YORA
SOLUTIONS

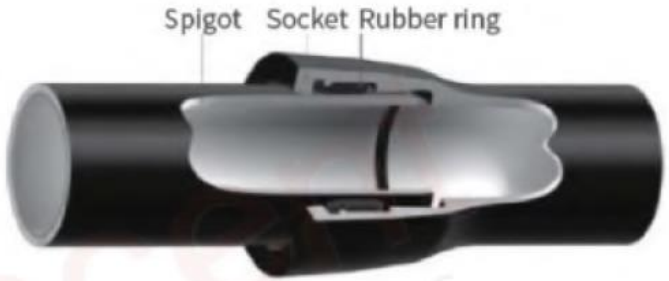
YORA Piping Solutions

Ductile Iron Pipes

Introduction to Ductile iron Pipes

- Ductile iron pipes are a type of pipe made from ductile cast iron, a material known for its excellent durability, strength, and flexibility. These pipes are manufactured using a centrifugal casting process, which enhances their physical properties and makes them resistant to fractures and damage under stress. The key feature of ductile iron is its nodular graphite structure, which gives it high tensile strength and impact resistance compared to traditional cast iron.

YORA SOLUTIONS



Applications of Ductile Iron Pipes

YORA SOLUTIONS

- Water Supply Systems: Ductile iron pipes are extensively used for potable water distribution due to their strength, reliability, and long service life. They can withstand high pressures, making them ideal for both urban and rural water supply networks.
- Sewage and Wastewater Systems: These pipes are used for transporting sewage and industrial wastewater, thanks to their corrosion resistance and ability to handle the high pressures associated with such systems.
- Irrigation Systems: In agricultural settings, ductile iron pipes are employed in irrigation systems to ensure the efficient and reliable delivery of water to crops.
- Fire Protection Systems: Their durability and ability to handle high pressure make them suitable for fire hydrant and sprinkler systems.
- Industrial Applications: Ductile iron pipes are used in various industries for transporting fluids and gases under high pressure and temperature conditions, such as in chemical plants and power stations.
- Overall, ductile iron pipes are valued for their strength, flexibility, and long-term performance in a wide range of applications, making them a preferred choice for infrastructure projects around the world.

International Standards

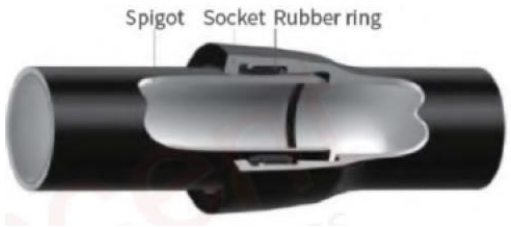
- Standard: EN545, EN598, ISO2531, EN1092-2, ISO7005-2, EN197-1, EN196-1, ISO4179, ISO16132, ISO8179-1, ISO8179-2, ISO8180, EN14901, EN681-1, ISO4633, EN1514, EN ISO4016, EN ISO4034, EN ISO7091, and other Normative References.

Types of Joints

YORA SOLUTIONS

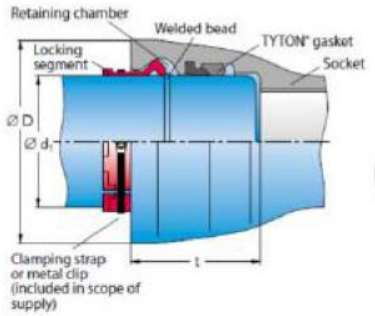
Push On Tupe

- Push in Flexible Joint, Non-restrained.
- Accessory: EPDM Gasket,



Restrained Type

- Push in Flexible Joint, Restrained. (a)
- Accessory: EPDM Gasket, Left lock + Right lock + Catch (DN80-DN500), Locking segment + Clamping strap



Nominal Size and Pressure Ratings

DN80-DN2000
Class 20- Class 100
Pressure/Gravity (EN598)
PN10-PN40
Note: Also according to K7,K8,K9,K12

YORA SOLUTIONS

Pipe Protection

- **Coating**
- Zinc rich (≥200g/㎡), with finishing layer Black bitumen, Blue epoxy, Red epoxy.
- Metallic Zinc (≥200g/㎡), with finishing layer Black bitumen, Blue epoxy, Red epoxy.
- Alloy Zinc and aluminum (≥400g/㎡), with finishing layer Black bitumen, Blue epoxy, Red epoxy.

- **Lining**
- (ordinary portland) cement mortar
- high-alumina cement mortar

Additional coatings and linings for special applications

YORA SOLUTIONS

- Lining and Coating Polyurethane(PU), 900µm, 700µm.
- Lining epoxy ceramic, 1000µm.
- Lining sulfate cement mortar
- Epoxy resin sealing layer on cement mortar lining.
- Bitumen sealing layer on cement mortar lining.
- A supplement to the Zinc coating with finish layer. Polyethylene sleeve(PE).
- Coating of the joint area: Epoxy coating, Polyurethane coating.

