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Agrément Certificate
06/4401
Product Sheet 1

HARGREAVES FOUNDRY DRAINAGE SYSTEMS

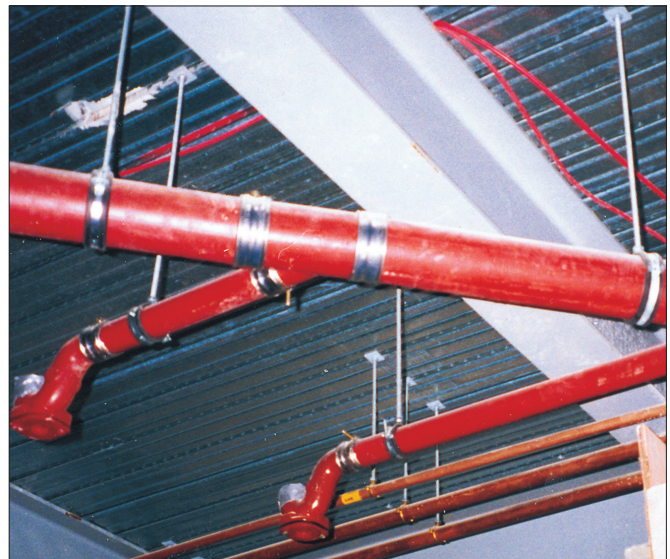
THE HALIFAX CAST IRON SOIL AND DRAIN PIPEWORK SYSTEM, PIPE, COUPLINGS AND FITTINGS

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Halifax Cast Iron Soil and Drain Pipework System, Pipe, Couplings and Fittings, cast iron products for use in the conveyance of domestic wastewater and rainwater in above- and below-ground applications.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Strength — the products have adequate resistance to site and service loading (see section 6).

Performance of joints — joints with the pipeline remain watertight under conditions where pipeline movement is present, and will not be adversely affected by thermal expansion or contraction (see section 7).

Flow characteristics — a cast iron soil system using the pipes, couplings and fittings will have satisfactory flow characteristics (see section 8).

Resistance to chemicals — the products will be unaffected by those types and quantities of chemicals likely to be found in domestic waste water (see section 9).

Resistance to elevated temperatures — the products have adequate resistance to temperatures likely to occur in service (see section 10).

Durability — the products will have a service life equivalent to conventional cast iron sanitary pipework systems (see section 14).

The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Paul Valentine
Technical Excellence Director

Claire Curtis-Thomas
Chief Executive

Date of Third issue: 16 November 2017

Originally certificated on 13 March 2013

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, the Halifax Cast Iron Soil and Drain Pipework System, Pipe, Couplings and Fittings, if installed, used and maintained in accordance with this Certificate, will satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: B3(4)	Internal fire spread (structure)
Comment:	The products can satisfy this Requirement, provided the installation stipulations are met. See section 11 of this Certificate.
Requirement: E1	Protection against sound from other parts of the building and adjoining buildings
Comment:	The products can satisfy this Requirement. See section 12 of this Certificate.
Requirement: H1(1)	Foul water drainage
Comment:	The products will convey the flow of foul or surface water and minimise the risk of blockages or leakage. See sections 7 and 8 of this Certificate.
Requirement: H3(1)	Rainwater drainage
Comment:	The products can satisfy this Requirement. See sections 4.1, 6, 7 and 8 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The products are acceptable. See section 14 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Durability, workmanship and fitness of materials
Comment:	The use of the products will satisfy the requirements of this Regulation. See sections 13 and 14 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 2.1	Compartmentation
Comment:	The products can satisfy the necessary requirements of this Standard, provided the installation stipulations are met, with reference to clause 2.1.14 ⁽²⁾ . See section 11 of this Certificate.
Standard: 2.2	Separation
Comment:	The products can satisfy the necessary requirements of this Standard, provided the installation stipulations are met, with reference to clauses 2.2.6 ⁽²⁾ and 2.2.9 ⁽¹⁾ . See section 11 of this Certificate.
Standard: 3.6	Surface water drainage
Standard: 3.7	Wastewater drainage
Comment:	The products will contribute to satisfying the relevant requirements of these Standards, with reference to clauses 3.6.4 ⁽¹⁾⁽²⁾ to 3.6.6 ⁽¹⁾⁽²⁾ and 3.7.1 ⁽¹⁾⁽²⁾ . See sections 4.1, 6, 7 and 8 of this Certificate.
Standard: 5.1	Noise separation
Comment:	The products, when designed in accordance with this Certificate, can satisfy this Standard, with reference to clauses 5.1.1 ⁽¹⁾⁽²⁾ , 5.1.6 ⁽²⁾ and 5.1.7 ⁽¹⁾ . See section 12 of this Certificate.
Standard: 7.1(a)(b)	Statement of sustainability
Comment:	The products can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation: 12	Building standards applicable to conversions
Comment:	All comments given for the products under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation: 23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:	The products are acceptable. See section 14 and the <i>Installation</i> part of this Certificate.
Regulation: 35(4)	Internal fire spread - Structure
Comment:	The products can satisfy the necessary requirements of this Regulation, provided the installation stipulations are met. See section 11 of this Certificate.
Regulation: 49	Protection against sound from other parts of the building and from adjoining buildings
Regulation: 51	Reverberation in the common internal parts of a building containing flats or rooms for residential purposes
Comment:	The products can satisfy these Regulations. See section 12 of this Certificate.
Regulation: 79	Drainage systems
Comment:	The products are acceptable. See sections 4.1, 6, 7 and 8 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.1, Table 2) and 3 *Delivery and site handling* (3.2) of this Certificate.

