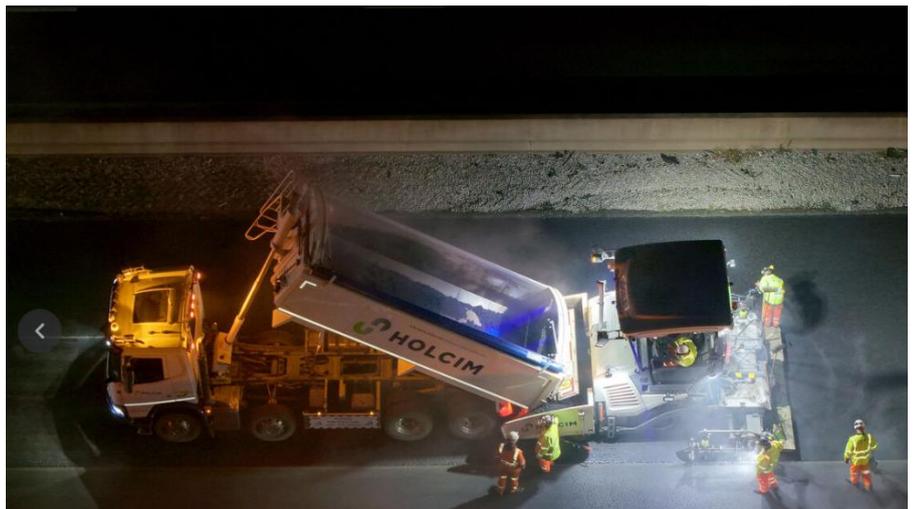


**XAIS-PTS Product Assessment Certificate**  
 Product Assessment Scheme to confirm compliance with Manual for Contract Documents for Highway Works, Specification for Highway Works and BS 9228 requirements

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 Britannia House Unit 1 Rough Hey Road  
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 UK Approved Body (UKAB)  
 Product Area 23 Road Construction Product

Product Name: Foamix® Cold Recycled Bound Material (CRBM)  
 Product Family: QVE Ex-situ cold recycled bound Material  
 Certificate Reference: 948.202-6.9228



XAIS-PTS Ltd has awarded this **Product Assessment Certificate** to the Company named above for the product described herein. This product have been assessed by XAIS-PTS Ltd in line with the XAIS-PTS PAS certification scheme as being fit for their intended use provided, they are manufactured, installed, and used as set out in this Certificate. The issue of this Certificate as overseen by the Ex-Situ Recycling Specialist Group, has been authorised by the XAIS-PTS Technical Supervisory Panel and granted by XAIS-PTS Limited.

This XAIS-PTS Certificate is issued by XAIS-PTS following the requirements of ISO/IEC 17065. Whilst XAIS-PTS are UKAS accredited (Certification Body No 6478). This certificate is outside of the scope of accreditation. Readers must check the validity and latest issue number of this XAIS-PTS Certificate by referring to the XAIS-PTS website or contacting XAIS-PTS directly. The Certificate should be read in full as it may be misleading to read clauses in isolation. Photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

On behalf of XAIS-PTS Ltd  
 Signature:

Date First Issued: 10.03.26



David Buckley Managing Director

Certificate Valid until: 09.03.29

This Product Assessment Certificate is issued by XAIS-PTS Ltd under XAIS-PTS Specialist Group (XAIS-PTSSG), in accordance with the requirements of MCHW, SHW and BS 9228, supported by XAIS-PTS Technical Supervisory Panel (XAIS-PTSTSP) which includes representation from National Highways (NH), Association of Directors of Environment, Economy Planning and Transport (ADEPT), Road Surface Treatments Association (RSTA), Mineral Products Association (MPA), HAUC (UK) SROH Working Group, HAUC (UK) SROH Innovations Working Group and Transport Scotland.

XAIS-PTSPAS Product Assessment Certificates are each subject to review every three years, with annual interim surveillance.

## 1. PRODUCT APPLICATIONS

Foamix® Cold Recycled Bound Material (CRBM) can be used for both Base and Binder course layers of the pavement. It can be laid at thicknesses between 50mm and 150mm compacted layers for grading zone/stiffness class combinations A and B for stiffness Classes B3 and B4.

