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Agrément Certificate
No 05/H104**PRODUCT SHEET 1 – ULTRACRETE IRONWORK REINSTATEMENT SYSTEM**

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 Advisers' 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 Ultracrete Ironwork Reinstatement System used for the reinstatement of ironwork where rapid trafficking is required.

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**

Performance — Ultracrete Envirobed HA104, Ultracrete PY4 and M60 bedding mortars can achieve the 20 Nmm⁻² in two hours required in HD 27/04, Clause 3.1.1. Ultracrete PY4 product can achieve 30 Nmm⁻² in one hour and therefore meets the compressive strength requirements for a rapid-setting bedding material in accordance with HA 104/02, Clause 6.1 (c). Ultracrete Envirobed HA104 meets the requirements of a rapid-setting bedding material in accordance with HA 104/02, Clause 6.1 (a)-(d) (see section 4).

Durability — Ultracrete Instant Road Repair is equivalent in durability to 40/60 pen hot-laid bitumen macadam. Provided the surrounding pavement remains structurally sound, the system will have an anticipated service life of up to five years (see section 5).

The BBA has awarded this Agrément Certificate for Ultracrete Ironwork Reinstatement System to Instarmac Group plc as fit for its intended use provided it is installed used and maintained as set out in this Agrément Certificate.

On behalf of the British Board of Agrément

Date of First issue: 24 March 2005

Date of Second issue: 7 December 2007

Amended holder's address 21 May 2008

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 of this Agrément Certificate by either referring to the BBA's website (www.bbacerts.co.uk) or contacting the BBA direct.

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HAPAS Requirements

Requirements

The Highways Technical Advisory Committee (HiTAC) of HAPAS has agreed relevant assessment criteria for the system with the BBA. In the opinion of the BBA, the system, when manufactured and laid in accordance with the provisions of this Certificate, will meet the relevant requirements.

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 section: 2 Delivery and site handling (2.1 to 2.3)

General

This Certificate relates to the Ultracrete Ironwork Reinstatement System, used for the reinstatement of ironwork where rapid trafficking is required.

The system is for use with a cover and frame up to and including Class D400 of BS EN 124 : 1994 in footways, footpaths, cycle-tracks and type 2, 3 and 4 carriageways.

The system's compressive strength and rapid-setting characteristics are adversely affected by low temperatures and it should not be installed at temperatures below 5°C.

The installation of the system must be carried out by experienced specialist contractors in accordance with the procedures described in this Certificate and the manufacturer's literature.

Technical Specification

1 Description

1.1 The system comprises the following components:

- Ultracrete Envirobond HA104 — a two component, non-shrink, fast setting, cementitious mortar, used to bed and level ironwork in highly trafficked locations, such as junctions and turning areas
- Ultracrete PY4 SG and WG (summer and winter grades) — two component, fast-setting, polyester resin-based mortars used to bed and level ironwork in highly trafficked locations such as junctions and turning areas
- Ultracrete M60 Rapid-Set Bedding Mortar — a fast-setting, cementitious mortar, used to bed and level ironwork
- Ultracrete QC10 Rapid Strength Concrete — a two part, fast-setting cementitious concrete, used for backfilling around ironwork installations
- Ultracrete Instant Road Repair (IRR) — graded Permanent Cold-lay Surfacing Materials (PCSMs) available in 6 mm and 10 mm surface course grades
- Ultracrete SCJ Cold Joint Sealer — a spray-applied, cold joint sealant, applied to the vertical edges at joint interfaces.

1.2 Quality control checks are carried out on the raw materials, during manufacture and on the finished products.

2 Delivery and site handling

2.1 The components are delivered to site in the packaging and weights given in Table 1. The tubs and bags bear the manufacturer's name, address, mixing instructions and a hazard label in accordance with *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002* (CHIP3) (see Table 2).

Component	Weight	Packaging type	Shelf-life ⁽¹⁾ (months)
Ultracrete Envirobond HA 104 powder	20 kg	Bag	6
liquid	2.5 litre	Bottle	6
Ultracrete PY4 SG and WG	25 kg	Tub	6
Ultracrete M60	25 kg	Bag or tub	6
Ultracrete QC10	25 kg	Bag or tub	6
Ultracrete Instant Road Repair	25 kg	Bag	1
	25 kg	Tub	6
Ultracrete SCJ Cold Joint Sealer	750 ml	Aerosol can	12

(1) When stored in frost-free and dry conditions in accordance with the Certificate holder's instructions.

