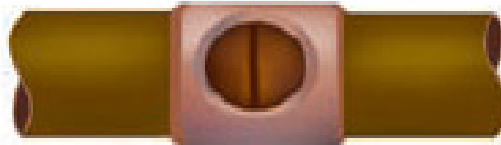


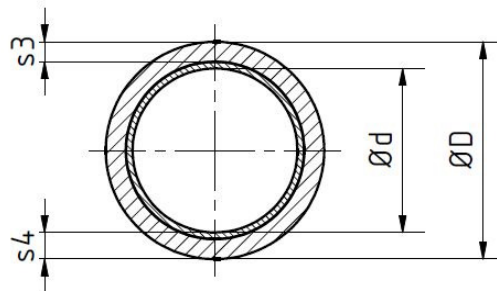
Z-Core

System:	Epoxy resin
Pressure range:	up to 10 bar
Temperature:	max. 135 °C
Chemical barrier:	highly resinous inner layer of 2,5 mm highly resinous outer layer of 0,2 mm
Connection type:	plain ends for bonding with socket DN 25-DN 200



Z-Core

Description: Z-Core
 Connection: plain ends
 Norm: ISO Dimensions
 Diameter: DN 25 - 200
 Pressure class: PN 10

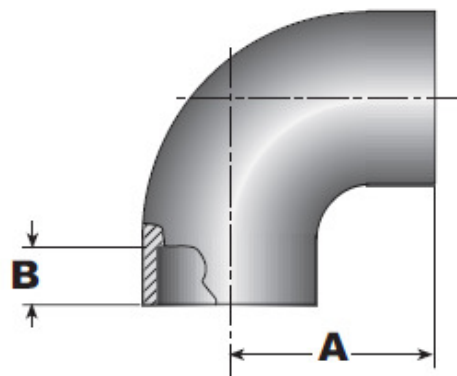


Diameter DN	Ø d1 [mm]	S4 [mm]	Ø d2 [mm]	S3 [mm]	Pipe volume [l/m]	Type / socket length	Weight [kg/m]
25	33,4	5,1	23	2,3	0,4	plain	1,0
40	48,3	6,4	36	3,6	1,0	plain	1,8
50	60,3	6,4	48	3,6	1,8	plain	2,4
80	88,9	6,4	76	3,6	4,5	plain	3,6
100	114,0	7,1	100	4,3	7,8	plain	5,3
150	168,0	7,1	154	4,3	18,6	plain	10,4
200	219,0	7,6	204	4,8	32,6	plain	15,3

Delivery length = 6 m.

Elbow 90°

Description: Elbow 90°
 Connection: cylindrical socket
 System: Z-Core
 Diameter: DN 25 - 300
 Pressure class: PN 16 up to DN 80; PN 10 from DN 80 to DN 300



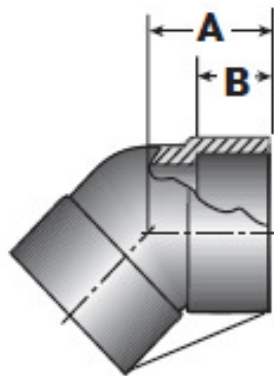
DN	B [mm]	HLU*		PM**	
		A [mm]	Weight ca.[kg]	A [mm]	Weight ca.[kg]
25	30	127	0,5	63	0,2
40	33	152	0,8	69	0,3
50	46	165	0,9	96	0,8
80	46	196	1,1	112	1,2
100	46	228	1,8	128	1,8
150	46	274	3,8	152	3,8
200	66	375	6,9	190	6,0
250	101	449	11,4		
300	101	512	15,7		

* Hand Layup Fittings

** Press Molded Fittings

Elbow 45°

Description: Elbow 45°
 Connection: cylindrical socket
 System: Z-Core
 Diameter: DN 25 - 300
 Pressure class: PN 16 up to DN 80; PN 10 from DN 80 to DN 300



