

PAINTS FOR CORROSION PROTECTION OF STRUCTURAL STEELWORK IN HIGHWAY APPLICATIONS

PENGUARD PRO GF – TO HE ITEM NO 123

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

(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to Penguard Pro GF, a two-pack, high-solids, quick-drying, 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 the *Manual of Contract Documents for Highway Works* (MCHW), 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 will provide satisfactory resistance to corrosion of the substrate steel (see section 6).

Durability — a complete paint system based on the products described in this Certificate can be expected to perform satisfactorily for a period in excess of 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

Date of Fourth issue: 12 November 2020

Originally certificated on 17 January 2014



Hardy Giesler
Chief Executive Officer

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 MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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Requirements

In the opinion of the BBA, Penguard Pro GF, having been registered by Highways England and found to comply with the requirements of CG303 (formerly BD 35/14) and approved for ongoing registration, when used in accordance with the provisions of this Certificate will satisfy or contribute to satisfying the requirements of the:

- MCHW⁽¹⁾, Volume 1 (Paints), Series 1900 and 5000
- MCHW⁽¹⁾, Volume 2, Series NG 1900 and NG 5000
- *Design Manual for Roads and Bridges* (DMRB), CG303 *Quality assurance scheme for paints and similar protective coatings*
- CM 431, formerly BD 87/05.

(1) The MCHW is operated by the Overseeing Organisations: Highways England (HE), Transport Scotland, the Welsh Government and the Department for Infrastructure (Northern Ireland).

Regulations

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.2) and 3 *Delivery and site handling* (3.1 and 3.2) of this Certificate.

Technical Specification

1 Description

1.1 Penguard Pro GF is a two-pack, high-solids, 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 the MCHW, Volumes 1 and 2, where Item No 123 is specified. The product is available in a range of colours.

1.2 The product has the following characteristics:

Table 1 Characteristics

Characteristic (unit)	Value
Specific gravity	1.34
Volume solids (%) mixed	75
Flashpoint (°C) mixed	32
VOC (g·l ⁻¹) mixed	226.6

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 being 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 : 2015 by Intertek (Certificate 0044915-05).

3 Delivery and site handling

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

3.2 The Certificate holder has taken the responsibility of classifying and labelling the product under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

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

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 Highway 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.

5 Practicability of installation

Application of the product is designed to be carried out by operatives familiar with this type of product.

6 Corrosion resistance

The product has been registered in accordance with the requirements of CG303 and can 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 Highway Applications*.

7 Maintenance

Regular planned maintenance may be required as per section 8. Damage must be repaired in accordance with the 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 in excess of 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, after which the entire contents of the curing agent (Part B) are added, and the product mixed thoroughly.

9.3 The product is applied by airless spray (tip range 0.68 to 0.48 mm, output fluid pressure not less than 15 MPa/min) or air-assisted spray, to achieve a typical dry film thickness (dft) of between 150 to 600 µm [equivalent to a wet film thickness (wft) of 200 to 800 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 bearing the appropriate HAPAS-approval, observing the minimum overcoating period given in Table 2.

Table 2 Application properties

	Temperature (°C)			
	5	10	23	40
Surface dry (hours)	8	6	3	1
Hard dry (hours)	18	12	6	4
Minimum overcoating time (hours)	12	7	3	2
Pot life (hours)	—	—	2	—

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 2.

Technical Investigations

10 Tests

Tests were carried out and the 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 and >250 µm
 - salt spray
 - sulphur dioxide
 - humidity.

11 Investigations

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

Bibliography

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

CG303 (formerly BD 35/14) *Design Manual for Roads and Bridges (DMRB), Volume 2 Highway Structures : Design (Substructures and Special Structures), Materials, Section 3 Paints and Other Protective Coatings Part 1 Quality assurance Scheme for Paints and Similar Protective Coatings*

CM 431 (formerly BD 87/05) *Design Manual for Roads and Bridges (DMRB), Volume 3 Highway Structures: Maintenance Painting of Steelwork*

Manual of Contract Documents for Highway Works, Volume 1 *Specification for Highway Works*, Series 1900 *Protection of steelwork against corrosion*

Manual of Contract Documents for Highway Works, Volume 1 *Specification for Highway Works*, Series 5000 *Maintenance painting of steelwork*

Manual of Contract Documents for Highway Works, Volume 2 *Notes for Guidance on the Specification for Highway Works*, Series 1900 *Protection of steelwork against corrosion*

Manual of Contract Documents for Highway Works, Volume 2 *Notes for Guidance on the Specification for Highway Works*, Series 5000 *Maintenance painting of steelwork*

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.