Table 2 Hazard classification

Component	Hazard classification
Ultracrete Envirobred HA104 powder	Irritant
Ultracrete PY4 SG and WG	Harmful, Flammable
Ultracrete M60	Irritant
Ultracrete QC10	Irritant
Ultracrete Instant Road Repair	Irritant
Ultracrete SCJ Cold Joint Sealer	Harmful, Extremely flammable

2.2 When handling Ultracrete Envirobred HA104, Ultracrete M60 and QC10 on site, the normal health and safety procedures associated with cementitious materials should be observed.

2.3 Health and Safety Data Sheets and the Control of Substances Hazardous to Health Regulations 2002 (COSHH) risk assessments for the works should be available to the purchaser and be maintained on site.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Ultracrete Ironwork Reinstatement System.

Design Considerations

3 Use

The Ultracrete Ironwork Reinstatement System is used for the reinstatement of ironwork, up to and including Class D400 of BS EN 124 : 1994, in footways, footpaths, cycle-tracks and types 2, 3 and 4 carriageways, where rapid trafficking is required.

4 Performance

4.1 When installed in accordance with this Certificate, Ultracrete Envirobred HA104, Ultracrete PY4 and M60 bedding mortars can achieve the 20 Nmm⁻² in two hours as required for rapid construction in HD 27/04, Clause 3.11.

4.2 In addition, Ultracrete PY4 can achieve 30 Nmm⁻² in one hour and therefore meets the compressive strength requirements for a rapid-setting bedding mortar in accordance with HA 104/02, Clause 6.1(c).

4.3 Ultracrete Envirobred meets the requirements of a rapid-setting bedding material in accordance with HA 104/02, Clause 6.1 (a)-(d).

5 Durability

5.1 Ultracrete Instant Road Repair is equivalent in durability to 40/60 pen⁽¹⁾ hot-laid bitumen macadam.

(1) To BS EN 12591 : 2000.

5.2 Provided the surrounding pavement remains structurally sound, the system will have an anticipated service life of up to five years.

Installation

6 General

6.1 Precast concrete inspection chambers should comply with the requirements of BS 5911-4 : 2002 and BS EN 752-3 : 1997.

6.2 The various components of the system should be installed within the thickness limits given in Table 3.

Table 3 Minimum and maximum material thickness

Component	Thickness (mm)	
	Minimum	Maximum
Ultracrete Envirobred HA104	10	50
Ultracrete PY4 SG and WG	5	50
Ultracrete M60	10	75
Ultracrete QC10	20	250

6.3 Ultracrete Instant Road Repair is applied at a nominal 40 mm thickness in accordance with the Certificate holder's installation instructions, Appendix A8, *Compaction Requirements of the Specification for the Reinstatement of Openings in Highways* and sections 8.13 and 8.14 of this Certificate.

6.4 Should other materials be used in conjunction with the system (for example to repair/rebuild the supporting structure) such materials should have a strength commensurate with the reinstatement system.

6.5 The frame and cover should be aligned so as to ensure safe access to the reinstatement.

7 Preparation

7.1 A perimeter area, indicating the minimum width needed for excavation, is marked out around the existing frame of a failed installation (see Figure 1). This area should be extended to include any defects.

7.2 The supporting structure must be of adequate size and strength to support the frame, cover and expected loading.

7.3 The marked area is saw cut and excavated to uncover the flange of the existing cover and frame (see Figure 2). The existing cover and frame are removed using a suitable mechanical lifting device, taking care to avoid dropping loose materials in to the shaft.

Figure 1 Failed ironwork

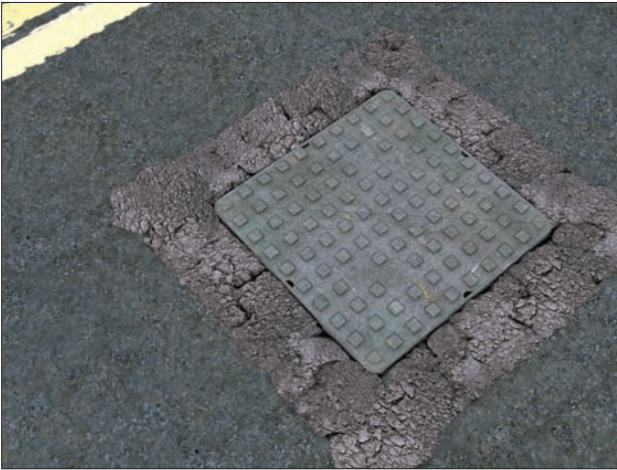


Figure 2 Excavating failed ironwork



7.4 All old bedding mortar should be removed and the supporting structure cut back or loose bricks removed until a sound base is achieved.

