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Agrément Certificate
02/H069
Product Sheet 2

JFC CORRIPIPE TWINWALL DRAINAGE SYSTEM

JFC CORRIPIPE TWINWALL 150 MM, 225 MM AND 300 MM FITTINGS

This Certificate is issued under the Highway Authorities' Product Approval Scheme (HAPAS) by the British Board of Agrément (BBA) in conjunction with the Highways Agency (HA) (acting on behalf of the overseeing organisations of the Department for Transport; the Scottish Executive; the Welsh Assembly Government; the Department for Regional Development, Northern Ireland), the County Surveyors' Society, the Local government Technical Advisors' Group and industry bodies. HAPAS Agrément Certificates are normally each subject to a review every five years.

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to the JFC CorriPipe Twinwall Drainage System 150 mm, 225 mm and 300 mm Fittings, for use in conjunction with 150 mm, 225 mm and 300 mm JFC CorriPipe Twinwall pipes, as covered by Product Sheet 1 of this Certificate, in highway drainage.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with HAPAS requirements
- factors relating to compliance with Regulations where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal five-yearly review.



KEY FACTORS ASSESSED

Strength — the fittings have adequate strength to resist loads associated with installation and service (see section 5).

Performance of joints — the system will remain watertight under normal service conditions (see section 6).

Durability — the system will have a service life in excess of 50 years (see section 9).

The BBA has awarded this Agrément Certificate to the company named above for the system described herein. This system 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: 18 July 2011



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.

HAPAS Requirements

Requirements

The general requirements for drains are contained in the Manual of Contract Documents for Highway Works (MCHW)⁽¹⁾, Volume 1 and Volume 2.

The general requirements for structured wall pipes and fittings are contained in the MCHW, Volume 1, Clause 518.

Further information and guidance is given in MCHW, Volume 3, Drawing Numbers F1 and F2.

Additional site requirements may be included on particular contracts.

(1) The MCHW is operated by the Overseeing Organisations : The Highways Agency (HA), Transport Scotland, the Welsh Assembly Government and The Department for Regional Development (Northern Ireland).

Regulations

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* (2.1) and 10 *General*.

General

This Certificate relates to JFC CorriPipe Twinwall Drainage System 150 mm, 225 mm and 300 mm Fittings.

The fittings comply with MCHW, Volume 1, Clause 518, and are for use in conjunction with 150 mm and 300 mm pipes covered by Product Sheet 1 of this Certificate in highway drainage for the collection and disposal of surface and sub-surface water.

Technical Specification

1 Description

1.1 JFC CorriPipe Twinwall fittings are moulded from medium density polyethylene (MDPE) in accordance with EAN TS 12-24 : issue 2, February 2008 *Technical Specification for Plastic Ducts for Buried Electrical Cables*⁽¹⁾. Details and dimensions of the fittings are given in Table 1 and Figure 1.

(1) Produced by the Engineering Directorate of the Energy Networks Association (ENA).

