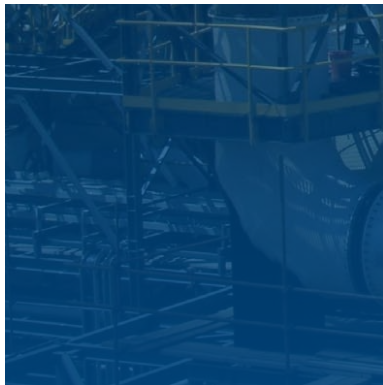




Piping Catalog

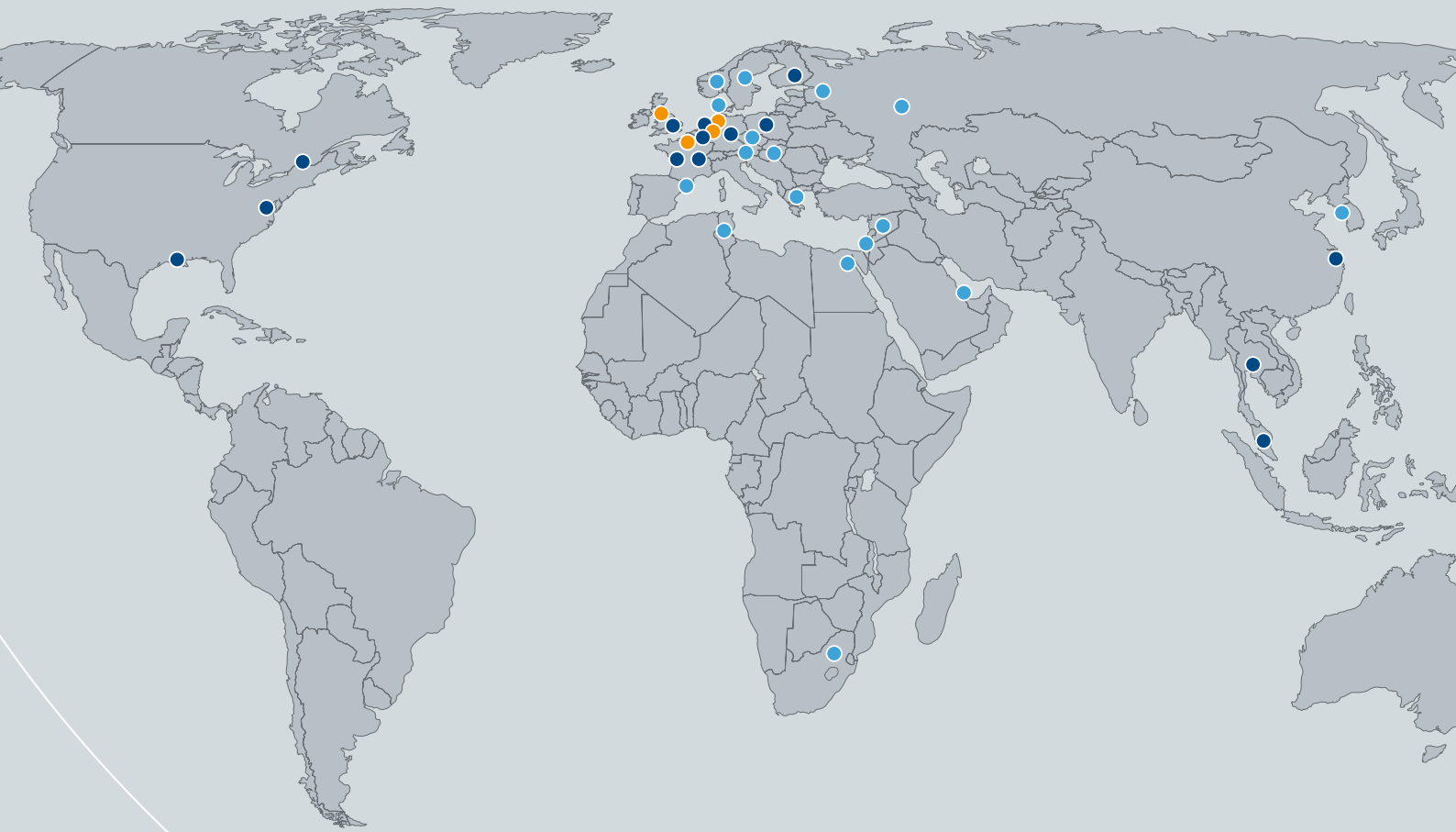
Based on Type D, B, E DIN 16965/966

2018



Plasticon Composites
Worldmap Operations & Sales

- Operations & Sales
- Sales
- Polem, bulk storage



Since 1969, Plasticon Composites has enjoyed a worldwide reputation in glass fibre reinforced pipes and fittings. Today, piping systems are available in a variety of standard diameters ranging from 25 to 700 mm and above. Plasticon Composites offers pipes and fittings to meet all national and international standards depending on the area and application. Combining the strength of FRP and the chemical compatibility of plastics provides customers with a superior alternative to costly metal alloys and rubber-lined steel.



This engineering guide provides information for applications in which Plasticon Composites FRP piping materials can be used. The design of a pipeline using Plasticon Composites products means a construction with FRP pipes

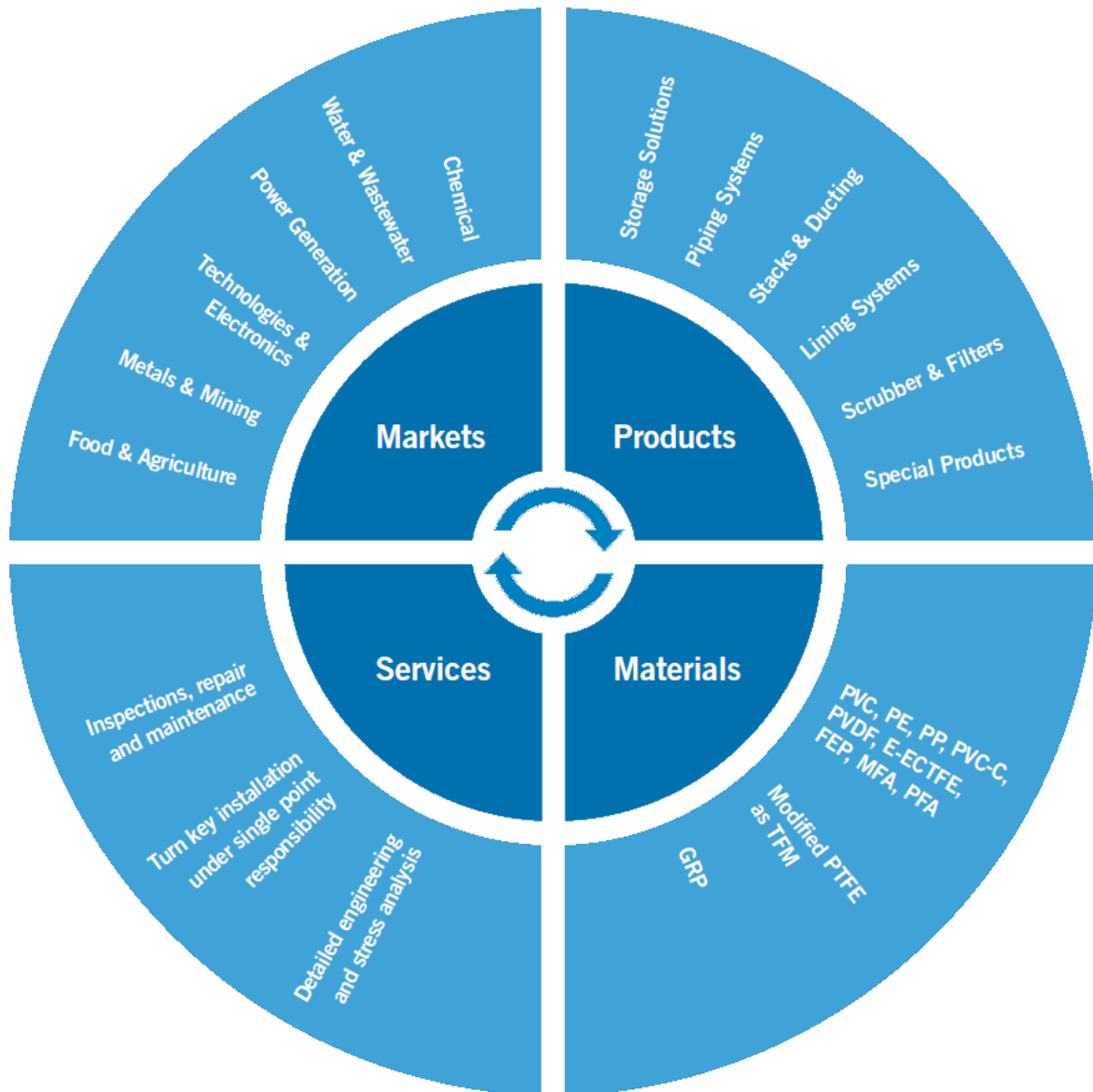
and fittings that are all designed to meet the necessary high-performance requirements. Because of its benefits, there is a possibility of using prefabricated pipeline sections (pipe spools) which should be considered in the



design stage of the piping system. The advantages of using pipe spools are the reduced amount of joints to be made in the field, smaller assembly tolerances and shorter installation time.

If this guide does not cover all necessary engineering information, our engineers will be pleased to assist and inform you of specific design possibilities and the latest improvements of Plasticon Composites





Plasticon Composites pipe systems comply with all major quality assurance and certification standards, including DIN, ASTM, SFS, UIC, AWWA, BS and ISO. Your guarantee of high quality, low maintenance and total solutions.



Design & Quality

Plasticon Composites dual-laminate pipe systems are designed and produced in accordance with DIN 16965 and DIN 16966 Part 2 Type B. Our welders are certified by DVS. We apply DIN or ASME pressure.

Approvals

Plasticon Composites is certified by several key testing authorities and conforms to a long list of design codes and industry standards & norms. The production companies, their products and employees are approved according to ISO, DVS, KIWA, DET Norske Veritas and GOST. Your guarantee of high quality, low maintenance and total solutions.

One stop responsibility

Plasticon Composites is able to execute the entire project process for customers piping solutions: from design and engineering, through to production, project management, installation and after-sales service.

Plasticon Composites provides the following services:

- Advice on the best liner option for each specific application
- Detailed engineering including isometric and spool drawings
- Stress calculations
- Supply of pipe fittings and flanges
- Assembly or spool construction in one of our factories or on site
- Project and site management
- Turnkey installation and erection of pipe systems
- Inspection and maintenance



Pipes and fittings

Based on type B DIN 16965/966



Component description

based on Type B DIN16965/966

Pipe



Pipes are manufactured by hand lay-up lamination process in the DN25-DN300 range and filament winding in the DN350-DN700 range based on Type B DIN16965.

