	85	115	4,2
32	210	45	78	100	140	6,1
40	220	50	88	110	150	7,5
50	240	55	102	125	165	9,3
65	260	60	122	145	185	11,2
80	290	70	138	160	200	16,3
100	320	80	158	180	220	19,9
125	350	90	188	210	250	30,1
150	380	100	212	240	285	41,0
200	455	120	268	295	340	68,0

Flanged lateral tees with reduced branches available upon request.

DN	25	32	40	50	65	80	100	125	150	200
Pipe Diameter	33,4	42,2	48,3	60,3	73,0	88,9	114,3	141,3	168,3	219,1
Wall Thickness S (ANSI Sched. 40)	3,38	3,56	3,68	3,91	5,16	5,49	6,02	6,55	7,11	8,18
PTFE-Thickness	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0

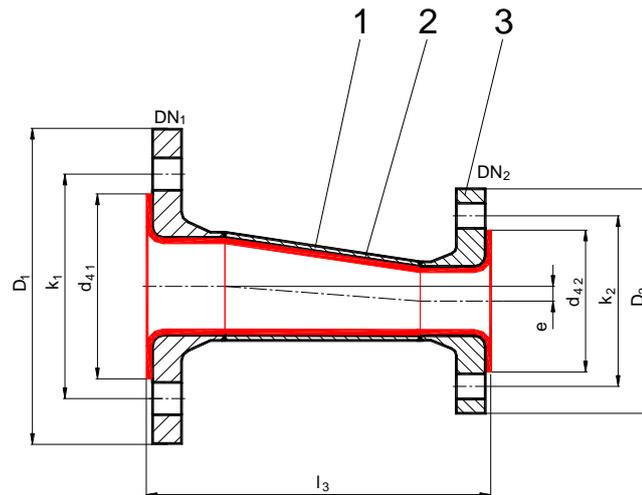
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

DIN

Eccentric Reducers DIN PN 10

DN 20 - DN 300

Pos.	Component	Materials	Norm
1	Reducing Fitting	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 1/2; Epoxivinyll-Priming	



DN ₁	DN ₂	l ₃	d _{4.1}	d _{4.2}	k ₁	k ₂	D ₁	D ₂	e	kg
25	20	125	68	58	85	75	115	105	3	2,3
25	15	125	68	45	85	65	115	95	6	2,2
40	25	145	88	68	110	85	150	115	11	3,4
40	20	145	88	58	110	75	150	105	7	3,1
50	40	165	102	88	125	110	165	150	6	5,3
50	25	160	102	68	125	85	165	105	13	4,3
65	50	185	122	102	145	125	185	165	8	6,5
65	40	180	122	88	145	110	185	150	14	5,9
80	65	190	138	122	160	145	200	185	6	8,8
80	50	190	138	102	160	125	200	165	14	8,2
80	40	185	138	88	160	110	200	150	20	7,1
100	80	205	158	138	180	160	220	200	13	10,3
100	65	200	158	122	180	145	220	185	19	9,8
100	50	200	158	102	180	125	220	165	27	9,3
125	100	235	188	158	210	180	250	220	13	13,9
125	80	235	188	138	210	160	250	200	25	12,8
125	65	230	188	122	210	145	250	185	32	12,4
150	125	250	212	188	240	210	285	250	14	18,1
150	100	250	212	158	240	180	285	220	27	16,5
150	80	250	212	138	240	160	285	200	40	15,9
200	150	270	268	212	295	240	340	285	25	26,3
200	125	270	268	212	295	210	340	250	40	25,8
200	100	270	268	158	295	180	340	220	52	23,6
250	200	310	320	268	350	295	395	340	27	38,2
250	150	305	320	212	350	240	395	285	52	34,6
250	125	305	320	188	350	210	395	250	67	34,1
300	250	340	370	320	400	350	445	395	25	48,8
300	200	335	370	268	400	295	445	340	52	45,3
300	150	330	370	212	400	240	445	285	78	41,8

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Wall Thickness (ANSI Sched. 40)	2,8	2,9	3,4	3,6	3,7	3,9	5,2	5,5	6,0	6,5	7,1	8,18	9,27	10,31
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

