

Test Certificate
Hydrostatic Test on Cast Iron Pipe
(In-house method Based on BS 437 : 2008 Clause 1)

Date of issue : 09 November 2020
Page 1A of 1 page

Castco LRN: DP0200919-120

Details as supplied by client

Customer : Cheung Hing Foundry (HK) Limited

Customer's ref. : --

Address : 299 Pak Sha Tsuen, Kung Um Road, Yuen Long, N.T.

Job title : --

Contract no. : --

Sample description : DN75 x 1.83 m Length Cast Iron Pipe with Flexible Joint

Brand name : CHF

Manufacturer : Liuzhou Lizhi Foundry Co., Ltd.

Laboratory Test Result

Date received : 19 September 2020

Date of test : 22 September 2020

Specimen no.	CHF	DP0200919-120
Actual internal hydrostatic pressure applied (Bar)	3.5	
Sustain period (sec)	30	
Test result	Passed	

Remark : 1. Test results relate only to the specimen tested (effect of measurement uncertainty has not been taken into account).
2. Samples Submitted by : Asia Development (HK) Limited.
3. Country of Origin : China
4. This page no. 1A of test report supersedes page no. 1 of the previous test report of Castco LRN: DP0200919-120 HYD issued on 06 October 2020.
5. Test report for (In-house method)

Checked by : SIT KWAN NING

Form No. PIPE HYD In-house_T2 46/03/06/2020 006

香港粉嶺安居街33號得利中心
香港粉嶺安居街30號新寧中心
香港粉嶺安居街29號
Tel: 2597 8333 Fax: 2597 8399

香港粉嶺安居街33號 33, On Kui Street, Fanling, Hong Kong Tel: 2597 8333
香港粉嶺安居街29A號 29A, On Chuen Street, Fanling, Hong Kong Fax: 2597 8399
E-mail: info@castco.com.hk Website: www.castco.com.hk

Test Report

Metallic Materials - Tensile Test of Metallic Materials
(BS EN 10002-1 : 2001)

Date of issue : 06 October 2020
Page 1 of 1 page

Castco LRN : DP0200919-120 TEN

Details as supplied by customer

Customer : Cheung Hing Foundry (HK) Limited

Customer's Ref. No. : --

Address : 299 Pak Sha Tsuen, Kung Um Road, Yuen Long, N.T.

Contract No. : --

Job Title : --

Origin of copper tube : --

Supplier : --

Grade & Form of copper tube product : --

Location in workshop : --

No. & Type of specimen applied : 1 no. DN75 x 1.83 m Length Cast Iron Pipe with Flexible Joint

Acceptance standard : BS 437 : 2008 Clause 4.5 Table 4

Nominal thickness : 6.96 mm

Laboratory Test Result

Date Received : 19 September 2020

Date Tested : 26 September 2020

Tensile Test

Specimen Identity	Grade	Type & Preparation	Width (mm)	Thickness (mm)	Org. X-sect Area (mm ²)	Org. Gauge Length (mm)	Test Gauge Length (mm)	Tensile Strength (MPa)	Elongation (%)	Position of Fracture	Remark
DP0200919-120	--	--	7.97	6.96	55.40	--	--	2.0	--	Valid	--

Remarks :

- Legends : A - Proportional ; B - Non-proportional ; M - Machined ; N - Unmachined ;
+ This measurement is 'invalid' which relates to the position of fracture only.
- Test results relate only to the specimen tested.
- Test results comply with BS 437 : 2008 Clause 4.5 Table 4 (effect of measurement uncertainty has not been taken into account).
- Samples Submitted by : Asia Development (HK) Limited.
- Country of Origin : China
- Manufacturer : Liuzhou Lizhi Foundry Co., Ltd.

