



## PPG Protective & Marine Coatings

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**HAPAS**  
**Roads and Bridges**  
**Agrément Certificate**  
**No 05/H106**

Amendment 13th August 2009\*

## PPG PROTECTIVE & MARINE COATINGS PAINTS FOR CORROSION PROTECTION OF STRUCTURAL STEELWORK IN HIGHWAY APPLICATIONS

This Certificate is issued under the Highway Authorities' Product Approval Scheme (HAPAS) by the BBA in conjunction with the Highways Agency (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

- This Certificate relates to PPG Protective & Marine Coatings Paints for Corrosion Protection of Structural Steelwork in Highway Applications, covered by the accompanying Detail Sheets.
- Full data on the products is given in the Certificate holder's product data sheet, material safety data sheet and package labelling.

This Front Sheet must be read in conjunction with the accompanying Detail Sheets, which provide information specific to particular paints.

## HAPAS Requirements — Detail Sheet 1

### 1 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 following documents:

- Manual of Contract Documents for Highway Works (MCHW), Volume 1 (Paints) Series 1900 and 5000
- Manual of Contract Documents for Highway Works (MCHW) Volume 2 Series NG 1900 and NG 5000
- BA 27/99
- BD 35/99
- BD 87/03.

### Regulations

#### 2 Construction (Design and Management) Regulations 1994 (as amended)

#### Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections:

1 Description, 2 Delivery, site handling and storage (2.2) of the appropriate Detail Sheet.

### Design Data

#### 3 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.

### Bibliography

BA 27/99 *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 2 Quality Assurance Scheme for Paints and Similar Protective Coatings*

BD 35/99 *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 87/03 *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)

## 4 Conditions

4.1 This Certificate:

- (a) relates only to the product that is named, described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

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

4.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabrication including all related and relevant processes thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;
- (b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine;

(c) are reviewed by the BBA as and when it considers appropriate; and

(d) remain in accordance with the requirements of the Highway Authorities' Product Approval Scheme.

4.4 In granting this Certificate, the BBA is not responsible for:

- (a) the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the actual works in which the product is installed, used and maintained, including the nature, design, methods and workmanship of such works.

4.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do 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 or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future 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 installation and use of this product.



In the opinion of the British Board of Agrément, PPG Protective & Marine Coatings Paints for Corrosion Protection of Structural Steelwork in Highway Applications are fit for their intended use provided they are installed and used as set out in this Certificate. Certificate No 05/H106 is accordingly awarded to PPG Protective & Marine Coatings.

On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to read 'P. C. Newell', is written over a light grey background.

Date of issue: 13th May 2005

Chief Executive

*\*Certificate amended on 13th August 2009 to include a change of all company details.*

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For technical or additional information, contact the Certificate holder (see front page).  
For information about the Agrément Certificate, including validity and scope, tel: Hotline 01923 665400, or check the BBA website.



PPG Protective &amp; Marine Coatings

SIGMA EP110 PRIMER —  
TO HA ITEM No 110**HAPAS**

Roads and Bridges

Certificate No 05/H106

**DETAIL SHEET 2**

Amendment 13th August 2009\*

## Product

*Sigma EP110 Primer is a two-pack, zinc phosphate, epoxy blast primer/sealer, for use as part of a specification for the protection of steelwork in accordance with the Manual of Contract Documents for Highway Works (MCHW), Volumes 1 and 2, where Item No 110 is specified.*

*This Detail Sheet must be read in conjunction with the Front Sheet, which gives the product's position regarding HAPAS requirements, general information and the Conditions of Certification.*

## Technical Specification

### 1 Description

1.1 Sigma EP110 Primer is a two-pack, zinc phosphate, epoxy blast primer/sealer. The product is available in one colour, bamboo, to BS 4800 : 1989, 08 C 35.

1.2 The characteristics of the product are:

Specific gravity	base	1.45–1.50
	activator	0.88–0.94
	mixed	1.32–1.38
Volume solids (%)	mixed	43
Flashpoint (°C)	base	23
	activator	23
VOC (g/l) (to PG 6/23)	mixed	544

### 2 Delivery, site handling and storage

2.1 The product is supplied in 4 litre and 20 litre packs in the correct proportions. The gross weight of the mixed 20 litre container is 28 kg.