1.2 The ring seals described in Product Sheet 1 are available for each size of pipe for connection to the fittings.

1.3 Continuous quality control is exercised during manufacture. Checks include:

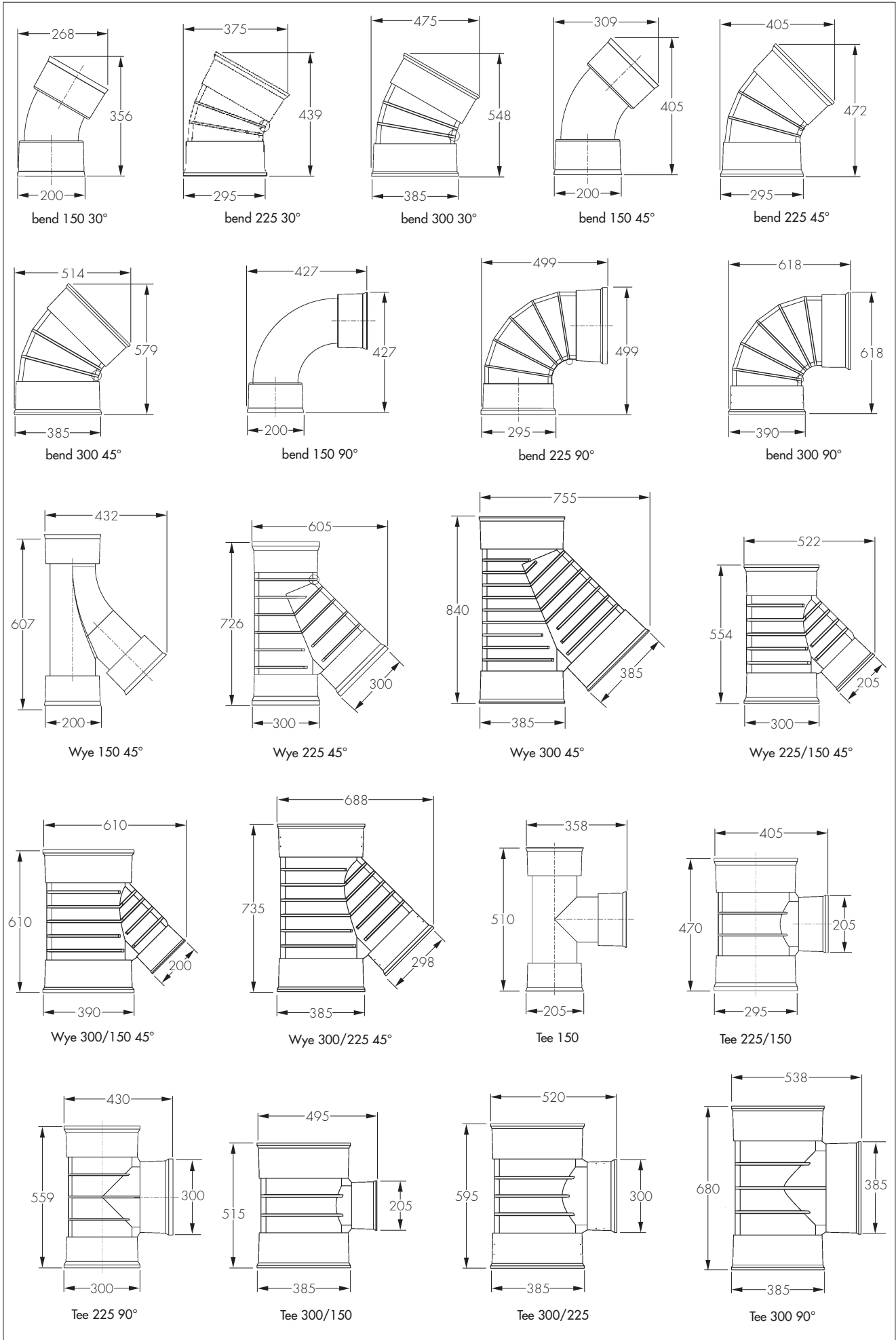
- dimensional accuracy
- airtightness
- visual appearance.

1.4 A label bearing the BBA identification mark incorporating the number of this Certificate is attached to each fitting.

Table 1 JFC CorriPipe Twinwall Fittings (all dimensions in mm)

Style	Size	Angle
Bend	150	30°
Bend	225	30°
Bend	300	30°
Bend	150	45°
Bend	225	45°
Bend	300	45°
Bend	150	90°
Bend	225	90°
Bend	300	90°
Wye	150	45°
Wye	225	45°
Wye	300	45°
Wye	225/150	45°
Wye	300/150	45°
Wye	300/225	45°
Tee	150	90°
Tee	225/150	—
Tee	225	90°
Tee	300/150	—
Tee	300/225	—
Tee	300	90°

Figure 1 Twinwall fittings (all dimensions in mm)



2 Delivery and site handling

2.1 Handling, storage and transportation should be in accordance with BS 5955-6 : 1980.

2.2 When long-term storage is envisaged, the fittings must be protected from direct sunlight. If protection cannot be provided, consideration must be given to the effects of daily exposure to direct sunlight:

- up to 3 months — negligible UV degradation but possible extreme surface temperatures of up to 80°C may cause some localised distortion
- 3 months to 12 months — may have significant effect on the impact resistance and physical properties
- over 12 months — damage will occur unless protection provided.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on JFC CorriPipe Twinwall Drainage System 150 mm, 225 mm and 300 mm Fittings.

Design Considerations

3 General

JFC CorriPipe Twinwall Drainage System 150 mm, 225 mm and 300 mm Fittings, when used with the pipes described in Product Sheet 1 and installed in accordance with the recommendations given in this Certificate, are suitable for use in highways for the collection and disposal of surface and sub-surface water.