Checked by : SIT KWAN NING
Senior Supervisor

Approved Signatory : LEE WAI KWOK
B.Sc., C. Eng., MICE, MHKIE
Registered Professional Engineer
Executive Director

End of Report

Form No. ST BS EN 10002-1:2001 T2 46/12/05/2017 006

香港粉嶺安居街33號 33, On Kui Street, Fanling, Hong Kong Tel: 2597 8333
香港粉嶺安居街29A號 29A, On Chuen Street, Fanling, Hong Kong Fax: 2597 8399
E-mail: info@castco.com.hk Website: www.castco.com.hk

Test Report
Dimension and Mass of Cast Iron Drain Pipe, Fitting and Their Joints
(BS 437 : 2008 Annex A2 to A9 (Clause 4.3 : 4.4))

Date of issue : 06 October 2020
Page 1 of 1 page

Castco LRN : DP0200919-120 DIM

Details as supplied by customer

Customer : Cheung Hing Foundry (HK) Limited

Customer's ref. no. : --

Address : 299 Pak Sha Tsuen, Kung Um Road, Yuen Long, N.T.

Job title : --

Contract no. : --

Sample description : DN75 x 1.83 m Length Cast Iron Pipe

Manufacturer : Liuzhou Lizhi Foundry Co., Ltd.

Brand name : CHF

Nominal bore : 75 mm

Nominal Length : 1830 mm

Nominal Mass : 30.5 kg

Type of joint : Flexible joint

Laboratory test result

Date sample received : 19 September 2020

Date of test : 22 September 2020

A. Dimensions Check :

Specimen no. : DP0200919-120

Nominal bore : 75 mm

	BS requirement from clause 4.3	Test results
Pipe		
External diameter (mm)	--	94.7
Ovality (mm)	--	0.2
Wall thickness (mm)	--	7.57
Internal diameter (mm)	--	79.6
End Face Maximum deviation (mm)	--	1.00
Deviation of straightness (mm)	--	0.20
Socket		
Internal diameter (F) (mm)	--	79.6
Thickness (H) (mm)	--	7.57
Depth of socket (K) (mm)	--	10.2
Length (mm)	--	1830
Mass (kg)	--	29.5

Remark : * - The figure fails to comply with BS 437 : 2008 Clause 4.3 & 4.4
N/A - Not applicable

Remarks : 1. Test result relates only to the specimen tested.
2. Compliance check against BS 437 : 2008, Annex A2 to A9, Clause 4.3 & 4.4 was not possible as this pipe was not tested for compliance with BS 437 : 2008, Annex A2 to A9, Clause 4.3 & 4.4. This has not been taken into account.

Signature : LEE WAI KWOK
B.Sc., C. Eng., MICE, MHKIE
Registered Professional Engineer
Executive Director

As listed in the HOKLAS directory of accredited laboratories. Original copy or the laboratory's certified true copy is valid.

HYD

DIM

TEN

Date of issue : 09 November 2020

Page 1A of 1 page

Castco LRN: DP0200713-DIM

Details as supplied by client

Customer : Cheung Hing Foundry (HK) Limited

Customer's ref. : --

Address : 299 Pak She Tsuen, Kung Um Road, Yuen Long, N.T.

Job title : --

Contract no. : --

Sample description : DN100 x 1.83 m Length Cast Iron Pipe with Flexible Joint

Brand name : CHF

Manufacturer : Liuzhou Lizhi Foundry Co., Ltd.

Laboratory Test Result

Date received : 13 July 2020

Date of test : 24 July 2020

Specimen no.

DP0200713

Actual internal hydrostatic pressure applied (Bar)

3.5

Sustain period (sec)

30

Test result

Passed

- Remark : 1. Test results relate only to the specimen tested (effect of measurement uncertainty has not been taken into account).
 2. Sample supplied by : Asia Development (HK) Limited.
 3. Country of Origin : China
 4. This page no. 1A of test report supersedes page no. 1 of the previous test report of Castco Ltd. DP0200713-075 HYD, issued on 20 August 2020.
 5. Test report for (In-house method) based on BS 437 : 2008 Clause 1.