YORA SOLUTIONS

Ductile Iron fittings

- Standard: EN545, EN598, ISO2531, EN1092-2, ISO7005-2, EN197-1, EN196-1, ISO4179, ISO16132, ISO8179-1, ISO8179-2, ISO8180, EN14901, EN681-1, ISO4633, EN1514, EN ISO4016, EN ISO4034, EN ISO7091, and other Normative References.
- All types of fittings are available as per the above standards.

DN	External diameter DE mm		Minimum wall thickness emin mm						
–	Nominal	Limit deviations	Class 20	Class 25	Class 30	Class 40	Class 50	Class 64	**Class 100**
40	56	+ 1/ - 1,2				3,0	3,5	4,0	**4,7**
50	66	+ 1/ - 1,2				3,0	3,5	4,0	**4,7**
60	77	+ 1/ - 1,2				3,0	3,5	4,0	**4,7**
65	82	+ 1/ - 1,2				3,0	3,5	4,0	**4,7**
80	98	+ 1/- 2,7				3,0	3,5	4,0	**4,7**
100	118	+ 1/- 2,8				3,0	3,5	4,0	**4,7**
125	144	+ 1/ - 2,8				3,0	3,5	4,0	**5,0**
150	170	+ 1/ - 2,9				3,0	3,5	4,0	**5,9**
200	222	+ 1/ - 3,0				3,1	3,9	5,0	**7,7**
250	274	+ 1/ - 3,1				3,9	4,8	6,1	**9,5**
300	326	+ 1/ - 3,3				4,6	5,7	7,3	**11,2**
350	378	+ 1/ - 3,4			4.7	5,3	6,6	8,5	**13,0**
400	429	+ 1/ - 3,5			4.8	6,0	7,5	9,6	**14,8**
450	480	+ 1/ - 3,6			5.1	6,8	8,4	10,7	**16,6**
500	532	+ 1/ - 3,8			5.6	7,5	9,3	11,9	**18,3**
600	635	+ 1/ - 4,0			6.7	8,9	11,1	14,2	**21,9**
700	738	+ 1/ - 4,3		6,8	7.8	10,4	13,0	16,5	
800	842	+ 1/ - 4,5		7,5	8.9	11,9	14,8	18,8	
900	945	+ 1/ - 4,8		8,4	10.0	13,3	16,6		
1 000	1048	+ 1/ - 5,0		9,3	11.1	14,8	18,4		
1 100	1 152	+ 1/ - 6,0	8,2	10,2	12.2	16,2	20,2		
1 200	1 255	+ 1/ - 5,8	8,9	11,1	13.3	17,7	22,0		
1 400	1 462	+ 1/- 6,6	10,4	12,9	15.5				
1 500	1 565	+ 1/ - 7,0	11,1	13,9	16.6				
1 600	1 668	+ 1/ - 7,4	11,9	14,8	17.7				
1 800	1 875	+ 1/ - 8,2	13,3	16,6	19.9				
2 000	2 082	+ 1/ - 9,0	14,8	18,4	22.1				

YORA SOLUTIONS

DIMENSIONS of PIPES EN545

The table here presents the nominal dimensions of pipes in accordance to BS EN 545

DN	External diameter DE		Pressure class	Minimum Wall thickness emin	Approximate Weight of Socket	Weight Kg/m	Weight Kg/Length (6000mm)
	mm			mm	Kg		
–	Norminal	Limit deviations	–	–	–	–	–
100	118	+1/-2.8	40	3	4.3	15.1	71
150	170	+1/-2.9	40	3	7.1	22.8	106
200	222	+1/-3.0	40	3.1	10.3	30.6	146
250	274	+1/-3.1	40	3.9	14.2	40.2	210
300	326	+1/-3.3	40	4.6	18.6	50.8	282
350	376	+1/-3.4	30	4.7	23.7	63.2	335
400	429	+1/-3.5	30	4.8	29.3	75.5	394
450	480	+1/-3.6	30	5.1	38.3	89.3	472
500	532	+1/-3.8	30	5.6	42.8	104.3	565
600	635	+1/-4.0	30	6.7	59.3	137.3	754
700	738	+1/-4.3	25	6.8	79.1	173.9	993
800	842	+1/-4.5	25	7.5	102.6	215.2	1165
900	945	+1/-4.8	25	8.4	129.6	260.2	1444
1000	1048	+1/-5.0	25	9.3	161.3	309.3	1759
1100	1152	+1/-6.0	25	10.2	194.7	362.8	2104
1200	1255	+1/-5.8	25	11.1	237.7	420.1	2478
1400	1462	+1/-6.6	25	12.9	279.3	547.2	3405
1500	1565	+1/-7	25	13.9	474.7	616.4	3911
1600	1668	+1/-7.4	25	14.8	526	690	4408
1800	1875	+1/-8.2	25	16.6	702	849.7	5559
2000	2082	+1/-9.0	25	18.4	909.9	1025.8	6854

