

XAIS-PTS Product Assessment Certificate

Product Acceptance Scheme in accordance with Manual for Contract Documents for Highway Works, Specification for Highway Works (MCHW SHW) Volume 1 Sub-Clause 104.15 and 104.16

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UK Approved Body (UKAB)
Product Area 23 Road Construction Products

Product Name: Glasstex P100

Product Family: Geosynthetic: Installation and End Product Performance in accordance with MCHW SHW Sub Clause 936

Certificate Reference: PA936 003



On behalf of XAIS-PTS Ltd

Signature



R Edwards Managing Director

Date First Issued: 15.10.24

Certificate Valid until: 14.10.27

Product Name: Glasstex P100

Product Family: Geosynthetic: Installation and End Product Performance in accordance with MCHW SHW Sub Clause 936

This Product Assessment Certificate is issued by XAIS-PTS Ltd under XAIS-PTS Product Acceptance Scheme (XAIS-PTSPAS), in accordance with MCHW SHW Sub-Clause 104.15 and 104.16, 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.

Sub-clause 104.16 (e) requires that *“The scheme must have a technical supervisory panel that provides technical oversight on the operation of the scheme and formally consents to the issue of assessment and certification requirements of the specialist groups developing the assessment and certification requirements. This panel must include a balanced representation of key end users, recognized industry experts and those responsible for the highways on which such products will be used or installed”*.

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

PRODUCT APPLICATIONS

- Glasstex P100 is produced in accordance with BS EN 15381 under FPC certificate FPC Audit Report No 0338-CPR-5534. Most recent recognised third-party BS EN ISO 9001:2015 QMS Audit Report.
- BS EN 15381:2008 Geotextiles and geotextile-related products —Characteristics required for use in pavements and asphalt overlays — Functions: Reinforcement (R) | Stress relief (STR) | Sealing (B).
- Glasstex P100 geosynthetic is intended to suppress reflection cracking in asphalt surfacing.
- To deliver a level of performance whereby the surface course shall not have more than 10% of the reflection cracking that was present before the installation, for a minimum period of 5 years in accordance with MCHW SHW Clause 936.

KEY FACTORS ASSESSED

As part of the assessment process of Tensar Glasstex P100, the following key factors were reviewed in line with BS EN ISO 9001:2015 Section 8.3 Design and Development.

BS EN ISO 9001:2015 Quality Management System – BS EN ISO 9001:2015 Certificate No: Q 05288

Certificate of Conformity of the Factory Production Control in respect of BS EN 15381:2008:
Compliance with BS EN ISO 9001: 2015 Section 8.3 ‘Design and Development of Products and Services’

- Kiwa GmbH - Factory Production Control Certificate No: 0799 -CPR -110
- BT TG - Factory Production Control Certificate No: 0338-CPR-5534 UKCA Certificate
- DoP No 93_Glasstex_P100 R + STR + IB (UKUK) Glasstex P100 Declaration of Performance
- UKCA DoP No 93_Glasstex_P100 R + STR + IB Glasstex P100 Declaration of Performance
- Installation Method Statement (IMS) as detailed in the Quality Plan.
- Review of supporting documents and test data
- Client Internal Procedures and Processes
- Clients Management Systems Manual - Client Document Reference
- On site documentation
- Training Matrix
- Safety Data Sheet(s)
- Technical Data Sheet(s)

1. TECHNICAL SPECIFICATION

1.1 Case Study – M3 Junctions 2 to 4a (westbound) Smart Motorways Scheme opened 2017

1.2 VCS prior to treatment: URS VCS pretreatment crack survey April 2014 incorporating MP35/4 to MP36/5

1.3 PTS Multi-Function Vehicle (MFV) MCHW SHW Cl. 936 Cracking Survey data at seven years post-treatment MP35/4 to MP36/5 Lane 3 (CL3)

2. MANUFACTURE

Tensor Glasstex P100 geosynthetics is manufactured in accordance with BS EN 15381:2008 and its Factory Production Control Certificate No: 0338-CPR-5534 (UKCA) in compliance with the Construction Products Regulation 2011 (Retained EU Law EUR 305/2011) as amended by the Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and the Construction Products (Amendment etc.) (EU Exit) Regulations 2020.

3. TECHNICAL SPECIFICATION

Technical information was provided by Tensor who hold FPC certificate No 0338-CPR-5534 for production of materials at its facility in Blackburn, to produce Glasstex P100 in accordance with BS EN 15381. All material is supplied with a test certificate and DoP.

