



**BS EN 598:2007 +A1:2009  
Ductile Iron Pipe & Fittings  
Sewerage applications**

球鐵排污管及配件





# The Characteristics of Ductile Iron Piping Products



## \*The Standard For Performance

Since its introduction into the construction, drainage and plumbing industries in the 2000's, Ductile Iron Pipe has been recognized as the industry standard for modern waste water systems. More than ten years of field experience have proved its strength, durability and reliability for installations and services for storm drain, waste and vent piping applications.



## \*Strength and Durability

Ductile Iron's high degree of dependability is primarily due to its high strength, durability and impact-resistance. Designed and manufactured to the industry's standards, Ductile Iron Pipes and Fittings not only resist damage during transportation and handing, but also withstand the demanding operating conditions once installed.



## \*Quietness

Ductile Iron is known for quiet operation. Its dense molecular structure helps reducing plumbing noise and thus eliminates the noise complaints commonly existed in other piping materials.



## \*Ease of Installation

Unlike other piping materials, installation is simple. It can be installed in a wide variety of conditions and can be easily cut on site to suit different working lengths.



## \*Top Safety

Ductile Iron will not burn, support a fire, or give off toxic fumes. Thus ensures the protection of life and property.



## \*Environmental Friendliness

Ductile Iron is best known for its 100% recyclability which represents a great savings to our environment.

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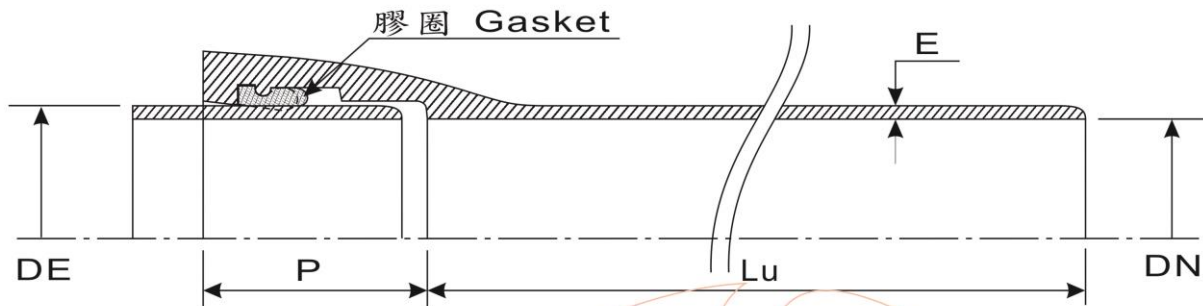
CHEUNG HING FOUNDRY (HK) LIMITED



# BS EN 598 K9 Ductile Iron Spigot and Socket Pipe with Flexible Joint (for Sewerage)

## BS EN 598 K9

### 承插式柔性膠圈接頭球墨鑄鐵排污管



| Nominal internal diameter 公稱內徑 mm DN | 80      | 100     | 150     | 200     | 250     | 300     | 350     | 400     | 450     | 500     | 600     | 700     |
|--------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Pipe 管身                              |         |         |         |         |         |         | *       | *       | *       | *       | *       | *       |
| Nominal external diameter 公稱外徑 mm DE | 98      | 118     | 170     | 222     | 274     | 326     | 378     | 429     | 480     | 532     | 635     | 738     |
| Tolerance ±公差                        | +1/-2.7 | +1/-2.8 | +1/-2.9 | +1/-3.0 | +1/-3.1 | +1/-3.3 | +1/-3.4 | +1/-3.5 | +1/-3.6 | +1/-3.8 | +1/-4.0 | +1/-4.3 |
| Thickness (nominal) 公稱壁厚 mm E        | 4.8     | 4.8     | 4.8     | 4.9     | 5.3     | 5.6     | 6.0     | 6.3     | 6.7     | 7.0     | 7.7     | 9.6     |
| Minimum Thickness 最少壁厚 mm            | 3.5     | 3.5     | 3.5     | 3.6     | 3.7     | 4.0     | 4.3     | 4.6     | 4.9     | 5.2     | 5.8     | 7.6     |
| Socket 管套                            |         |         |         |         |         |         |         |         |         |         |         |         |
| Socket Internal depth 管套深度 mm P      | 85      | 88      | 94      | 100     | 105     | 110     | 110     | 110     | 120     | 120     | 120     | 150     |
| Total Mass of pipe (approx) 約總重 kg   | 77      | 95      | 144     | 194     | 255     | 323     | 403     | 482     | 574     | 669     | 883     | 1126    |
| Effective length of pipe 有效長度 Lu     | 6 M     | 6 M     | 6 M     | 6 M     | 6 M     | 6 M     | 6 M     | 6 M     | 6 M     | 6 M     | 6 M     | 6 M     |

\* Made to order.