NOTE: The preferred pipe pressure classes cover products intended for all usual applications

YORA SOLUTIONS

EN 545

DIMENSIONS and WEIGHTS of PIPES of PREFERRED PRESSURE CLASSES EN545

YORA SOLUTIONS

DIMENSIONS and WEIGHTS of PIPES of K9

K9

DN	External diameter DE		Wall thickness enom	Approximate Weight of Socket	Weight Kg/m	Weight Kg/Length (6000mm)	
	mm		mm	Kg			
–	Norminal	Limit deviations	–	–	–	–	
80	98	+1/-2.7	6.0	3.4	12.2	**77**	
100	118	+1/-2.8	6.0	4.3	15.1	**95**	
150	170	+1/-2.9	6.0	7.1	22.8	**144**	
200	222	+1/-3.0	6.3	10.3	30.6	**194**	
250	274	+1/-3.1	6.8	14.2	40.2	**255**	
300	326	+1/-3.3	7.2	18.6	50.8	**323**	
350	376	+1/-3.4	7.7	23.7	63.2	**403**	
400	429	+1/-3.5	8.1	29.3	75.5	**482**	
450	480	+1/-3.6	8.6	38.3	89.3	**575**	
500	532	+1/-3.8	9.0	42.8	104.3	**669**	
600	635	+1/-4.0	9.9	59.3	137.3	**882**	
700	738	+1/-4.3	10.8	79.1	173.9	**1123**	
800	842	+1/-4.5	11.7	102.6	215.2	**1394**	
900	945	+1/-4.8	12.6	129.6	260.2	**1691**	
1000	1048	+1/-5.0	13.5	161.3	309.3	**2017**	
1100	1152	+1/-6.0	14.4	194.7	362.8	**2372**	
1200	1255	+1/-5.8	15.3	237.7	420.1	**2758**	
1400	1462	+1/-6.6	17.1	279.3	547.2	**3669**	
						L=6m	**L=8.15m**
1500	1565	+1/-7	18.0	474.7	616.4	4173.1	**5498.4**
1600	1668	+1/-7.4	18.9	526	690	4666	**6149.5**
1800	1875	+1/-8.2	20.7	702	849.7	5800.2	**7627.1**
2000	**2082**	**+1/-9.0**	**22.5**	**909.9**	**1025.8**	**7064.7**	**9270.2**

YORA SOLUTIONS

DIMENSIONS of PIPES ISO2531

ISO 2531

DN	DEa mm	Nominal iron wall thickness, enom mmb						
		C20	C25	C30	C40	C50	C64	**C100**
40	56				4,4 c	4,4	4,4	**4,4**
50	66				4,4 c	4,4	4,4	**4,4**
60	77				4,4 c	4,4	4,4	**4,4**
65	82				4,4 c	4,4	4,4	**4,4**
80	98				4,4 c	4,4	4,4	**4,8**
100	118				4,4 c	4,4	4,4	**5,5**
125	144				4,5 c	4,5	4,8	**6,5**
150	170				4,5 c	4,5	5,3	**7,4**
200	222				4,7 c	5,4	6,5	**9,2**
250	274				5,5c	6,4	7,8	**11,1**
300	326			5,1	6,2c	7,4	8,9	**12,9**
350	378		5,1	6,3 cd	7,1	8,4	10,2	**14,8**
400	429		5,5	6,5cd	7,8	9,3	11,3	**16,5**
450	480		6,1	6,9c	8,6	10,3	12,6	**18,4**
500	532		6,5	7,5c	9,3	11,2	13,7	**20,2**
600	635		7,6	8,7c	10,9	13,1	16,1	**23,8**
700	738	7,3	8,8 cd	9,9	12,4	15,0	18.5	**27,5**
800	842	8,1	9,6c	11,1	14,0	16,9	21,0	
900	945	8,9	10,6c	12,3	15,5	18,8	23,4	
1000	1 048	9,8	11,6c	13,4	17,1	20,7		
1100	1 152	10,6	12,6c	14,7	18,7	22,7		
1200	1 255	11,4	13,6c	15,8	20,2			
1400	1 462	13,1	15,7c	18,2				
1500	1 565	13,9	16,7c	19,4				
1600	1 668	14,8	17,7c	20,6				
1800	1 875	16,4	19,7c	23,0				
2000	2 082	18.1	21,8c	25,4				
2200	2 288	19,8	23,8c					
2400	2 495	21,4	25,8c					
2600	2 702	23,1	27,9c					

