EDIP
DUCTILE IRON PIPES AND FITTINGS
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

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ring Test</td>
<td></td>
</tr>
<tr>
<td>Tensile Test</td>
<td></td>
</tr>
</tbody>
</table>

Centrifugally cast pipes

DN80 to DN800

- Tensile strength: Min 420 N/mm²
- Min 10%
- Max 230 HB

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 ±100mm. 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.

<table>
<thead>
<tr>
<th>Nominal Diameter</th>
<th>Centrifugally cast pipes</th>
</tr>
</thead>
<tbody>
<tr>
<td>K9</td>
<td></td>
</tr>
<tr>
<td>DN 80 to DN 300</td>
<td>50 bar</td>
</tr>
<tr>
<td>DN 350 to DN 600</td>
<td>40 bar</td>
</tr>
<tr>
<td>DN 700 to DN 800</td>
<td>32 bar</td>
</tr>
<tr>
<td>Class 40</td>
<td></td>
</tr>
<tr>
<td>DN 80 to DN 400</td>
<td>40 bar</td>
</tr>
</tbody>
</table>

Coating

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

<table>
<thead>
<tr>
<th>Centrifugally cast pipes</th>
</tr>
</thead>
<tbody>
<tr>
<td>External</td>
</tr>
<tr>
<td>Metallic zinc &amp; bitumen coating</td>
</tr>
<tr>
<td>Internal</td>
</tr>
<tr>
<td>Cement mortar lining</td>
</tr>
</tbody>
</table>

Thickness of Cement Mortar Lining (t)

<table>
<thead>
<tr>
<th>DN</th>
<th>Nominal value (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 to 300</td>
<td>4</td>
</tr>
<tr>
<td>350 to 600</td>
<td>5</td>
</tr>
<tr>
<td>700 to 800</td>
<td>6</td>
</tr>
</tbody>
</table>

MANUFACTURING PROCESS

1. Raw Material
2. Melting process
3. Casting process
### PUSH-IN JOINT DUCTILE IRON PIPES

**DIMENSIONS FOR K9 & CLASS 40 PIPES (All dimensions in millimetres)**

<table>
<thead>
<tr>
<th>Nominal Diameter DN</th>
<th>DE</th>
<th>t₁</th>
<th>T</th>
<th>t</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>98</td>
<td>85</td>
<td>6.0</td>
<td>4.8</td>
<td>4.0</td>
</tr>
<tr>
<td>100</td>
<td>118</td>
<td>88</td>
<td>6.0</td>
<td>4.8</td>
<td>4.0</td>
</tr>
<tr>
<td>150</td>
<td>170</td>
<td>94</td>
<td>6.0</td>
<td>5.0</td>
<td>4.0</td>
</tr>
<tr>
<td>200</td>
<td>222</td>
<td>100</td>
<td>6.3</td>
<td>5.4</td>
<td>4.0</td>
</tr>
<tr>
<td>250</td>
<td>274</td>
<td>105</td>
<td>6.8</td>
<td>5.8</td>
<td>4.0</td>
</tr>
<tr>
<td>300</td>
<td>326</td>
<td>110</td>
<td>7.2</td>
<td>6.2</td>
<td>4.0</td>
</tr>
<tr>
<td>350</td>
<td>378</td>
<td>110</td>
<td>7.7</td>
<td>7.0</td>
<td>5.0</td>
</tr>
<tr>
<td>400</td>
<td>429</td>
<td>110</td>
<td>8.1</td>
<td>7.8</td>
<td>5.0</td>
</tr>
<tr>
<td>450</td>
<td>480</td>
<td>120</td>
<td>8.6</td>
<td>-</td>
<td>5.0</td>
</tr>
<tr>
<td>500</td>
<td>532</td>
<td>120</td>
<td>9.0</td>
<td>-</td>
<td>5.0</td>
</tr>
<tr>
<td>600</td>
<td>635</td>
<td>120</td>
<td>9.9</td>
<td>-</td>
<td>5.0</td>
</tr>
<tr>
<td>700</td>
<td>738</td>
<td>150</td>
<td>10.8</td>
<td>-</td>
<td>6.0</td>
</tr>
<tr>
<td>800</td>
<td>842</td>
<td>160</td>
<td>11.7</td>
<td>-</td>
<td>6.0</td>
</tr>
</tbody>
</table>

### INSTALLATION PROCESS

**Installation**

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

1. Socket cleaning, especially the gasket placing position should be well cleaned
2. Spigot cleaning & lubricating
3. Putting a rubber gasket on socket end
4. 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.
EDIP
DUCTILE IRON PIPES AND FITTINGS

MEALLURGY

Raw Material
Melting
Nodulisation

DUCTILE IRON PIPE MANUFACTURING PROCESS
Casting

FINISHING

Annealing
Metallic Zinc Coating
Hydrostatic Pressure Test
Cement Mortar Lining
Bitumen Coating
Marking & Packing

7 Cement mortar process
8 Bitumen coating process
9 Finished product
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

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

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

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.
EDIP1 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, EDIP1 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 (QS), MS ISO 14001:2004 Environmental Management System and OHSAS 18001:2007 Occupational Health and Safety Management System certifications.

EDIP1’s ductile iron pipes marketed under brand names of “SUASA UNIK”, “EDIP” and “ENGETEX” 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, EDIP1 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