Additional Information

NHBC Standards 2017

In the opinion of the BBA, the Halifax Cast Iron Soil and Drain Pipework System, Pipe, Couplings and Fittings, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 5.3 *Drainage below ground* and 8.1 *Internal services*, D16 and D17 *Soil and waste systems*.

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard BS EN 877 : 1999 and BS EN 681-1 : 1996. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 The Halifax Cast Iron Soil and Drain Pipework System, Pipe, Couplings and Fittings comprise cast iron pipe, couplings and fittings (see Table 1). The dimensions of the products given in Table 2 comply with BS EN 877 : 1999 + A1 : 2006. The pipe is spun cast without sockets and is normally supplied in 3 m lengths. The CONNECT coupling consists of a band of stabilised chrome steel with an EPDM gasket to BS EN 681-1 : 1996. The Ductile Iron coupling is a two-piece coupling with an EPDM gasket to BS EN 681-1 : 1996.

1.2 For above ground applications, the pipe and fittings are finished in a red external coating. For below ground applications, the pipe and fittings are finished in a grey external coating. Details of the coatings are given in Table 3.

Table 1 Components

Component	Range of sizes (mm)	
	Soil (above ground applications)	Drain (below ground applications)
Double spigot pipe	50, 70, 100, 150, 200	100, 150, 200
Coupling 'CONNECT'	50, 70, 100, 150, 200	N/A
Ductile iron couplings	50, 70, 100, 150, 200	100, 150, 200
EPDM moulded ductile coupling gaskets	50, 70, 100, 150, 200	100, 150, 200
88° short radius bend	50, 70, 100, 150, 200	N/A
69° short radius bend	50, 70, 100, 150	N/A
45° short radius bend	50, 70, 100, 150, 200	100, 150, 200
30° short radius bend	50, 70, 100, 150	100, 150
15° short radius bend	50, 70, 100, 150	100, 150
22° long radius bend	100	100
88° long radius bend	100, 150	100, 150
88° short radius bend – back door	70, 100	N/A
88° long radius bend – back door	100, 150	100, 150
88° bend – long tail	100	N/A
88° single equal and unequal branches	50 x 50, 70 x 50, 70 x 70, 100 x 50, 100 x 70, 100 x 100, 150 x 100, 150 x 150, 200 x 200	N/A
69° single equal and unequal branches	50 x 50, 70 x 50, 70 x 70, 100 x 50, 100 x 70, 100 x 100, 150 x 100	100 x 100, 150 x 100
45° single equal and unequal branches	50 x 50, 70 x 50, 70 x 70, 100 x 50, 100 x 70, 100 x 100, 150 x 70, 150 x 100, 150 x 150, 200 x 100, 200 x 150, 200 x 200	100 x 100, 150 x 100, 150 x 150, 200 x 100, 200 x 150, 200 x 200
88° single branch radius curve	100 x 100, 150 x 100, 150 x 150	100 x 100, 150 x 100, 150 x 150
88° single branch radius curve with access	100 x 100, 150 x 100, 150 x 150	100 x 100, 150 x 100, 150 x 150
88° double branch	100 x 100	N/A
69° double branch	100 x 100	100 x 100
45° double branch	100 x 100, 150 x 100, 150 x 150, 200 x 200	100 x 100, 150 x 100, 150 x 150, 200 x 200
88° double branch – radius curve	100 x 100, 150 x 100	100 x 100, 150 x 100
88° single branch – long tail	100 x 100	N/A
88° corner branch – long tail	100 x 100	N/A
88° corner branch – short tail	100 x 100	N/A
Access pipes – round door	50, 70, 100, 150	100, 150
Access pipes – rectangular door	100, 150, 200	100, 150, 200
Offset at 75 mm	100	N/A
Offset at 130 mm	50, 70, 100	N/A
Pipe tapers	70 x 50, 100 x 50, 100 x 70, 150 x 50, 150 x 70, 150 x 100, 200 x 100, 200 x 150	150 x 100, 200 x 100, 200 x 150
Traps – with bottom access	50, 70, 100, 150	100, 150
Manifold connector	100	N/A
Blank ends	50, 70, 100, 150, 200	100, 150, 200
Blank ends – drilled and tapped	100, 150	100, 150
88° boss pipe (single boss)	70, 100, 150	N/A
88° boss pipe (double boss) opposed	100	N/A
88° boss pipe (double boss at 90°)	100	N/A
Stack support pipes	70, 100, 150, 200	N/A
Stack support brackets	70, 100, 150, 200	N/A
88° long radius bend – heel rest	N/A	100, 150
45° medium radius bend	N/A	100, 150
Bellmouth gully inlet	N/A	100
Gully inlet	N/A	150
Solid cover	N/A	200
Plain grating	N/A	200
Puddle flange	N/A	100, 150, 200
Inspection chamber	N/A	100 x 100, 150 x 150, 150 x 100
Bellmouth gully inlet with secured grate	N/A	100

