

Engtex

ENGTEX DUCTILE IRON PIPE INDUSTRY SDN. BHD. (577932-D)

A member of Engtex Group Berhad
- listed on the Main Market
of Bursa Malaysia [KLSE]



EDIP

**DUCTILE IRON PIPES AND FITTINGS
BS EN545:2010**



STANDARDS

The major standards for the specification of ductile iron pipelines are listed as below.

- BS EN 545 - Ductile iron pipes, fittings accessories and their joints for water pipelines.
- BS EN 598 - Ductile iron pipes, fittings accessories and their joints for sewerage applications.
- ISO 2531 - Ductile iron pipes, fittings, accessories and their joints for water applications.

Remarkable Mechanical Properties



Ring Test



Tensile Test

Mechanical Properties (Tensile Properties and Hardness)

Pipes Centrifugally Cast		
Minimum Tensile Strength	Minimum Elongation after fracture	Maximum Hardness
N/mm ²	%	HB
420	10	230

Tolerance on Pipes Length

The standard manufacturing length of a spigot and socket push-in joint pipe is 6.0m. The tolerance on the length of pipe is ± 100 mm. All pipes from which test bars have been cut are accepted by the purchaser as complete lengths.

Tolerance on Straightness of Pipes

Pipes shall be straight, with a maximum deviation of 0.125% of their length.

Works Proof and Leak Tightness Test Pressures

Prior to the internal cement lining and external bitumen coating processes, the hydrostatic test for push-in joint pipes is carried out after metallic zinc coating. The test detects leak, sweat or other defects of the pipe body.

Works Leak Tightness Test for Centrifugally Cast Pipes

The test carried out on all pipes before application of External and internal coating, except for the metallic zinc coating of pipes which may be applied before the test.

Pressure Class	Testing Pressure Centrifugally Cast Pipes	
	Bar	
Class 25	25	
Class 30	30	
Class 40	40	
Class 50, Class 64, Class 100	50	

Coating

Unless otherwise specified by the purchaser, all pipes are coated externally with metallic zinc covered by a finishing paint layer.

	Centrifugally cast pipes
External	Metallic zinc & bitumen coating
Internal	Cement mortar lining

Thickness of Cement Mortar Lining (t)

DN	Thickness		Maximum crack width and radial displacement
	Nominal value	Limit deviation	
	mm		mm
80 to 300	4	-1.5	0.4
350 to 600	5	-2.0	0.5
700 to 800	6	-2.5	0.6

Note : Storage of pipes in a hot, dry environment can cause metal expansion and mortar shrinkage which can result in the dry lining developing areas of disbondment and shrinkage cracks exceeding the width given in Table. When the lining is re-exposed to water, it will swell by absorption of moisture and the cracks will close to conform to table and will eventually heal by an autogenous process.

MANUFACTURING PROCESS

1 Raw Material



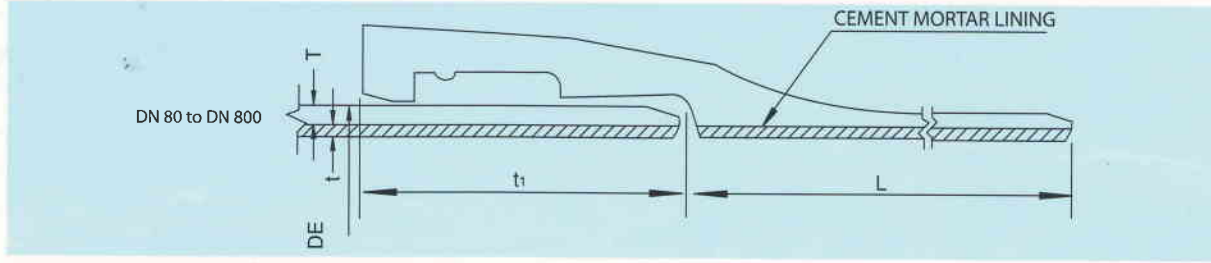
2 Melting process



3 Casting process



PUSH-IN JOINT DUCTILE IRON PIPES



Dimensions of Pipes (mm)