2.2 The base is classified as harmful, dangerous for the environment and flammable under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3) and the activator is classified as harmful and flammable. Containers of both parts carry the appropriate hazard labelling, product reference and batch code.

2.3 When stored in the original containers in a paint store in the conditions recommended by the paint manufacturer, the product has a minimum shelf-life of 18 months.

## Design Data

### 3 General

Sigma EP110 Primer is for use as a blast primer/sealer on steel surfaces prepared by abrasive blast cleaning to BS EN ISO 8501-1 : 2001 (Sa 2½), or is for use on hot-dip, galvanized steel after treatment with Sigma Etch (T-Wash) (see Detail Sheet 6).

## Installation

### 4 Mixing procedure

The base is mixed with a power agitator, the entire contents of the activator are added, and the product mixed thoroughly. The product is used within the pot life given in Table 1.

Table 1 Application properties

	Temperature (°C)		
	10	20	30
Surface dry (mins)	40	20	15
Hard dry (h)	2	1	½
Minimum overcoating time (h)	8	4	3
Maximum overcoating time (months)	3	3	2
Pot life (h)	10	8	4

### 5 Application

5.1 Sigma EP110 Primer is applied by airless spray (tip range 0.43 mm to 0.58 mm, output fluid pressure 120 to 150 bar), to achieve a dry film thickness (dft) of 25 µm to 30 µm [equivalent to a wet film thickness (wft) of 58 µm to 69 µm].

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

## Technical Investigations

Sigma EP110 Primer has been registered in accordance with the procedures of BA 27/99 and found to comply with the requirements of BD 35/99:

- Date of approval 24 December 2003.

## Bibliography

BS 4800 : 1989 *Schedule of paint colours for building purposes*

BS EN ISO 8501-1 : 2001 *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings*

BA 27/99 *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 2 Quality Assurance Scheme for Paints and Similar Protective Coatings*

BD 35/99 *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*

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)

Process Guidance Note (PG) 6/23 (04) *Secretary of State's Guidance for Coating of Metal and Plastic Processes*



On behalf of the British Board of Agrément

Date of issue: 13th May 2005

A handwritten signature in black ink, appearing to read 'P. C. Newson'.

Chief Executive

*\*Certificate amended on 13th August 2009 to include a change of all company details.*

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PPG Protective &amp; Marine Coatings

SIGMACOVER 690 —  
TO HA ITEM No 115**HAPAS**

Roads and Bridges

Certificate No 05/H106

**DETAIL SHEET 3**

Amendment 21st June 2010\*

## Product

Sigmacover 690 is a two-pack, high-build, aluminium, epoxy, maintenance primer for abraded surfaces and is for use as part of a specification for the protection of steelwork in accordance with the Manual of Contract Documents for Highway Works (MCHW), Volumes 1 and 2, where Item No 115 is specified.

This Detail Sheet must be read in conjunction with the Front Sheet, which gives the product's position regarding HAPAS requirements, general information and the Conditions of Certification.

## Technical Specification

### 1 Description

1.1 Sigmacover 690 is a two-pack, high-build, epoxy primer, pigmented with aluminium. The product is available in one colour, aluminium.

1.2 The characteristics of the product are:

Specific gravity	base	1.39–1.43
	activator	0.98–1.00
	mixed	1.28–1.34
Volume solids (%)	mixed	90
Flashpoint (°C)	base	>65
	activator	45
VOC (g l <sup>-1</sup> ) (to PG 6/23)	mixed	135

### 2 Delivery, site handling and storage

2.1 The product is supplied in 4 litre and 20 litre packs in the correct proportions of each component. When mixed, the gross weight of the 20 litre container is 30 kg.

2.2 The base is classified as irritant and dangerous for the environment under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3) and the activator is classified as corrosive and dangerous for the environment. Containers of both parts carry the appropriate hazard labelling, product reference, and batch code.

2.3 When stored in the original containers in a paint store in the conditions recommended by the paint manufacturer, the product has a minimum shelf-life of 18 months.

## Design Data

### 3 General

Sigmacover 690 is for use over steelwork prepared by power tool cleaning/abrading over properly prepared, weathered coatings of chlorinated rubber, acrylated rubber, oleo-resinous or epoxy.

## Installation

### 4 Mixing procedure

The base is mixed with a power agitator, the entire contents of the activator are added, and the product is mixed thoroughly. The product is used within the pot life given in Table 1.

