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Agrément Certificate
09/4705
Product Sheet 1

KALSI PLASTICS UNDERGROUND DRAINAGE SYSTEMS

KALSI AQUAFLOW INSPECTION CHAMBERS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Kalsi Aquaflow Inspection Chambers, for access to drains up to a depth of 1.2 m in non-roadway applications, for the purposes of testing, rodding, removal of debris, maintenance or inspection.

AGRÉMENT 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

Mechanical properties — the chambers have adequate stiffness for depth of burial (see section 4).

Performance of joints — joints between the chamber and pipeline remain watertight under conditions where pipeline movement is in excess of that expected to occur in normal good drainage practice, and will not be adversely affected by thermal expansion or contraction (see section 5).

Watertightness — the chamber to riser connection and correctly made connections between the chamber and the pipe will resist water egress (see section 6).

Flow characteristics — the chambers have satisfactory flow characteristics to prevent blockage (see section 7).

Resistance to elevated temperature — the chambers have adequate resistance to the temperature ranges normal in domestic sewage (see section 9).

Durability — under the conditions given in this Certificate the chamber will have a service life equivalent to that of the system to which it is connected, ie in excess of 50 years (see section 10).

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 26 January 2010

Brian Chamberlain

Head of Approvals — Engineering

Greg Cooper

Chief Executive

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, Kalsi Aquaflow Inspection Chambers, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2000 (as amended) (England and Wales)

Requirement:	H1	Foul water drainage
Comment:		The product will convey the flow of foul water and minimise the risk of blockages or leaks. See sections 3, 4.1 and 4.2, 5, 6 and 7 of this Certificate.
Requirement:	H3(3)	Rainwater drainage
Comment:		The product will convey the flow of surface water and minimise the risk of blockages or leaks. See sections 3, 4.1 and 4.2, 5, 6 and 7 of this Certificate.
Requirement:	Regulation 7	Materials and Workmanship
Comment:		The product is acceptable. See section 10 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The use of the product satisfies the requirements of this Regulation. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building Standards – construction
Standard:	3.6(a)	Surface water drainage
Comment:		The product meets the relevant requirement of this Standard, with reference to clauses 3.6.1 ⁽¹⁾⁽²⁾ , 3.6.2 ⁽¹⁾⁽²⁾ and 3.6.3 ⁽¹⁾⁽²⁾ . See sections 3, 4.1 and 4.2, 5, 6 and 7 of this Certificate.
Standard:	3.7(b)	Wastewater drainage
Comment:		The product meets the relevant requirements of this Standard, with reference to clauses 3.7.3 ⁽¹⁾⁽²⁾ and 3.7.4 ⁽¹⁾⁽²⁾ . See sections 3, 4.1 and 4.2, 5, 6 and 7 of this Certificate. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is of an acceptable material. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation:	N4	Underground foul drainage
Comment:		See sections 3, 4.1 and 4.2, 5, 6 and 7 of this Certificate.
Regulation:	N5	Rain-water drainage
Comment:		See sections 3, 4.1 and 4.2, 5, 6 and 7 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 2 *Delivery and site handling*, 3 *General* and 11 *General* (11.1 and 11.2).

Non-regulatory Information

NHBC Standards 2008

NHBC accepts the use of Kalsi Aquaflow Inspection Chambers, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 5.3 *Drainage below ground*.

General

This Certificate relates to Kalsi Aquaflow Inspection Chambers, for accessing adoptable and private drainage networks in non-roadway applications at depths of up to 1.2 m without the requirement for personnel to enter the chamber.