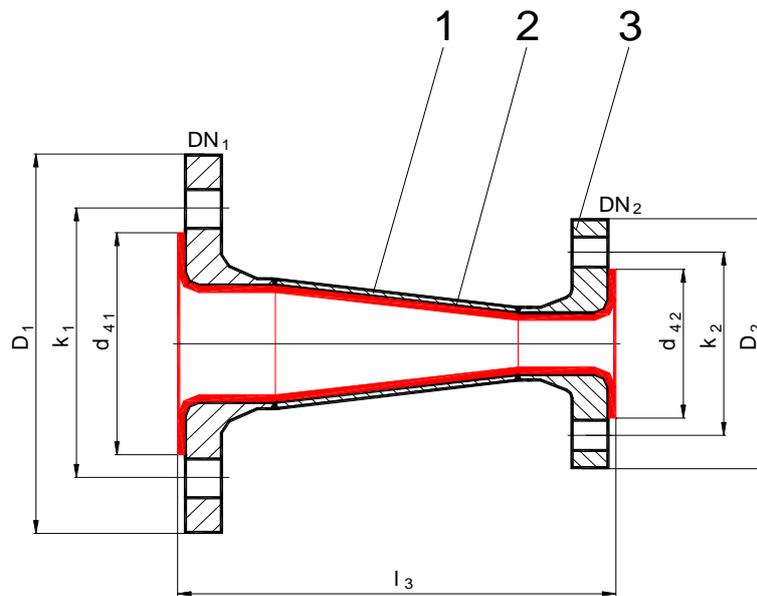
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

DIN

Concentric Reducers DIN PN 10

DN 20 - DN 100

Pos.	Component	Materials	Standard
1	Reducing Fitting	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyll-Priming	



DN ₁	DN ₂	l ₃	d _{4.1}	d _{4.2}	k ₁	k ₂	D ₁	D ₂	kg
20	15	125	58	45	75	65	105	95	2,1
25	20	125	68	58	85	75	115	105	2,3
25	15	125	68	45	85	65	115	95	2,2
32	25	130	78	68	100	85	140	115	3,1
40	32	150	88	78	110	100	150	140	4,3
40	25	145	88	68	110	85	150	115	3,4
50	40	165	102	88	125	110	165	150	5,3
50	32	165	102	78	125	100	165	140	4,8
50	25	160	102	68	125	85	165	115	4,3
65	50	185	122	102	145	125	185	165	6,5
65	40	180	122	88	145	110	185	150	5,9
65	32	180	122	78	145	100	185	140	5,7
80	65	190	138	122	160	145	200	185	8,8
80	50	190	138	102	160	125	200	165	8,2
80	40	185	138	88	160	110	200	150	7,1
100	80	205	158	138	180	160	220	200	10,3
100	65	200	158	122	180	145	220	185	9,8
100	50	200	158	102	180	125	220	165	9,3

DN	15	20	25	32	40	50	65	80	100
Wall Thickness s (ANSI Sched. 40)	2,8	2,9	3,4	3,6	3,7	3,9	5,2	5,5	6,0
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5

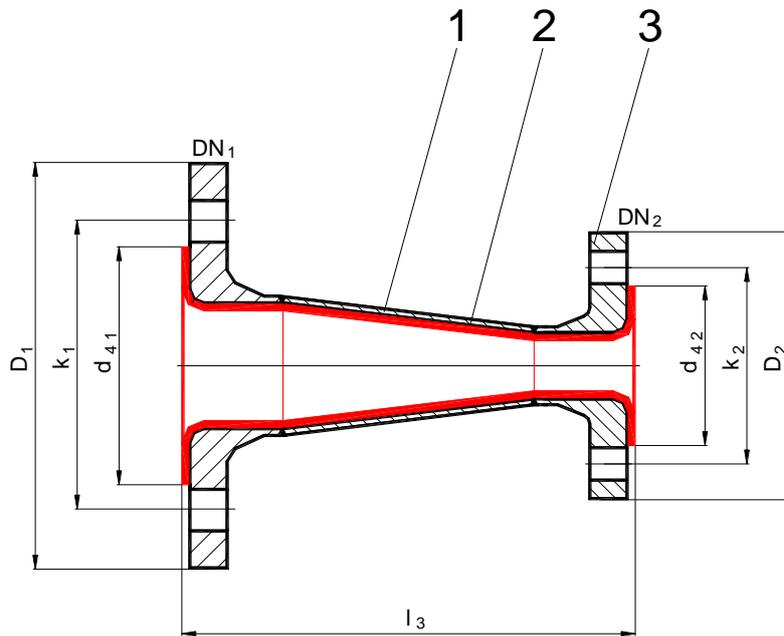
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

DIN

Concentric Reducers DIN PN 10

DN 125 - DN 300

Pos.	Component	Materials	Standard
1	Reducing Fitting	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyl-Priming	



DN ₁	DN ₂	l ₃	d _{4.1}	d _{4.2}	k ₁	k ₂	D ₁	D ₂	kg
125	100	235	188	158	210	180	250	220	13,9
125	80	235	188	138	210	160	250	200	12,8
125	65	230	188	122	210	145	250	185	12,4
150	125	250	212	188	240	210	285	250	18,1
150	100	250	212	158	240	180	285	220	16,5
150	80	250	212	138	240	160	285	200	15,9
200	150	270	268	212	295	240	340	285	26,3
200	125	270	268	212	295	210	340	250	25,8
200	100	270	268	158	295	180	340	220	23,6
250	200	310	320	268	350	295	395	340	38,2
250	150	305	320	212	350	240	395	285	34,6
250	125	305	320	188	350	210	395	250	34,1
300	250	340	370	320	400	350	445	395	48,8
300	200	335	370	268	400	295	445	340	45,3
300	150	330	370	212	400	240	445	285	41,8