DN	External diameter DE			Minimum Wall Thickness, e						t1 (mm)	L (mm)
	mm			mm							
	Nominal	Limit deviations		Class 25	Class 30	Class 40	Class 50	Class 64	Class 100		
80	98	+1	-2.7			3.0	3.5	4.0	4.7	85	6000
100	118	+1	-2.8			3.0	3.5	4.0	4.7	88	6000
150	170	+1	-2.9			3.0	3.5	4.0	5.9	94	6000
200	222	+1	-3.0			3.1	3.9	5.0	7.7	100	6000
250	274	+1	-3.1			3.9	4.8	6.1	9.5	105	6000
300	326	+1	-3.3			4.6	5.7	7.3	11.2	110	6000
350	378	+1	-3.4		4.7	5.3	6.6	8.5	13	110	6000
400	429	+1	-3.5		4.8	6.0	7.5	9.6	14.8	110	6000
450	480	+1	-3.6		5.1	6.8	8.4	10.7	16.6	120	6000
500	532	+1	-3.8		5.6	7.5	9.3	11.9	18.3	120	6000
600	635	+1	-4.0		6.7	8.9	11.1	14.2	21.9	120	6000
700	738	+1	-4.3	6.8	7.8	10.4	13.0	16.5		150	6000
800	842	+1	-4.5	7.5	8.9	11.9	14.8	18.8		160	6000

Note 1: The bold figure indicate the standard products which are suitable for most application. (Grey boxes represent products which are outside the scope of this standard.)

Note 2: For Smaller DN, the minimum pipe wall thickness is governed by a combination of manufacturing constrains, structural performance and installation and handling requirements.

Note 3: The minimum thickness is given for non-restrained joints

Note 4: Pressure classes between 50 and 100 may be supplied by interpolation on request.

INSTALLATION PROCESS

Installation

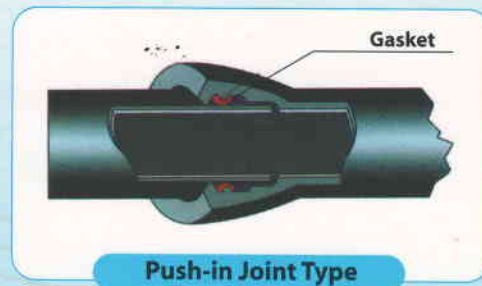
Suitable for various topographies and any climate conditions. The simple method of installation greatly speeds up the progress of project.



Socket cleaning, especially the gasket placing position should be well cleaned



Spigot cleaning & lubricating



Putting a rubber gasket on socket end



Connecting pipes (push-in)

The push-in flexible joint is an extremely strong and efficient joint, extensively used throughout the world. Apart from normal anchoring precautions on bends and tees, no bolt tightening is necessary and the simple push-in connection with a single separate component-rubber gasket-allows rapid, low cost pipe laying even in wet conditions.

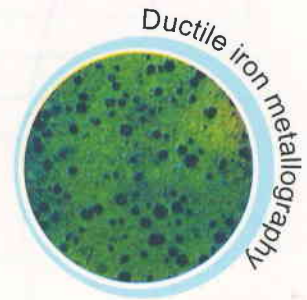
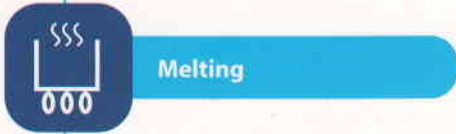
4 Annealing process

5 Metallic zinc coating process

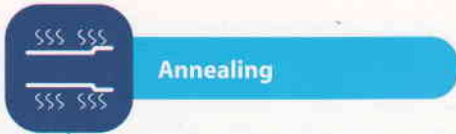
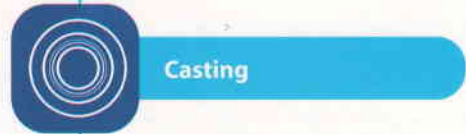
6 Hydrostatic pressure test



METALLURGY



DUCTILE IRON PIPE MANUFACTURING PROCESS



FINISHING



7 Cement mortar process

8 Bitumen coating process

9 Finished product



Ductile Iron Pipe has been recognised as the superior pipe material for water and wastewater applications

The Advantages Of Using Ductile Iron Pipes

1. Little maintenance cost, designed with better corrosion resistance can last longer
2. Strong enough to withstand high-pressure application, traffic load and soil movement
3. Proven Ductile Iron Push-in joint easy and fast to install.
With deflectable angular deflection enables reduce requirement of bends. (Saves time & materials cost)
4. Backfill and excavation cost reduced. (Cost Efficient)
5. Conservative design and high safety factor, can accommodate increase pressure load, with excellent burst strength.
6. Easy to get accessories fittings and flanged pipes
7. Suitable use for above ground and underground pipeline
8. Lower pumping costs from increase flow capacity. Significant energy saving during service lifetime.
Ductile Iron saves money

DUCTILE IRON FITTINGS

We offer over 500 various sizes of fittings as listed below.

