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HAPAS Certificate
14/H210
Product Sheet 5

PAINTS FOR CORROSION PROTECTION OF STRUCTURAL STEELWORK IN HIGHWAY APPLICATIONS

PENGUARD PRO GF — TO HA ITEM NO 123

This HAPAS Certificate Product Sheet⁽¹⁾ is issued by the British Board of Agrément (BBA), supported by the Highways Agency (HA) (acting on behalf of the Overseeing Organisations of the Department for Transport; Transport Scotland; the Welsh Assembly Government and the Department for Regional Development, Northern Ireland), the Association of Directors of Environment, Economy, Planning and Transport (ADEPT), the Local Government Technical Advisers' Group and industry bodies. HAPAS Certificate Product Sheets are normally each subject to a review every three years.
(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to Penguard Pro GF, for use as part of a specification for the corrosion protection of structural steelwork in Highway Applications, in accordance with the Manual of Contract Documents for Highway Works, Volumes 1 and 2, where Item No 123 is specified.

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 three-yearly review.



KEY FACTORS ASSESSED

Corrosion resistance — a complete paint system incorporating the product, when applied in accordance with this Certificate, will provide satisfactory resistance to corrosion of the substrate steel (see section 6).

Durability — a complete paint system based on the product described in this Certificate can be expected to perform satisfactorily for a period greater than 15 years before its first major maintenance (see section 8).

The BBA has awarded this Certificate to the company named above for the product described herein. This product 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

Simon Wroe
Head of Approvals — Materials

Claire Curtis-Thomas
Chief Executive

Date of First issue: 17 January 2014

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.

Requirements

The Highways Technical Advisory Committee (HiTAC) and HAPAS Specialist Group 12 (Paints and similar protective coatings for corrosion protection of structural steelwork) have agreed with the BBA the aspects of performance to be used by the BBA in assessing the compliance of paints and similar protective coatings as set out in the Guideline Document. Additional requirements of the overseeing organisations are set out in the following documents:

- Manual of Contract Documents for Highway Works (MCHW)⁽¹⁾, Volume 1 (Paints) Series 1900 and 5000
- Manual of Contract Documents for Highway Works (MCHW)⁽¹⁾, Volume 2 Series NG 1900 and NG 5000
- Design Manual for Roads and Bridges, BD 35/06
- Design Manual for Roads and Bridges, BD 87/05.

(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: 3 *Delivery and site handling* (3.1 and 3.2) of this Certificate.

Technical Specification

1 Description

1.1 Penguard Pro GF is a high solids, two pack, epoxy-amine glass flake coating, for use as part of a specification for the corrosion protection of structural steelwork in Highway Applications, in accordance with MCHW, Volumes 1 and 2, where Item No. 123 is specified. The product is available in grey.

1.2 The product has the following characteristics:

Specific gravity base	1.34
Volume solids (%) mixed	75.2
Flashpoint (°C) mixed	33
VOC (g·l ⁻¹) mixed	231

(1) Tested in accordance with the methods given in the Guideline Document.

2 Manufacture

2.1 The product is manufactured by a batch blending process.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by Det Norsk Veritas (Certificate 479).

3 Delivery and site handling

3.1 The product is supplied in 20 litre packs in the correct proportions. The gross weight of the mixed containers is 27.4 kg.

3.2 The base (Part A) is classified as 'irritant' and 'dangerous for the environment' and the curing agent (Part B) is classified as 'flammable', 'irritant', 'corrosive' and 'dangerous for the environment' under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009* (CHIP 4)/*Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) 2009*. Containers of both parts carry the appropriate hazard labelling, product reference and batch code.

3.3 When stored in the original containers in a paint store in the conditions recommended by the Certificate holder, the product has a minimum shelf-life of 12 months.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Penguard PRO GF.

Design Considerations

4 Use

4.1 Where included as part of the specification for a paint system as listed in the Supplement to Paints for Corrosion Protection of Structural Steelwork in Highways Applications⁽¹⁾, Penguard Pro GF is satisfactory for use as an intermediate coat of a corrosion protection system for structural steel.

(1) Product Sheet 99 of this Certificate.

4.2 Penguard Pro GF meets the requirements of the Guidance Document and BD 35/06, when included as part of the specification for a paint system as listed in the Supplement to Paints for Corrosion Protection of Structural Steelwork in Highways Applications.

5 Practicability of installation

The product can be applied by operatives familiar with this type of product.

6 Corrosion resistance

The product has been tested in accordance with the requirements of the Guideline Document and meets all of the requirements of that document, and may contribute to corrosion resistance when included as part of the specification for a paint system as listed in the Supplement to Paints for Corrosion Protection of Structural Steelwork in Highways Applications.

7 Maintenance

Regular planned maintenance may be required at the intervals specified in section 8 of this Certificate. Any damage must be repaired in accordance with MCHW, Volume 1 (Paints), Series 5000.

8 Durability

A complete paint system based on the products described in this Certificate can be expected to perform satisfactorily for a period greater than 15 years before its first major maintenance.

Installation

9 Application

9.1 Substrates must be cleaned and prepared in accordance with the MCHW, Volume 1 (Paints) Series 1900 and 5000, and the Certificate holder's instructions.

9.2 The base (Part A) is mixed with a power agitator, the entire contents of the curing agent (Part B) are added, and the product is mixed thoroughly.

9.3 The product is applied by airless spray (tip range 0.63 mm to 0.09 mm, output fluid pressure not less than 15 MPa/min) or air-assisted spray, to achieve a typical dry film thickness (dft) of 150 µm to 500 µm [equivalent to a wet film thickness (wft) of 200 µm to 667 µm]. The Certificate holder can advise on suitable spray equipment.

9.4 Small areas can be coated by brush or roller, if required.

9.5 The product is overcoated with the Certificate holder's products holding the appropriate HAPAS approval, observing the minimum overcoating period given in Table 1.

Table 1 Application properties

	Temperature (°C)			
	5	10	23	40
Surface dry (mins)	7	6	3	1
Hard dry (hours)	18	12	6	4
Minimum overcoating time (hours)	10	7	3	2
Pot life (hours)	4	2	1	20 mins

Note: For maximum overcoating time the Certificate holder should be consulted.

9.6 The product must be used within the pot life given in Table 1.

10 Tests

Tests were conducted and results assessed to determine:

- liquid paint
 - density
 - flashpoint
 - volume solids
 - viscosity
 - volatile organic compound
 - pot life
 - other composition requirements
- applied coating
 - resistance to sagging
 - opacity
 - colour designation
 - visual comparison of the declared standard
 - gloss
 - surface dry (ballotini)
 - hard dry
 - application and appearance
 - minimum overcoating time
 - film thickness
- complete system
 - artificial weathering of topcoat
 - scratch resistance of single-pack topcoat and of two-pack topcoat
 - impact resistance
 - adhesion for systems of thicknesses <250 µm and >250 µm
 - salt spray
 - sulfur dioxide
 - humidity.

11 Investigations

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

Bibliography

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BD 35/06 *Design Manual for Roads and Bridges (DMRB), Volume 2 Highway Structures : Design (Substructures and Special Structures), Materials, Section 4 Paints and Other Protective Coatings – Part 1 Quality Assurance Scheme for Paints and Similar Protective Coatings*

BD 87/05 *Design Manual for Roads and Bridges (DMRB), Volume 3 Highway Structures : Inspection and Maintenance – Part 2 Maintenance Painting of Steelwork*

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)*

12 Conditions

12.1 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.

12.2 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.

12.3 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.

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

12.5 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
- actual 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
- any claims by the manufacturer relating to CE marking.

12.6 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.