Checked by :

SIT KWAN NING

Form No. PIPE HYD In-house_T 6/03/06/2020

香港粉嶺安居街33號利中中心
 香港粉嶺安居街30號新寧中心
 香港粉嶺安全街29號
 Tel: 2597 8333 Fax: 2597 8399

香港粉嶺安居街33號 33, On Kui Street, Fanling, Hong Kong. Tel: 2597 8333
 香港粉嶺安全街29A號 29A, On Chuen Street, Fanling, Hong Kong. Fax: 2597 8399
 E-mail: info@castco.com.hk Website: www.castco.com.hk

Test ReportMetals - Tensile Test of Metallic Materials
(BS EN 10002-1 : 2001)

Date of issue : 20 August 2020

Page 1 of 1 page

Castco LRN : DP0200713-075 TEN

Details as supplied by customer

Customer : Cheung Hing Foundry (HK) Limited

Customer's Ref. No. : --

Address : 299 Pak She Tsuen, Kung Um Road, Yuen Long, N.T.

Contract No. : --

Job Title : --

Origin of copper tube : --

Supplier : --

Grade & Form of copper tube product : --

Location in workshop : --

No. & Type of specimens supplied : 1. DN100 x 1.83 m Length Cast Iron Pipe with Flexible Joint

Acceptance standard : BS 437 : 2008 Clause 4.5 Table 4

Nominal thickness : 6.4 mm

Laboratory Test Result

Date Received : 11 July 2020

Date Tested : 11 August 2020

Tensile Test

Specimen Identity	Grade	Type & Preparation	Width (mm)	Thickness (mm)	Org. X-sect Area (mm ²)	Org. Gauge Length (mm)	Specimen Length (mm)	Tensile Strength (MPa)	Elongation (%)	Position of Fracture	Remark
DP0200713-075	--	--	8.16	6.41	52.27	--	--	3.4	--	Valid	--

Remarks :

1. Legend : A - Proportional ; B - Non-proportional ; M - Machined ; N - Unmachined ;
 + This measurement is 'invalid' which relates to the position of fracture only.
 2. Test results relate only to the specimen tested.
 3. Test results comply with BS 437 : 2008 Clause 4.5 Table 4 (effect of measurement uncertainty has not been taken into account).
 4. Samples supplied by : Asia Development (HK) Limited.
 5. Country of Origin : China
 6. Manufacturer : Liuzhou Lizhi Foundry Co., Ltd.

Checked by :

SIT KWAN NING
Senior Supervisor

Form No. ST BSEN 10002-1:2001 T2 d4 12/05/2017

Approved Signatory :

End of Report

LEE WAI KWOK
B.Sc., C. Eng., MICE, MHKIE
Registered Professional Engineer
Executive Director

香港粉嶺安居街33號 33, On Kui Street, Fanling, Hong Kong. Tel: 2597 8333
 香港粉嶺安全街29A號 29A, On Chuen Street, Fanling, Hong Kong. Fax: 2597 8399
 E-mail: info@castco.com.hk Website: www.castco.com.hk

香港粉嶺安居街33號 33, On Kui Street, Fanling, Hong Kong. Tel: 2597 8333
 香港粉嶺安全街29A號 29A, On Chuen Street, Fanling, Hong Kong. Fax: 2597 8399
 E-mail: info@castco.com.hk Website: www.castco.com.hk

Test ReportDimension and Mass of Cast Iron Pipe, Fitting and Their Joints
(BS 437 : 2008 Annex 2 to 4, Clause 4.3 & 4.4)

Date of issue : 20 August 2020

Page 1 of 1 page

Castco LRN : DP0200713-075 DIM

Details as supplied by customer

Customer : Cheung Hing Foundry (HK) Limited

Customer's ref. no. : --

Address : 299 Pak She Tsuen, Kung Um Road, Yuen Long, N.T.

Job title : --

Contract no. : --

Sample description : DN100 x 1.83 m Length Cast Iron Pipe

Manufacturer : Liuzhou Lizhi Foundry Co., Ltd.