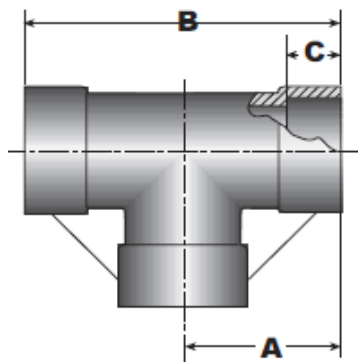
DN	B [mm]	HLU*		Weight ca.[kg]
		A [mm]	PM** A [mm]	
25	30	44	64	0
40	33	57	59	0
50	46	64	83	1
80	46	76	95	1
100	46	102	103	2
150	46	127	121	4
200	66	151		4
250	101	195		8
300	101	221		10

* Hand Layup Fittings

** Press Molded Fittings

Tee

Description: Tee
 Connection: cylindrical socket
 System: Z-Core
 Diameter: DN 25 – 300
 Pressure class: PN 16 up to DN 80; PN 10 from DN 80 to DN 300



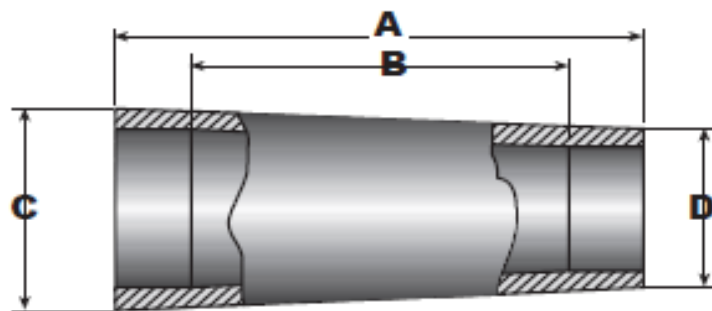
DN	C [mm]	HLU*		PM**		Weight ca.[kg]
		A [mm]	B [mm]	A [mm]	B [mm]	
25	30	89	178	64	127	0,4
40	33	102	203	70	132	0,4
50	46	114	229	97	194	1,0
80	46	140	279	113	225	1,7
100	46	165	330	129	257	2,6
150	46	203	406			5,5
200	67	195	391			7,7
250	102	310	619			14,6
300	102	335	670			19,3

* Hand Layup Fittings

** Press Molded Fittings

Concentric reducer

Description: Concentric reducer
 Connection: cylindrical socket
 System: Z-Core
 Diameter: DN 25 - 350
 Pressure class: PN 16 up to DN 80; PN 10 from DN 80 to DN 350



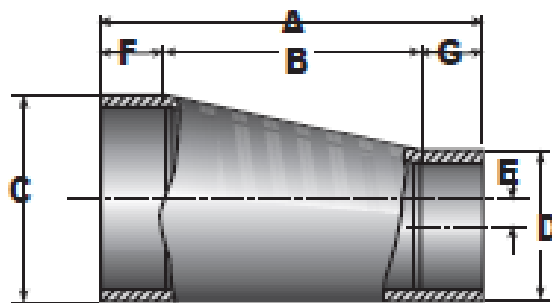
DN1	DN2	HLU*				PM**				Weight ca.[kg]
		A [mm]	B [mm]	C [mm]	D [mm]	A [mm]	B [mm]	C [mm]	D [mm]	
40	25	114	51	79	68	152	81	79	68	0,8
50	25	181	105	79	68	152	76	79	68	1,0
50	40	127	48	79	68	152	73	79	68	0,6
80	40	165	86	122	79	144	65	122	79	1,0
80	50	152	60	122	79	152	60	122	79	0,9
100	50	270	184	133	79	184	92	133	79	1,3
100	80	178	86	133	106	184	92	133	106	1,4
150	80	292	200	200	133	243	151	200	133	3,4
150	100	229	137	200	133	238	137	200	133	3,1
200	100		279	241	133					5,3
200	150		279	241	191					4,7
250	150		187	292	191					4,9
250	200		187	292	241					57,4
300	200		238	343	241					8,5
300	250		238	343	292					10,3
350	300		233	381	349					11,3