Table 2 Dimensions of pipe and fittings

Nominal diameter (mm)	Outside diameter (mm)	Pipe nominal wall thickness (mm)	Minimum wall thickness (mm)	Weight per 3 m lengths (kg)	Fittings nominal wall thickness (mm)	Minimum wall thickness (mm)
50	57-60	3.5	3.0	15.7	3.5	3.0
70	77-80	3.5	3.0	19.4	3.5	3.0
100	109-112	3.5	3.0	27.6	3.5	3.0
150	158-162	4.0	3.5	45.2	4.0	3.5
200	207.5-212.5	5.0	4.0	71.2	5.0	4.0

Table 3 Coating specifications

Component	Use	Average coating thickness (mm)	Colour/ paint type
Pipe:	above ground ⁽¹⁾		
internal face		130	yellow ochre/epoxy
external face		40	red epoxy
Fittings:			
internal face	70	red/epoxy	
external face	70	red/epoxy	
Pipe:	below ground		
internal face		130	yellow ochre/epoxy
external face		170	grey/epoxy
Fittings:			
internal face	150	red/epoxy	
external face	150	grey/epoxy	

(1) For external use, an exterior grade finish coat in accordance with BS EN 877 : 1999 + A1 : 2016 should be applied to provide protection.

2 Manufacture

2.1 The cast iron products are manufactured in grey cast iron which complies with the requirements of BS EN 1561 : 2011, Grade ENJL 1020, ISO 185 Grade 15 and complies with BS EN 877 : 1999.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

3 Delivery and site handling

3.1 Each pipe length is marked with the Certificate holder's trade mark, the nominal diameter and a code indicating the date of manufacture. Fittings are marked with the manufacturer's trademark and the nominal diameter and angle, where relevant.


3.2 The products should be protected from impacts, for example from heavy vehicles such as fork-lift trucks used on commercial premises.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Halifax Cast Iron Soil and Drain Pipework System, Pipe, Couplings and Fittings.

Design Considerations

4 Use


 4.1 The Halifax Cast Iron Soil and Drain Pipework System, Pipe, Couplings and Fittings are satisfactory for use in domestic, commercial and public buildings in accordance with BS EN 12056-2 : 2000 and BS EN 752 : 2008 for the conveyance of domestic sewage, and BS EN 12056-3 : 2000 for the conveyance of surface water as is permitted to be discharged into public sewers by the Water Industry Act 1991, and surface water and sewage as is permitted and defined by the Sewerage (Scotland) Act 1968 and the Water and Sewerage Services (Northern Ireland) Order 2006.

4.2 This use of the products for the conveyance of trade effluent has not been assessed and is outside the scope of this Certificate.

5 Practicability of installation

The pipe, couplings and fittings are designed to be installed by a competent general builder, or a contractor, experienced with these types of products.

6 Strength

 The pipe, fittings and other accessories will have adequate resistance to the forms of loading associated with installation and normal service conditions.

7 Performance of joints



7.1 The joints will not be adversely affected by thermal expansion or contraction when correctly installed.

7.2 When correctly made, the joints will remain watertight under conditions of pipeline movement in excess of those expected to occur in normal good drainage practice.

8 Flow characteristics



8.1 A system comprising the cast iron pipe and fittings (including swept entry branches and other accessories) will have satisfactory flow characteristics. Non-swept branch connections are restricted in accordance with BS EN 12056-2 : 2000.

8.2 Offsets in the wet portion of a discharge stack should be avoided. However, if the S-bend offsets are to be fitted in this position, large radius bends should be used (see BS EN 12056-2 : 2000). A ventilation stack may be necessary above and below the offset.