Table 1 Application properties

	Temperature (°C)			
	5	10	20	30
Surface dry (h)	16	9	4	3
Hard dry (h)	48	36	12	8
Minimum overcoating time (h)	48	36	12	8
Maximum overcoating time (months)	6	6	4	3
Pot life (h)	4	4	3	2

### 5 Application

5.1 Sigmacover 690 is applied by spray, to achieve a dry film thickness (dft) of 75 µm to 250 µm [equivalent to a wet film thickness (wft) of 83 µm to 277 µm]:

- airless spray — tip range from 0.48 mm to 0.53 mm, output fluid pressure 150 bar.

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

## Technical Investigations

Sigmacover 690 has been registered in accordance with the procedures of BA 27/99 and found to comply with the requirements of BD 35/99:

- Date of approval 29 January 1997.

## Bibliography

BA 27/99 *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 2 *Quality Assurance Scheme for Paints and Similar Protective Coatings*

BD 35/99 *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*

*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)*

*Process Guidance Note (PG) 6/23 (04) Secretary of State's Guidance for Coating of Metal and Plastic Processes*



On behalf of the British Board of Agrément

Date of issue: 13th May 2005

Chief Executive

*\*Certificate amended on 21st June 2010 to include a change of product name.*





PPG Protective &amp; Marine Coatings

**SIGMACOVER 456 HS —**  
TO HA ITEM No 116

## Product

Sigmacover 456 HS is a two-pack, high-build, epoxy maintenance undercoat for abraded surfaces for use as part of a specification for the protection of steelwork in accordance with and the Manual of Contract Documents for Highway Works (MCHW), Volumes 1 and 2, where Item No 116 is specified.

This Detail Sheet must be read in conjunction with the Front Sheet, which gives the product's position regarding HAPAS requirements, general information and the Conditions of Certification.

## Technical Specification

### 1 Description

1.1 Sigmacover 456 HS is a two-pack, high-build, flexible epoxy maintenance undercoat for abraded surfaces. The product is available in light grey (00 A 05) and medium grey (00 A 09) to BS 4800 : 1989.

1.2 The characteristics of the product are:

Specific gravity (depends on colour)	base	1.5–1.6
	activator	0.95–0.97
	mixed	1.4–1.5
Volume solids (%)	mixed	70
Flashpoint (°C)	base	26
	activator	26
VOC (g <sup>l</sup> <sup>-1</sup> ) (to PG 6/23)	mixed	156

### 2 Delivery, site handling and storage

2.1 The product is supplied in 4 litre and 20 litre packs in the correct proportions. When mixed, the gross weight of the 20 litre container is 33 kg.

2.2 The base is classified as harmful and flammable under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3) and the activator is classified as corrosive, flammable and dangerous for the environment. Containers carry the appropriate hazard labelling, product reference and batch code.

2.3 When stored in the original containers in a paint store in the conditions recommended by the paint manufacturer, the product has a minimum shelf-life of 18 months.

## Design Data

### 3 General

Sigmacover 456 HS is for application over steelwork primed with Sigmacover 690 (see Detail Sheet 3), or over properly prepared, weathered coatings of alkyd, epoxy and polyurethane systems.

## Installation

### 4 Mixing procedure

The base is mixed with a power agitator, the entire contents of the activator is added, and the product is mixed thoroughly. The product is used within the pot life given in Table 1.

Table 1 Application properties

	Temperature (°C)			
	5	10	20	30
Surface dry (h)	16	10	4	2
Hard dry (h)	24	18	8	6
Minimum overcoating time (h)	40	32	16	12
Pot life (h)	10	8	4	2.5

### 5 Application

5.1 Sigmacover 456 HS is applied by spray or brush, to achieve a dry film thickness (dft) of 75 µm to 150 µm [equivalent to a wet film thickness (wft) of 107 µm to 214 µm]:

- airless spray — tip size 0.48 mm, output fluid pressure 150 bar
- brush.

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

## Technical Investigations

The product has been registered in accordance with the procedures of BA 27/99 and found to comply with the requirements of BD 35/99:

- Date of original approval 25 September 2003.
- Date of approval as Sigmacover 456 HS 3 March 2005.