## 2. REQUIREMENTS

- 2.1 Product to be manufactured only by the Certificate Holder in line with its internal procedures and processes covered under Quality Management System (QMS) meeting the requirements of BS EN ISO 9001:2015 covered under certificate No FM 96927.
- 2.2 Product to be manufactured using only the raw materials and the mix design formulations authorised by the Certificate Holder.
- 2.3 Product to be installed only by competent installers experienced with this type of product.

## 3. KEY FACTORS ASSESSED

- Current BSI QMS accreditation to BS EN ISO 9001: 2015 Certificate Number FM 96927 and recent audit
- Quality Plan Q03 CON G01 - Foamix® Cold Recycled Bound Material (CRBM)
- Installation Method Statement (IMS) for manufacture and product installation
- Installation Methodology
- Review of supporting documents
- Design and Development of Products and Services compliance with BS EN ISO 9001: 2015
- MCHW SHW Volume 1 Clause 948
- MCHW CC 202 Section 6
- BS 9228

## 4. TECHNICAL SPECIFICATION

Foamix® Cold Recycled Bound Material (CRBM) with grading zone/stiffness class combinations A and B for Stiffness Classes B3 and B4. Design and installation and monitoring shall be in accordance with the relevant design and installation requirements as stated in MCHW SHW Clause 948, MCHW CC 202 Section 6 and BS9228.

## 5. TECHNICAL DATA

The Foamix® Cold Recycled Bound Material (CRBM), its production, components, installation and testing were assessed in accordance with the requirements given in the relevant standards BS9228 / CC202 Section 6 / SHW 948. Common requirements exist between a number of standards and these common requirements have been identified below.

<b>Grading of Aggregate (BS EN 933-1)</b>				
Gradings carried out in accordance with BS9228: Table 1 / CC202 Section 6: Table 6.24 / SHW 948: Table 9/25				
Sieve (mm)	Zone A Specification	Case Study 1 (Zone A) Scheme Average Grading	Zone B Specification	Case Study 2 (Zone B) Scheme Average Grading
40	100	100	100	100
31.5	100	100	100	100
20	100	100	100	100
14	85–100	88	85–100	92
10	68–100	76	68–100	79
4	38–74	50	38–94	45
2	26–58	38	26–84	38
0.5	13–38	23	13–64	16
0.25	9–28	16	9–51	11
0.063	5–21	10	5–38	7

<b>Bitumen</b>	
<b>SHW Clause 948.7/ BS 9228 Section 4.1/ CC202 Section 6</b>	
Bitumen emulsion shall conform to BS EN 13808	
SHW 948.7: “.....and be used in accordance with BS 434-2.”	
<b>CC202 Section 6 Table 6.8 Performance characteristics for bitumen emulsion for ex situ CRBM</b>	
Characteristic	Requirement
Minimum nominal binder content	38% (Class 3)
Maximum penetration grade	160/220 (Class 5)

<b>Added Cement and Bitumen Content by Mass for ex situ CRBM</b>				
Requirements in accordance with BS9228: Section 9.2.1 / CC202: Table 6.25 / SHW 948: Table 9/26				
	Material type	BS9228 Cement	CC202/ SHW 948 Cement	Added residual bitumen
<b>Specification</b>	QVE	2.5% Maximum	1% Minimum	3% Minimum
<b>Case Study 1</b>	QVE		1%	3%
<b>Case Study 2</b>	QVE		1%	3%

<b>Other hydraulic material (PFA /IBBA) PFA Compliance in accordance with BS EN 14227-4</b>				
Requirements in accordance with BS9228: Section 9.2.1 / SHW 948: Table 9/26				
	Material type	BS9228PFA PFA	SHW 948 PFA	CC 202
<b>Specification</b>	QVE	NR may be added as filler	May be added as filler	NR
<b>Case Study 1</b>	QVE	In accordance with mix design		
<b>Case Study 2</b>	QVE	In accordance with mix design		