DN	65	80	100	125	150	200	250	300
Wall Thickness S (ANSI Sched. 40)	5,2	5,5	6,0	6,5	7,1	8,18	9,27	10,31
PTFE-Thickness	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

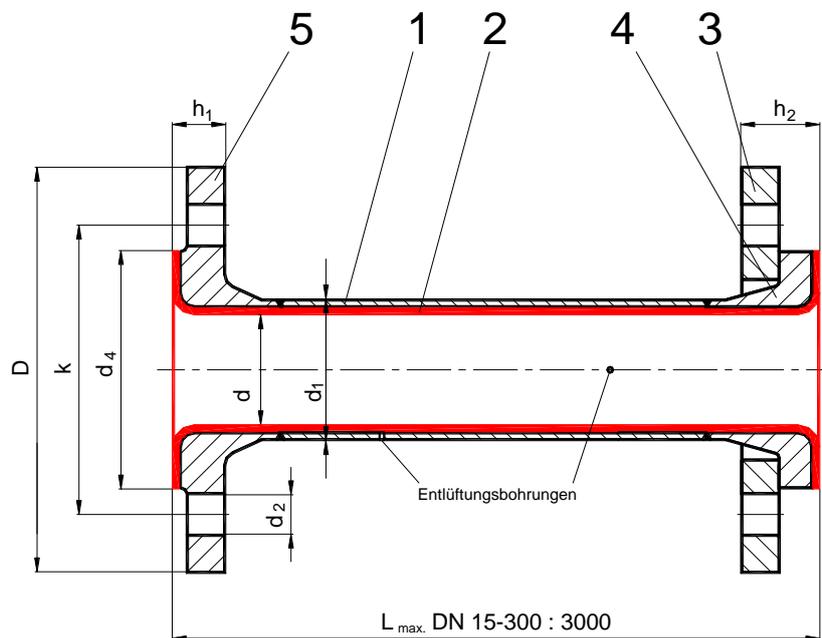
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

DIN

Flanged Pipes DIN PN 10

DN 15 - DN 300

Pos.	Component	Materials	Standard
1	Pipe	P235GH (1.0345) bzw. P265GH (1.0425)	DIN EN 10028-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894 / 4895
3	Loose Flange	P235GH (1.0345), P245GH (1.0352), P250GH (1.0460), P265GH	DIN EN 10222-2
4	Welding Neck Stub End	P235GH (1.0345), P245GH (1.0352), P250GH (1.0460), P265GH	DIN EN 10028-2
5	Welding Neck Flange **)	P235GH (1.0345), P245GH (1.0352), P250GH (1.0460), P265GH	DIN DN 10222-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyll-Priming	



DN	d	d ₁	nxd ₂	d ₄	k	D	h ₁	h ₂	kg/m	kg/ 2 flanges
15	14	24,0	4 x 14	45	65	95	16,0	24,0	1,4	1,5
20	22	34,0	4 x 14	58	75	105	19,0	29,0	1,8	2,0
25	22	34,0	4 x 14	68	85	115	19,0	29,0	2,5	2,6
32	38	48,3	4 x 18	78	100	140	19,0	31,0	3,2	3,7
40	38	48,3	4 x 18	88	110	150	18,0	31,0	3,7	4,2
50	48	60,3	4 x 18	102	125	165	18,0	35,0	5,1	5,5
65	63	76,1	4 x 18	122	145	185	18,5	35,5	6,8	6,7
80	75	88,9	8 x 18	138	160	200	21,0	40,0	8,6	8,5
100	99	114,3	8 x 18	158	180	220	21,5	42,5	12,6	10,2
125	122	139,7	8 x 18	188	210	250	23,5	46,5	18,0	13,6
150	149	168,3	8 x 22 *)	212	240	285	24,0	47,0	23,4	16,5
200	194	219,1	8 x 22 *)	268	295	340	27,0	52,0	39,1	23,5
250	248	273,0	12 x 22 *)	320	350	395	30,0	61,0	51,7	32,7
300	297	323,9	12 x 22 *)	370	400	445	29,0	61,0	67,7	44,0

*) In case of loose flanges with stub ends DIN 2673 indicates 8 x 23 or 12 x 23 respectively