## Bibliography

BS 4800 : 1989 *Schedule of paint colours for building purposes*

BA 27/99 *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 2 Quality Assurance Scheme for Paints and Similar Protective Coatings*

BD 35/99 *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*

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)

Process Guidance Note (PG) 6/23 (04) *Secretary of State's Guidance for Coating of Metal and Plastic Processes*



On behalf of the British Board of Agrément

Date of issue: 13th May 2005

Chief Executive

*\*Certificate amended on 21st June 2010 to include a change of primer name Sigmacover 690.*

**British Board of Agrément**

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For technical or additional information, contact the Certificate holder (see front page).  
For information about the Agrément Certificate, including validity and scope, tel: Hotline 01923 665400, or check the BBA website.





PPG Protective &amp; Marine Coatings

SIGMACOVER 300 —  
TO HA ITEM No 150**HAPAS**Roads and Bridges  
Certificate No 05/H106**DETAIL SHEET 5**

Amendment 13th August 2009\*

## Product

Sigmacover is a two-pack, high-build, pitch-epoxy/polyamide undercoat finish for use as part of a specification for the protection of steelwork in accordance with the Manual of Contract Documents for Highway Works (MCHW), Volumes 1 and 2, where Item No 150 is specified.

This Detail Sheet must be read in conjunction with the Front Sheet, which gives the product's position regarding HAPAS requirements, general information and the Conditions of Certification.

## Technical Specification

### 1 Description

1.1 Sigmacover 300 is a two-pack, high-build, pitch-epoxy/polyamide undercoat and finish for use with Sigma EP 110 Primer (approved under Item No 110). The product is available in black or brown.

1.2 The characteristics of the product are:

Specific gravity	base	1.5–1.6
	activator	0.96–1.0
	mixed	1.4–1.6
Volume solids (%)	mixed	65
Flashpoint (°C)	base	25
	activator	26
VOC (g <sup>l</sup> <sup>-1</sup> ) (to PG 6/23)	mixed	295

### 2 Delivery, site handling and storage

2.1 The product is supplied in 4 litre and 20 litre packs, in the correct proportions. The gross weight of the mixed 20 litre container is 34 kg.

2.2 The base is classified as toxic, harmful and flammable under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3) and the activator is classified as corrosive, harmful and flammable. Containers of both parts carry the appropriate hazard labelling, product reference and batch date.

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

## Design Data

### 3 General

Sigmacover 300 is for use as an undercoat or finish over blast-cleaned steelwork, primed with Sigma EP110 Primer (which meets Item No 110).

## Installation

### 4 Mixing procedure

The base is mixed with a power agitator, the entire contents of the activator are added, and the product is mixed thoroughly. The product is used within the pot life given in Table 1.

Table 1 Application properties

	Temperature (°C)			
	5	10	20	30
Surface dry (h)	16	6	2	1
Hard dry (h)	48	30	16	8
Minimum overcoating time (h)	24	18	6	4
Maximum overcoating time (days)	21	12	4	3
Pot life (h)	12	10	6	2

### 5 Application

5.1 Sigmacover 300 is applied by spray, to achieve a dry film thickness (dft) of 100 µm to 150 µm:

- airless spray — tip range from 0.53 mm to 0.64 mm, output fluid pressure 150 bar.

5.2 If appropriate, the product may be overcoated with the Certificate holder's products holding the appropriate HAPAS approval, after the minimum overcoating period described in Table 1.

## Technical Investigations

The product has been registered in accordance with the procedures of BA 27/99 and found to comply with the requirements of BD 35/99:

- Date of original approval 25 September 2003.
- Date of approval as Sigmacover 300, 3 March 2005.

## Bibliography

BA 27/99 *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 2 Quality Assurance Scheme for Paints and Similar Protective Coatings*

BD 35/99 *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*

*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)*

*Process Guidance Note (PG) 6/23 (04) Secretary of State's Guidance for Coating of Metal and Plastic Processes*



On behalf of the British Board of Agrément

Date of issue: 13th May 2005

A handwritten signature in black ink, appearing to read 'P. C. Newson'.