Elbow 90°



Elbows 90° are manufactured by hand lay-up lamination process in the DN25-DN700 range based on Type B DIN16966

Elbow 45°



Elbows 45° are manufactured by hand lay-up lamination process in the DN25-DN700 range based on Type B DIN16966

Excentric reducer



Concentric reducers are manufactured by lay-up lamination process in the DN25-DN700 range based on Type B DIN16966

Concentric reducer



Eccentric reducers are manufactured by hand lay-up lamination process in the DN25-DN700 range based on Type B DIN16966

Fix flange



Fix flanges are manufactured by hand lay-up lamination process in the DN25-DN700 range based on Type B DIN16966, drilling acc. to EN1092



Stub end



Stub ends are manufactured by hand lay-up lamination process and pressing in the DN25-DN300 range and only hand lay-up lamination process in the DN350-DN700 range based on Type B DIN16966

Loose Flange



Loose flanges can be delivered in following materials: carbon steel (hot deep galv., painted), stainless steel, GRP. The dimensions of the flanges are based on EN1092 pressure rates

Blind flange



Blind Flanges are manufactured in a hand lay-up lamination process in the DN25-DN700 range based on Type B DIN16966 drilling acc. to EN1092

Overlaminates



Overlaminates are manufactured in a hand lay-up lamination process in the DN25-DN700 range based on Type B DIN16966

Branch connection



Branch connections are manufactured in a hand lay-up lamination process in the DN25-DN700 range based on Type B DIN16966

Supports

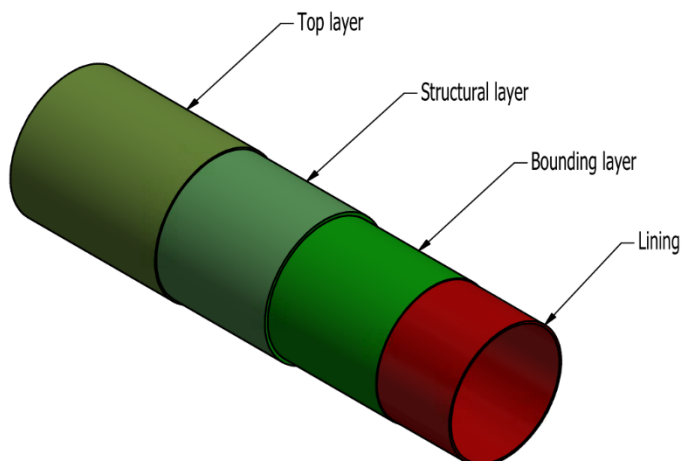


Supports are delivered acc. to client's specification as well as Plasticon is able to delivered own solutions or modular supports available on the market.



Pipes and fittings Type B acc. to DIN 16965/966 are built of thermoplastic liner with adhesive layer and structural layer which is radius winded with, woven roving and chopped strand glass mats, roving, unidirectional woven roving.

Type B DIN 16965/966 Laminate structure



| Name of the Layer | Description | |
|---|---|---------------|
| Chemical Barrier Layer (CBL) - thermoplastic liner | Thermoplastic layer with bonding layer (mat+resin or backing tape) | |
| Structural Layer | Pipes | |
| | Radius winded from roving, chopped strand mats and woven roving | |
| | Resin content | Glass content |
| | 40 ± 5% | 60 ± 5% |
| | Fittings | |
| | Laminated from chopped strand mats and woven roving | |
| | Resin content | Glass content |
| | 65 - 45% | 35 - 55% |
| Top Layer | Made of top veil Protection for weather conditions UV – radiation and attack of chemicals | |

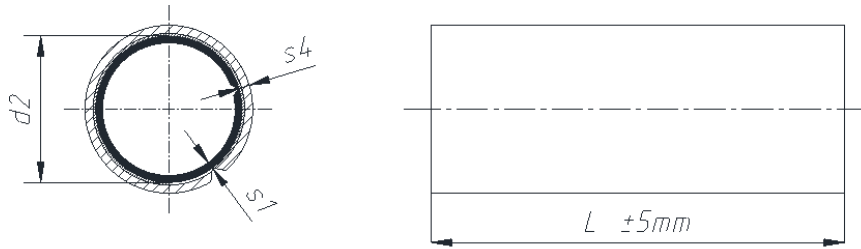


| Material Property | Symbol | Pipe≤DN300 (Complex) | Pipe>DN300 (Filament winding) | Components (Complex) [elbows, reducers, overlaminates≤DN300] | Components (Mat+Woven roving; 450g/m ² +600g/m ²) [fix flanges, stub ends, blind flanges, branch connections, overlaminates>DN300] | Components (Mat+Woven roving; 300g/m ² +300g/m ²) [fix flanges DN25- 200, stub ends DN25-200] |
|------------------------------------|----------------|-------------------------------------|-------------------------------------|---|---|---|
| Density Pipe Material | ρ | 1600 kg/m ³ | 1750 kg/m ³ | 1600 kg/m ³ | 1550 kg/m ³ | 1550 kg/m ³ |
| Thermal Expansion-Axial | α_a | 25*10 ⁻⁶ K ⁻¹ | 25*10 ⁻⁶ K ⁻¹ | 25*10 ⁻⁶ K ⁻¹ | 25*10 ⁻⁶ K ⁻¹ | 25*10 ⁻⁶ K ⁻¹ |
| Thermal Expansion-Hoop | α_h | 25*10 ⁻⁶ K ⁻¹ | 15*10 ⁻⁶ K ⁻¹ | 25*10 ⁻⁶ K ⁻¹ | 25*10 ⁻⁶ K ⁻¹ | 25*10 ⁻⁶ K ⁻¹ |
| Poisson Ratio Axial-Hoop | -- | 0,11 | 0,11 | 0,11 | 0,11 | 0,11 |
| Poisson Ratio Hoop-Axial | -- | 0,3 | 0,3 | 0,3 | 0,3 | 0,3 |
| Tensile Strength - Hoop Direction | σ_{t-h} | 140 MPa ¹⁾ | 360 MPa ²⁾ | 140 MPa ¹⁾ | 140 MPa ³⁾ | 120 MPa ³⁾ |
| Bending Strength-Hoop Direction | σ_{b-h} | 190 MPa ¹⁾ | 360 MPa ²⁾ | 190 MPa ¹⁾ | 160 MPa ³⁾ | 120 MPa ³⁾ |
| Tensile Strength - Axial Direction | σ_{t-a} | 140 MPa ¹⁾ | 180 MPa ²⁾ | 140 MPa ¹⁾ | 140 MPa ³⁾ | 120 MPa ³⁾ |
| Bending Strength-Axial Direction | σ_{b-a} | 190 MPa ¹⁾ | 180 MPa ²⁾ | 190 MPa ¹⁾ | 160 MPa ³⁾ | 120 MPa ³⁾ |
| Tensile Modulus-Hoop Direction | E_{t-h} | 10300 MPa ¹⁾ | 14000 MPa ²⁾ | 10300 MPa ¹⁾ | 9500 MPa ³⁾ | 9500 MPa ³⁾ |
| Bending Modulus-Hoop Direction | E_{b-h} | 9000 MPa ¹⁾ | 14000 MPa ²⁾ | 9000 MPa ¹⁾ | 9000 MPa ³⁾ | 9000 MPa ³⁾ |
| Tensile Modulus-Axial Direction | E_{t-a} | 10300 MPa ¹⁾ | 8000 MPa ²⁾ | 10300 MPa ¹⁾ | 9500 MPa ³⁾ | 9500 MPa ³⁾ |
| Bending Modulus-Axial Direction | E_{b-a} | 9000 MPa ¹⁾ | 8000 MPa ²⁾ | 9000 MPa ¹⁾ | 9000 MPa ³⁾ | 8000 MPa ³⁾ |
| Shear Modulus | G | 3 GPa | 3 GPa | 3 GPa | 3 GPa | 3 GPa |

Remarks:

- 1) - Mechanical Properties are confirmed with the TÜV Rheinland Industrie Service GmbH Werkstoffgutachten nr 124666135
- 2) - Mechanical Properties are confirmed with the TÜV SÜD certificate nr: DGR-0036-QS-588-07
- 3) - Mechanical Properties are confirmed with the TÜV Süddeutschland Einzelgutachten zu den Werkstoffen nr 343202



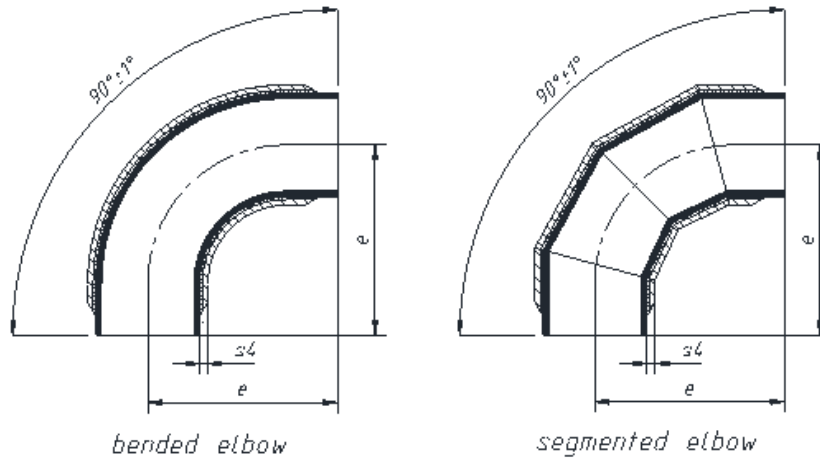
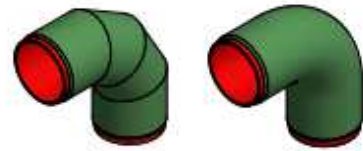


| DN | d2 | Thickness s1 of thermoplastic liner | Thickness s4 with adhesive layer without liner |
|-----|-----|-------------------------------------|--|
| | | PP2222 | PN16 [mm] |
| 32 | 40 | 3.7 | 2.9 |
| 40 | 50 | 4.6 | 2.9 |
| 50 | 63 | 5.8 | 2.9 |
| 80 | 90 | 5.1 | 2.9 |
| 100 | 110 | 6.3 | 2.9 |
| 150 | 160 | 4.9 | 3.2 |
| 200 | 200 | 4.9 | 3.7 |
| 250 | 250 | 6.2 | 4.4 |
| 300 | 315 | 7.7 | 5.3 |
| 350 | 355 | 5.0 | 5.8 |
| 400 | 400 | 6.0 | 6.4 |
| 500 | 500 | 8.0 | 7.8 |
| 450 | 450 | 4.0 | 7.1 |
| 600 | 600 | 8.0 | 9.1 |
| 25 | 32 | 3.5 | 2.9 |

Remarks:

- thickness differ to DIN16965





| DN | e [mm] | Thickness s4 with adhesive layer without liner | |
|-----|-----------|--|--|
| | | PN16 [mm] | |
| 25 | 110 | 2.9 | |
| 32 | 130 | 2.9 | |
| 40 | 150 | 2.9 | |
| 50 | 180 | 2.9 | |
| 80 | 165 | 3.8 | |
| 100 | 205 | 4.4 | |
| 150 | 285 | 5.9 | |
| 200 | 365 | 7.2 | |
| 250 | 450 | 8.7 | |
| 300 | 525 | 10.6 | |
| 350 | 600 | 11.9 | |
| 400 | 680 | 13.3 | |
| 500 | 830 | 16.2 | |
| 450 | 775 | 14.7 | |
| 600 | 950 | 19.2 | |

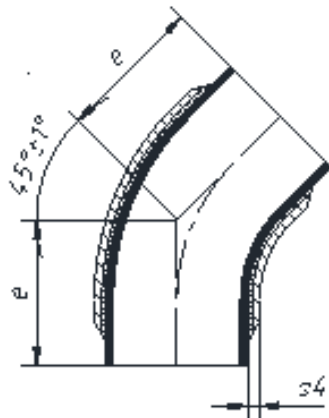
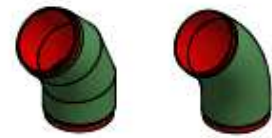
Remarks:

Bended elbow – PVC DN25-50, PP and PE DN25-300, PVDF DN25-50

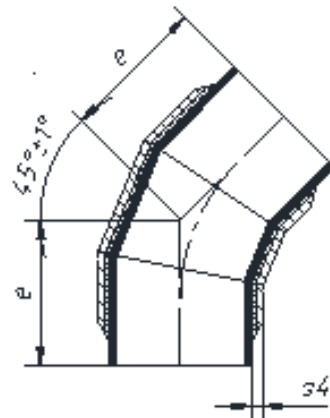
Segmented elbow – PVC DN65-700, PP and PE DN350-700, PVDF DN65-700, ECTFE and PFA DN25-700