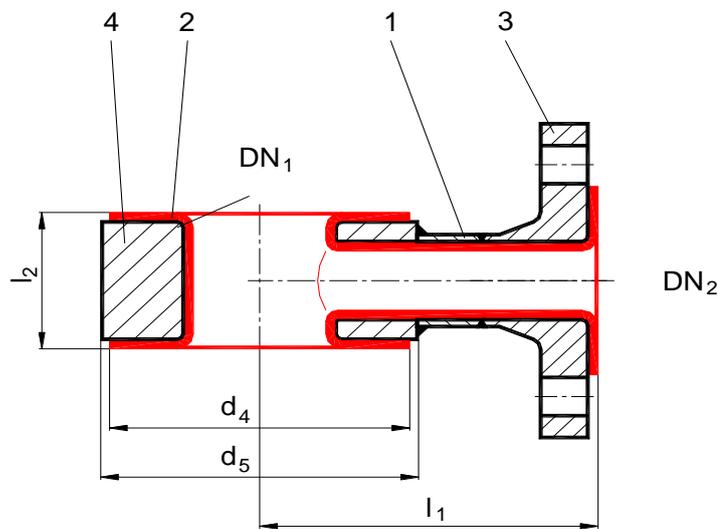
***) For welding neck flanges DN 15 - DN 40 pressure rating changes preferably to PN 40 (DIN 2635)

Pipe lengths DN 25 - DN 150 up to 6.000 mm; Lining technology based upon paste-extruded PTFE or C-PTFE

DN	15	20	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	24,0	34,0	34,0	48,3	48,3	60,3	76,1	88,9	114,3	139,7	168,3	219,1	273,0	323,9
Wall Thickness s (DIN 2848 series 2)	3,0	3,0	3,0	2,6	2,6	2,9	2,9	3,2	3,6	4,0	4,5	6,3	6,3	7,1
PTFE-Thickness	2,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874
DIN
Instrument Tappings DIN PN 10
DN 25 - DN 100

Pos.	Component	Materials	Standard
1	Pipe	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
4	Heavy Duty Pipe	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyll-Priming	



DN ₁	DN ₂	d ₄₁	d ₅	d ₄₂	D	l ₁	l ₂	kg
25	25	68	70	68	115	90	50	3,0
25	20	58	70	68	105	90	50	2,8
25	15	45	70	68	95	90	50	2,6
32	25	78	82	68	115	100	50	3,5
40	25	88	92	68	115	110	50	3,8
40	40	88	92	88	150	110	75	4,6
50	25	102	107	68	115	115	50	5,2
50	40	102	107	88	150	115	75	6,4
50	50	102	107	102	165	115	90	8,0
65	25	122	127	68	115	125	50	6,3
65	40	122	127	88	150	125	75	7,4
65	50	122	127	102	165	125	90	9,8
80	25	138	142	68	115	135	50	6,8
80 *)	40	138	142	88	150	135	75	8,5
80 *)	50	138	142	102	165	135	90	11,1
100	25	158	162	68	115	150	50	7,4
100	40	158	162	88	150	150	75	9,5
100 *)	50	158	162	102	165	150	90	12,8

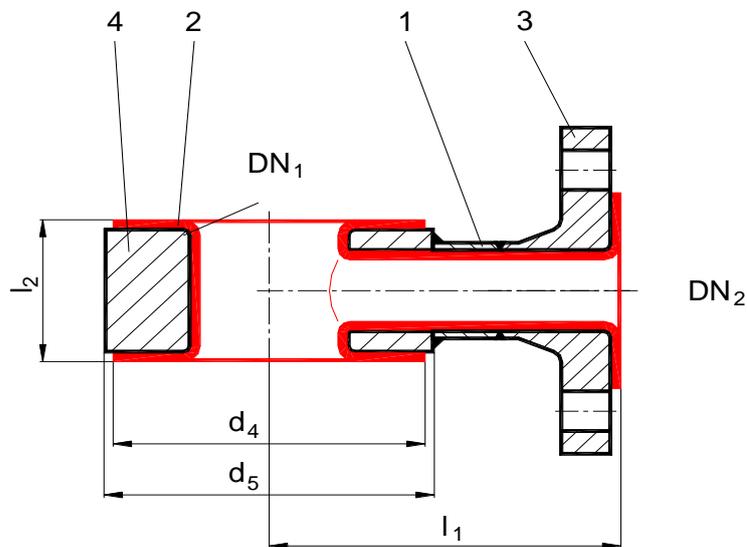
 *) Special Make-up: Body furnished with 2 x 2 threaded bores M16 in close vicinity to branch DN₂, thus enabling assembly of main passage DN₁

DN	15	20	25	32	40	50	65	80	100
Pipe Diameter	33,7	33,7	33,7	42,2	48,3	60,3	76,1	88,9	114,3
Wall Thickness s (pipe connector)	3,38	3,38	3,38		3,68	3,91		5,49	
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5

Instrument tappings with 2 to 4 branches upon request besides special make-ups with branches DN 80 (only for main passage ≥ DN 80)

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874
DIN
Instrument Tappings DIN PN 10
DN 125 - DN 300

Pos.	Component	Materials	Standard
1	Pipe	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
3	Welding Neck Flange	P235GH (1.0345), P245GH (1.0352)	DIN EN 10253-2, DIN EN 10222-2
4	Heavy Duty Pipe	P235GH (1.0345), P265GH (1.0425)	DIN EN 10253-2
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyll-Priming	