* Hand Layup Fittings

** Press Molded Fittings

Eccentric reducer

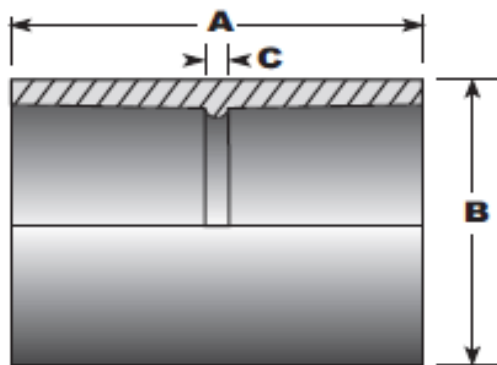
Description: Eccentric reducer
 Connection: cylindrical socket
 System: Z-Core
 Diameter: DN 25 – 350
 Pressure class: PN 16 up to DN 80; PN 10 from DN 80 to DN 350



DN1	DN2	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	Weight ca.[kg]
80	50	168	75	102	73	13	46	46	0,6
100	50	168	75	127	73	25	46	46	0,7
100	80	168	75	127	102	13	46	46	0,8
150	80	229	137	181	102	38	46	46	3,1
150	100	229	137	181	127	25	46	46	2,7
200	100	300	187	232	127	51	67	46	4,7
200	150	300	187	232	181	25	67	46	3,6
250	150	335	187	286	181	51	102	46	6,8
250	200	356	187	286	232	25	102	67	6,4
300	200	406	238	337	232	51	102	67	8,3
300	250	416	213	337	286	25	102	102	9,9

Coupling

Description: Coupling
 Connection: cylindrical socket
 System: Z-Core
 Diameter: DN 25 - 300
 Pressure class: PN 16 up to DN 80; PN 10 from DN 80 to DN 300



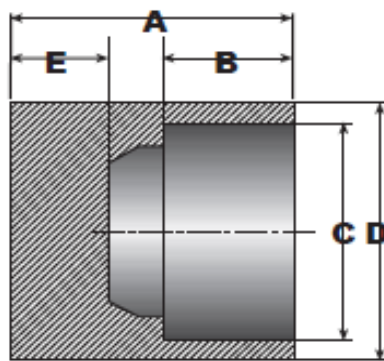
DN	A [mm]	HLU*	PM**	C [mm]	Weight ca.[kg]
		B [mm]	B [mm]		
25	76	48	54	16	0,2
40	76	60	70	10	0,2
50	102	73	78	10	0,3
80	102	105	106	10	0,5
100	102	130	133	10	0,7
150	102	183	203	10	1,6
200	143	238	251	10	2,2
250	213	289	311	10	6,5
300	213	343	360	10	6,9

* Hand Layup Fittings

** Press Molded Fittings

Cap

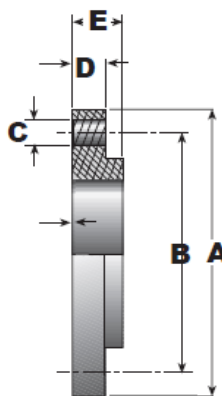
Description: Cap
 Connection: cylindrical socket
 System: Z-Core
 Diameter: DN 25 - 300
 Pressure class: PN 16 up to DN 80; PN 10 from DN 80 to DN 300



DN	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Weight ca.[kg]
25	78	30	33	52	32	0,3
40	81	33	49	68	38	0,4
50	102	46	60	79	38	0,6
80	102	46	89	106	38	1,1
100	102	46	114	133	38	1,8
150	102	46	168	200	38	3,7
200	143	67	219	251	67	6,1
250	213	102	273	311	51	7,4
300	213	102	324	368	51	

Fix flange metric

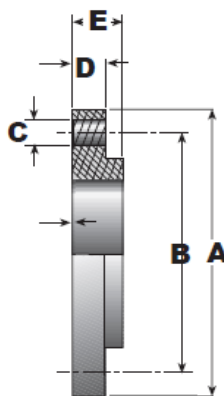
Description: Fix flange
 Connection acc.: DIN/ISO 2501
 Material : Z-Core
 Diameter: DN 25 – 300
 Pressure class: PN 16 up to DN 80; PN 10 from DN 80 to DN 300