Name	Product	Type/Size	Certification
0338-CPR-5534 UKCA Certificate	Glasstex P100		UKCA Certificates
DoP No 93 Glasstex P100 R + STR + IB (UK)	Glasstex	P100	Declaration of Performance

Physical Properties from Tensor Technical notes (TNs)		
Characteristic	Unit	Value
Roll width	m	1.0, 1.5, 2.0, 3.0
Roll length	m	100
Product weight	g/m ²	400
Index strength	kN/m	100
Typical strain at failure	%	3
Elastic modulus of glass filaments	GPa	80
Mesh size	mm	40 x 40
Polymer of Paving Fabric		PP
Weight of Paving fabric	g/m ²	130
Bitumen retention	kg/m ²	≥1.1

Glasstex P100 meets the demands for reinforcing geogrids. Glasstex P100 is a composite asphalt interlayer composed of a glass yarn grid structure stitched bonded to a polypropylene (PP) paving fabric.

The grid controls strains in the overlay by adhesion with the asphalt overlay providing a structural reinforcing effect. The fabric aids installation and provides, together with the bitumen absorbed from the bond coat, a stress relief effect and interlayer barrier against ingress of moisture and oxygen.

The material is designed to be laid using a bond coat of BS EN 13808 or BS EN 12591. The bond coat material is laid using a calibrated spray bar to BS 1707 (see application spray rate information (Section 5)).

Initial bond strength testing is carried out on all sites during the installation, and details are recorded to ensure the minimum requirement of 9kg is surpassed in accordance with the Tensor installation documentation and in accordance with the RSTA Code of Practice.

4. REFLECTION CRACKING SURVEY PRIOR TO PREPARATORY WORKS

For an installation to satisfy the requirements of MCHW SHW Clause 936, not more than 30 days after completion of the work, the Contractor shall provide a record of the progress of the work in the form of an 'As Built' manual including: a pre-treatment crack map.

Where geosynthetics are applied over a new longitudinal joint, a drawing showing the location of the joint shall be submitted.

(Note: If a pre-treatment crack map is not provided, all cracks appearing within 5 years will be seen as 'excessive' and require remedial measures (see sub-Clause 936.19).

5. PREPARATORY WORKS

Tensor Glasstex P100 is delivered, handled and stored in accordance with the Manufacturer's instructions and the latest version of the Tensor Quality Plan.

5. PREPARATORY WORKS cont.

Preparatory Works are undertaken according to the Installation Method Statement (as detailed within the Quality Plan) and the requirements of MCHW SHW 936.

The surface that is to receive the Tensar Glasstex P100 geosynthetic shall be free of surface defects so as not to compromise the performance of the product system to be applied. Where a levelling or regulating course is required, it shall be laid in accordance with the requirements of Clause 907, such installations are outside the scope of this certificate.

Tensar Glasstex P100 requires a bond coat for installation, either a paving grade bitumen in accordance with BS EN 12591 or a bitumen emulsion in accordance with BS EN 13808.

Before the bond coat is applied, ironwork shall be masked. Any planings or asphalt deposits on the surface shall be removed and the receiving surface shall be swept free of all loose material.

- The bond coat (referred to in BS EN 13808 as the tack-coat) can either be hot-applied bitumen or a bitumen emulsion; cut-back bitumen products (i.e. bitumen mixed with a volatile liquid, e.g. kerosene) should be avoided and are not recommended for the installation of Tensar Glasstex. For hot-applied bitumen, the penetration grade can vary from 160/220 for moderate climates (e.g. UK) to suitable lower penetration grades in hotter climates.

The minimum air temperature at the time of applying the hot bitumen should be +5°C. Variances depending on site conditions should be agreed upon by the engineer and the installer of the product.

- For bitumen emulsions these should be suitable for surface dressing (treatments) and provide a bitumen solids content of ≥69% (e.g. C 69 B3 according to BS EN 13808). The minimum air temperature at the time of applying the bitumen emulsion should be +10°C. Variances depending on site conditions should be agreed upon by the Engineer and the Installer of the product.
- The bond coat bitumen or emulsion proposed for the interlayer should first be approved by the Engineer.
- The bond coat should be sprayed mechanically onto the surface at a uniform rate. Small or localized areas can be sprayed by hand.

Spray rates:

The required spray rate for the bond coat is given in the Installation Guideline document (Bond Coat Application) and shall be at least 1.1kg/m²e.g. ≥1.1 kg/m² in case of hot bitumen; or in the case of bitumen emulsion, sufficient to deliver for 1.2-1.5 kg/m² of residual bitumen.

- For overlaps, spray bond coat on top of the previously installed layer, for the width of the overlap only; avoid oversaturation.