DN ₁	DN ₂	d _{4,1}	d ₅	d _{4,2}	D	l ₁	l ₂	kg
125	25	188	192	68	115	160	50	8,9
125	40	188	192	78	150	160	75	11,5
125	50	188	192	102	165	160	90	14,8
150	25	212	218	68	115	180	50	9,9
150	40	212	218	78	150	180	75	12,7
150	50	212	218	102	165	180	90	16,0
200	25	268	273	68	115	210	50	12,5
200	40	268	273	78	150	210	75	14,5
200	50	268	273	102	165	210	90	18,0
250	25	320	328	68	115	240	50	15,0
250	40	320	328	78	150	240	75	17,5
250	50	320	328	102	165	240	90	20,5
300	25	370	378	68	115	340	90	30,5
300	40	370	378	78	150	340	110	35,0
300	50	370	378	102	165	340	120	39,5

Instrument tappings with 2 to 4 branches upon request besides special make-ups with branches DN 80 (only for main passage ≥ DN 80)

DN	25	32	40	50	65	80	100	125	150	200	250	300
Pipe Diameter	33,7	42,2	48,3	60,3	76,1	88,9	114,3	141,3	168,3	219,1	273,0	323,9
Wall Thickness S (connecting pipe)	3,38		3,68	3,91		5,49						
PTFE-Thickness	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

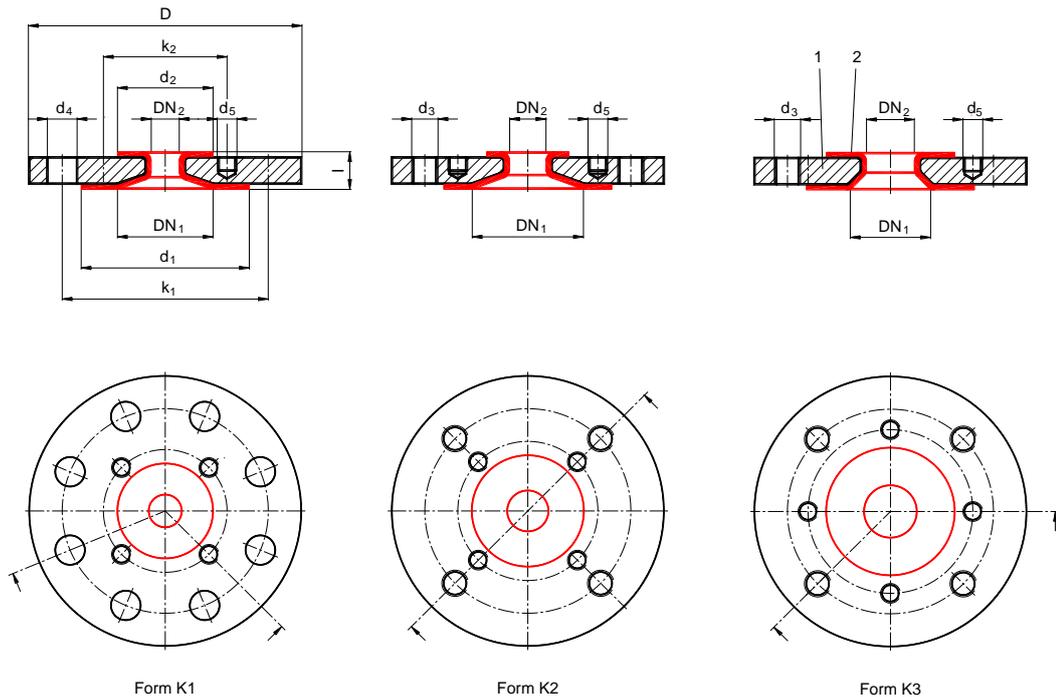
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

DIN

Concentric Reducing Flanges DIN PN 10

DN 20 - DN 65

Pos.	Component	Materials	Standard
1	Flange	P245GH (1.0352), P265GH (1.0425)	DIN EN 10222-2, DIN EN 10028-2
2	Lining	virgin PTFE or PTFE electrostatically conductive	ASTM D 4894
Surface Treatment		Ball Blasting acc. to SIS 05 5900 SA 2 ½; Epoxivinyll-Priming	



DN₁: Through-hole
Bore position acc. to DIN EN 1333
DN₂: Threaded bore
Bore position acc. to DIN EN 1333

DN₁: Threaded bore
Bore position acc. to DIN EN 1333
DN₂: Threaded bore
Bore position acc. to DIN EN 1333

DN₁: Threaded bore
Bore Position acc. to DIN EN 1333
DN₂: Threaded bore
Bore position on principle axis