DN	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Bolts	No.	Weight ca.[kg]
25	115	85	14	22	35	M 12	4	
40	150	110	18	30	38	M 16	4	
50	165	125	18	30	51	M 16	4	
80	200	160	18	30	51	M 16	8	
100	220	180	18	38	51	M 16	8	
150	279	241	23	40	51	M 20	8	
200	343	298	23	52	60	M 20	8	
250	406	350	23	78	106	M 20	12	
300	483	400	23	78	106	M 20	12	

Fix flange

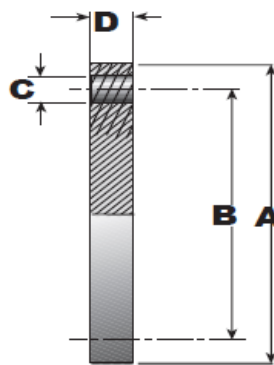
Description: Fix flange
 Connection acc.: ANSI B16.1 125 lb
 Material : Z-Core
 Diameter: DN 25 – 300
 Pressure class: PN 16 up to DN 80; PN 10 from DN 80 to DN 300



DN	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	Bolts [zoll]	No.	Weight ca.[kg]
25	108	79	16	22	37	1/2	4	0,3
40	127	98	16	30	40	1/2	4	0,5
50	152	121	19	30	52	5/8	4	0,8
80	191	152	19	30	52	5/8	8	1,5
100	229	191	19	38	52	5/8	8	2,1
150	279	241	22	40	52	3/4	8	2,6
200	343	298	22	52	65	3/4	8	4,9
250	406	362	25	78	108	7/8	12	9,7
300	483	432	25	78	108	7/8	12	13,8

Blind flange

Description: Blind flange
 Connection acc.: ANSI B16.1 125 lb
 Material : Z-Core
 Diameter: DN 25 - 300
 Pressure class: PN 16 up to DN 80; PN 10 from DN 80 to DN 300



DN	A [mm]	B [mm]	C [mm]	D [mm]	Bolts [zoll]	No.	Weight ca.[kg]
25	108	79	16	22	1/2	4	0,3
40	127	98	16	30	1/2	4	0,6
50	152	121	19	30	5/8	4	0,9
80	191	152	19	30	5/8	4	1,5
100	229	191	19	38	5/8	8	2,6
150	279	241	22	40	3/4	8	4,0
200	343	298	22	52	3/4	8	8,2
250	406	362	25	78	7/8	12	17,1
300	483	432	25	78	7/8	12	24,5

Physical properties of Cast Epoxy pipes:

	Temperature 24 °C		Temperature 121 °C		Temperature 135 °C	
	DN 25	DN 40 – 200	DN 25	DN 40 – 200	DN 25	DN 40 – 200
	MPa	MPa	MPa	MPa	MPa	MPa
Axial Tensile – ASTM D 2105						
Ultimate Stress	159	200	100	131	93	121
Design Stress	40	50	26	33	23	30
Modulus of Elasticity		13100		11000		10300
Poisson's Ratio	0,15					
Axial Compression - ASTM D 695						
Ultimate Stress	138	179	145	152	138	145
Design Stress	34	45	36	38	34	36
Modulus of Elasticity	32400	44126	9653	12411	6895	7860
Beam Bending - ASTM D 790						
Ultimate Stress	345	290	221	186	200	172
Design Stress	43	36	28	1623	25	22
Modulus of Elasticity	4137	27579	1241	8274	827	5516
Hydrostatic burst ASTM 1599						
Ultimate Hoop Tensile Stress	193	76				
Hoop Tensile Modulus of Elasticity		14686				
Hydrostatic Design - ASTM 2992						
Procedure B – Hoop tensile Stress Static 50 Year @ 24 °C						
Coefficient of linear Thermal expansion - ASTM D 696	non insulated pipe $1,7 \times 10^{-5}$ mm/mm °C Insulated pipe $1,9 \times 10^{-6}$ mm/mm °C					
Specific Gravity	2200 Kg/ m ³					
Hazen-Williams Flow Factor	C – 150					
Surface Roughness	Ra 2 μ					
Manning's « n »	0,009					