<b>Mix design performance test criteria for stiffness modulus of bitumen bound materials (BS EN 12697-26)</b> BS9228: Table 3 / CC202 Section 6 Table 6.29 / SHW 948: TABLE 9/27				
Property or Characteristic	Class B3 Specification	Case Study 2 Mean from test set	Class B4 Specification	Case Study 1 Mean from test set
Indirect tensile stiffness modulus ( <i>ITSM<sub>d</sub></i> )	3 100 MPa	5892 MPa	4700 MPa	7900 MPa
Mean retained indirect tensile stiffness modulus ( <i>ITSM<sub>R</sub></i> ) BS9228 and CC202 Section 6 only	75%	88%	75%	91%

<b>Mix design properties and test criteria for recycling using bituminous binder (BS EN 12697-8)</b> BS9228: Table 4				
Property or characteristic	Individual specimens Specification	Mean from test set Specification	Case Study 1	Case Study 2
Air voids content	9% maximum	7% maximum	5.8% (Data from cores)	4.5% (Data from cores)

<b>Test property criteria (short term)</b> BS9228: Table 8a / SHW 948: Table 9/30					
Material property or characteristic	Standard	Individual results Specification	Rolling mean of 2 sets of 3 specimens Specification	Case Study 1	Case Study 2
Particle size distribution of the aggregate	BS EN 933-1	Zone		Zone A	Zone B
Water content	BS 1924-1	Design target $\pm 2\%$		Target 6%	Target 6%
Relative in-situ wet density	BS 1924-2	93% minimum	95% minimum	98%	97%
Layer thickness		$\pm 25$ mm of specified	$\pm 15$ mm of specified	Target 220mm	Target 220mm

<b>LWD Data – Case Study 2</b> BS9228: Section 13.2				
Property or characteristic	Minimum value measured within 2 hours of completion	Measured surface modulus at 2 hours (scheme average)	Minimum value measured within 24 hours of completion	Measured surface modulus at 24 hours (scheme average)
Surface Modulus	50MPa	102MPa	100MPa	122MPa

<b>Test property criteria (long term) (BS EN BS EN 12697-26)</b> BS9228: Table 8b / CC202 Section 6: Table 6.29				
Retained ITSM Specification	Individual sets of 3 specimens*	Rolling mean of 2 sets of 3 specimens**	ITSM	ITSM <sub>R</sub>
Case Study 1	B4: 80% of 4700	B4: 95% of 4700	7900	88%
Case Study 2	B3: 80% of 3100	B3: 95% of 3100	5892	91%

\*Not less than 80% of the relevant value from Table 3  
\*\* Relevant value from Table 3 less 5%

## 6. ADDITIONAL PERFORMANCE TESTING

Material property or characteristic	Standard	Results	Case Study 2
Deformation (WTSair)	BS EN 12697-22	Scheme Average	0.04 mm/10 <sup>3</sup>
Deformation. Rut Depth	BS EN 12697-22	Scheme Average	0.70mm
Deformation. PRDair	BS EN 12697-22	Scheme Average	1.6%
Fatigue 4PB (ε6) (Four-Point Bending)	EN 12697-24	Scheme Average	122 μm/m
ITS (Indirect tensile strength)	BS EN 12697-23	Scheme Average	686 kPa

## 7. TEST RESULTS

Available on request of the Overseeing Organisation from the Certificate Holder, comprising the verification and ongoing validation processes.

## 8. DESIGN PROCESS BS EN ISO 9001: 2015 SECTION 8.3

HOLCIM's product development internal processes were documented from the initial Research & Development study, subsequent QC testing through to the transition to live product status and production which formed part of the assessment process. Sites where the products were applied were inspected by XAIS-PTS Ltd to assess the visual condition of Foamix® and the details are presented in XAIS-PTS Technical Report.

## 9. MANUFACTURE

- 9.1 Manufacture of Foamix® Cold Recycled Bound Material (CRBM) is carried out at a fixed or mobile mixing plant using graded aggregates processed from arisings from the excavation of roads, processed concrete and/or inert demolition wastes with a cold bitumen binder
- 9.2 Material is produced in accordance with HOLCIM procedures and processes Quality Plan Q03 CON G01 - Foamix® Cold Recycled Bound Material (CRBM)
- 9.3 Installation Method Statement (IMS) for manufacture and product installation
- 9.4 The Quality Management System (QMS) of the manufacturer has been assessed and certified as meeting the requirements of BS EN ISO 9001: 2015 by BSI (Certificate FM 96927).