R – depends on the liner material and produced method





banded elbow



segmented elbow

| DN | e [mm] | Thickness s4 with adhesive layer without liner | |
|-----|-----------|--|--|
| | | PN16 [mm] | |
| 25 | 70 | 2.9 | |
| 32 | 80 | 2.9 | |
| 40 | 90 | 2.9 | |
| 50 | 105 | 2.9 | |
| 500 | 390 | 16.2 | |
| 400 | 325 | 13.3 | |
| 350 | 290 | 11.9 | |
| 300 | 260 | 10.6 | |
| 250 | 225 | 8.7 | |
| 200 | 190 | 7.2 | |
| 150 | 150 | 5.9 | |
| 80 | 100 | 3.8 | |
| 100 | 115 | 4.4 | |
| 450 | 380 | 14.7 | |
| 600 | 430 | 19.2 | |

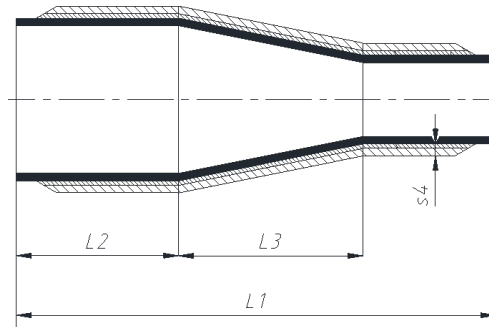
Remarks:

Banded elbow – PVC DN25-50, PP and PE DN25-300, PVDF DN25-50

Segmented elbow – PVC DN65-700, PP and PE DN350-700, PVDF DN65-700, ECTFE and PFA DN25-700

R – depends on the liner material and produced method





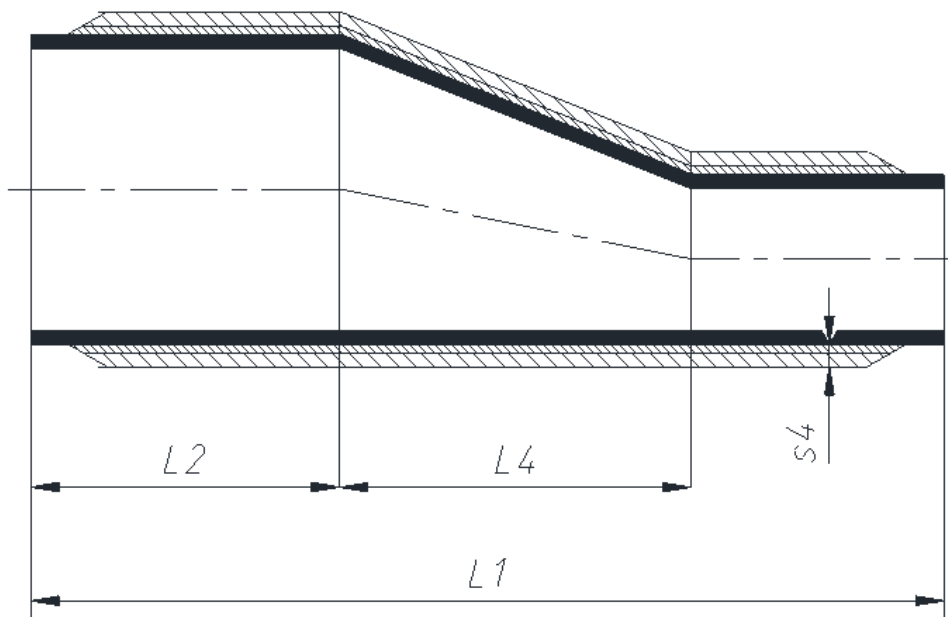
| DN1 | DN2 | L1 [mm] | L2 [mm] | L3 [mm] | Thickness s4 with adhesive layer without liner |
|-----|-----|------------|------------|------------|--|
| | | | | | PN16 [mm] |
| 32 | 25 | 180 | 85 | 20 | 2.9 |
| 40 | 25 | 205 | 85 | 45 | 2.9 |
| 40 | 32 | 200 | 85 | 25 | 2.9 |
| 50 | 25 | 235 | 85 | 80 | 3.3 |
| 50 | 32 | 230 | 85 | 60 | 3.3 |
| 50 | 40 | 205 | 85 | 35 | 3.3 |
| 65 | 32 | 260 | 85 | 90 | 3.8 |
| 65 | 40 | 235 | 85 | 65 | 3.8 |
| 65 | 50 | 210 | 85 | 30 | 3.8 |
| 80 | 40 | 275 | 85 | 105 | 4.3 |
| 80 | 50 | 245 | 85 | 70 | 4.3 |
| 80 | 65 | 210 | 85 | 40 | 4.3 |
| 100 | 50 | 325 | 110 | 95 | 5 |
| 100 | 65 | 285 | 110 | 90 | 5 |
| 100 | 80 | 250 | 110 | 50 | 5 |
| 125 | 100 | 285 | 110 | 40 | 5.6 |
| 150 | 125 | 310 | 110 | 90 | 6.8 |
| 125 | 65 | 350 | 110 | 130 | 5.6 |
| 200 | 100 | 495 | 127 | 230 | 8.3 |
| 150 | 100 | 350 | 110 | 130 | 6.8 |
| 200 | 125 | 430 | 127 | 195 | 8.3 |
| 150 | 80 | 375 | 110 | 180 | 6.8 |
| 125 | 80 | 310 | 110 | 90 | 5.6 |
| 200 | 150 | 370 | 127 | 105 | 8.3 |
| 250 | 200 | 400 | 143 | 130 | 10.1 |
| 300 | 150 | 655 | 158 | 360 | 12.4 |





| DN1 | DN2 | L1 [mm] | L2 [mm] | L3 [mm] | Thickness s4 with adhesive layer without liner |
|-----|-----|------------|------------|------------|--|
| | | | | | PN16 [mm] |
| 250 | 150 | 510 | 143 | 230 | 10.1 |
| 300 | 200 | 540 | 158 | 255 | 12.4 |
| 300 | 250 | 435 | 158 | 130 | 12.4 |
| 250 | 125 | 575 | 143 | 320 | 10.1 |
| 350 | 300 | 440 | 150 | 140 | 13.9 |
| 400 | 250 | 695 | 166 | 385 | 15.5 |
| 350 | 200 | 665 | 150 | 400 | 13.9 |
| 350 | 250 | 550 | 150 | 270 | 13.9 |
| 500 | 300 | 865 | 191 | 515 | 19.1 |
| 500 | 350 | 730 | 191 | 375 | 19.1 |
| 400 | 350 | 450 | 166 | 115 | 15.5 |
| 400 | 300 | 580 | 166 | 255 | 15.5 |
| 500 | 400 | 615 | 191 | 255 | 19.1 |
| 600 | 350 | 980 | 181 | 630 | 22.8 |
| 600 | 500 | 630 | 181 | 260 | 22.8 |
| 600 | 400 | 865 | 181 | 515 | 22.8 |





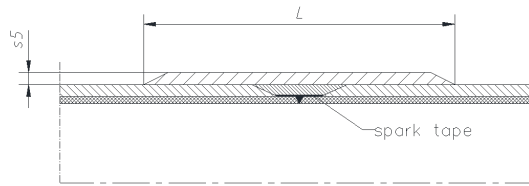
| DN1 | DN2 | L1 [mm] | L2 [mm] | L3 [mm] | Thickness s4 with adhesive layer without liner |
|-----|-----|---------|---------|---------|--|
| | | | | | PN16 [mm] |
| 32 | 25 | 180 | 85 | | 2.9 |
| 40 | 25 | 205 | 85 | | 3 |
| 40 | 32 | 200 | 85 | | 3 |
| 50 | 32 | 230 | 85 | | 3.5 |
| 50 | 40 | 205 | 85 | | 3.5 |
| 65 | 50 | 210 | 85 | | 3.9 |
| 50 | 25 | 235 | 85 | | 3.5 |
| 65 | 32 | 260 | 85 | | 3.9 |
| 65 | 40 | 235 | 85 | | 3.9 |
| 100 | 50 | 325 | 110 | | 5.3 |
| 80 | 65 | 210 | 85 | | 4.5 |
| 125 | 65 | 350 | 110 | | 5.8 |
| 80 | 50 | 245 | 85 | | 4.5 |
| 80 | 40 | 275 | 85 | | 4.5 |
| 100 | 65 | 285 | 110 | | 5.3 |
| 125 | 100 | 285 | 110 | | 5.8 |
| 100 | 80 | 250 | 110 | | 5.3 |
| 125 | 80 | 310 | 110 | | 5.8 |
| 150 | 125 | 310 | 110 | | 7.2 |
| 150 | 80 | 375 | 110 | | 7.2 |
| 200 | 100 | 495 | 127 | | 8.7 |
| 150 | 100 | 350 | 110 | | 7.2 |
| 250 | 200 | 400 | 143 | | 10.6 |





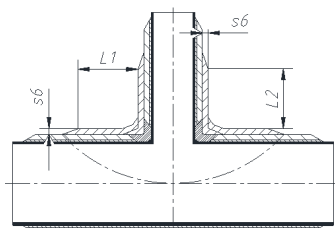
| DN1 | DN2 | L1 [mm] | L2 [mm] | L3 [mm] | Thickness s4 with adhesive layer without liner |
|-----|-----|------------|------------|------------|---|
| | | | | | PN16 [mm] |
| 200 | 125 | 430 | 127 | | 8.7 |
| 200 | 150 | 370 | 127 | | 8.7 |
| 300 | 200 | 540 | 158 | | 13.1 |
| 300 | 250 | 435 | 158 | | 13.1 |
| 250 | 125 | 575 | 143 | | 10.6 |
| 350 | 300 | 440 | 150 | | 14.6 |
| 300 | 150 | 655 | 158 | | 13.1 |
| 250 | 150 | 510 | 143 | | 10.6 |
| 350 | 200 | 665 | 150 | | 14.6 |
| 400 | 300 | 580 | 166 | | 16.4 |
| 500 | 350 | 730 | 191 | | 20.2 |
| 400 | 250 | 695 | 166 | | 16.4 |
| 350 | 250 | 550 | 150 | | 14.6 |
| 500 | 300 | 865 | 191 | | 20.2 |
| 400 | 350 | 450 | 166 | | 16.4 |
| 500 | 400 | 615 | 191 | | 20.2 |
| 600 | 350 | 980 | 181 | | 24 |
| 600 | 400 | 865 | 181 | | 24 |
| 600 | 500 | 630 | 181 | | 24 |