Chief Executive

*\*Certificate amended on 13th August 2009 to include a change of all company details.*



PPG Protective &amp; Marine Coatings

SIGMA ETCH (T-WASH) —  
TO HA ITEM No 155**HAPAS**Roads and Bridges  
Certificate No 05/H106**DETAIL SHEET 6**

Amendment 1 3th August 2009\*

## Product

*Sigma Etch (T-Wash) is a mordant wash for galvanized surfaces for use as part of a specification for the protection of steelwork in accordance with the requirements of the Manual of Contract Documents for Highway Works (MCHW), Volumes 1 and 2, where Item No 155 is specified.*

*This Detail Sheet must be read in conjunction with the Front Sheet, which gives the product's position regarding HAPAS requirements, general information and the Conditions of Certification.*

## Technical Specification

### 1 Description

1.1 Sigma Etch (T-Wash) is a phosphoric, acid-based mordant wash for galvanized surfaces (T-wash), and is pale blue in colour.

1.2 The characteristics of the product are:

Specific gravity	1.0–1.04
Flashpoint (°C)	34
VOC (g/l) (to PG 6/23)	335

### 2 Delivery, site handling and storage

2.1 The product is supplied in 5 litre plastic bottles.

2.2 The product is classified as irritant and flammable under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3). Containers carry the appropriate hazard labelling, product reference and batch code.

2.3 When stored in the original containers in a paint store in the conditions recommended by the manufacturer, the product has a minimum shelf-life of 18 months.

## Design Data

### 3 General

Sigma Etch (T-Wash) is for use as a mordant treatment for new or weathered, galvanized steelwork as an adhesion promoter for subsequent overcoating.

## Installation

### 4 Mixing procedure

The container is agitated thoroughly before use.

### 5 Application

5.1 The product is applied by brush to new surfaces within seven days of galvanizing, or to clean, dry, weathered galvanized surfaces.

5.2 In a satisfactory treatment, the surface will turn black. Where not, it is likely that the surface is greasy, contaminated, or may have a coherent film of corrosion products. In such cases, the surface must be cleaned and the product reapplied.

5.3 The treated surface is overcoated with the Certificate holder's paint systems holding the appropriate HAPAS approval within the overcoating periods given in Table 1.

Table 1 Overcoating interval

Duration	Temperature (°C)		
	10	20	30
Min (h)	2	1	1
Max (days)	2	2	2

## Technical Investigations

Sigma Etch (T-Wash) has been registered in accordance with the procedures of BA 27/99 and complies with the composition requirements of BD 35/99:

- Date of approval 20 June 2003.

## Bibliography

BA 27/99 *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 2 *Quality Assurance Scheme for Paints and Similar Protective Coatings*

BD 35/99 *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*

*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)*

*Process Guidance Note (PG) 6/23 (04) Secretary of State's Guidance for Coating of Metal and Plastic Processes*



On behalf of the British Board of Agrément

Date of issue: 13th May 2005

A handwritten signature in black ink, appearing to read 'P. C. Newstead'.

Chief Executive

*\*Certificate amended on 13th August 2009 to include a change of all company details.*



PPG Protective &amp; Marine Coatings

SIGMA EP 159 SEALER —  
TO HA ITEM No 159**HAPAS**

Roads and Bridges

Certificate No 05/H106

**DETAIL SHEET 7**

Amendment 13th August 2009\*

## Product

*Sigma EP 159 Sealer is a two-pack, aluminium, epoxy sealer/primer for use as part of a specification for the protection of steelwork in accordance with the Manual of Contract Documents for Highway Works (MCHW), Volumes 1 and 2, where Item No 159 is specified.*

*This Detail Sheet must be read in conjunction with the Front Sheet, which gives the product's position regarding HAPAS requirements, general information and the Conditions of Certification.*

## Technical Specification

### 1 Description

1.1 Sigma EP 159 Sealer is a two-pack, epoxy sealer, pigmented with aluminium flake. The product is available in one colour, grey.

1.2 The characteristics of the product are:

Specific gravity	base	0.99–1.04
	activator	0.90–0.95
	mixed	0.97–1.02
Volume solids (%)	mixed	45
Flashpoint (°C)	base	25
	activator	24
VOC content (g <sup>l</sup> <sup>-1</sup> ) (to PG 6/23)	mixed	549

### 2 Delivery, site handling and storage

2.1 The product is supplied in 4 litre or 20 litre packs, in the correct proportions. The gross weight of the mixed 20 litre container is 20 kg.

2.2 The base is classified as harmful, dangerous for the environment and flammable under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3) and the activator is classified as flammable and harmful. Containers of both parts carry the appropriate hazard labelling, product reference, and batch code.