7.5 The newly exposed substrate should be clean and structurally sound prior to commencing the reinstatement work.

7.6 The depth needed to install the frame and cover level to the road surface should be determined, taking into account the depth of the frame and the manufacturer's recommended maximum and minimum thicknesses (see Table 3).

7.7 The finishing course of the supporting structure should be adjusted accordingly. For brick structures, levelling should be achieved prior to the installation of the final course.

7.8 Concrete structures should be repaired using conventional concrete repair techniques and materials. The Certificate holder can advise on suitable materials.

7.9 All old bedding material, loose paint, rust and any other debris should be removed from the frame prior to installation.

8 Installation

8.1 The products are mixed and laid strictly in accordance with this Certificate and the manufacturer's recommendations.

8.2 When using Ultracrete Envirobed HA104 and Ultracrete M60, the substrate should be wetted down prior to application of the mortar (see Figure 3).

8.3 If packing materials are used as to support and level the frame, they should be compatible with the bedding mortar to be used. The Certificate holder can advise on suitable materials.

8.4 The appropriate bedding mortar should be mechanically mixed as follows:

- Ultracrete Envirobed HA104 — 20 kg of powder is mixed with approximately one 2.5 litre bottle of Envirobed HA104 liquid to obtain a stiff, non-slump mix with a uniform consistency. The amount of liquid required may be adjusted depending on the required consistency
- Ultracrete PY4 SG or WG — the filler should be slowly added to the resin in the ratio of one complete tin of resin to one pack of filler/activator and mixed until a homogeneous mix is obtained. Part tins or packs should not be mixed
- Ultracrete M60 — 25 kg of powder is mixed with approximately 3 litres of potable water to obtain a stiff, non-slump mix with a uniform consistency.

8.5 The bedding materials should be immediately placed on the supporting structure, allowing a 5 mm excess thickness and used within ten minutes of mixing.

8.6 The frame is lowered into position using a suitable lifting device and placed on the bedding mortar ensuring that it is fully supported and checking that the frame does not overhang the mortar at any point. Care should be taken to avoid voids in the bedding material under the frame, particularly in the vicinity of the cover seating.

8.7 The frame is tamped down into place, ensuring the correct level is obtained (see Figure 4). This can be checked by placing a straight edge over the frame and surrounding carriageway.

8.8 Any holes within the frame should be infilled and the flanges of the frame enveloped by a minimum thickness of 10 mm of the bedding material.

8.9 Exposed surfaces of the bedding material around the frame must be float finished, ensuring any voids or loose material is removed and the inside surface pointed to a smooth finish.

8.10 Once the bedding mortar has achieved sufficient strength the backfill material is placed. Ultracrete QC10 is mechanically mixed by adding the bag of cement to the sand/aggregate, and mixing with water⁽¹⁾ until the desired workability is obtained. The product may also be mixed by hand, if required, but care must be taken to ensure that a uniform consistency is achieved.

(1) The volume of water required will vary depending on the moisture content of the aggregate. Typically, one to two litres of water will achieve the required workability.

8.11 The area to be infilled should be wetted and the material placed within 10 minutes of mixing, to 40 mm below the required surface fill level, and compacted ensuring no voids are present (see Figure 5). The final surface is then rough floated to achieve a textured level surface ready to receive the Ultracrete Instant Road Repair.

8.12 Once the Ultracrete QC10 has reached sufficient strength, all vertical edges of the excavated area and the manhole frame are sprayed with Ultracrete SCJ Cold Joint Sealer ensuring all the surfaces are covered (see Figure 6).