DN ₁	DN ₂	Form	D	l	d ₁	k ₁	nxd ₃	nxd ₄	d ₂	k ₂	nxd ₅	kg
20	15	K3	105	35	58	75	4xM12		45	65	4xM12	1,7
25	20	K3	115	35	68	85	4xM12		58	75	4xM12	1,8
25	15	K3	115	35	68	85	4xM12		45	65	4xM12	2,1
32	25	K3	140	35	78	100	4xM16		68	85	4xM12	2,9
32	20	K3	140	35	78	100	4xM16		58	75	4xM12	3,0
40	32	K3	150	35	88	110	4xM16		78	100	4xM16	3,5
40	25	K3	150	35	88	110	4xM16		68	85	4xM12	3,6
40	20	K2	150	35	88	110	4xM16		58	75	4xM12	3,6
50	40	K3	165	35	102	125	4xM16		88	110	4xM16	4,2
50	32	K3	165	35	102	125	4xM16		78	100	4xM16	4,3
50	25	K2	165	35	102	125	4xM16		68	85	4xM12	4,4
50	20	K2	165	35	102	125	4xM16		58	75	4xM12	4,4
65	50	K3	185	35	122	145	4xM16		102	125	4xM16	5,3
65	40	K3	185	35	122	145	4xM16		88	110	4xM16	5,3
65	32	K2	185	35	122	145	4xM16		78	100	4xM16	5,4
65	25	K2	185	35	122	145	4xM16		68	85	4xM12	5,6
65	20	K2	185	35	122	145	4xM16		58	75	4xM12	5,6

DN	15	20	25	32	40	50	65
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,0	3,5

PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

DIN

Concentric Reducing Flanges DIN PN 10

DN 80 - DN 300

DN ₁	DN ₂	Form	D	l	d ₁	k ₁	nxd ₃	nxd ₄	d ₂	k ₂	nxd ₅	kg
80	65	K2	200	35	138	160	8xM16		122	145	4xM16	5,8
80	50	K2	200	35	138	160	8xM16		102	125	4xM16	6,1
80	40	K2	200	35	138	160	8xM16		88	110	4xM16	6,4
80	32	K2	200	35	138	160	8xM16		78	100	4xM16	6,5
80	25	K1	200	35	138	160		8x18	68	85	4xM12	6,5
80	20	K1	200	35	138	160		8x18	58	75	4xM12	6,6
100	80	K3	220	45	158	180	8xM16		138	160	8xM16	9,4
100	65	K2	220	45	158	180	8xM16		122	145	4xM16	9,6
100	50	K2	220	45	158	180	8xM16		102	125	4xM16	9,7
100	40	K1	220	45	158	180		8x18	88	110	4xM16	9,8
100	32	K1	220	45	158	180		8x18	78	100	4xM16	10,1
100	25	K1	220	45	158	180		8x18	68	85	4xM12	10,3
100	20	K1	220	45	158	180		8x18	58	75	4xM12	10,4
125	100	K3	250	45	188	210	8xM16		158	180	8xM16	11,3
125	80	K2	250	45	188	210	8xM16		138	160	8xM16	12,8
125	65	K2	250	45	188	210	8xM16		122	145	4xM16	12,1
125	50	K1	250	45	188	210		8x18	102	125	4xM16	12,3
125	40	K1	250	45	188	210		8x18	88	110	4xM16	12,5
125	32	K1	250	45	188	210		8x18	78	100	4xM16	12,7
125	25	K1	250	45	188	210		8x18	68	85	4xM12	12,7
150	125	K3	285	45	212	240	8xM20		188	210	8xM16	13,8
150	100	K2	285	45	212	240	8xM20		158	180	8xM16	14,7
150	80	K1	285	45	212	240		8x22	138	160	8xM16	15,7
150	65	K1	285	45	212	240		8x22	122	145	4xM16	15,8
150	50	K1	285	45	212	240		8x22	102	125	4xM16	16,0
150	40	K1	285	45	212	240		8x22	88	110	4xM16	16,6
150	32	K1	285	45	212	240		8x22	78	100	4xM16	17,3
150	25	K1	285	45	212	240		8x22	68	85	4xM12	17,3
200	150	K2	340	45	268	295	8xM20		212	240	8xM20	19,5
200	125	K1	340	45	268	295		8x22	188	210	8xM16	20,5
200	100	K1	340	45	268	295		8x22	158	180	8xM16	21,2
200	80	K1	340	45	268	295		8x22	138	160	8xM16	21,8
200	65	K1	340	45	268	295		8x22	122	145	4xM16	22,4
200	50	K1	340	45	268	295		8x22	102	125	4xM16	22,9
200	40	K1	340	45	268	295		8x22	88	110	4xM16	23,3
200	25	K1	340	45	268	295		8x22	68	85	4xM12	24,0
250	200	K2	395	45	320	350	12xM20		268	295	8xM20	24,7
250	150	K1	395	45	320	350		12x22	212	240	8xM20	26,8
250	125	K1	395	45	320	350		12x22	188	210	8xM16	27,6
250	100	K1	395	45	320	350		12x22	158	180	8xM16	28,4
250	80	K1	395	45	320	350		12x22	138	160	8xM16	29,5
250	65	K1	395	45	320	350		12x22	122	145	4xM16	31,0
250	50	K1	395	45	320	350		12x22	102	125	4xM16	32,0
300	250	K2	445	50	370	400	12xM20		320	350	12xM20	28,5
300	200	K1	445	50	370	400		12x22	268	295	8xM20	31,0
300	150	K1	445	50	370	400		12x22	212	240	8xM20	34,0
300	125	K1	445	50	370	400		12x22	188	210	8xM16	36,5
300	100	K1	445	50	370	400		12x22	158	180	8xM16	38,0
300	80	K1	445	50	370	400		12x22	138	160	8xM16	39,5
300	65	K1	445	50	370	400		12x22	122	145	4xM16	40,5
300	50	K1	445	50	370	400		12x22	102	125	4xM16	42,0