Installation of Tensar Bond coats shall be installed in accordance with the following criteria:

- The bond coat shall be applied directly beneath the geosynthetic in accordance with the Installation Method Statement and in contract specific Appendix 7/1; Higher application rates may be specified on a product specific basis or as dictated by local conditions. (Note: in some cases, this bond coat may be part of a composite system including a geosynthetic.)
- The bond coat shall be sprayed through a certified calibrated spray bar in accordance with Uniformity of Transverse Distribution of Binder – BS 1707 with at the agreed rate appropriate to the specific project and the minimum application spray rates as above.
- The rate and accuracy of the distribution of the bond coat shall be checked at the commencement of the work by means of a carpet tile test carried out in accordance with BS EN 12272-1. This test shall be repeated for each binder distributor used during the course of the work.

6. PRODUCT APPLICATION PROCESS

Installation of Tensar Glasstex P100 geosynthetic is carried out by The Approved Installer(s) of The Certificate Holder, i.e. Foster Contracting Ltd / Foster Contracting (North) Ltd, in accordance with the Installation Method Statement (as detailed within the Quality Plan) and MCHW SHW Clause 936.

6. PRODUCT APPLICATION PROCESS cont.

- The Installer shall be registered under National Highways Sector Scheme NHSS 13.
- The Installer shall work in accordance with the design provided to achieve the performance requirements in terms of control of reflection cracking as set out in MCHW SHW Clause 936 and in contract specific Appendix 7/1;
- Tensar Glasstex Method statement includes installation (as detailed within the Quality Plan)
- General installation procedures and (as detailed within the Quality Plan)
- Limitations in respect to weather and substrate conditions (as detailed within the Quality Plan)
- On site storage and handling of materials (Tensar procedures and as detailed within the Quality Plan)
- Installation is carried out using appropriate mechanical equipment specifically designed to lay the material under tension.
- On-site quality control / assurance procedures and associated documentation (as detailed within the Quality Plan).
- Hand-laying / custom fitting may be required in locations such as tight radius bends and on small, restricted sites.
- The Installer shall ensure that the Tensar Glasstex P100 geosynthetic has initial bond such that it is capable of withstanding construction traffic and remains fully adhered to the substrate and the asphalt overlay with no separation.
- The Installer shall measure and record the bond condition as stipulated in the Quality Plan and refer to the RSTA ADEPT Code of Practice for Geosynthetics and Steel meshes.
- Installation shall be planned and carried out such that there is continuity of work and other surfacing operations are not impeded.
- Details of requirements for transverse and longitudinal overlaps are as detailed within the Installation Method Statement.

The Tensar Glasstex P100 geosynthetic shall be placed sufficiently deep within the bound layers (minimum depth after compaction of 40 mm) so that it is not removed when the surface course is replaced.

However, should subsequent planing be set at a depth below the interlayer all material removed is suitable for recycling in asphalt binder or base course. See report: Universität Rostock (2013), available on request.

If a surface course is to be placed directly on the Tensar Glasstex P100, approval by the Overseeing Organisation (a Departure from Standard) will be needed, as such installations are outside the scope of MCHW SHW Clause 936.

An audit of the installation was carried out for Tensar Glasstex P100 in order to assess the installation procedures as defined in the Tensar Quality Plan along with the assessment of UKCA Marking and Declaration of Performance and on-site quality control procedures – XAIS-PTS Installation Report Reference PTS0144 Stage 3, dated 27.09.23.

7. AFTERCARE

Aftercare shall be carried out in accordance with the Installation Method Statement (as detailed within the Quality Plan) and MCHW SHW Clause 936.

- Masking shall be removed after the Tensar Glasstex P100 geosynthetic has been installed and before the surfacing operation commences.
- The Tensar Glasstex P100 geosynthetic shall be overlaid in the same shift, or as soon as is practically possible or in accordance with the details specified in the contract specifics.
- The Installer shall undertake remedial action where necessary, which may include nailing, patching, cutting, or dusting if there are signs of distress, such as separation, turning damage, bleeding, or pickup of the Tensar Glasstex P100 geosynthetic in order to prevent further damage to the System.

8. AS BUILT MANUAL

To satisfy the requirements of MCHW SHW Clause 936, an As Built Manual shall be prepared within 30 days of installation. The As Built Manual shall include the following information:

- i. The product name.
- ii. All test results.
- iii. A pre-treatment crack map. Where geosynthetics are applied over a new longitudinal joint, a drawing showing the location of the joint shall be submitted. (Note: If a pre-treatment crack map is not provided, all cracks appearing within 5 years will be seen as 'excessive' and require remedial measures (see MCHW SHW Clause 936.19).

8. AS BUILT MANUAL cont.

- iv. Variations to the design proposal and those necessitated by local conditions (which need to be agreed prior to installation).
- v. A record of installation control carried out.
- vi. Weather information.
- vii. Unforeseen problems encountered.
- viii. A list of complaints, if any, from the general public or road users.
- ix. Any other information that the Overseeing Organisation may reasonably require to be included, as previously agreed.