Brand name : CHF

Nominal bore : 100 mm

Nominal Length : 1830 mm

Nominal Mass : 35 kg

Type of joint : Flexible joint

Laboratory test result

Date sample received : 13 July 2020

Date of test : 24 July 2020

A. Dimensions Check

Specimen no. : DP0200713-075

Nominal bore : 100 mm

		BS requirement from clause 4.3	Test results
Pipe	External diameter (mm)	117 (+2/-1)	118.9
	Ovality (mm)	≤ 1.0	0.3
	Wall thickness (mm)	≥ 6.7	6.79
	Internal diameter (mm)	≥ 99	105.3
	End Face Meridian deviation	90° (± 3°)	-1° 00'
	Deviation of straightness (mm)	≤ 2.75	0.25
Socket	Internal diameter (F) (mm)		
	Thickness (H) (mm)		
	Depth of socket (K) (mm)		
Length (mm)		1830 (± 20)	1830
Mass (kg)		35 (-5.0)	35.8

Legend : * - The figure fails to comply with BS 437 : 2008 Clause 4.3 & 4.4
 N/A - Not applicable

- Remarks : 1. Test result relates only to the specimen tested.
 2. The result complies with the requirement of BS 437 : 2008, Annex 2 to A.9, Clause 4.3 & 4.4 (effect of measurement uncertainty has not been taken into account).

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CHF

Test Certificate

Hydrostatic Test on Cast Iron Pipe

(In-house method based on BS 437 : 2008 Clause 1)

Date of issue : 09 November 2020

Page 1A of 1 page

Castco LRN: DP0200713-076

Details as supplied by client

Customer : Cheung Hing Foundry (HK) Limited

Customer's ref. : --

Address : 299 Pak Sha Tsuen, Kung Um Road, Yuen Long, N.T.

Job title : --

Contract no. : --

Sample description : DN150 x 1.83 m Length Cast Iron Pipe with Flexible Joint

Brand name : CHF

Manufacturer : Liuzhou Lizhi Foundry Co., Ltd.

Laboratory Test Result

Date received : 13 July 2020

Date of test : 24 July 2020

Specimen no.

DP0200713-076

Actual internal hydrostatic pressure applied (Bar)

3.5

Sustain period (sec)

30

Test result

Passed

- Remark : 1. Test results relate only to the specimen tested (effect of measurement uncertainty has not been taken into account).
2. Sample supplied by : Asia Development (HK) Limited.
3. Country of Origin : China
4. This page no. 1A of test report supersedes page no. 1 of the previous test report of Castco Ltd. DP0200713-076 HYD issued on 20 August 2020.
5. Test report for In-house method

Checked by :

SIT KWAN NING
Senior Supervisor

Form No. PIPE HYD In-house_T 4 (3/06/2020)

香港粉嶺安樂街33號利中心
香港粉嶺安樂街30號新寧中心
香港粉嶺安樂街29號
Tel: 2597 8333 Fax: 2597 8399

CASTCO

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

香港粉嶺安樂街33號
29A號
E-mail: info@castco.com.hk

33, On Kui Street, Fanling, Hong Kong.
29A, On Chuen Street, Fanling, Hong Kong.
Website: www.castco.com.hk

Tel: 2597 8333
Fax: 2597 8399

Test Report

Metals Materials - Tensile Test of Metallic Materials
(BS EN 10002-1 : 2001)

Date of issue : 20 August 2020

Page 1 of 1 page

Castco LRN : DP0200713-075 TEN

Details as supplied by customer

Customer : Cheung Hing Foundry (HK) Limited

Customer's Ref. No. : --

Address : 299 Pak Sha Tsuen, Kung Um Road, Yuen Long, N.T.