2.3 When stored in the original containers in a paint store in the conditions recommended by the paint manufacturer, the product has a minimum shelf-life of 18 months.

## Design Data

### 3 General

Sigma EP 159 Sealer is for use as a sealer for aluminium metal spray on steelwork, prior to overcoating with MIO epoxy, oleo-resinous or acrylated rubber paints.

## Installation

### 4 Mixing procedure

The base is mixed with a power agitator, the entire contents of the activator are added, and the product is mixed thoroughly. The product is used within the pot life given in Table 1.

Table 1 Application properties

	Temperature (°C)		
	10	20	30
Surface dry (mins)	90	45	25
Hard dry (h)	4	3	1
Minimum overcoating time (h)	8	8	6
Maximum overcoating time (h)	96	96	96
Pot life (h)	10	8	4

### 5 Application

5.1 Sigma EP 159 Sealer is applied by spray or brush, to achieve a coverage of 12–20 m<sup>2</sup>l<sup>-1</sup>:

- airless spray — tip range from 0.32 mm to 0.41 mm, output fluid pressure 120–150 bar.

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

## Technical Investigations

Sigma EP 159 Sealer has been registered in accordance with the procedures of BA 27/99 and found to comply with the requirements of BD 35/99:

- Date of approval 30 March 2004.

## Bibliography

BA 27/99 *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 2 Quality Assurance Scheme for Paints and Similar Protective Coatings*

BD 35/99 *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*

*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)*

*Process Guidance Note (PG) 6/23 (04) Secretary of State's Guidance for Coating of Metal and Plastic Processes*



On behalf of the British Board of Agrément

Date of issue: 13th May 2005

Chief Executive

*\*Certificate amended on 13th August 2009 to include a change of all company details.*





PPG Protective &amp; Marine Coatings

**SIGMADUR 550** —  
TO HA ITEM No 168

## Product

*Sigmadur 550 is a two-pack, polyurethane gloss finish for use as part of a specification for the protection of steelwork in accordance with the Manual of Contract Documents for Highway Works (MCHW), Volumes 1 and 2, where Item No 168 is specified.*

*This Detail Sheet must be read in conjunction with the Front Sheet, which gives the product's position regarding HAPAS requirements, general information and the Conditions of Certification.*

## Technical Specification

### 1 Description

1.1 Sigmadur 550 is a two-pack, polyurethane gloss finish. The product is available in a range of colours to BS 4800 : 1989 and RAL, details of which are available from the Certificate holder.

1.2 The characteristics of the product are:

Specific gravity	base	1.22–1.44
	activator	1.07
	mixed	1.2–1.4
Volume solids (%)	mixed	56
Flashpoint (°C)	base	33
	activator	42
VOC (g l <sup>-1</sup> ) (to PG 6/23)	base	398
	mixed	398

### 2 Delivery, site handling and storage

2.1 The product is supplied in 4 litre and 20 litre packs in the correct proportions. The gross weight of the mixed 20 litre container is 30 kg.

2.2 The base is classified as harmful and flammable under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3) and the activator is classified as harmful, dangerous to the environment and flammable. Containers of both parts carry the appropriate hazard labelling, product reference, and batch code.

2.3 When stored in the original containers in a paint store in the conditions recommended by the paint manufacturer, the product has a minimum shelf-life of six months.

## Design Data

### 3 General

Sigmadur 550 is for use as the topcoat of a corrosion-protection system for structural steel, and is for application over the Certificate holder's undercoats and primers meeting Item No 112, 116 or 162 and over properly prepared, weathered coatings.

## Installation

### 4 Mixing procedure

The base is mixed with a power agitator, the entire contents of the activator are added, and the product is mixed thoroughly. The product is used within the pot life given in Table 1.

Table 1 Application properties

	Temperature (°C)			
	5	10	20	30
Surface dry (h)	3	2	1	½
Hard dry (h)	16	8	6	5
Minimum overcoating time (h)	16	8	6	5
Pot life (h)	8	6	5	3

### 5 Application

Sigmadur 550 is applied by spray or brush to achieve a dry film thickness (dft) of 50 µm to 70 µm in a spray application, or of 40 µm to 50 µm in a brush application [equivalent to a wet film thickness (wft) range of 89 µm to 125 µm and 70 µm to 89 µm respectively]:

- airless spray — tip size 0.33 mm, output fluid pressure 150 bar
- brush.