9 Resistance to chemicals

The products will be unaffected by the types and quantities of chemicals likely to be found in the effluents defined in section 4.1 of this Certificate.

10 Resistance to elevated temperatures

The products have adequate resistance to the temperatures likely to be found in domestic sewage.

11 Properties in relation to fire



11.1 When tested in accordance with EN 13501-1 : 2007, the products achieved a reaction to fire classification* A2-s1, d0 for above ground pipes and fittings, and B-s1, d0 for applications below ground.

11.2 The pipe and fittings are non-combustible and therefore do not require a proprietary sealing system.

11.3 The national Building Regulations concerning the prevention of fire spread by features as fire stopping must be taken into account at this stage.

12 Noise



In common with all types of pipe materials, where pipes penetrate a floor or wall separating habitable rooms, they should be encased in a full height enclosure to limit sound transmission.

13 Maintenance



13.1 Drains and sewers incorporating the products can be maintained using jetting equipment, or rodded using conventional flexible drain rods. Toothed root cutters, as used with some mechanical cleaning systems, could damage the internal coatings and should not be used.

13.2 Sections of the system can be removed and replaced. Access must be provided in accordance with BS EN 12056-2 : 2000 and BS EN 12056-3 : 2000.

14 Durability



When used within the conditions and recommendations given in this Certificate, the products will have a serviceable life equivalent to conventional cast iron sanitary pipework systems. When used externally, the pipe should be painted regularly with an exterior grade finish coat.

15 Reuse and recyclability

The cast iron products and fittings are fully recyclable.

Installation

16 General

Installation of the Halifax Cast Iron Soil and Drain Pipework System, Pipe, Couplings and Fittings should be in accordance with BS EN 12056-2 : 2000, BS EN 12056-3 : 2000 and the Certificate holder's Technical Guide.

17 Procedure

17.1 Pipes can be cut to length on site with a circular saw or abrasive disc cutter. Before jointing, the cut ends should be thoroughly cleaned and de-burred.

17.2 Joints are made by slackening the bolt on the coupling. The coupling is pushed onto the end of the pipe or fitting up to the gasket central register. The cut pipes must be square and the next pipe or fitting must be pushed into the coupling up to the gasket central register. The coupling bolt is tightened to the recommended torque setting.

17.3 For above ground use, the pipe must be adequately supported at every connection and at a maximum spacing of 3 m for horizontal pipe and 3 m for vertical pipe.

Technical Investigations

18 Tests

Tests were carried out in accordance with the relevant clauses of BS EN 877 : 1999:

	Clause
• surface condition*	5.1
• external diameter and ovality*	5.2.1/5.2.4
• wall thickness*	5.2.2
• internal diameter of pipes*	5.2.3
• straightness of pipes*	5.2.5
• end faces	5.2.6
• length of pipes	5.2.7
• lengths of fittings and sealing zone	5.2.7
• angle of fittings	5.2.8
• masses	5.3
• tensile strength	5.4
• Brinell hardness	5.5
• ring crush strength of pipes	5.6
• internal coatings	
— resistance to salt spray	5.7.2.1
— resistance to waste water	5.7.2.2
— chemical resistance	5.7.2.3
— dry coating thickness	5.7.2.4
— adhesion	5.7.2.5
— resistance to hot water	5.7.2.6
— resistance to temperature cycling	5.7.2.7
• external coatings	
— dry coating thickness	5.7.3.4
— adhesion	5.7.3.5
• watertightness under different	
— conditions	5.8.4/5.8.5
• airtightness	5.8.6
• temperature resistance	5.8.7
• marking	5.11.

19 Investigations

19.1 An evaluation of data was made to determine:

- system design
- resistance to chemicals
- practicability of installation
- suitability of materials
- effect of crossflow
- quality of castings
- reaction to fire
- flame resistance
- compatibility with other paints.

19.2 The manufacturing process was evaluated, including the methods adopted for quality control and details were obtained of the quality and composition of the materials used.

Bibliography

BS EN 681-1 : 1996 *Elastomeric seals — Material requirements for pipe joint seals used in water and drainage applications — Vulcanized rubber*

BS EN 752 : 2008 *Drain and sewer systems outside buildings*

BS EN 877 : 1999 + A1 : 2006 *Cast iron pipes and fittings, their joints and accessories for the evacuation of water from buildings — Requirements, test methods and quality assurance*

BS EN 1561 : 2011 *Founding — Grey cast irons*

BS EN 12056-2 : 2000 *Gravity Drainage Systems inside Buildings — Sanitary pipework, layout and calculation*

BS EN 12056-3 : 2000 *Gravity drainage systems inside buildings — Roof drainage, layout and calculation*

EN 13501 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

Conditions of Certification

20 Conditions

20.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

20.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

20.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

20.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

20.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

20.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.