PT/300/0510 – AS (May 2010)
Assessment Schedule for Saint-Gobain PAM Blutop ductile iron pipe system

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1. Scope

To assess the fitness for purpose of the Blutop ductile iron pipe system manufactured by Saint-Gobain PAM UK. Blutop is a lightweight, thin walled ductile iron pipe system for use in potable water distribution systems. It is outside the scope of BS EN 545: 2006.

The Blutop pipe system comprises thin wall ductile iron pipes, fittings, joints and accessories that enable it to be connected to polyethylene and PVC-U water mains or other BLUTOP pipes. **Connection to PE and PVC-U water mains are excluded from this assessment.** The pipes are available in three nominal sizes (DN/OD); 90, 110 and 125 and standardised pressure class 25 (continuous operating pressure (PFA) of 25 bar), with maximum allowable operating pressure (PMA) of 30 bar (including surge).

The pipes are supplied in nominal 6m lengths and are manufactured by centrifugal casting. The joints and fittings include push-fit, anchored and non-anchored.

External corrosion protection is provided by blue PAM Natural, an alloy of zinc and aluminium plus an epoxy top-coat. This coating is WRc Approved™ for use on ductile iron pipe (certificate number PT/261/0107).

Internal corrosion protection is provided by a coating of blue thermoplastic ethylene vinyl acetate (EVA) co-polymer.

The fittings are coated with a fusion bonded epoxy material that complies with the requirements of EN 14901.

The scope of the assessment covers all the components used in the Blutop pipe system.

2. Assessment schedule

This schedule covers the following assessment areas:

2.1 Technical review of the properties of the components that make up the Blutop pipe system.

2.2 An audit of production facilities, including review of type and quality control testing and test results.

2.3 Review of test data and witnessing testing where necessary.

2.4 Audit of written procedures for the installation of the System.

3. Review of properties

3.1 This Assessment Schedule has taken into account the requirements of the following national and international specifications:

BS EN 545 Ductile iron pipes, fittings, accessories and their joints for water pipelines;

BS EN 12842 Ductile iron fittings for PVC-U or PE piping systems.

3.2 Marking on pipe:

Manufacturer's name
Year of manufacture
Ductile iron
DN

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Pressure class

Material properties:
Pipe manufactured from ductile iron type 420 – 10; fittings manufactured from ductile iron type 420-5.

Property	Value	Method
Minimum tensile strength	420 MPa	Clause 6.3 BS EN 545
Minimum elongation after fracture	10% (420-10 grade) 5% (420-5 grade)	Clause 6.3 BS EN 545

Pipe properties:
Principle dimensions

Nominal Size OD	90	110	125
Tolerance on OD mm	+0.6 -1.0	+0.7 -1.0	+0.8 -1.0
ID average mm	83	103	118
Nominal iron thickness	3.0	3.0	3.0
Minimum iron thickness	2.2	2.2	2.2
Nominal mass per metre (kg/m)	6.1	7.5	8.6

Pressure class: Continuous operating pressure (PFA) of 25 bar. Pipes with restrained flexible joints limited to PFA 16 bar.

Corrosion protection:
Interior coating.
DUCTAN Thermoplastic EVA to Saint-Gobain specification – average thickness 300µm, minimum thickness 250µm. WRAS approved No 0608502.

Property	Requirement	Method
Adhesion	Average 8 MPa, mimimum 6 MPA	BS EN ISO 4624: 2003
Freedom from holidays	No porosity at 1500v applied voltage	-
Resistance to reverse impact	No porosity at 1500v applied voltage after 10J impact	BS EN ISO 6272-1-2004
Resistance to thermal ageing in water	Width of blistering and rust spread < 5mm after 480 hrs @ 50°C	BS EN ISO 2812-2-1995

External coating.
PAM ZINALIUM to assessment schedule PT/261/0107, WRc Approved™ for use on ductile iron pipe, certificate number PT/261/0107 (under the superceded name of PAM Natural).

Joint properties:
Gaskets comply with the requirements of BS EN 681-1 type WA, Class 60, nominal hardness 63 ± 3 Shore A. WRAS Approved No. 0601524.

Flexible joints comply with the requirements of clause 5.2 of BS 545: 2006.

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Restrained flexible joints comply with the requirements of clause 5.3 of BS EN 545: 2006.

Flanged joints comply with the requirements of clause 5.4 of BS 545: 2006.

Fittings properties:

Corrosion protection – fusion bonded epoxy coating (internal and external) to BS EN 14901: 2006. WRAS Approval No. 0612503.

4. Water quality

Blutop pipes are approved under Regulation 31.4a of the UK Water Supply (Water Quality) Regulations for use in public water supply.

5 Review of procedures

In addition to the performance of pipes, the following items are checked.

Quality control, as it applies to:

- incoming materials; and,
- control of production.

Installation procedures and available guidance to users.

6. Reference documents

1. BS EN 545:2006 Ductile iron pipes, fittings, accessories and their joints for water pipelines. Requirements and test methods
2. BS EN 681-1: British Standard Elastomeric seals. Material requirements for pipe joint seals used in water and drainage applications. Vulcanized rubber.
3. BS EN 805:2000 Water supply. Requirements for systems and components outside buildings
4. BS EN 14901:2006 Ductile iron pipes, fittings and accessories. Epoxy coating (heavy duty) of ductile iron fittings and accessories. Requirements and test methods
5. BS EN ISO 4624:2003, BS 3900-E10:2003 Paints and varnishes. Pull-off test for adhesion
6. BS EN ISO 6272-1:2004, BS 3900-E13:2004 Paints and varnishes. Rapid-deformation (impact resistance) tests. Falling-weight test, large-area indenter
7. BS EN ISO 2812-2:1995, BS 3900-G8:1993 Paints and varnishes. Determination of resistance to liquids. Water immersion method
8. St Gobain PAM. Système de canalisation BLUTOP – Dossier technique. Version 10.

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