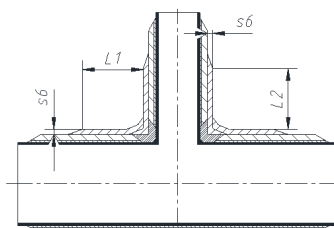


| DN | t | PN16 | |
|-----|------------|---------|--------|
| | | s5 [mm] | L [mm] |
| 25 | 20-pau017a | 4.0 | 110 |
| 32 | 20-pau017a | 4.0 | 110 |
| 50 | 20-pau017a | 4.0 | 110 |
| 65 | 20-pau017a | 4.0 | 110 |
| 40 | 20-pau017a | 4.0 | 110 |
| 80 | 20-pau017a | 4.0 | 115 |
| 100 | 20-pau017a | 4.0 | 140 |
| 125 | 20-pau017a | 4.5 | 160 |
| 150 | 20-pau017a | 5.7 | 200 |
| 200 | 20-pau017a | 7.2 | 250 |
| 300 | 20-pau017a | 11.2 | 395 |
| 250 | 20-pau017a | 8.9 | 315 |
| 350 | 20-pau017a | 12.7 | 440 |
| 400 | 20-pau017a | 14.3 | 500 |
| 500 | 20-pau017a | 17.8 | 620 |
| 450 | 20-pau017a | 16.0 | 560 |
| 600 | 20-pau017a | 21.4 | 745 |





saddle DN1>2*DN2



bridge DN1≤2*DN2

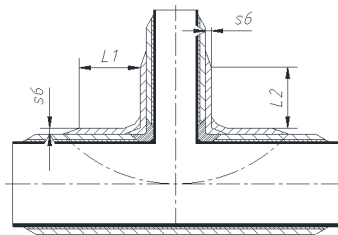
| DN1 | DN2 | PN16 | |
|-----|-----|---------|-------------|
| | | s6 [mm] | L1/L2 [mm] |
| 250 | 250 | 24.6 | 85.2/85.2 |
| 300 | 150 | 21.3 | 91.3/65.3 |
| 300 | 200 | 24.0 | 96.0/76.7 |
| 300 | 250 | 27.1 | 101.2/90.2 |
| 300 | 300 | 31.0 | 107.3/107.3 |
| 350 | 200 | 25.4 | 105.3/79.2 |
| 350 | 250 | 28.6 | 110.7/93.0 |
| 350 | 300 | 32.6 | 117.1/110.4 |
| 350 | 350 | 34.9 | 120.7/120.7 |
| 400 | 200 | 26.7 | 115.4/81.8 |
| 400 | 350 | 36.5 | 131.8/124.1 |
| 400 | 250 | 30.0 | 121.1/95.9 |
| 400 | 300 | 34.1 | 127.9/113.6 |
| 400 | 400 | 39.1 | 135.8/135.8 |
| 500 | 250 | 33.4 | 144.0/102.0 |
| 500 | 300 | 37.8 | 151.7/120.6 |
| 500 | 350 | 40.3 | 155.9/131.5 |
| 500 | 400 | 43.1 | 160.5/143.6 |
| 500 | 500 | 49.0 | 169.7/169.7 |
| 600 | 300 | 41.0 | 174.5/126.6 |
| 600 | 350 | 43.7 | 179.2/138.0 |
| 600 | 500 | 52.8 | 194.3/177.4 |
| 600 | 400 | 46.6 | 184.1/150.5 |
| 600 | 600 | 58.7 | 203.4/203.4 |
| 25 | 25 | 5.0 | 50.0/50.0 |
| 32 | 32 | 5.0 | 50.0/50.0 |
| 32 | 25 | 5.0 | 50.0/50.0 |
| 40 | 32 | 5.0 | 50.0/50.0 |
| 40 | 40 | 5.0 | 50.0/50.0 |
| 40 | 25 | 5.0 | 50.0/50.0 |
| 50 | 25 | 5.0 | 50.0/50.0 |
| 50 | 32 | 5.3 | 50.0/50.0 |
| 50 | 40 | 5.9 | 50.0/50.0 |



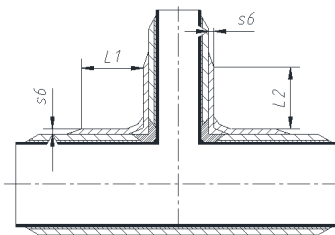


| DN1 | DN2 | PN16 | |
|-----|-----|---------|------------|
| | | s6 [mm] | L1/L2 [mm] |
| 65 | 32 | 6.1 | 50.0/50.0 |
| 65 | 40 | 6.7 | 50.0/50.0 |
| 65 | 65 | 8.1 | 50.0/50.0 |
| 65 | 50 | 7.5 | 50.0/50.0 |
| 80 | 40 | 7.7 | 50.0/50.0 |
| 80 | 50 | 8.5 | 50.0/50.0 |
| 80 | 65 | 9.2 | 50.0/50.0 |
| 80 | 80 | 10.0 | 50.0/50.0 |
| 100 | 50 | 7.4 | 50.0/50.0 |
| 100 | 65 | 8.2 | 50.0/50.0 |
| 100 | 80 | 9.1 | 50.0/50.0 |
| 100 | 100 | 10.2 | 50.0/50.0 |
| 125 | 80 | 10.1 | 50.0/50.0 |
| 125 | 125 | 12.1 | 50.0/50.0 |
| 125 | 65 | 9.1 | 50.0/50.0 |
| 150 | 80 | 11.6 | 50.0/50.0 |
| 150 | 100 | 12.9 | 50.2/50.0 |
| 125 | 100 | 11.2 | 50.0/50.0 |
| 150 | 125 | 13.8 | 51.6/50.0 |
| 150 | 150 | 15.8 | 54.8/54.8 |
| 200 | 100 | 14.1 | 59.3/50.0 |
| 200 | 125 | 15.1 | 61.0/50.0 |
| 200 | 150 | 17.3 | 64.6/57.9 |
| 200 | 200 | 19.6 | 68.2/68.2 |
| 250 | 125 | 16.9 | 72.5/51.6 |
| 250 | 150 | 19.2 | 76.5/61.4 |
| 50 | 50 | 6.7 | 50.0/50.0 |
| 250 | 200 | 21.7 | 80.6/72.2 |





saddle DN1>2*DN2



bridge DN1<=2*DN2

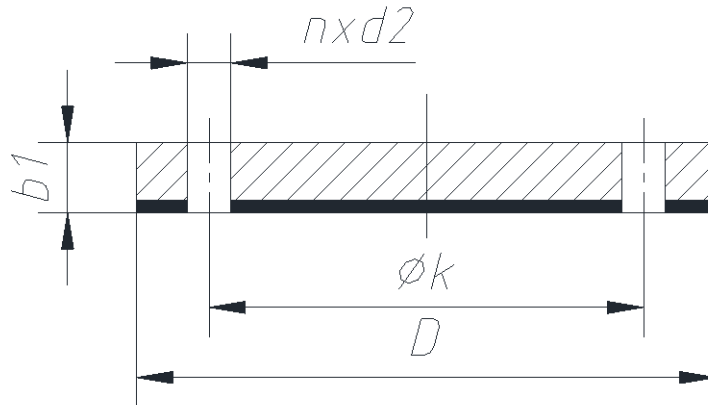
| DN1 | DN2 | PN16 | |
|-----|-----|---------|------------|
| | | s6 [mm] | L1/L2 [mm] |
| 65 | 25 | 5.6 | 50.0/50.0 |
| 80 | 25 | 6.5 | 50.0/50.0 |
| 65 | 32 | 6.1 | 50.0/50.0 |
| 80 | 32 | 7.0 | 50.0/50.0 |
| 100 | 25 | 5.2 | 50.0/50.0 |
| 100 | 32 | 5.8 | 50.0/50.0 |
| 100 | 40 | 6.6 | 50.0/50.0 |
| 125 | 25 | 6.0 | 50.0/50.0 |
| 125 | 40 | 7.4 | 50.0/50.0 |
| 125 | 50 | 8.3 | 50.0/50.0 |
| 150 | 25 | 7.2 | 50.0/50.0 |
| 150 | 32 | 7.9 | 50.0/50.0 |
| 125 | 32 | 6.7 | 50.0/50.0 |
| 150 | 40 | 8.8 | 50.0/50.0 |
| 150 | 50 | 9.8 | 50.0/50.0 |
| 200 | 25 | 7.9 | 50.0/50.0 |
| 200 | 32 | 8.7 | 50.0/50.0 |
| 150 | 65 | 10.6 | 50.0/50.0 |
| 200 | 40 | 9.6 | 50.8/50.0 |
| 200 | 65 | 11.7 | 54.9/50.0 |
| 200 | 80 | 12.7 | 56.8/50.0 |
| 200 | 50 | 10.7 | 53.0/50.0 |
| 250 | 32 | 9.9 | 58.7/50.0 |
| 250 | 25 | 9.0 | 56.7/50.0 |
| 250 | 40 | 10.9 | 60.9/50.0 |
| 250 | 50 | 12.1 | 63.4/50.0 |
| 250 | 65 | 13.1 | 65.4/50.0 |
| 250 | 80 | 14.3 | 67.7/50.0 |
| 250 | 100 | 15.8 | 70.5/50.0 |
| 300 | 25 | 10.0 | 68.3/50.0 |
| 300 | 32 | 11.0 | 70.6/50.0 |
| 300 | 40 | 12.2 | 73.3/50.0 |
| 300 | 50 | 13.5 | 76.2/50.0 |
| 300 | 80 | 16.0 | 81.3/50.0 |





| DN1 | DN2 | PN16 | |
|-----|-----|------------|---------------|
| | | s6 [mm] | L1/L2 [mm] |
| 300 | 100 | 17.6 | 84.5/50.4 |
| 350 | 25 | 10.7 | 75.4/50.0 |
| 300 | 65 | 14.7 | 78.7/50.0 |
| 300 | 125 | 18.8 | 86.8/55.0 |
| 350 | 32 | 11.8 | 78.1/50.0 |
| 350 | 40 | 13.0 | 80.8/50.0 |
| 350 | 80 | 17.0 | 89.4/50.0 |
| 350 | 100 | 18.8 | 93.1/52.3 |
| 350 | 50 | 14.4 | 83.9/50.0 |
| 350 | 65 | 15.6 | 86.5/50.0 |
| 350 | 125 | 20.0 | 95.4/57.0 |
| 400 | 25 | 11.1 | 82.8/50.0 |
| 350 | 150 | 22.6 | 100.3/67.6 |
| 400 | 32 | 12.3 | 85.8/50.0 |
| 400 | 40 | 13.6 | 88.9/50.0 |
| 400 | 50 | 15.1 | 92.3/50.0 |
| 400 | 65 | 16.4 | 95.2/50.0 |
| 400 | 80 | 17.9 | 98.4/50.0 |
| 400 | 100 | 19.7 | 102.1/54.1 |
| 400 | 125 | 20.9 | 104.5/58.8 |
| 400 | 150 | 23.7 | 109.9/69.8 |
| 500 | 25 | 12.5 | 99.8/50.0 |
| 500 | 32 | 13.9 | 103.4/50.0 |
| 500 | 40 | 15.3 | 106.8/50.0 |
| 500 | 50 | 17.0 | 110.8/50.0 |
| 500 | 65 | 18.4 | 114.0/50.0 |
| 500 | 80 | 20.1 | 117.8/50.8 |
| 500 | 100 | 22.1 | 122.1/57.9 |
| 500 | 125 | 23.5 | 125.0/63.0 |
| 500 | 150 | 26.5 | 131.1/74.5 |
| 500 | 200 | 29.7 | 137.2/87.1 |
| 600 | 25 | 13.5 | 115.9/50.0 |
| 600 | 32 | 15.0 | 119.8/50.0 |
| 600 | 40 | 16.6 | 123.9/50.0 |
| 600 | 50 | 18.5 | 128.5/50.0 |
| 600 | 80 | 21.9 | 136.5/53.7 |
| 600 | 100 | 24.0 | 141.2/61.1 |
| 600 | 125 | 25.6 | 144.6/66.5 |
| 600 | 65 | 20.0 | 132.1/50.0 |
| 600 | 150 | 28.9 | 151.5/78.6 |
| 600 | 200 | 32.4 | 158.5/91.9 |
| 600 | 250 | 36.3 | 165.9/107.4 |