Technical Specification

1 Description

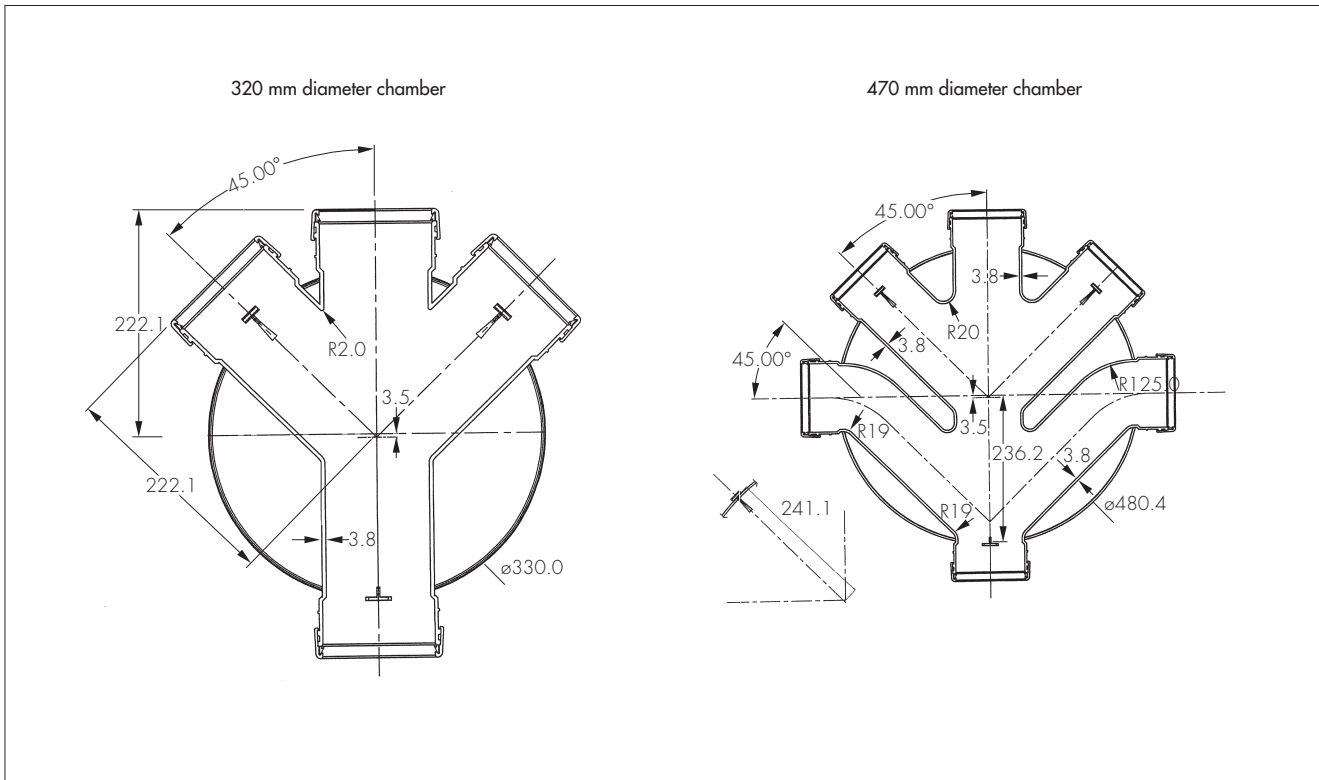
1.1 The inspection chambers comprise a rounded base with a gradient (in which are formed drainage channels and sockets for connection to 110 mm pipe with seal to BS EN 1401-1 : 2009), risers and a cover and frame.

1.2 Two sizes of base are available (see Figure 1):

- 320 mm diameter with four 110 mm sockets, for use up to a depth of 0.6 m
- 470 mm diameter with six 110 mm sockets, for use up to a depth of 1.2 m.

Bases are manufactured in black polypropylene.

Figure 1 Kalsi Aquaflow Inspection Chambers - plan view showing connection sockets



1.3 Risers are separately available to enable site adjustments of invert depth to be made. A seal is installed into one end of the riser and they are push-fitted into the base. Riser heights are 185 mm for the 320 mm diameter base and 235 mm for the 470 mm diameter base. Risers are manufactured in black polypropylene.

1.4 The non-sealed cover and frame are fixed with screws to the top of the risers.

1.5 Continuous quality control is exercised during manufacture, including dimensional checks, visual examinations, material properties and watertightness checks.

2 Delivery and site handling


Reasonable care must be taken in handling and storage to prevent damage or distortion to the products, and they must be transported in such a manner as to prevent damage prior to and during delivery.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Kalsi Aquaflow Inspection Chambers.