Contract No. : --

Job Title : --

Origin of copper tube : --

Supplier : --

Grade & Form of copper tube product : --

Location in workshop : --

No. & Type of specimen supplied : 1 no. DN100 x 1.83 m Length Cast Iron Pipe with Flexible Joint

Nominal thickness : 6.4 mm

Acceptance standard : BS 437 : 2008 Clause 4.5 Table 4

Laboratory Test Result

Date Received : 11 July 2020

Date Tested : 11 August 2020

Tensile Test

Specimen Identity	Grade	Type & Preparation	Width (mm)	Thickness (mm)	Org. X-sect Area (mm ²)	Org. Gauge Length (mm)	Specimen Length (mm)	Tensile Strength (MPa)	Elongation (%)	Position of Fracture	Remark
DP0200713-075	--	--	8.16	6.41	52.27	--	--	3.4	--	Valid	--

Remarks :

1. Legend : A - Proportional ; B - Non - proportional ; M - Machined ; N - Unmachined ;
+ This measurement is 'invalid' which relates to the position of fracture only.
2. Test results relate only to the specimen tested.
3. Test results comply with BS 437 : 2008 Clause 4.5 Table 4 (effect of measurement uncertainty has not been taken into account).
4. Samples supplied by : Asia Development (HK) Limited.
5. Country of Origin : China
6. Manufacturer : Liuzhou Lizhi Foundry Co., Ltd.

Checked by :

SIT KWAN NING
Senior Supervisor

Form No. ST BSEN 10002-1_2001 T2 d4 12/05/2017

Approved Signatory :

End of Report

LEE WAI KWOK
B.Sc., C. Eng., MICE, MHQE
Registered Professional Engineer
Executive Director

HYD

DIM

TEN

Test Certificate

Hydrostatic Test on Cast Iron Pipe

(In-house method based on BS 437 : 2008 Clause 1)

Date of issue: 09 November 2020
Page 1A of 1 page

Castco LRN: DP0200527-154 DIM

Details as supplied by client

Customer: Cheung Hing Foundry (HK) Limited

Customer's ref. no.:

Address: 299 Pak She Tsuen, Kung Um Road, Yuen Long, N.T.

Job title: --

Contract no.:

Sample description: DN225 x 1.83 m Length Cast Iron Pipe with Flexible Joint

Brand name: CHF

Manufacturer: Liuzhou Lizhi Foundry Co., Ltd.

Laboratory Test Result

Date received: 27 May 2020

Date of test: 06 June 2020

Specimen no.	DP0200527-154 DIM
Actual internal hydrostatic pressure applied (Bar)	3.5
Sustain period (sec)	30
Test result	Passed

Remark: 1. Test results relate only to the specimen tested (effect of measurement uncertainty has not been taken into account).
2. Sample supplied by: Asia Development (HK) Limited.
3. Country of Origin: China
4. This page no. 1A of test report supersedes page no. 1 of the previous test report of Castco Ltd DP0200527-154 HYD issued on 27 June 2020.
5. Test report for (In-house method based on BS 437 : 2008 Clause 1) is changed due to typo.

Checked by:

SIT KWAN NING
Senior Supervisor

Form No. PIPE HYD In-house_T & 03/06/2020

香港粉嶺安居街33號得利中心
香港粉嶺安居街30號新寧中心
香港粉嶺安居街29號
Tel: 2597 8333 Fax: 2597 8339

香港粉嶺安居街33號 33, On Kui Street, Fanling, Hong Kong Tel: 2597 8333
香港粉嶺安居街29A號 29A, On Chuen Street, Fanling, Hong Kong Fax: 2597 8399
E-mail: info@castco.com.hk Website: www.castco.com.hk

Test Report

Metallic Materials - Tensile Test of Metallic Materials
(BS EN 10002-1 : 2001)Date of issue: 27 June 2020
Page 1 of 1 page

Castco LRN: DP0200527-154 TEN

Details as supplied by customer

Customer: Cheung Hing Foundry (HK) Limited

Customer's Ref. No.:

Address: 299 Pak She Tsuen, Kung Um Road, Yuen Long, N.T.