DN	20	25	32	40	50	65	80	100	125	150	200	250	300
PTFE-Thickness	3,0	3,0	3,0	3,0	3,0	3,5	4,0	4,5	4,5	5,0	6,0	7,0	7,0

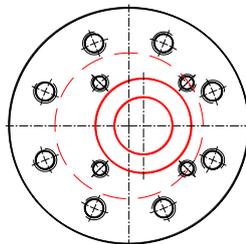
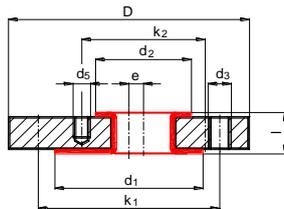
PTFE-lined Pipes and -Fittings acc. to DIN 2848 / 2874

DIN

Eccentric Reducing Flanges DIN PN 10

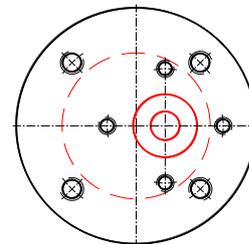
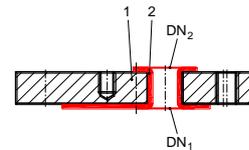
DN 25 - DN 250

Pos.	Component	Materials	Standard
1	Flange	S275JR (1.0044)	EN 10025
2	Lining	virgin PTFE (white) or PTFE (black) electrostatically conductive	ASTM D 4894
Protective Coating		Epoxiviny-Primer on top of sandblasted surface	



FORM E2

DN₁: Threaded bore
Bore position acc. to DIN EN 1333
DN₂: Threaded bore
Bore position acc. to nach DIN EN 1333



FORM E3

DN₁: Threaded bore
Bore position acc. to DIN EN 1333
DN₂: Threaded bore
Bore position on principle axis

DN ₁	DN ₂	Type	D	l	d ₁	k ₁	nxd ₃	e	d ₂	k ₂	nxd ₄	kg
25	20	E3	115	35	68	85	4xM12	3,4	58	75	4xM12	1,7
40	25	E3	150	35	88	110	4xM12	7,3	68	85	4xM12	3,6
40	20	E3	150	35	88	110	4xM12	10,7	58	75	4xM12	3,6
50	40	E3	165	35	102	125	4xM16	6,0	88	110	4xM16	4,2
50	25	E3	165	35	102	125	4xM16	13,3	68	85	4xM12	4,4
80	50	E2	200	35	138	160	8xM16	14,3	102	125	4xM16	6,1
80	40	E2	200	35	138	160	8xM16	20,3	88	110	4xM16	6,4
80	25	E2	200	35	138	160	8xM16	27,6	68	85	4xM12	6,5
100	80	E3	220	45	158	180	8xM16	12,2	138	160	8xM16	9,4
100	50	E2	220	45	158	180	8xM16	27,0	102	125	4xM16	9,7
100	25	E2	220	45	158	180	8xM16	33,0	68	85	4xM12	10,3
125	100	E3	250	45	188	210	8xM16	12,7	158	180	8xM16	11,3
125	80	E3	250	45	188	210	8xM16	25,4	138	160	8xM16	11,8
125	50	E2	250	45	188	210	8xM16	39,4	102	125	4xM16	12,3
150	100	E3	285	45	212	240	8xM20	27,0	158	180	8xM16	14,7
150	80	E3	285	45	212	240	8xM20	39,7	138	160	8xM16	15,7
150	50	E2	285	45	212	240	8xM20	54,0	102	125	4xM16	16,0
150	25	E2	285	45	212	240	8xM20	67,3	68	85	4xM12	17,3
200	150	E3	340	45	268	295	8xM20	25,4	212	240	8xM20	19,5
200	100	E3	340	45	268	295	8xM20	52,4	158	180	8xM16	21,2
200	80	E3	340	45	268	295	8xM20	65,1	138	160	8xM16	21,8
200	50	E2	340	45	268	295	8xM20	79,4	102	125	8xM20	22,9
250	200	E2	395	45	320	350	12xM20	27,0	268	295	8xM20	24,7
250	150	E2	395	45	320	350	12xM20	52,4	212	240	8xM20	26,8
250	100	E2	395	45	320	350	12xM20	79,4	158	180	8xM16	28,4
250	80	E2	395	45	320	350	12xM20	92,1	138	160	8xM16	29,5
250	50	E3	395	45	320	350	12xM20	106,1	102	125	4xM16	32,0