Figure 3 Apply the bedding mortar to the prepared substrate



Figure 4 Tamping and levelling of the frame

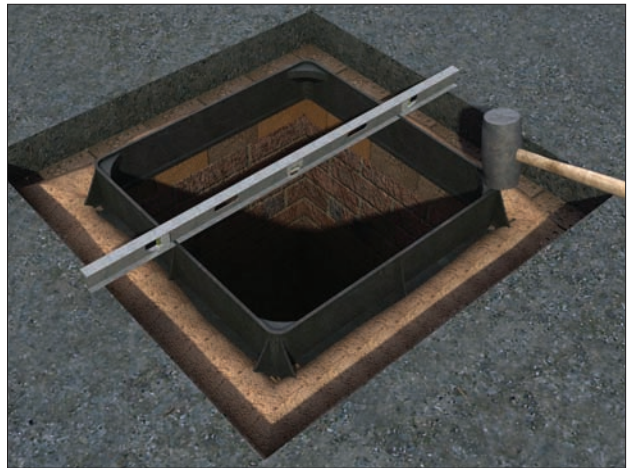


Figure 5 Backfilling using Ultracrete QC10



Figure 6 Application of Ultracrete SCJ Cold Joint Sealer



8.13 Ultracrete Instant Road Repair is applied to a depth of approximately 45 mm and compacted to 30 mm (see Figure 7).

8.14 Vertical edges are sprayed again using the Ultracrete SCJ Cold Joint Sealer and Ultracrete Instant Road Repair is applied with a surcharge. The material is then compacted level with the existing surface course (see Figure 8).

8.15 An Ultracrete Envirobred HA104 or Ultracrete M60 installation should not be trafficked for a minimum of two hours following completion of the installation. This may be reduced to one hour for an Ultracrete PY4 installation.

Figure 7 Installation of Ultracrete Instant Road Repair



Figure 8 Final compaction of Ultracrete Instant Road Repair



9 Tests

9.1 Tests were carried out on the following components to determine:

Ultracrete Instant Road Repair

- skid/slip resistance

Ultracrete Envirobred HA104

- compression strength
- tensile strength
- workability
- shrinkage

Ultracrete PY4 SG and WG

- shrinkage
- accelerated ageing
- pot life

Ultracrete M60

- freeze/thaw resistance
- compressive strength
- shrinkage
- pot life

Ultracrete QC10

- freeze/thaw resistance
- shrinkage
- pot life

Ultracrete SCJ Cold Joint Sealer

- adhesion and corrosion protection.

9.2 A reassessment was made of the data relating to Agrément Certificate No 01/H060 Ultracrete Instant Road Repair.

10 Investigations

10.1 An examination was made of independent test data relating to:

Ultracrete Instant Road Repair

- rut resistance
- PSV and AAV values

Ultracrete PY4 SG and WG

- flexural strength
- compressive strength

Ultracrete M60

- freeze/thaw resistance
- compressive strength
- chloride content

Ultracrete QC10

- compressive strength
- chloride content

Ultracrete Ironwork Reinstatement System

- full-scale load test
- watertightness.

10.2 A postal user survey was conducted to investigate the performance of the product in service.

10.3 A visit was made to a site to witness installation of the system.

10.4 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.

Additional Information

The management systems of Instarmac Group plc have been assessed and registered as meeting the requirements of ISO 9001 : 2000 by National Quality Assurance Ltd (Certificate No 6987/1).

Bibliography

BS 5911-4 : 2002 *Precast concrete pipes, fittings and ancillary products — Specification for unreinforced and reinforced concrete inspection chambers (complementary to BS EN 1917 : 2002)*

BS EN 124 : 1994 *Gully tops and manhole tops for vehicular and pedestrian areas. Design requirements, type testing, marking, quality control*

BS EN 1917 : 2002 *Concrete manholes and inspection chambers, unreinforced, steel fibre and reinforced*

BS EN 752-3 : 1997 *Drain and sewer outside buildings — Planning*

BS EN 12591 : 2000 *Bitumen and bituminous binders — Specification for paving grade bitumens*

ISO 9001 : 2000 *Quality management systems — Requirements*

HA 104/02 *Design Manual for Roads and Bridges : Volume 4, Geotechnics and Drainage : Section 2, Drainage : Part 5, Chamber Tops and Gully Tops for Road Drainage and Services — Installation and Maintenance*

HD 27/04 *Design Manual for Roads and Bridges : Volume 7, Pavement Design and Maintenance : Section 2, Pavement Design and Construction : Part 4, Pavement Construction Methods*

Specification for the reinstatement of openings in highways : DfT June 2002

11 Conditions

11.1 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.

11.2 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

11.3 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
- remain in accordance with the requirements of Highways Authorities' Product Approval Scheme.

11.4 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.

11.5 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.