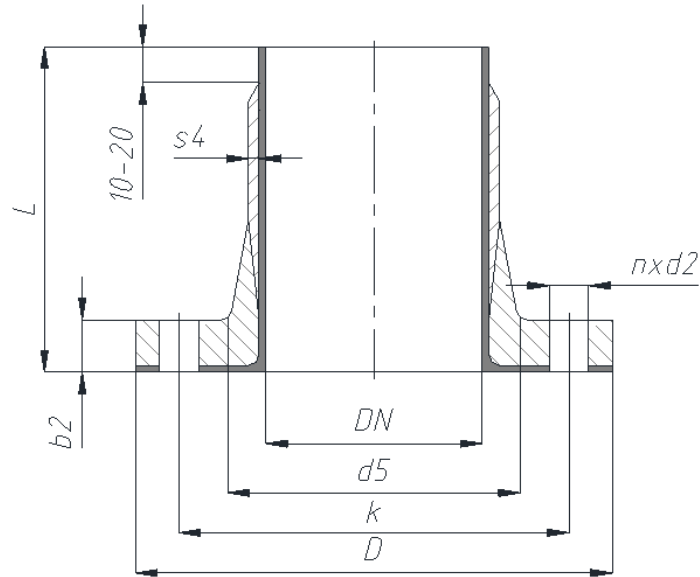


| DN | PN16 (drilling PN16) | | | | |
|-----|----------------------|----------|--------|--------|---------|
| | D [mm] | *b1 [mm] | k [mm] | n [mm] | d2 [mm] |
| 25 | 115.00 | 19 | 85.00 | 4 | 14 |
| 32 | 140.00 | 21 | 100.00 | 4 | 18 |
| 40 | 150.00 | 24 | 110.00 | 4 | 18 |
| 50 | 165.00 | 26 | 125.00 | 4 | 18 |
| 80 | 200.00 | 32 | 160.00 | 8 | 18 |
| 65 | 185.00 | 29 | 145.00 | 8 | 18 |
| 100 | 220.00 | 35 | 180.00 | 8 | 18 |
| 125 | 250.00 | 39 | 210.00 | 8 | 18 |
| 150 | 285.00 | 43 | 240.00 | 8 | 22 |
| 250 | 405.00 | 53 | 355.00 | 12 | 26 |
| 200 | 340.00 | 45 | 295.00 | 12 | 22 |
| 350 | 520.00 | 69 | 470.00 | 16 | 26 |
| 400 | 580.00 | 76 | 525.00 | 16 | 30 |
| 300 | 460.00 | 60 | 410.00 | 12 | 26 |
| 500 | 715.00 | 93 | 650.00 | 20 | 33 |
| 450 | 640.00 | 85 | 585.00 | 20 | 30 |

Remarks:

- *s4 – thickness with adhesive layer without liner, *b2 – thickness incl. liner



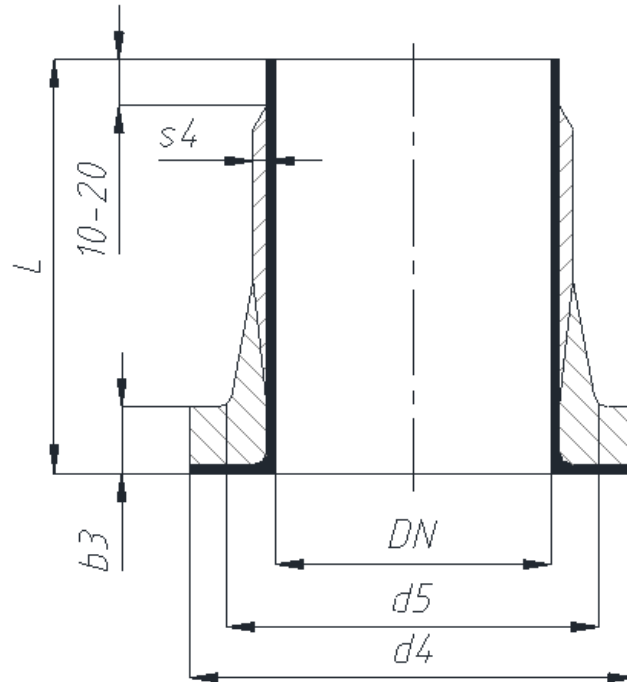


| DN | PN16 (drilling PN16) | | | | | | | |
|-----|----------------------|---------|----------|----------|--------|--------|---------|--------|
| | D [mm] | d5 [mm] | *s4 [mm] | *b2 [mm] | k [mm] | n [mm] | d2 [mm] | L [mm] |
| 25 | 115.00 | 50 | 2.9 | 18 | 85.00 | 4 | 32 | 250 |
| 32 | 140.00 | 58 | 2.9 | 19 | 100.00 | 4 | 40 | 250 |
| 40 | 150.00 | 68 | 2.9 | 20 | 110.00 | 4 | 50 | 250 |
| 50 | 165.00 | 82 | 2.9 | 22 | 125.00 | 4 | 63 | 250 |
| 80 | 200.00 | 125 | 2.9 | 32 | 160.00 | 8 | 90 | 250 |
| 100 | 220.00 | 145 | 2.9 | 42 | 180.00 | 8 | 110 | 250 |
| 150 | 285.00 | 200 | 3.2 | 44 | 240.00 | 8 | 160 | 250 |
| 200 | 340.00 | 255 | 3.7 | 54 | 295.00 | 12 | 200 | 250 |
| 300 | 460.00 | 360 | 5.3 | 74 | 410.00 | 12 | 315 | 300 |
| 400 | 580.00 | 470 | 6.4 | 94 | 525.00 | 16 | 400 | 400 |
| 250 | 405.00 | 305 | 4.4 | 64 | 355.00 | 12 | 250 | 250 |
| 350 | 520.00 | 420 | 5.8 | 84 | 470.00 | 16 | 355 | 350 |
| 500 | 715.00 | 590 | 7.8 | 104 | 650.00 | 20 | 500 | 500 |
| 450 | 640.00 | 530 | 7.1 | 99 | 585.00 | 20 | 450 | 450 |

Remarks:

- *s4 – thickness with adhesive layer without liner, *b2 – thickness incl. liner



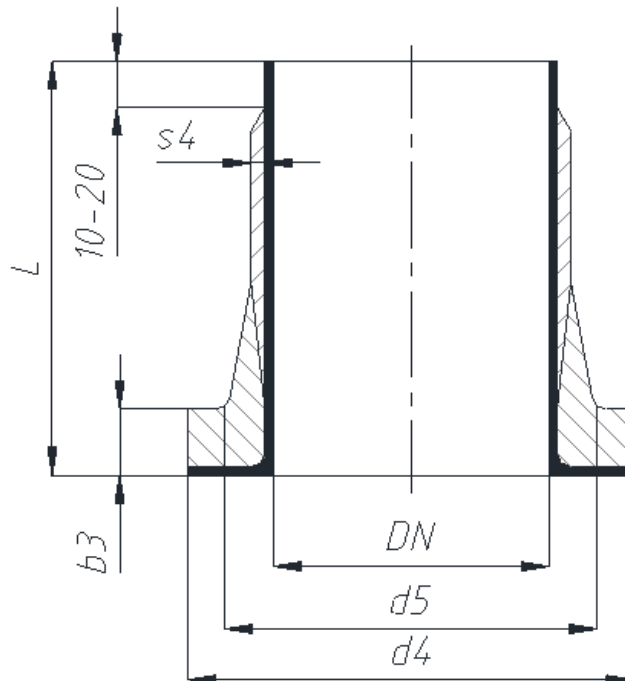


| DN | PN16 (drilling PN16) | | | | |
|-----|----------------------|---------|----------|----------|--------|
| | d4 [mm] | d5 [mm] | *s4 [mm] | *b3 [mm] | L [mm] |
| 450 | 550 | 502 | 7.1 | 89 | 500 |
| 350 | 438 | 398 | 5.8 | 74 | 400 |
| 400 | 490 | 452 | 6.4 | 84 | 450 |
| 500 | 610 | 554 | 7.8 | 94 | 550 |

Remarks:

- *s4 – thickness with adhesive layer without liner, *b3 – thickness incl. liner Stub ends are manufactured with welded flange face and hand lay-up lamination process. In range DN25-DN300 for PVC and PP liner there is additional possibility of flaring flange face with pressing lamination process (RAL9010)



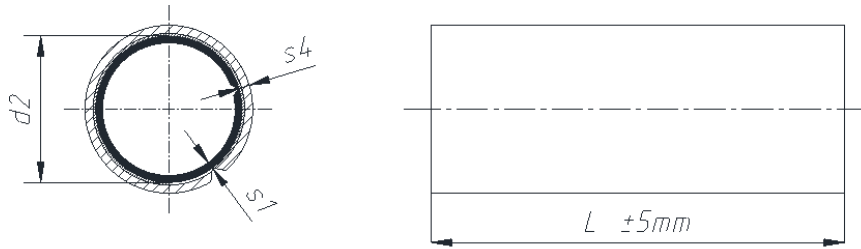


| DN | PN16 (drilling PN16) | | | | |
|-----|----------------------|---------|----------|----------|--------|
| | d4 [mm] | d5 [mm] | *s4 [mm] | *b3 [mm] | L [mm] |
| 25 | 68 | 50 | 2.9 | 16 | 200 |
| 32 | 78 | 58 | 2.9 | 18 | 200 |
| 80 | 138 | 111 | 4.2 | 26 | 200 |
| 40 | 88 | 68 | 2.9 | 18 | 200 |
| 150 | 212 | 188 | 6.7 | 39 | 200 |
| 100 | 158 | 133 | 5 | 31 | 200 |
| 50 | 102 | 82 | 3.3 | 18 | 200 |
| 300 | 378 | 347 | 12.2 | 64 | 350 |
| 200 | 268 | 237 | 8.2 | 44 | 250 |
| 250 | 320 | 293 | 9.9 | 54 | 300 |

Remarks:

- *s4 – thickness with adhesive layer without liner, *b3 – thickness incl. liner Stub ends are manufactured with welded flange face and hand lay-up lamination process. In range DN25-DN300 for PVC and PP liner there is additional possibility of flaring flange face with pressing lamination process (RAL9010)



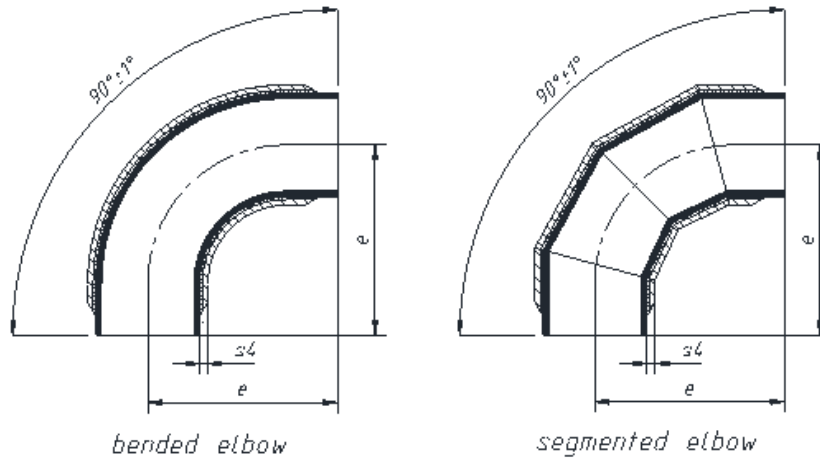
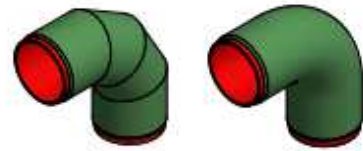


| DN | d2 | Thickness s1 of thermoplastic liner | Thickness s4 with adhesive layer without liner |
|-----|-----|-------------------------------------|--|
| | | PP2222 | PN6 [mm] |
| 25 | 32 | 3.5 | 2.9 |
| 40 | 50 | 4.6 | 2.9 |
| 50 | 63 | 5.8 | 2.9 |
| 250 | 250 | 6.2 | 2.9 |
| 80 | 90 | 5.1 | 2.9 |
| 100 | 110 | 6.3 | 2.9 |
| 150 | 160 | 4.9 | 2.9 |
| 200 | 200 | 4.9 | 2.9 |
| 300 | 315 | 7.7 | 2.9 |
| 350 | 355 | 5.0 | 2.9 |
| 400 | 400 | 6.0 | 3.1 |
| 500 | 500 | 8.0 | 3.6 |
| 32 | 40 | 3.7 | 2.9 |
| 450 | 450 | 4.0 | 3.3 |
| 600 | 600 | 8.0 | 4.1 |