## 10. STORAGE AND DELIVERY

### Storing the Material

Foamix® has a life of up to 6 hours and is not to be stored. This material is designated as Heavy Duty.

### Delivery / Transportation

Foamix® is delivered to site in approved vehicles equipped with rollover sheets.

## 11. INSTALLATION

An audit of the IMS was carried out to assess the installation method as part of the initial assessment process. This will be reviewed at ongoing surveillance and reassessment visits.

## 12. INSTALLATION PERSONNEL

Foamix® Cold Recycled Bound Material (CRBM) shall only be installed by a competent installer experienced with this type of product, in accordance with the Certificate Holder's instructions.

## 13. CERTIFICATE VALIDITY

This certificate will remain valid in so far as the following conditions are maintained:

- Continuing compliance as described in the XAIS-PTS PAS Guidelines & Criteria document, British Standards and the associated specification and normative references
- Annual XAIS-PTS surveillance assessments to verify that the requirements for product specifications and product quality control are being maintained by the Certificate Holder
- maintained evidence of adequate performance from installation monitoring
- Three-year recertification assessment
- Adherence to acceptable conduct requirements for Certificate holder.

## 14. BIBLIOGRAPHY (correct at time of initial certificate issue)

BS EN ISO 9001 Quality management systems – Requirements.

BS EN ISO/IEC 17065 Conformity assessment. Requirements for bodies certifying products, processes and services

BS EN ISO/IEC 17067 Conformity assessment. Fundamentals of product certification and guidelines for product certification schemes.

National Highways CS 229, Data for pavement assessment.

National Highways Manual of Contract Documents for Highway Works, General Principles & Scheme Governance, Construction, GC 101 General requirements for the Specification for Highway Works.

National Highways Manual of Contract Documents for Highway Works, Volume 1 Specification for Highway Works, Series 100 Preliminaries.

National Highways, Manual of Contract Documents for Highway Works, Volume 1 Specification for Highway Works, Series 900 Road Pavements – Bituminous Bound Materials.

National Highways, Manual of Contract Documents for Highway Works, Pavement Construction, CC 202, Flexible pavement construction.

BS 9228 Recycling of roads and other paved areas using bitumen emulsion, foamed bitumen or hydraulic material. Materials, production, installation and product type testing. Specification.

BS EN 12697-8 Bituminous mixtures. Test methods - Determination of void characteristics of bituminous specimens

BS EN 12697-26 Bituminous mixtures. Test methods. Stiffness.

BS434-2 Bitumen road emulsions - Code of practice for the use of cationic bitumen emulsions on roads and other paved areas

BS 1924-1 Hydraulically bound and stabilized materials for civil engineering purposes - Sampling, sample preparation and testing of materials before treatment

BS 1924-2 Unbound, hydraulically bound and stabilized materials for civil engineering purposes - Sample preparation and testing of materials during and after treatment. Test method

BS EN 933-1, Tests for geometrical properties of aggregates. Determination of particle size distribution. Sieving method

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
  - valid only in 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 XAIS-PTS Ltd.
  - XAIS-PTS Product Assessment confirms compliance with Manual for Contract Documents for Highway Works GC 101 Section 12, Specification for Highway Works MCHW SHW Volume 1 Clause 104.15 and 104.16 and BS 9228 requirements and shall be submitted by the Contractor/Certificate Holder to the Overseeing Organisation for Approval.
2. Publications, documents, specifications, legislation, regulations, standards, and the like referenced in this Certificate are those that were current and/or deemed relevant by XAIS-PTS Ltd at the date of issue or reissue of this Certificate.
3. This Certificate will remain valid for an unlimited period, subject to 3 year review to revalidate 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 XAIS-PTS Ltd
  - continue to be checked as and when deemed appropriate by XAIS-PTS Ltd under arrangements that it will determine
  - are reviewed by XAIS-PTS Ltd as and when it considers appropriate.
  - remain in accordance with the requirements of XAIS-PTSPAS. Additional review shall be carried out as necessary should Specification's / Standard's change to ensure compliance.
  - remain in accordance with XAIS-PTS Terms of Business.
4. XAIS-PTS Ltd has used due skill, care, and diligence in preparing this Certificate, but no warranty is provided.
5. In issuing this Certificate, XAIS-PTS Ltd 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
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.