## Technical Investigations

The product has been registered in accordance with the procedures of BA 27/99 and found to comply with the requirements of BD 35/99:

- Date of original approval 8 March 1993.
- Date of approval as Sigmadur 550, 30 July 1994.

## Bibliography

BS 4800 : 1989 *Schedule of paint colours for building purposes*

BA 27/99 *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 2 Quality Assurance Scheme for Paints and Similar Protective Coatings*

BD 35/99 *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*

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)*

Process Guidance Note (PG) 6/23 (04) *Secretary of State's Guidance for Coating of Metal and Plastic Processes*



On behalf of the British Board of Agrément

Date of issue: 13th May 2005

A handwritten signature in black ink, appearing to read 'P. C. Newstead'.

Chief Executive

*\*Certificate amended on 13th August 2009 to include a change of all company details.*

**British Board of Agrément**

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For technical or additional information, contact the Certificate holder (see front page).  
For information about the Agrément Certificate, including validity and scope, tel: Hotline 01923 665400, or check the BBA website.

## Product

Sigmadur 520 is a two-pack, polyurethane semi-gloss finish for use as part of a specification for the protection of steelwork in accordance with the Manual of Contract Documents for Highway Works (MCHW), Volumes 1 and 2, where Item No 169 is specified.

This Detail Sheet must be read in conjunction with the Front Sheet, which gives the product's position regarding HAPAS requirements, general information and the Conditions of Certification.

## Technical Specification

### 1 Description

1.1 Sigmadur 520 is a two-pack, polyurethane semi-gloss finish. The product is available in a range of colours to BS 4800 : 1989 and details of which are available from the Certificate holder.

1.2 The characteristics of the product are:

Specific gravity	base	1.35–1.39
	activator	1.07
	mixed	1.2–1.4
Volume solids (%)	mixed	58
Flashpoint (°C)	base	30
	activator	42
VOC content (g <sup>l</sup> <sup>-1</sup> ) (to PG 6/23)	mixed	389

### 2 Delivery, site handling and storage

2.1 The product is supplied in 4 litre and 20 litre packs in the correct proportions. When mixed, the gross weight of the 20 litre container is 30 kg.

2.2 The base is classified as harmful and flammable under the Chemicals (Hazard Information and Packaging for Supply) Regulations 2002 (CHIP3) and the activator is classified as harmful, dangerous to the environment and flammable. Containers of both parts carry the appropriate hazard labelling, product reference, and batch code.

2.3 When stored in the original containers in a paint store in the conditions recommended by the manufacturer, the product has a minimum shelf-life of 18 months.

## Design Data

### 3 General

Sigmadur 520 is for use as the topcoat of a corrosion-protection system for structural steel, and is for application over the Certificate holder's undercoats and primers meeting Item No 112, 116 or 162.

## Installation

### 4 Mixing procedure

The base is mixed with a power agitator, the entire contents of the activator are added, and the product is mixed thoroughly. The product is used within the pot life given in Table 1.

Table 1 Application properties

	Temperature (°C)			
	5	10	20	30
Surface dry (h)	3	2	1	½
Hard dry (h)	16	8	6	5
Minimum overcoating time (h)	16	8	6	5
Pot life (h)	8	6	5	3

### 5 Application

Sigmadur 520 is applied by spray or brush to achieve a dry film thickness (dft) of 50 µm to 115 µm in a spray application, or of 40 µm to 60 µm in a brush application [equivalent to a wet film thickness (wft) from 86 µm to 198 µm and from 69 µm to 103 µm respectively]:

- airless spray — tip range from 0.33 mm, output fluid pressure 150 bar
- brush.

## Technical Investigations

The product has been registered in accordance with the procedures of BA 27/99 and found to comply with the requirements of BD 35/99:

- Date of original approval 25 September 2003.
- Date of approval as Sigmadur 520, 30 July 2004.

## Bibliography

BS 4800 : 1989 *Schedule of paint colours for building purposes*

BA 27/99 *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 2 Quality Assurance Scheme for Paints and Similar Protective Coatings*

BD 35/99 *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*

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)

Process Guidance Note (PG) 6/23 (04) *Secretary of State's Guidance for Coating of Metal and Plastic Processes*



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Chief Executive

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