DN	25	40	50	80	100	125	150	200	250
PTFE-Thickness	3,0	3,0	3,0	4,0	4,5	4,5	5,0	6,0	7,0

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SGO N° 032A
COA N° 0320
RD N° 0328
SP N° 0408
AD N° 0806

Memoria degli accordi
of Mutual Recognition to EA, UK, etc.
Agreement of EA, UK, and EAC
Mutual Recognition Agreements

Registrazione numero/Registration number

PED/0497/412/05

CERTIFICATO CE DEL TIPO EC TYPE EXAMINATION CERTIFICATE

si certifica che la Società/we certify that the Company

LMP FLUORCARBON S.r.l.

Via Marconi, 127 - 21020 TAINO (VA) - ITALY

ha realizzato il seguente Tipo di Insieme in pressione che soddisfa i Requisiti Essenziali di Sicurezza dell'Allegato I e le procedure del Modulo B, Allegato III, della Direttiva 97/23/CE

has realized the following Type of pressure Assembly that meets the Essential Safety Requirements of Annex I and the procedures of Module B, Annex III, of the 97/23/EC Directive

TUBI DRITTI E CURVI CON DIRAMAZIONI E NON, RIDUZIONI E VISORI IN ACCIAIO AL CARBONIO RIVESTITI IN PTFE

PTFE-LINED PIPES AND SHAPED CARBON STEEL PARTS, REDUCERS AND SIGHT GLASSES

32<=DN<=300: PS_{max} 21 barg; 350<=DN<=600: PS_{max} 10 barg

TS_{min} -10 °C; TS_{max} +200 °C

Gruppo Fluidi/Fluid Group 1; Categoria/Category I - II - III

Il Fabbricante è autorizzato ad apporre sull'Attrezzatura in pressione di cui sopra, dopo la marcatura CE, il numero di identificazione dell'Organismo Notificato.

The Manufacturer is authorized to provide the above pressure Equipment with the CE marking, followed by the Notified Body identification number.

CE 0497

20/05/2005

Prima emissione
First issue

29/10/2015

Ultima emissione
Latest issue

19/05/2025

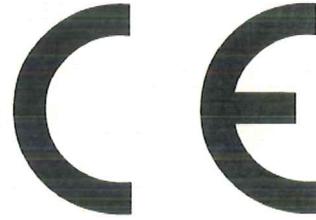
Scadenza
Expiring

CSI SpA
Sede Legale
20030 Senago - MI - I
Cascina Traversagna 21

Direzione, Uffici e Laboratori
20021 Bollate - MI - I
Viale Lombardia 20
Tel. +39 02 383301
Fax +39 02 3503940
www.csi-spa.com



CSI[®]
CERT

Registrazione numero/*Registration number*

PED/0497/413/05

CERTIFICATO CE DEL TIPO
EC TYPE EXAMINATION CERTIFICATE

si certifica che la Società/*we certify that the Company*

LMP FLUORCARBON S.r.l.
Via Marconi, 127 - 21020 TAINO (VA) - ITALY

ha implementato e mantiene la conformità al Tipo - Certificato CE n° PED/0497/412/05 - ai Requisiti Essenziali di Sicurezza dell'Allegato I e alle Procedure del Modulo C1 - Allegato III della Direttiva 97/23/CE
has implemented and maintains the compliance with the Type, Certificate CE nb. PED/0497/412/05 - with the Essential Safety Requirements of Annexe I and with the Procedure of Module C1 - Annexe III of the 97/23/EC Directive

allo scopo di produrre e collaudare
for manufacturing and testing

TUBI DRITTI E CURVI CON DIRAMAZIONI E NON, RIDUZIONI E VISORI RIVESTITI IN PTFE

PTFE-LINED PIPES AND SHAPED PARTS, REDUCERS AND SIGHT GLASSES

$32 \leq DN \leq 150$: PS_{max} 16 barg; $150 < DN \leq 600$: PS_{max} 10 barg
Gruppo Fluido/*Fluid Group* 1 - Categoria/*Category* I - II - III

Il Fabbricante è autorizzato ad apporre sull'Attrezzatura in pressione di cui sopra, dopo la marcatura CE, il numero di identificazione dell'Organismo Notificato.
The Manufacturer is authorized to provide the above pressure Equipment with the CE marking, followed by the Notified Body identification number.

CE 0497

20/05/2005

Prima emissione
First issue

30/04/2014

Ultima emissione
Latest issue

19/05/2017

Scadenza
Expiring