#### National annex NA(informative)

#### Significant changes from BS 4772

This British Standard is one of the three new application standards for ductile iron pipelines which have been developed by CEN, the other standards being BS EN 545 (water application) and BS EN 969 (gas / sewerage supply). This standard replaces BS 4772 : 1988 in respect of sewerage applications, and with the publication of all three application standards as British Standards, BS 4772 will be withdrawn.

This annex has been written to identify the most significant changes from BS 4772 that have been adopted in BS EN 598 and it is not intended to contradict nor replace any of the clauses or provisions in BS EN 598.

This British Standard is the UK implementation of BS EN 598 : 2007+A1 : 2009. It supersedes BS EN 598 :2007 which is withdrawn.

#### Specification:

The Pipes and Fittings are supplied with internal lining of cement / high alumina cement mortar.

Externally coated metallic zinc (130g/m<sup>2</sup>) & Bitumen (70um) in according to ISO 8179.

The Flexible Joints for DI pipes and fittings are designed according to the requirement from HKSAR, which is including sufficient axial movement where the allowable spigot withdrawal of minimum 38mm and minimum angular deflection of 4°

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CHEUNG HING FOUNDRY (HK) LIMITED



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## BS EN 598 K9

### 承插式柔性膠圈接頭球墨鑄鐵排污管

## Pipe - Test Report 管證書

### Straightness

**CASTCO** 佳力高試驗中心有限公司  
CASTCO TESTING CENTRE LIMITED

**Test Report**  
Determination of Straightness of Ductile Iron Pipes, Fittings, Accessories and Their Joints for Sewerage Applications  
[BS EN 598 : 2007 + A1 : 2009 clause 4.2.4]

Date of issue : 17 April 2018  
Page 1 of 1 page(s)  
Castco LRN : DP0180104-096 ST

**Details as supplied by customer:-**  
Customer : TPY Ltd.  
Address : G/F., No. 120, Tung Tau Tsuen, Shap Pat Heung, Yuen Long, N.T. Hong Kong  
Job title : --  
Sample Description :-  
Sample I.D. :-  
Nominal size (DN) : 100  
Brand :

Customer's Ref. No. :-  
Contract No. :-  
Type : Pipe (Centrifugally Cast with Flexible Joint)  
Nominal length : 6000 mm  
Manufacturer : TPY Ltd.

**Laboratory test results:-**  
Date sample received : 04 January 2018  
Date of test : 15 January 2018

|  |         |
|--|---------|
| Measured straightness of ductile iron pipe | 0.45 mm |
|--|---------|

**Remark :**  
1. Test result relate only to the specimens tested.  
2. Test results complies with Clause 4.2.4 of BS EN 598 : 2007 + A1 : 2009.

Checked by :   
SIT KWAN NING  
End of Report

Certified by :   
LEE WAI KWOK  
Registered Professional Engineer  
Executive Director

### Brinell Hardness

**CASTCO** 佳力高試驗中心有限公司  
CASTCO TESTING CENTRE LIMITED

**Test Report**  
Brinell Hardness Test of Ductile Iron Pipes, Fittings and Accessories for Sewerage Applications  
[BS EN 598 : 2007 + A1 : 2009 Clause 4.3.2]

Date of issue : 17 April 2018  
Page 1 of 1 page(s)  
Castco LRN : DP0180104-096 BH

**Details as supplied by customer:-**  
Customer : TPY Ltd.  
Address : G/F., No. 120, Tung Tau Tsuen, Shap Pat Heung, Yuen Long, N.T. Hong Kong  
Job title : --  
Sample description :-  
Sample I.D. :-  
Nominal size (DN) 100  
Class : K9  
Origin : China

Customer's Ref. No. :-  
Contract no. :-  
Type : Pipe (Centrifugally Cast with Flexible Joint)  
Manufacturer : TPY Ltd.  
Brand :

Brinell hardness testing machine : Machine type : 布氏硬機計HB-3000B Series No. : 0125 (BH101)  
Cert. No. : CL0170518-12 I.D. No. : NDT-HB-01

Calipers :  
Date of received : 04 January 2018  
Date of test : 26 January 2018  
Test specimen thickness : 5.65 mm  
Test temperature : 21 °C

**Laboratory test results:-**  
Sketch of test locations

|   |   |   |
|---|---|---|
| 1 | 2 | 3 |
| ○ | ○ | ○ |

| Indentation no. | Indentation diameter (2 directions) (mm) | Indentation means (mm) | Corresponding hardness value (HB) | Results |
|-----------------|--|------------------------|-----------------------------------|---------|
| 1               | 4.55                                     | 4.64                   | 170                               | C       |
| 2               | 4.71                                     | 4.72                   | 161                               | C       |
| 3               | 4.68                                     | 4.76                   | 161                               | C       |

**Remark :**  
1. Test results relate only to the specimen tested.  
2. Test results of the sample comply with the requirement of BS EN 598 : 2007 + A1 : 2009.