Remarks:

- thickness differ to DIN16965





| DN | e [mm] | Thickness s4 with adhesive layer without liner | |
|-----|--------|--|--|
| | | PN6 [mm] | |
| 25 | 110 | 2.9 | |
| 32 | 130 | 2.9 | |
| 40 | 150 | 2.9 | |
| 50 | 180 | 2.9 | |
| 80 | 165 | 2.9 | |
| 100 | 205 | 2.9 | |
| 150 | 285 | 2.9 | |
| 200 | 365 | 3.3 | |
| 250 | 450 | 3.9 | |
| 300 | 525 | 4.6 | |
| 350 | 600 | 5 | |
| 400 | 680 | 5.5 | |
| 450 | 775 | 6.1 | |
| 500 | 830 | 6.6 | |
| 600 | 950 | 7.7 | |

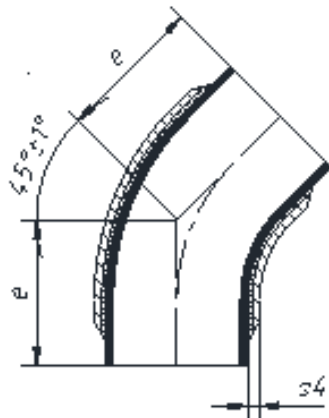
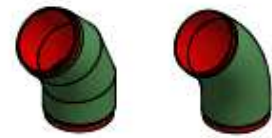
Remarks:

Bended elbow – PVC DN25-50, PP and PE DN25-300, PVDF DN25-50

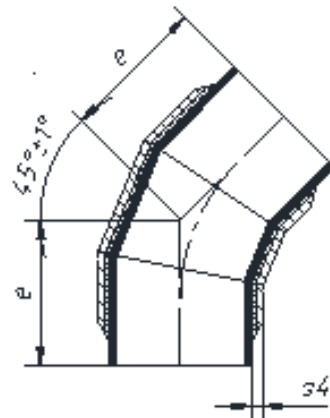
Segmented elbow – PVC DN65-700, PP and PE DN350-700, PVDF DN65-700, ECTFE and PFA DN25-700

R – depends on the liner material and produced method





banded elbow



segmented elbow

| DN | e [mm] | Thickness s4 with adhesive layer without liner | |
|-----|-----------|--|--|
| | | PN6 [mm] | |
| 25 | 70 | 2.9 | |
| 32 | 80 | 2.9 | |
| 40 | 90 | 2.9 | |
| 150 | 150 | 2.9 | |
| 200 | 190 | 3.3 | |
| 250 | 225 | 3.9 | |
| 300 | 260 | 4.6 | |
| 350 | 290 | 5 | |
| 100 | 115 | 2.9 | |
| 400 | 325 | 5.5 | |
| 450 | 380 | 6.1 | |
| 500 | 390 | 6.6 | |
| 600 | 430 | 7.7 | |
| 80 | 100 | 2.9 | |
| 50 | 105 | 2.9 | |

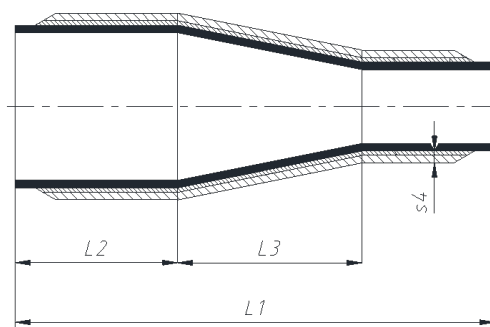
Remarks:

Banded elbow – PVC DN25-50, PP and PE DN25-300, PVDF DN25-50

Segmented elbow – PVC DN65-700, PP and PE DN350-700, PVDF DN65-700, ECTFE and PFA DN25-700

R – depends on the liner material and produced method





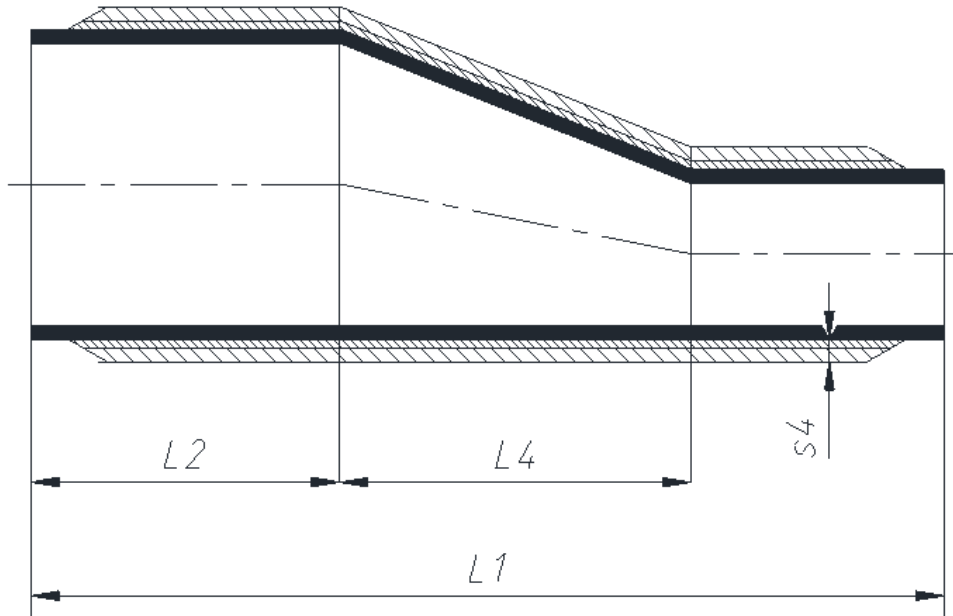
| DN1 | DN2 | L1 [mm] | L2 [mm] | L3 [mm] | Thickness s4 with adhesive layer without liner |
|-----|-----|------------|------------|------------|--|
| | | | | | PN6 [mm] |
| 150 | 100 | 350 | 110 | 130 | 3.2 |
| 150 | 125 | 310 | 110 | 90 | 3.2 |
| 200 | 100 | 495 | 127 | 230 | 3.7 |
| 200 | 125 | 430 | 127 | 195 | 3.7 |
| 200 | 150 | 370 | 127 | 105 | 3.7 |
| 250 | 125 | 575 | 143 | 320 | 4.4 |
| 250 | 150 | 510 | 143 | 230 | 4.4 |
| 250 | 200 | 400 | 143 | 130 | 4.4 |
| 300 | 150 | 655 | 158 | 360 | 5.2 |
| 300 | 200 | 540 | 158 | 255 | 5.2 |
| 300 | 250 | 435 | 158 | 130 | 5.2 |
| 350 | 200 | 665 | 150 | 400 | 5.8 |
| 350 | 300 | 440 | 150 | 140 | 5.8 |
| 350 | 250 | 550 | 150 | 270 | 5.8 |
| 400 | 300 | 580 | 166 | 255 | 6.4 |
| 400 | 350 | 450 | 166 | 115 | 6.4 |
| 400 | 250 | 695 | 166 | 385 | 6.4 |
| 500 | 300 | 865 | 191 | 515 | 7.7 |
| 500 | 350 | 730 | 191 | 375 | 7.7 |
| 500 | 400 | 615 | 191 | 255 | 7.7 |
| 600 | 350 | 980 | 181 | 630 | 9 |
| 600 | 400 | 865 | 181 | 515 | 9 |
| 600 | 500 | 630 | 181 | 260 | 9 |
| 32 | 25 | 180 | 85 | 20 | 2.9 |
| 40 | 25 | 205 | 85 | 45 | 2.9 |
| 40 | 32 | 200 | 85 | 25 | 2.9 |





| DN1 | DN2 | L1 [mm] | L2 [mm] | L3 [mm] | Thickness s4 with adhesive layer without liner |
|-----|-----|------------|------------|------------|---|
| | | | | | PN6 [mm] |
| 50 | 25 | 235 | 85 | 80 | 2.9 |
| 50 | 32 | 230 | 85 | 60 | 2.9 |
| 50 | 40 | 205 | 85 | 35 | 2.9 |
| 65 | 32 | 260 | 85 | 90 | 2.9 |
| 65 | 40 | 235 | 85 | 65 | 2.9 |
| 65 | 50 | 210 | 85 | 30 | 2.9 |
| 80 | 40 | 275 | 85 | 105 | 2.9 |
| 80 | 50 | 245 | 85 | 70 | 2.9 |
| 80 | 65 | 210 | 85 | 40 | 2.9 |
| 100 | 50 | 325 | 110 | 95 | 2.9 |
| 100 | 65 | 285 | 110 | 90 | 2.9 |
| 100 | 80 | 250 | 110 | 50 | 2.9 |
| 125 | 65 | 350 | 110 | 130 | 2.9 |
| 125 | 80 | 310 | 110 | 90 | 2.9 |
| 125 | 100 | 285 | 110 | 40 | 2.9 |
| 150 | 80 | 375 | 110 | 180 | 3.2 |





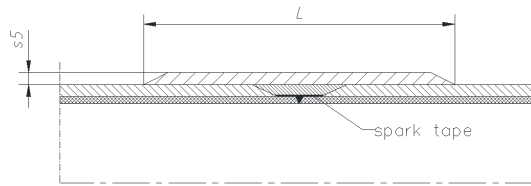
| DN1 | DN2 | L1 [mm] | L2 [mm] | L3 [mm] | Thickness s4 with adhesive layer without liner |
|-----|-----|---------|---------|---------|--|
| | | | | | PN6 [mm] |
| 32 | 25 | 180 | 85 | | 2.9 |
| 40 | 32 | 200 | 85 | | 2.9 |
| 40 | 25 | 205 | 85 | | 2.9 |
| 50 | 25 | 235 | 85 | | 2.9 |
| 50 | 32 | 230 | 85 | | 2.9 |
| 50 | 40 | 205 | 85 | | 2.9 |
| 65 | 32 | 260 | 85 | | 2.9 |
| 65 | 40 | 235 | 85 | | 2.9 |
| 65 | 50 | 210 | 85 | | 2.9 |
| 80 | 40 | 275 | 85 | | 2.9 |
| 80 | 50 | 245 | 85 | | 2.9 |
| 80 | 65 | 210 | 85 | | 2.9 |
| 100 | 65 | 285 | 110 | | 2.9 |
| 100 | 50 | 325 | 110 | | 2.9 |
| 100 | 80 | 250 | 110 | | 2.9 |
| 125 | 65 | 350 | 110 | | 2.9 |
| 125 | 80 | 310 | 110 | | 2.9 |
| 150 | 80 | 375 | 110 | | 3.3 |
| 125 | 100 | 285 | 110 | | 2.9 |
| 150 | 100 | 350 | 110 | | 3.3 |
| 150 | 125 | 310 | 110 | | 3.3 |
| 200 | 125 | 430 | 127 | | 3.9 |
| 200 | 100 | 495 | 127 | | 3.9 |