YORA SOLUTIONS

DIMENSIONS and WEIGHTS of PIPES of PREFERRED PRESSURE CLASSES ISO2531

ISO 2531

DN	DEa	Pressure class	Nominal iron wall thickness, enom	Approximate Weight of Socket	Weight Kg/m	Weight(Kg)
	mm		mm	Kg		(Length=6000mm)
100	118	C40	4,4	4.3	15.1	**71**
150	170	C40	4,5	7.1	22.8	**106**
200	222	C40	4,7	10.3	30.6	**146**
250	274	C40	5,5	14.2	40.2	**210**
300	326	C40	6,2	18.6	50.8	**282**
350	378	C30	6,3 b	23.7	63.2	**335**
400	429	C30	6,5 b	29.3	75.5	**394**
450	480	C30	6,9	38.3	89.3	**472**
500	532	C30	7,5	42.8	104.3	**565**
600	635	C30	8,7	59.3	137.3	**754**
700	738	C25	8,8 b	79.1	173.9	**993**
800	842	C25	9,6	102.6	215.2	**1165**
900	945	C25	10,6	129.6	260.2	**1444**
1000	1048	C25	11,6	161.3	309.3	**1759**
1100	1152	C25	12,6	194.7	362.8	**2104**
1200	1255	C25	13,6	237.7	420.1	**2478**
1400	1462	C25	15,7	279.3	547.2	**3405**
1500	1565	C25	16,7	474.7	616.4	**3911**
2600	2702	C25	27,9	–	–	–

a A tolerance of +1 mm applies

b Thicknesses are greater than calculated for "smoothing" between C40 and C30 and also between C30 and C25.

YORA SOLUTIONS

EN 598

DIMENSIONS and WEIGHTS of PIPES EN598

DN	External diameter, DE mm		Iron thickness, e mm				Approximate Weight of Socket (Kg)	Weight Kg/m	Weight Kg (Length=6000mm)
			Pressure pipes		Gravity pipes				
	Nominal	Limit deviation	Nominal	Limit deviation a	Nominal	Limit deviation a			
80	98	+ 1/-2,7	4,8	-1,3	3,4	-1,0	3.4	12.2	**77(K9)**
100	118	+ 1/-2.8	4,8	-1.3	3,4	-1,0	4.3	15.1	**71**
150	170	+ 1/-2.9	4,8	- 1,3	3,4	-1,0	7.1	22.8	**106**
200	222	+ 1/-3,0	4,9	- 1,3	3,4	-1,0	10.3	30.6	**146**
250	274	+ 1/-3.1	5,3	-1,6	4,1	-1,0	14.2	40.2	**210**
300	326	+ 1/-3.3	5,6	-1,6	4,8	-1,0	18.6	50.8	**282**
350	378	+ 1/-3.4	6,0	-1,7	5,5	-1,2	23.7	63.2	**335**
400	429	+ 1/-3,5	6,3	-1,7			29.3	75.5	**394**
450	480	+ 1/-3.6	6,7	-1,8			38.3	89.3	**472**
500	532	+ 1/-3,8	7,0	-1,8			42.8	104.3	**565**
600	635	+ 1/-4.0	7,7	-1,9			59.3	137.3	**754**
700	738	+ 1/-4.3	9,6	- 2,0			79.1	173.9	**993**
800	842	+ 1/-4,5	10,4	-2,1			102.6	215.2	**1165**
900	945	+ 1/-4,8	11,2	- 2,2			129.6	260.2	**1444**
1000	1 048	+ 1/-5,0	12,0	- 2,3			161.3	309.3	**1759**
1100	1 152	+ 1/-6.0	14,4	- 2,4			194.7	362.8	**2104**
1200	1 255	+ 1/-6.0	15,3	- 2,5			237.7	420.1	**2478**
1400	1 462	+ 1/-6.6	17,1	- 2,7			279.3	547.2	**3405**

a The minimum thickness can only appear locally at a few distinct points, not along the length or the circumference of the pipe.

YORA SOLUTIONS

HYDRAULIC PRESSURE

Specification DN	Minimum pressure at K= 7(Mpa)	Minimum pressure at k=8(Mpa)	Minimum pressure at K=9(Mpa)	Minimum test pressure of class c pipe (Mpa)	
				Recommended pressure rating	Pressure
DN80-DN300	3.2	4	5	C40	**4**
DN350-DN600	2.5	3.2	4	C30	**3**
DN700-DN100o	1.8	2.5	3.2	C25	**2.5**
DN1100-DN2000	1.3	1.8	2.5		
DN2200-DN2600	**0.8**	**1.3**	**1.8**	**C25**	**2.5**

Thank you

YORA SOLUTIONS FZCO

DUBAI SILICON OASIS, DUBAI, UAE

INFO@YORA-SOLUTIONS.COM

+971 50 233 8486

YORA
SOLUTIONS