Checked by :   
SIT KWAN NING  
Laboratory Supervisor  
End of Report

Certified by :   
LEE WAI KWOK  
R.C.S. C. (Reg. M.C.E. M.I.M.E.)  
Registered Professional Engineer  
Executive Director

From No. : PPR-BH1012018-1 of 15/03/2018  
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### Leaktightness

**CASTCO** 佳力高試驗中心有限公司  
CASTCO TESTING CENTRE LIMITED

**Test Report**  
Work Leaktightness Test of Ductile Iron Pipes, fittings, accessories and their joints for water pipelines  
[In accordance to EN598 : 2007 + A1 : 2009 Clause 4.7]

Date of issue : 17 April 2018  
Page 1 of 1 page  
Castco LRN : DP0180104-096 HYD

**Details as supplied by customer:-**  
Customer : TPY Ltd.  
Address : G/F., No. 120, Tung Tau Tsuen, Shap Pat Heung, Yuen Long, N.T. Hong Kong  
Job title : --  
Description of Pipe :-  
Nominal size (DN) : 100  
Length : 6000mm  
Brand name :   
Pressure testing type : Pipe (Centrifugally Cast with Flexible Joint)

Customer's ref. no. :-  
Manufacturer : TPY Ltd.

**Laboratory Test Results**  
Date of sample received : 04 January 2018  
Date of test : 15 January 2018

|                               |               |         |
|-------------------------------|---------------|---------|
| Specimen no.                  | DP0180104-096 |         |
| Testing temperature           | 20.0 °C       |         |
| Pressure amplitude maintained | 32 bar        |         |
| Actual testing time           | Time start    | 0 sec.  |
|                               | Time end      | 15 sec. |
|                               | Time interval | 15 sec. |
| Any leakage during the test   | No            |         |
| Compliance                    | C             |         |

**Notes :** Test sample shall withstand the internal pressure without any leakage to EN598 : 1995.  
**Legends :** C - Comply with EN598 : 2007 + A1 : 2009.  
F - Fail to comply with EN598 : 2007 + A1 : 2009.

**Remarks :**  
1. Test results relate only to the specimen tested.  
2. Test results of the sample comply with the requirement of BS EN 598 : 2007 + A1 : 2009 Clause 4.7.

Checked by :   
SIT KWAN NING  
Laboratory Supervisor  
End of Report

Certified by :   
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祥興鑄鐵有限公司  
CHEUNG HING FOUNDRY (HK) LIMITED



# BS EN 598 K9 Ductile Iron Spigot and Socket Pipe with Flexible Joint (for Sewerage)

## BS EN 598 K9

### 承插式柔性膠圈接頭球墨鑄鐵排污管

## Pipe - Test Report 管證書

### Tensile

**CASTCO** 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LIMITED

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**Test Report**  
**Tensile Test of Ductile Cast Iron**  
 [BS EN 598 : 2007 + A1 : 2009 Clause 4.3.1]

Date of issue : 17 April 2018  
 Page 1 of 1 page  
 Castco LRN : DP0180104-096 TEN

**Details as supplied by customer:**  
 Customer : TPY Ltd.  
 Address : G/F., No. 120, Tung Tau Tsuen, Shap Pat Heung, Yeun Long, N.T. Hong Kong  
 Job title : --  
 Sample Description : DN100 x 6.0m Length Ductile Iron Pipe  
 Grade : K9  
 Manufacturer : TPY Ltd. Brand name : Origin : China  
 Acceptance standard : BS EN 598 : 2007 + A1 : 2009 Clause 4.3.1  
 Customer Ref. No. : --  
 Contract no. : --

**Laboratory test results:**  
 Date received : 04 January 2018 Date tested : 15 February 2018

| Specimen Mark | Material designation |        | Gauge dia. (mm) | Cross-sect. Area. (mm <sup>2</sup> ) | Original gauge length, (mm) | Final gauge length, (mm) | 0.2% Proof stress |       | Tensile Load |       | Elongation % | Compliance |
|---------------|----------------------|--------|-----------------|--------------------------------------|-----------------------------|--------------------------|-------------------|-------|--------------|-------|--------------|------------|
|               | Symbol               | Number |                 |                                      |                             |                          | (kN)              | (MPa) | (kN)         | (MPa) |              |            |
| DP0180104-096 | --                   | --     | 5.15            | 20.8                                 | 40                          | 44                       |                   |       | 9.2          | 443   | 10           | C          |

Remarks :-  
 1. Legends : C - comply with acceptance standard. F - fail to comply with acceptance standard  
 2. Test results relate to the specimen tested only.  
 3. Test results of the sample comply with requirement of BS EN 598 : 2007 + A1 : 2009 Clause 4.3.1.