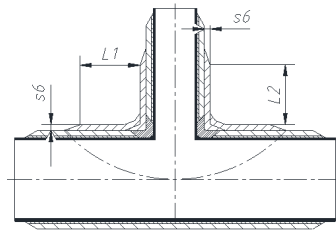
| DN1 | DN2 | L1 [mm] | L2 [mm] | L3 [mm] | Thickness s4 with adhesive layer without liner |
|-----|-----|------------|------------|------------|---|
| | | | | | PN6 [mm] |
| 250 | 125 | 575 | 143 | | 4.6 |
| 200 | 150 | 370 | 127 | | 3.9 |
| 250 | 150 | 510 | 143 | | 4.6 |
| 250 | 200 | 400 | 143 | | 4.6 |
| 300 | 150 | 655 | 158 | | 5.5 |
| 300 | 200 | 540 | 158 | | 5.5 |
| 300 | 250 | 435 | 158 | | 5.5 |
| 350 | 250 | 550 | 150 | | 6 |
| 350 | 200 | 665 | 150 | | 6 |
| 350 | 300 | 440 | 150 | | 6 |
| 400 | 250 | 695 | 166 | | 6.7 |
| 400 | 300 | 580 | 166 | | 6.7 |
| 400 | 350 | 450 | 166 | | 6.7 |
| 500 | 400 | 615 | 191 | | 8.1 |
| 500 | 300 | 865 | 191 | | 8.1 |
| 500 | 350 | 730 | 191 | | 8.1 |
| 600 | 350 | 980 | 181 | | 9.5 |
| 600 | 400 | 865 | 181 | | 9.5 |
| 600 | 500 | 630 | 181 | | 9.5 |



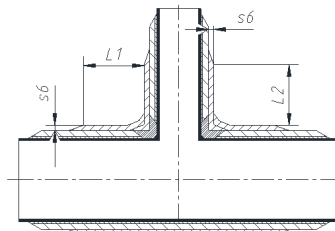


| DN | t | PN6 | |
|-----|------------|---------|--------|
| | | s5 [mm] | L [mm] |
| 25 | 20-pau017a | 4.0 | 110 |
| 32 | 20-pau017a | 4.0 | 110 |
| 40 | 20-pau017a | 4.0 | 110 |
| 65 | 20-pau017a | 4.0 | 110 |
| 80 | 20-pau017a | 4.0 | 110 |
| 50 | 20-pau017a | 4.0 | 110 |
| 100 | 20-pau017a | 4.0 | 110 |
| 150 | 20-pau017a | 4.0 | 110 |
| 200 | 20-pau017a | 4.0 | 110 |
| 400 | 20-pau017a | 5.3 | 185 |
| 350 | 20-pau017a | 4.7 | 165 |
| 250 | 20-pau017a | 4.0 | 120 |
| 125 | 20-pau017a | 4.0 | 110 |
| 300 | 20-pau017a | 4.2 | 145 |
| 500 | 20-pau017a | 6.6 | 230 |
| 450 | 20-pau017a | 5.9 | 210 |
| 600 | 20-pau017a | 7.9 | 275 |





saddle DN1>2*DN2



bridge DN1≤2*DN2

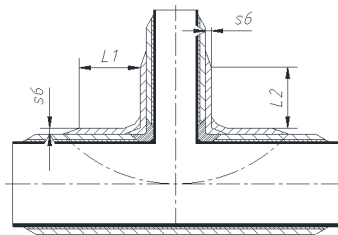
| DN1 | DN2 | PN6 | |
|-----|-----|---------|------------|
| | | s6 [mm] | L1/L2 [mm] |
| 25 | 25 | 5.0 | 50.0/50.0 |
| 32 | 25 | 5.0 | 50.0/50.0 |
| 32 | 32 | 5.0 | 50.0/50.0 |
| 40 | 25 | 5.0 | 50.0/50.0 |
| 40 | 32 | 5.0 | 50.0/50.0 |
| 40 | 40 | 5.0 | 50.0/50.0 |
| 50 | 25 | 5.0 | 50.0/50.0 |
| 50 | 32 | 5.0 | 50.0/50.0 |
| 50 | 40 | 5.0 | 50.0/50.0 |
| 65 | 32 | 5.0 | 50.0/50.0 |
| 65 | 50 | 5.0 | 50.0/50.0 |
| 65 | 65 | 5.0 | 50.0/50.0 |
| 65 | 40 | 5.0 | 50.0/50.0 |
| 80 | 40 | 5.0 | 50.0/50.0 |
| 50 | 50 | 5.0 | 50.0/50.0 |
| 80 | 50 | 5.0 | 50.0/50.0 |
| 80 | 65 | 5.0 | 50.0/50.0 |
| 80 | 80 | 5.0 | 50.0/50.0 |
| 100 | 65 | 5.0 | 50.0/50.0 |
| 100 | 80 | 5.0 | 50.0/50.0 |
| 125 | 65 | 5.0 | 50.0/50.0 |
| 125 | 80 | 5.0 | 50.0/50.0 |
| 100 | 100 | 5.0 | 50.0/50.0 |
| 125 | 100 | 5.0 | 50.0/50.0 |
| 125 | 125 | 5.0 | 50.0/50.0 |
| 150 | 80 | 5.0 | 50.0/50.0 |
| 100 | 50 | 5.0 | 50.0/50.0 |
| 150 | 100 | 5.0 | 50.0/50.0 |
| 150 | 125 | 5.0 | 50.0/50.0 |
| 150 | 150 | 5.8 | 50.0/50.0 |
| 200 | 100 | 5.1 | 50.0/50.0 |
| 200 | 125 | 5.7 | 50.0/50.0 |
| 250 | 125 | 6.9 | 50.0/50.0 |



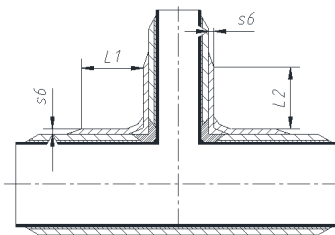


| DN1 | DN2 | PN6 | |
|-----|-----|---------|-------------|
| | | s6 [mm] | L1/L2 [mm] |
| 200 | 150 | 6.8 | 50.0/50.0 |
| 200 | 200 | 8.1 | 50.0/50.0 |
| 250 | 150 | 8.1 | 50.6/50.0 |
| 250 | 200 | 9.4 | 53.8/50.0 |
| 250 | 250 | 11.1 | 57.7/57.7 |
| 300 | 150 | 9.7 | 61.1/50.0 |
| 300 | 200 | 11.1 | 64.6/51.8 |
| 300 | 300 | 14.9 | 73.5/73.5 |
| 300 | 250 | 12.8 | 68.7/61.4 |
| 350 | 200 | 12.1 | 71.1/53.7 |
| 350 | 250 | 13.8 | 75.3/63.4 |
| 350 | 350 | 17.2 | 83.1/83.1 |
| 350 | 300 | 15.9 | 80.2/75.6 |
| 400 | 200 | 12.8 | 77.8/55.4 |
| 400 | 250 | 14.6 | 82.4/65.4 |
| 400 | 300 | 16.7 | 87.4/77.7 |
| 400 | 350 | 18.0 | 90.4/85.2 |
| 500 | 250 | 16.0 | 97.2/69.0 |
| 500 | 300 | 18.3 | 103.0/81.9 |
| 500 | 350 | 19.6 | 106.2/89.5 |
| 400 | 400 | 19.5 | 93.7/93.7 |
| 500 | 400 | 21.1 | 109.7/98.2 |
| 500 | 500 | 24.3 | 116.9/116.9 |
| 600 | 350 | 21.1 | 121.4/93.5 |
| 600 | 400 | 22.6 | 125.1/102.2 |
| 600 | 300 | 19.7 | 117.8/85.6 |
| 600 | 600 | 29.2 | 140.2/140.2 |
| 600 | 500 | 26.0 | 133.1/121.5 |





saddle DN1>2*DN2



bridge DN1<=2*DN2

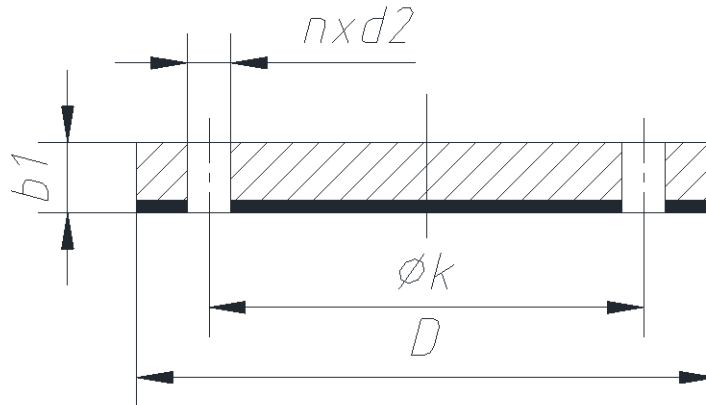
| DN1 | DN2 | PN6 | |
|-----|-----|---------|------------|
| | | s6 [mm] | L1/L2 [mm] |
| 65 | 25 | 5.0 | 50.0/50.0 |
| 65 | 32 | 5.0 | 50.0/50.0 |
| 80 | 25 | 5.0 | 50.0/50.0 |
| 80 | 32 | 5.0 | 50.0/50.0 |
| 100 | 25 | 5.0 | 50.0/50.0 |
| 100 | 32 | 5.0 | 50.0/50.0 |
| 100 | 40 | 5.0 | 50.0/50.0 |
| 125 | 32 | 5.0 | 50.0/50.0 |
| 125 | 25 | 5.0 | 50.0/50.0 |
| 125 | 40 | 5.0 | 50.0/50.0 |
| 125 | 50 | 5.0 | 50.0/50.0 |
| 150 | 25 | 5.0 | 50.0/50.0 |
| 150 | 32 | 5.0 | 50.0/50.0 |
| 150 | 40 | 5.0 | 50.0/50.0 |
| 150 | 50 | 5.0 | 50.0/50.0 |
| 150 | 65 | 5.0 | 50.0/50.0 |
| 200 | 32 | 5.0 | 50.0/50.0 |
| 200 | 50 | 5.0 | 50.0/50.0 |
| 200 | 25 | 5.0 | 50.0/50.0 |
| 200 | 40 | 5.0 | 50.0/50.0 |
| 200 | 65 | 5.0 | 50.0/50.0 |
| 200 | 80 | 5.0 | 50.0/50.0 |
| 250 | 25 | 5.0 | 50.0/50.0 |
| 250 | 32 | 5.0 | 50.0/50.0 |
| 250 | 40 | 5.0 | 50.0/50.0 |
| 250 | 50 | 5.0 | 50.0/50.0 |
| 250 | 65 | 5.0 | 50.0/50.0 |
| 250 | 80 | 5.6 | 50.0/50.0 |
| 300 | 32 | 5.0 | 50.0/50.0 |
| 300 | 25 | 5.0 | 50.0/50.0 |
| 300 | 40 | 5.1 | 50.0/50.0 |
| 250 | 100 | 6.3 | 50.0/50.0 |
| 300 | 50 | 5.8 | 50.0/50.0 |
| 300 | 65 | 6.4 | 51.7/50.0 |