For further information, please refer to technical specifications catalogue. **Sizes Available** : DN80-800mm

BEND

- Double Socket Bend
- Double Flanged Bend
- Double Flanged Duckfoot Bend
- Double Flanged Long Radius Bend

TAPER

- Double Socket Taper
- Double Flanged Concentric Taper
- Double Flanged Flat Taper

ANGLE BRANCH

- All Socket Angle Branch
- All Flanged Angle Branch

TEE

- All Socket Tee
- All Flanged Tee
- Double Socket Tee With Flanged Branch
- Double Socket Level Invert Tee With Flanged Branch
- All Flanged Level Invert Tee
- All Flanged Radial Tee

OTHER

- Flanged Socket Piece
- Flanged Spigot Piece
- Flanged Bell Mouth
- Double Socket Collar
- Blank Flange
- Flange Adaptor
- Straight Coupling

Products are available in Fusion Bonded Epoxy (FBE) finishing for above ground level application and Bitumen Coating for under ground application.



COMPANY PROFILE

Engtex Ductile Iron Pipe Industry Sdn. Bhd. (EDIPI) is a primary subsidiary of Engtex Group Berhad, a public company listed on the Main Market of Bursa Malaysia since 2nd August 2002 that is well known as one of the largest leading integrated manufacturer and one-stop distribution centre for pipes, valves, pipe-fittings, plumbing materials and steel products, providing total supply-chain solution for water works, sewerage system and construction industries.

EDIPI is principally engaged in the activity of manufacturing ductile iron pipes, joints, fittings and industrial casting products. The company's main production facility located on an 18 acres plant at Gebeng Industrial Estate, Kuantan, has a workforce of 250 persons with a production output capacity of 60,000 metric tonne per annum.

Since the commencement of our production operation in April 2002, the company has invested continuously to upgrade, modernize and improve our production facilities to produce premium quality ductile iron pipes with sizes ranging from DN80 to DN800 that are widely accepted by authorities, professionals and industry experts in both domestic and overseas markets.

In line with our continuous quality improvement policy, EDIPI is also investing resources in the area of product development, quality improvement and after sales services to deliver high quality products and services to our customer. Our factory's management system has obtained ISO 9001:2008 Quality Management System, Quality Environment System (5S), MS ISO 14001:2004 Environmental Management System and OHSAS 18001:2007 Occupational Health and Safety Management System certifications.

EDIPI's ductile iron pipes marketed under brand names of "SUASA UNIK", "EDIP" and "ENGTEX" are produced in compliance with international standards of BS EN 545, BS EN 598 and ISO 2531 certified by IKRAM Malaysia and PSB Singapore. Our product is also approved by CPRU Brunei and Ministry of Commerce and Industry, Sultanate of Oman.

In line with the increasing usages of ductile iron pipes due to its ductility, easy installation, high resistance to corrosive environment, low maintenance cost and low damage rate, and our market globalisation move, EDIPI is rapidly growing our overseas markets which include Singapore, Indonesia, Brunei, Vietnam, Hong Kong, Taiwan, Sri Lanka, Middle East and etc.

CERTIFICATIONS

Engtex Ductile Iron Pipe Industry Sdn. Bhd. has obtained various certifications for its management system and products as follows:



Management System

- ISO 9001:2008 Quality Management System
- 5S Quality Environment Management System
- MS ISO 14001:2004 Environmental Management System
- OHSAS 18001:2007 Occupational Health and Safety Management System

Product Certification

- BS EN 545 Ductile iron pipes, fittings, accessories and their joints for water pipelines
- BS EN 598 Ductile iron pipes, fittings, accessories and their joints for sewerage applications
- ISO 2531 Ductile iron pipes, fittings, accessories and their joints for water applications

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Authorised Dealer:

ENGTEX DUCTILE IRON PIPE INDUSTRY SDN. BHD. (577932-D)
(A member of Engtex Group Berhad - listed on the Main Market of Bursa Malaysia [KLSE])

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