Checked by : Laboratory Supervisor  
 Form No. S11-D17(CAST/TK/09/01) TAI 15/03/05 1/8

Certified by : **LEE WAI KWOK**  
 B.Sc., C. Eng., M.C.E., M.I.M.E.  
 Registered Professional Engineer  
 Executive Director

End of Report



### Surface Condition

**CASTCO** 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LIMITED

**Test Report**  
**Surface Condition Test for Ductile Iron Pipes, Fittings, Accessories and Their Joints for Sewerage Application**  
 [BS EN 598 : 2007 + A1 : 2009 clause 4.1.2]

Date of issue : 17 April 2018  
 Page 1 of 1 page(s)  
 Castco LRN : DP0180104-096 SC

**Details as supplied by customer:**  
 Customer : TPY Ltd. Customer's Ref. No. : --  
 Address : G/F., No. 120, Tung Tau Tsuen, Shap Pat Heung, Yeun Long, N.T. Hong Kong  
 Job title : --  
 Sample Description :-  
 Sample I.D. : --  
 Nominal size (DN) : 100  
 Manufacturer : TPY Ltd.  
 Origin : China  
 Type : Pipe (Centrifugally Cast with Flexible Joint)  
 Nominal length : 6000 mm  
 Brand :

**Laboratory test results:**  
 Date sample received : 04 January 2018 Date of test : 15 January 2018

The external surface condition of test sample is free from defect and surface imperfections.

Remark :  
 1. Test result relate only to the specimens tested.  
 2. Test results complies with Clause 4.1.2 of BS EN 598 : 2007 + A1 : 2009.

Checked by : Laboratory Supervisor  
 Form No. PPE-SC/TK/09/01\_T AI 15/03/05 1/8

Certified by : **LEE WAI KWOK**  
 B.Sc., C. Eng., M.C.E., M.I.M.E.  
 Registered Professional Engineer  
 Executive Director

End of Report

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### Dimension

**CASTCO** 佳力高試驗中心有限公司 CASTCO TESTING CENTRE LIMITED

**Test Report**  
**Method for Determination of Dimensions of Ductile Iron Pipes, Fittings, Accessories and Their Joints for Sewerage Applications**  
 (BS EN 598 : 2007 + A1 : 2009 Clause 4.2 & Clause 4.4.3)

Date of issue : 17 April 2018  
 Page 1 of 1 page(s)  
 Castco LRN : DP0180104-096 DIM

**Details as supplied by customer:**  
 Customer : TPY Ltd. Customer's ref. no. : --  
 Address : G/F., No. 120, Tung Tau Tsuen, Shap Pat Heung, Yeun Long, N.T. Hong Kong  
 Job title : --  
 Description of :  
 Nominal bore : 100 mm Length : 6000mm  
 Brand name : Type : Pipe (Centrifugally Cast with Flexible Joint)  
 Delivery doc : -- Manufacturer : TPY Ltd.  
 Origin : China

**Laboratory Test Result**  
 Date sample received : 04 January 2018 Date of test : 15 January 2018  
 Sample I.D. : DP0180104-096

| Nominal size DN : 100                           | Test result | BS EN requirement | Customer requirement |
|---|-------------|-------------------|----------------------|
| External diameter (e) (mm)                      | 118.3       | 118(+1 / -2.8)    | --                   |
| Ovality spigot of external diameter (%)         | 0.6         | ≤ 2.8             | --                   |
| Thickness (w) (mm)                              | 4.31        | 4.8 (-1.3)        | --                   |
| Internal diameter (mm)                          | 109.7       | 100 (-10)         | --                   |
| Length (mm)                                     | 6020        | 6000 (±100)       | --                   |
| Measured thickness of cement mortar lining (mm) | 6.08        | 4 (-1.5)          | --                   |

Remarks :  
 1. Test results relate only to the specimen tested.  
 2. Test results of the sample comply with the requirement of BS EN 598 : 2007 + A1 : 2009 Clause 4.2 & Clause 4.4.3.

Checked by : Laboratory Supervisor  
 Form No. PPE-DIM/TK/09/01\_T AI 15/03/05 1/8

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End of Report

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