9. REFLECTION CRACKING SURVEY AT 5 YEARS

The surface course shall not have more than 10% of the reflection cracking that was present before the installation of the geosynthetic or steel mesh, for a minimum period of 5 years. The amount of cracking shall be expressed as a length per 100m for each 100m length. The length of cracking before treatment shall be taken from the visual survey produced as part of the pavement investigation used for scheme identification.

- Replacement of the surfacing or other remedial measures agreed with the Overseeing Organisation shall be carried out if reflection cracking appears within the first 5 years.
- For the period of the guarantee, the geosynthetic or steel mesh shall meet the performance requirements stated in this Clause and contract specific Appendix 7/1.
- The guarantee shall exclude defects arising from accidental damage or damage caused by settlement or subsidence on which the surfacing material has been laid.

The reappearance of reflection cracking shall be confirmed by comparing locations of cracking with visual survey records carried out as part of the investigation prior to maintenance treatment design and coring through the cracks. This will identify whether cracking in the 'new' surface appears over existing cracks lower in the pavement structure. Note that reflection cracking may be 'top-down' or 'bottom-up'.

Tensar have provided case study evidence (from MFV survey) of the acceptable performance of the Glasstex P100 geosynthetic at 7 years post installation (less than 10% reflection cracking).

10. CASE STUDY

As part of the verification process, the following case study was reviewed:

1.1 M3 Smart Motorways Scheme J2 to J4a MP35/4 to MP36/5 Lane 3 (CL3)

A review of the case study was carried out to assess the performance of previously installed materials: PTS Stage 4 Report dated September 2024, Available on request from the Certificate Holder (Tensar).

11. TEST RESULTS

Available on request from the Certificate Holder, comprising the verification and on-going validation processes.

12. BIBLIOGRAPHY (/correct at time of initial certificate issue):

BS EN ISO/IEC 9001:2015 Quality Management System Requirements

BS EN ISO 17025:2017 General requirements for the competence of testing and calibration laboratories

BS EN ISO/IEC 17065:2012 Conformity assessment – Requirements for bodies certifying products, processes, and services

BS EN ISO/IEC 17067:2013 Conformity assessment – fundamentals of product certification and guidelines for product certification schemes

Manual of Contract Documents for Highways Works, Volume 1, Specification for Highways, Works, Series 100, Preliminaries, April 2022

Manual of Contract Documents for Highways Works, Volume 1, Specification for Highways, Works Series 900, Road Pavements – Bituminous Bound Materials, July 2021

BS EN 15381:2008 Geotextiles and geotextile-related products. Characteristics required for use in pavements and asphalt overlays

RSTA ADEPT Code of Practice for Geosynthetics and Steel Mesh for Asphalt Reinforcement (Interlayers), Issue 3 May 2023

National Highway Sector Scheme Document 13 Particular Requirements for the Application of ISO 9001:2015 for the Supply and Application of Surface Treatments to Road Surfaces, October 2022

UKPMS User Manual, Volume 2: Visual Data Collection for UKPMS, October 2009 Chapter 8: Detailed Visual Inspection (DVI)

BS EN 12591:2009 Bitumen and Bituminous Binders. Specifications for Paving Grade Bitumens

BS EN 14023:2010 Bitumen and Bituminous Binders. Specification Framework for Polymer Modified Bitumens

BS EN 12273:2008 Slurry Surfacing. Requirements

BS EN 12272-1:2002 Surface Dressing. Test Methods. Rate of Spread and Accuracy of Spread of Binder and Chippings

BS 1707:2018 Road Surface Dressing, Bond Coats, Seals, Preservatives and Other Sprays Specification for the Method of Test for Binder Sprayers for Accuracy of Spread of Binder (Spray Bar Bench Test)

BS 594987:2015+A1:2017 Asphalt for Roads and Other Paved Areas. Specification for Transport, Laying, Compaction and Product Type Testing Protocols

XAIS-PTS SG 936 Guidelines and Criteria Document for the Assessment and Certification of Geosynthetics and Steel Meshes: Installation and End Product Performance to MCHW SHW Clause 936

XAIS-PTS MFV Survey M3 Westbound at seven years post-treatment MP35/4 to MP36/5 Lane 3 (CL3)

PTS Report Stage 3 Installation Method Statement Audit

XAIS-PTS Report Stage 4 Review of Technical Data Relating to Design Inputs Verification and Consolidate Case Studies

XAIS-PTS Report Stage 5 Review

Universität Rostock (2013). "Stellungnahme zur Fräs- und Wiederverwendbarkeit Tensar Glasstex P100", Prof Dr.-Ing Fokke Saathoff & Dr.-Ing. Sefan Cantré, Rostock, Germany, D18059. In German (translation available on request)

CONDITIONS OF CERTIFICATION

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 forms part of the Product Acceptance Scheme as described in MCHW SHW Volume 1 Clause 104.16 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.