Contract No.:

Job Title:

Origin of copper tube: --

Supplier: --

Grade & Form of copper tube product: --

Location in warehouse: --

No. & Type of specimen applied: 1 no. DN225 x 1.83 m Length Cast Iron Pipe

Nominal thickness: 10.19 mm

Acceptance standard: BS 437 : 2008 Clause 4.5 Table 4

Laboratory Test Result

Date Received: 27 May 2020

Date Tested: 20 June 2020

Tensile Test

Specimen Identity	Grade	Type & Preparation	Width (mm)	Thickness (mm)	Org. X-sect Area (mm ²)	Org. Gauge Length (mm)	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation (%)	Position of Fracture	Remark
DP0200527-154	--	--	8.00	10.19	81.48	--	--	21	--	Valid	--

Remarks:

Legends: A - Proportional; B - Non-proportional; M - Machined; N - Unmachined.
+ This measurement is 'invalid' which relates to the position of fracture only.

1. Test results relate only to the specimen tested.
2. Test results comply with BS 437 : 2008 Clause 4.5 Table 4 (effect of measurement uncertainty has not been taken into account).
3. Samples supplied by: Asia Development (HK) Limited.
5. Country of Origin: China
6. Manufacturer: Liuzhou Lizhi Foundry Co., Ltd.

Checked by:

SIT KWAN NING
Senior Supervisor

Approved Signatory:

End of Report

WONG KA MAN
Senior Manager

Form No. ST BSEN 10002-1:2001 T2 d4 12/05/2017

/33

香港粉嶺安居街33號 33, On Kui Street, Fanling, Hong Kong Tel: 2597 8333
香港粉嶺安居街29A號 29A, On Chuen Street, Fanling, Hong Kong Fax: 2597 8399
E-mail: info@castco.com.hk Website: www.castco.com.hk

Test Report

Dimension and Mass of Cast Iron Pipe, Fitting and Their Joints
(BS 437 : 2008 Annex 2 to 9, Clause 4.3 & 4.4)Date of issue: 27 June 2020
Page 1 of 1 page

Castco LRN: DP0200527-154 DIM

Details as supplied by customer

Customer: Cheung Hing Foundry (HK) Limited

Customer's ref. no.:

Address: 299 Pak She Tsuen, Kung Um Road, Yuen Long, N.T.

Job title: --

Contract no.:

Sample description: DN225 x 1.83 m Length Cast Iron Pipe

Manufacturer: Liuzhou Lizhi Foundry Co., Ltd.

Brand name: CHF

Nominal bore: 225 mm

Nominal Length: 1830 mm

Nominal Mass: 111 kg

Type of joint: Flexible joint

Laboratory test result

Date sample received: 27 May 2020

Date of test: 06 June 2020

A. Dimensions Check

Specimen no.: DP0200527-154

Nominal bore: 225 mm

	BS requirement from clause 4.3	Test results
Pipe		
External diameter (mm)	254 (±2)	254.8
Ovality (mm)	≤ 2.0	0.4
Wall thickness (mm)	≥ 10.2	10.45
Internal diameter (mm)	≥ 224	233.9
End Face Perpendicular deviation	90° (± 3°)	-0° 30'
Deviation of straightness (mm)	≤ 2.75	0.95
Socket		
Internal diameter (F) (mm)		
Thickness (H) (mm)		
Depth of socket (K) (mm)		
Length (mm)	1830 (± 20)	1838
Mass (kg)	111 (-16.7)	115.7

Legend: * - The figure fails to comply with BS 437 : 2008 Clause 4.3 & 4.4
N/A - Not applicable

Remarks: 1. Test result relates only to the specimen tested.
2. Test result complies with the requirement of BS 437 : 2008, Annex 2 to A.9, Clause 4.3 & 4.4 (effect of measurement uncertainty has not been taken into account).

Signatory:

WONG KA MAN
Senior Manager

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Original copy or the laboratory's certified true copy is valid.

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