Design Considerations

3 General

 Kalsi Aquaflow Inspection Chambers are suitable for use in underground drains and public and private sewers designed in accordance with BS EN 752 : 2008, for the conveyance, by combined or separate systems, of surface water and domestic sewage as is permitted to be discharged into public sewers by the Water Industry Act 1991, Chapter 56, and surface water and sewerage as is permitted and defined by the Sewerage (Scotland) Act 1968, and the Water and Sewerage Services (Northern Ireland) Order 1973.

4 Mechanical properties



4.1 When installed and used in accordance with the recommendations given in this Certificate, the chambers, with proper cover and frame, will have adequate stiffness for the depth of burial.

4.2 The chamber has adequate strength to withstand the loads associated with normal site handling, installation and drain cleansing operations.

5 Performance of joints



Joints between the chamber and pipeline remain watertight under conditions where pipeline movement is in excess of that expected to occur under normal good drainage practice.

6 Watertightness



The chamber to riser shaft connection, and correctly made connections between the chamber and the pipe run, will resist water egress and not allow seepage of water.

7 Flow characteristics



The chamber has satisfactory flow characteristics to prevent blockage, provided the instructions given in section 11 are followed.

8 Rodding and testing

8.1 The drain can be rodded through the chamber using conventional cane rods, polypropylene rods or similar flexible systems incorporating a guide roller with or without a plunger disc. Rigid couplers between rods should not exceed 100 mm in length.

8.2 The chamber can be sealed for drain-testing purposes at the inlet and outlet connections using inflatable drain stoppers or screw-expanding plugs. This test can be carried out prior to inserting the riser shaft.

9 Resistance to elevated temperatures

The chambers have adequate resistance to the temperature ranges normally found in domestic sewage systems.

10 Durability



When used within the conditions given in this Certificate, the chamber will have a life equivalent to that of the system to which it is connected, ie in excess of 50 years.

Installation

11 General

11.1 Kalsi Aquaflow Inspection Chambers must be installed in accordance with the manufacturer's instructions, BS EN 752 : 2008 and BS EN 1610 : 2008 where applicable.

11.2 If the chambers are to be installed in ground where the water table may rise above the invert level of the chamber, a suitable anchorage must be provided.

11.3 Precautions must be taken to protect the chambers from damage by construction site traffic.

12 Procedure

12.1 The chambers must be installed in the vertical position and bedded on either a 100 mm layer of selected as-dug or granular material or a 100 mm layer of concrete, so that the invert is to line and level. If concrete is used the chamber should be bedded into position while the concrete is still wet, so that it takes the shape of the chamber base.

12.2 Connections to the chambers are made by removing the blanking off stopper from the socket to be jointed, lubricating the pipe end and pushing in the lubricated pipe end.

12.3 Before installing the risers into the base or the riser below, a ring seal should be placed in the recess at the bottom of the riser. Sufficient lubrication has to be applied before pushing the riser into place.

12.4 Backfilling is carried out using compacted, selected, as-dug or granular materials as specified in the manufacturer's instructions.

12.5 During backfilling, the cover and frame should be placed in position to prevent the ingress of foreign matter. Covers and frames are secured with screws.

13 Tests

Tests were carried out to determine:

- watertightness to BS EN 13598-1 : 2003
- joint tests on the pipe and chamber connection to BS EN 13598-1 : 2003
- resistance to negative pressure to BS EN 13598-1 : 2003
- dimensional accuracy to BS EN 13598-2 : 2009
- impact resistance to BS EN 13598-2 : 2009 at 20°C.

14 Investigations

14.1 An evaluation of the product was made to assess:

- structural integrity
- durability
- installation detail and practicability of installation
- ease of maintenance from ground level through the opening.

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

Bibliography

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

BS EN 1401-1 : 2009 *Plastics piping systems for non-pressure underground drainage and sewerage. Unplasticized poly(vinylchloride) (PVC-U) — Specifications for pipes, fittings and the system*

BS EN 1610 : 1998 *Construction and testing of drains and sewers*

BS EN 13598-1 : 2003 *Plastics piping systems for non-pressure underground drainage and sewerage— Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) — Specifications for ancillary fittings including shallow inspection chambers*

BS EN 13598-2 : 2009 *Plastics piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) — Specifications for manholes and inspection chambers in traffic areas and deep underground installations*

15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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.

15.2 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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.

15.4 In granting this Certificate, the BBA is not responsible for:

- 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
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

15.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.