4 Practicability of installation

The fittings are installed easily by experienced operatives using traditional drain-laying methods in accordance with HA requirements and MCHW, Volume 1, Clauses 503, 505, 518.7 and 518.8.

5 Strength

The fittings have adequate strength to resist loads associated with installation and with subsequent use in the situations described in this Certificate.

6 Performance of joints

The joints constructed from connectors with rubber seals remain watertight when subjected to deflection and distortion, and comply with the MCHW, Volume 1, Clauses 504.3 and 518.7 (see section 12).

7 Flow characteristics

When used with the pipes described in Product Sheet 1, the fittings will increase the hydraulic resistance of the system. Loss coefficients (K values) may be taken as:

30° bends	0.45
45° bends	0.7
90° bends	0.45
branch connections	1.0.

8 Maintenance

8.1 Access to the system for cleaning should be provided by conventional methods.

8.2 Drains incorporating the fittings can be rodded easily using flexible drain rods. In common with other standard plastic drainage systems, toothed root cutters and rods with metal ferrules, as used with some mechanical clearing systems, could damage the pipes and couplers and should not be used.

8.3 Drains incorporating the fittings have adequate resistance to water cleansing using pressure jetting equipment. It is recommended that low pressure, high volume systems are utilised in accordance with MCHW, Volume 1, Clause 520.

9 Durability

The fittings can be expected to have a life equivalent to that of other plastics fittings listed in Table 5/1 of the MCHW, Volume 1.

Installation

10 General

Drains utilising the JFC CorriPipe Twinwall Fittings must be installed in accordance with HA requirements and MCHW, Volume 1, Clauses 503, 505, 518.7 and 518.8.

11 Procedures

11.1 Typical laying, trench and backfilling specification details are given in Product Sheet 1, sections 11 and 12.

11.2 To make a joint, the pipe end and fitting socket should be cleaned and a rubber seal fitted externally between the first and second corrugation in the pipe. The seal and inside of the socket should be lubricated and the pipe pushed fully home to the register, either by hand, or using a lever if necessary.

11.3 Pipes and fittings must be protected from site construction traffic.

Technical Investigations

12 Tests

Tests were carried out to determine:

- dimensional accuracy
- rodding resistance to MCHW, Volume 1, Clause 518.12
- fitting ring stiffness to ISO 13967 : 1998
- drop test to EN 12061 : 1999
- strength of flexibility of fabricated fittings to EN 12256 : 1998
- watertightness of fabricated fittings to EN 1053 : 1995
- joint test to BS EN 1277 : 2003, Method 4, Conditions A, B and C
- water jetting WRc method.

13 Investigations

13.1 An examination was made of data in relation to the effect of the production tolerances on the performance of the products.

13.2 An evaluation of existing data was made to assess material properties, chemical resistance and durability.

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

Bibliography

BS 5955-6 : 1980 *Plastics pipework (thermoplastics materials) — Code of practice for the installation of unplasticized PVC pipework for gravity drains and sewers*

BS EN 1277 : 2003 *Plastics piping systems — Thermoplastics piping systems for buried non-pressure applications — Test methods for leaktightness of elastomeric sealing ring type joints*

ISO 13967 : 1998 *Thermoplastic fittings — Determination of ring stiffness*

BS EN 12061 : 1999 *Plastics piping systems — Thermoplastics fittings — Test method for impact resistance*

BS EN 12256 : 1998 *Plastics piping systems — Thermoplastics fittings — Test method for mechanical strength or flexibility of fabricated fittings*

EN 1053 : 1995 *Plastics piping systems — Thermoplastics piping systems for non-pressure applications — Test method for watertightness*

Manual of Contract Documents for Highway Works, Volume 1 *Specification for Highway Works*, August 1998 (as amended)

Manual of Contract Documents for Highway Works, Volume 2 *Notes for Guidance on the Specification for Highway Works*, August 1998 (as amended)

Manual of Contract Documents for Highway Works, Volume 3 *Highway Construction Details*, March 1998 (as amended)

14 Conditions

14.1 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.

14.2 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.

14.3 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
- remain in accordance with the requirements of Highway Authorities' Product Approval Scheme.

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

14.5 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
- individual 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.

14.6 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.