Flow rates and pressure loss for water $t = 10^{\circ}\text{C}$

	DN 25	DN 40	DN 50	DN 80	DN 100	DN 150	DN 200
v / m/s	Q l/ min	Q l/ min	Q l/ min	Q l/ min	Q l/ min	Q l/ min	Q l/ min
0,1	3,11	6,80	10,41	27,22	48,07	110,31	196,11
0,25	7,78	17,01	26,02	68,05	120,18	275,78	490,28
0,5	15,56	34,02	52,05	136,09	240,36	551,56	980,55
0,75	23,34	51,04	78,07	204,14	360,53	827,34	1470,83
1	31,12	68,05	104,10	272,19	480,71	1103,12	1961,11
1,25	38,91	85,06	130,12	340,23	600,89	1378,90	2451,38
1,5	46,69	102,07	156,15	408,28	721,07	1654,68	2941,66
2	62,25	136,09	208,19	544,38	961,42	2206,25	3922,22
3	93,37	204,14	312,29	816,56	1442,13	3309,37	5883,32
4	124,50	272,19	416,39	1088,75	1922,84	4412,49	7844,43
5	155,62	340,23	520,48	1360,94	2403,55	5515,62	9805,54

Recommended flow rate and volume flow for FIBERCAST cast pipes

DN 25	DN 40	DN 50	DN 80	DN 100	DN 150	DN 200	DN 250	DN 300
V / m/s	v / m/s	v / m/s	v / m/s	v / m/s	v / m/s	v / m/s	v / m/s	v / m/s
3	3	3	3	3	2,5	1,75	1,75	1,75
Q m ³ /h	Q m ³ /h	Q m ³ /h	Q m ³ /h	Q m ³ /h	Q m ³ /h	Q m ³ /h	Q m ³ /h	Q m ³ /h
5,602	12,25	18,74	48,994	86,528	165,47	205,92	329,359	472,441

Span supports in m at different temperatures

	24 °C	121 °C	135 °C
DN 25	2,50 m	1,86 m	1,68 m
DN 40	4,97 m	3,69 m	3,32 m
DN 50	5,39 m	3,99 m	3,60 m
DN 80	6,19 m	4,57 m	4,15 m
DN 100	6,98 m	5,15 m	4,66 m
DN 150	8,60 m	6,37 m	5,76 m
DN 200	9,66 m	7,16 m	6,46 m

Density in Kg/m ³	2000	1500	1250	1000	750
Correction factor	0,80	0,93	0,96	1	1,04

Example: Density = 1500 DN 100 24°C results 6,98 m x 0,93 = 6,49 m span.

Loop leg bends

Similarly to the practise in standard pipe construction it is usually to use U-Bends to compensate the thermal expansion. Often it is enough to have a change in direction. The following table gives you the minimum leg length (in m), which is required for the given expansion (in mm) for each Diameter.

DN	Elongation in mm									
	25 mm	50 mm	75 mm	100 mm	125 mm	150 mm	175 mm	200 mm	225 mm	250 mm
25	0,24 m	0,37 m	0,43 m	0,49 m	0,55 m	0,61 m	0,67 m	0,70 m	0,61 m	0,79 m
40	1,13 m	1,62 m	1,98 m	2,29 m	2,56 m	2,80 m	3,02 m	3,23 m	3,41 m	3,60 m
50	1,34 m	1,89 m	2,32 m	2,65 m	2,99 m	3,26 m	3,51 m	3,75 m	3,99 m	4,21 m
80	1,68 m	2,38 m	2,93 m	3,38 m	3,78 m	4,11 m	4,45 m	4,75 m	0,49 m	5,33 m
100	2,32 m	3,29 m	4,02 m	4,63 m	5,18 m	5,70 m	6,13 m	6,55 m	6,95 m	7,35 m
150	3,23 m	4,57 m	5,61 m	6,46 m	7,25 m	7,92 m	8,56 m	9,14 m	9,72 m	10,24 m
200	3,99 m	5,64 m	6,89 m	4,91 m	8,90 m	9,75 m	10,55 m	11,28 m	11,95 m	12,59 m