| DN1 | DN2 | PN6 | |
|-----|-----|------------|---------------|
| | | s6 [mm] | L1/L2 [mm] |
| 300 | 80 | 7.0 | 53.5/50.0 |
| 300 | 100 | 7.8 | 55.8/50.0 |
| 300 | 125 | 8.4 | 57.5/50.0 |
| 350 | 25 | 5.0 | 50.0/50.0 |
| 350 | 32 | 5.3 | 51.0/50.0 |
| 350 | 40 | 5.9 | 53.1/50.0 |
| 350 | 50 | 6.6 | 55.4/50.0 |
| 350 | 65 | 7.2 | 57.3/50.0 |
| 350 | 80 | 7.9 | 59.5/50.0 |
| 350 | 100 | 8.7 | 61.9/50.0 |
| 350 | 125 | 9.4 | 63.9/50.0 |
| 350 | 150 | 10.7 | 67.5/50.0 |
| 400 | 25 | 5.2 | 54.5/50.0 |
| 400 | 40 | 6.3 | 58.5/50.0 |
| 400 | 32 | 5.7 | 56.3/50.0 |
| 400 | 50 | 7.1 | 61.2/50.0 |
| 400 | 100 | 9.3 | 68.1/50.0 |
| 400 | 125 | 9.9 | 69.9/50.0 |
| 400 | 80 | 8.4 | 65.4/50.0 |
| 400 | 65 | 7.7 | 63.1/50.0 |
| 500 | 25 | 5.8 | 65.3/50.0 |
| 500 | 32 | 6.4 | 67.6/50.0 |
| 500 | 65 | 8.6 | 75.4/50.0 |
| 500 | 40 | 7.1 | 70.2/50.0 |
| 500 | 100 | 10.4 | 81.3/50.0 |
| 500 | 125 | 11.1 | 83.4/50.0 |
| 500 | 150 | 12.6 | 87.9/50.3 |
| 500 | 200 | 14.1 | 92.1/58.7 |
| 600 | 32 | 7.0 | 78.4/50.0 |
| 600 | 25 | 6.4 | 76.1/50.0 |
| 600 | 50 | 8.7 | 84.8/50.0 |
| 600 | 65 | 9.4 | 87.2/50.0 |
| 600 | 40 | 7.8 | 81.5/50.0 |
| 600 | 80 | 10.3 | 90.3/50.0 |
| 600 | 100 | 11.3 | 93.6/50.0 |
| 600 | 250 | 17.3 | 111.4/72.3 |
| 600 | 150 | 13.7 | 101.1/52.8 |
| 400 | 150 | 11.3 | 73.8/50.0 |
| 500 | 50 | 7.9 | 73.0/50.0 |
| 500 | 80 | 9.4 | 78.1/50.0 |
| 600 | 125 | 12.1 | 96.2/50.0 |
| 600 | 200 | 15.4 | 106.1/61.8 |



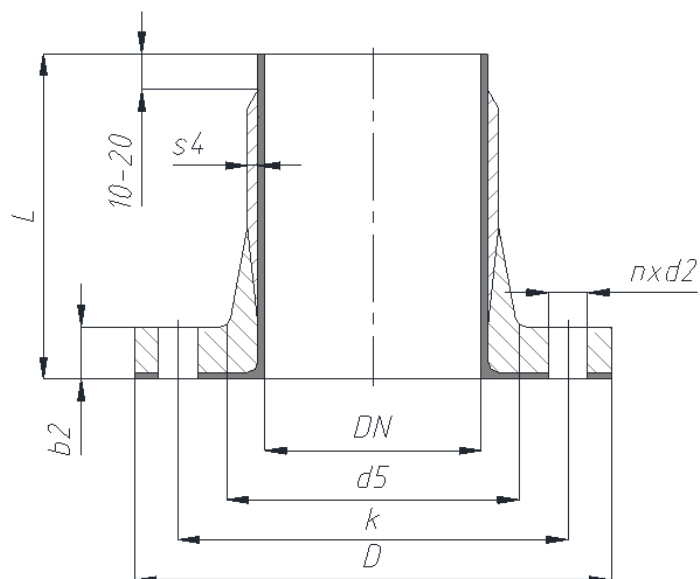


| DN | PN6 (drilling PN6) | | | | |
|-----|--------------------|----------|--------|--------|---------|
| | D [mm] | *b1 [mm] | k [mm] | n [mm] | d2 [mm] |
| 40 | 150.00 | 24 | 110.00 | 4 | 18 |
| 25 | 115.00 | 19 | 85.00 | 4 | 14 |
| 50 | 165.00 | 26 | 125.00 | 4 | 18 |
| 100 | 220.00 | 31 | 180.00 | 8 | 18 |
| 32 | 140.00 | 21 | 100.00 | 4 | 18 |
| 150 | 285.00 | 37 | 240.00 | 8 | 22 |
| 200 | 340.00 | 30 | 295.00 | 8 | 22 |
| 80 | 200.00 | 28 | 160.00 | 8 | 18 |
| 300 | 445.00 | 39 | 400.00 | 12 | 22 |
| 350 | 505.00 | 45 | 460.00 | 16 | 22 |
| 125 | 250.00 | 33 | 210.00 | 8 | 18 |
| 400 | 565.00 | 49 | 515.00 | 16 | 26 |
| 250 | 395.00 | 35 | 350.00 | 12 | 22 |
| 65 | 185.00 | 25 | 145.00 | 4 | 18 |
| 600 | 780.00 | 68 | 725.00 | 20 | 30 |
| 500 | 670.00 | 59 | 620.00 | 20 | 26 |
| 450 | 615.00 | 54 | 565.00 | 20 | 26 |

Remarks:

- *s4 – thickness with adhesive layer without liner, *b2 – thickness incl. liner



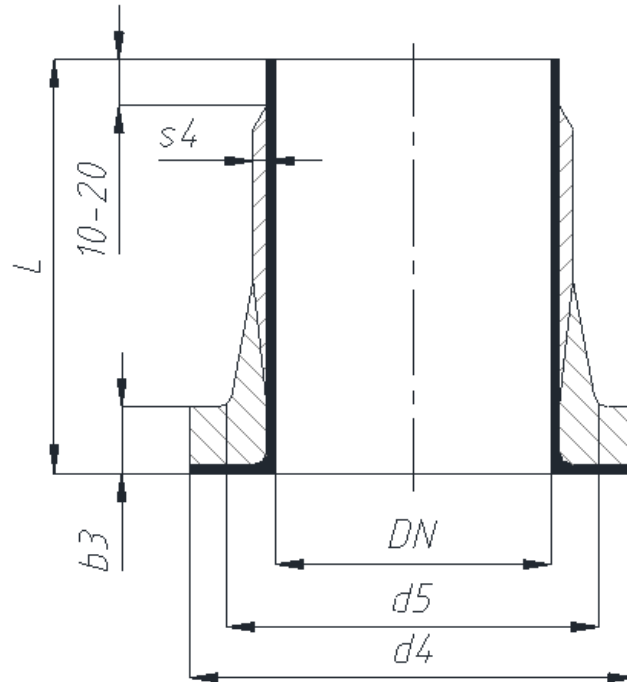


| DN | PN6 (drilling PN6) | | | | | | | |
|-----|--------------------|---------|----------|----------|--------|--------|---------|--------|
| | D [mm] | d5 [mm] | *s4 [mm] | *b2 [mm] | k [mm] | n [mm] | d2 [mm] | L [mm] |
| 25 | 115.00 | 50 | 2.9 | 18 | 85.00 | 4 | 32 | 250 |
| 32 | 140.00 | 58 | 2.9 | 19 | 100.00 | 4 | 40 | 250 |
| 40 | 150.00 | 68 | 2.9 | 20 | 110.00 | 4 | 50 | 250 |
| 50 | 165.00 | 82 | 2.9 | 22 | 125.00 | 4 | 63 | 250 |
| 80 | 200.00 | 111 | 2.9 | 26 | 160.00 | 8 | 90 | 250 |
| 150 | 285.00 | 188 | 2.9 | 34 | 240.00 | 8 | 160 | 250 |
| 200 | 340.00 | 245 | 2.9 | 37 | 295.00 | 8 | 200 | 250 |
| 250 | 395.00 | 300 | 2.9 | 41 | 350.00 | 12 | 250 | 250 |
| 100 | 220.00 | 133 | 2.9 | 28 | 180.00 | 8 | 110 | 250 |
| 350 | 505.00 | 410 | 2.9 | 54 | 460.00 | 16 | 355 | 250 |
| 400 | 565.00 | 460 | 3.1 | 59 | 515.00 | 16 | 400 | 250 |
| 300 | 445.00 | 350 | 2.9 | 46 | 400.00 | 12 | 315 | 250 |
| 450 | 615.00 | 513 | 3.3 | 62 | 565.00 | 20 | 450 | 250 |
| 600 | 780.00 | 660 | 4.1 | 69 | 725.00 | 20 | 600 | 300 |
| 500 | 670.00 | 565 | 3.6 | 64 | 620.00 | 20 | 500 | 250 |

Remarks:

- *s4 – thickness with adhesive layer without liner, *b2 – thickness incl. liner



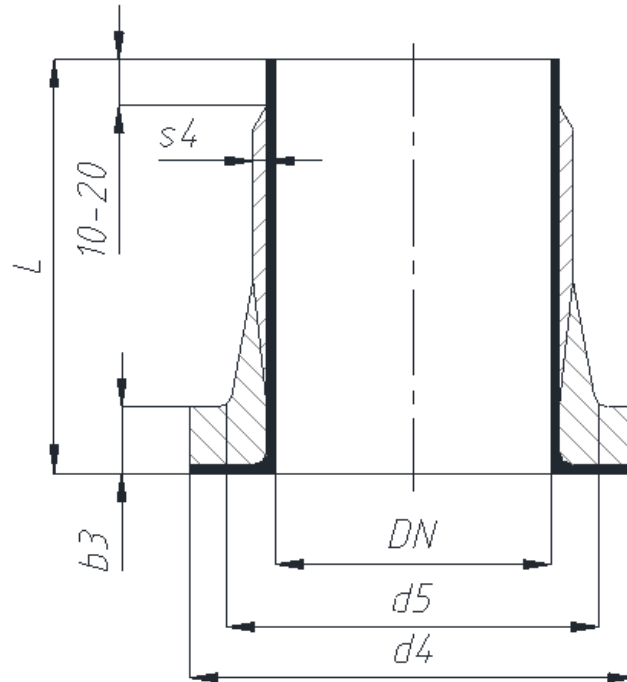


| DN | PN6 (drilling PN6) | | | | |
|-----|--------------------|---------|----------|----------|--------|
| | d4 [mm] | d5 [mm] | *s4 [mm] | *b3 [mm] | L [mm] |
| 350 | 430 | 387 | 2.9 | 44 | 250 |
| 450 | 532 | 492 | 3.3 | 52 | 300 |
| 400 | 482 | 441 | 3.1 | 49 | 250 |
| 500 | 585 | 544 | 3.6 | 54 | 300 |
| 600 | 685 | 648 | 4.1 | 59 | 350 |

Remarks:

- *s4 – thickness with adhesive layer without liner, *b3 – thickness incl. liner Stub ends are manufactured with welded flange face and hand lay-up lamination process. In range DN25-DN300 for PVC and PP liner there is additional possibility of flaring flange face with pressing lamination process (RAL9010)





| DN | PN6 (drilling PN6) | | | | |
|-----|--------------------|---------|----------|----------|--------|
| | d4 [mm] | d5 [mm] | *s4 [mm] | *b3 [mm] | L [mm] |
| 25 | 68 | 50 | 2.9 | 16 | 200 |
| 32 | 78 | 58 | 2.9 | 18 | 200 |
| 40 | 88 | 68 | 2.9 | 18 | 200 |
| 50 | 102 | 82 | 2.9 | 18 | 200 |
| 65 | 122 | 95 | 2.9 | 19 | 200 |
| 80 | 138 | 111 | 2.9 | 20 | 200 |
| 100 | 158 | 133 | 2.9 | 22 | 200 |
| 125 | 188 | 160 | 2.9 | 24 | 200 |
| 150 | 212 | 188 | 3.1 | 26 | 200 |
| 250 | 320 | 293 | 4.3 | 32 | 300 |
| 200 | 268 | 237 | 3.7 | 29 | 250 |
| 300 | 370 | 343 | 5.2 | 34 | 350 |

Remarks:

- *s4 – thickness with adhesive layer without liner, *b3 – thickness incl. liner Stub ends are manufactured with welded flange face and hand lay-up lamination process. In range DN25-DN300 for PVC and PP liner there is additional possibility of flaring flange face with pressing lamination process (RAL9010)



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