
**VOLUME 2 HIGHWAY STRUCTURES:
DESIGN
(SUBSTRUCTURES AND
SPECIAL STRUCTURES)
MATERIALS**

**SECTION 4 PAINTS AND OTHER
PROTECTIVE COATINGS**

PART 1

BD 35/14

**QUALITY ASSURANCE SCHEME FOR PAINTS
AND SIMILAR PROTECTIVE COATINGS**

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1. INTRODUCTION

Mandatory Sections

- 1.1 Sections of this document which contain requirements of the Overseeing Organisations are highlighted by being contained in boxes. These requirements must be complied with unless a departure from Standard has been agreed with the relevant Overseeing Organisation in accordance with their procedures. The remainder of this document contains advice, guidance and explanation to be read in conjunction with the requirements.

General

- 1.2 This version of the Standard replaces BD 35/06 issued in May 2006. BD 35/06 incorporated minor amendments to Items 14, 32, 110, 111, 116, 123, 124 and 185 and an update to Annex C. This edition incorporates minor corrections, updates and improvements to the wording in a number of paragraphs throughout the Standard. In the Manual of Paints for Structural Steelwork (Annex A), two items have had a minor amendment (Item 155 and 168), two items (Items 109 and 167) have been added and sixteen items (Items 14, 32, 35, 47, 50, 70, 74, 124, 132, 133, 134, 135, 141, 150, 151 and 156) have been deleted. The only items that are now listed in Annex A are those that are included in protective paint systems that are described in Series 1900 (MCHW 1.1900) or Series 5000 (MCHW 1.5000) of the Manual of Contract Documents for Highways Works. A minor amendment has been made to Annex B, B2 with the final paragraph now giving an acceptance criteria for the overcoating test. The British Standards referenced in Annex C have been updated where necessary.
- 1.3 The advice and requirements in this standard are given on the basis that the works will be executed in accordance with the Specification for Highway Works. (Manual of Contract Documents for Highway Works, Volume 1 (MCHW 1)). Products conforming to equivalent standards and specifications of other Members States of the European Economic Area (EEA) or a State which is party to a relevant agreement with the European Union and tests undertaken in other Member States of the EEA or a State which is party to a relevant agreement with the European Union will be acceptable in accordance with the terms of Clause 104 (MCHW 1.100).

Scope

- 1.4 This standard gives details, guidance and describes the operation of the quality assurance scheme for paints and similar protective coatings used in the protection of steelwork for highway structures against corrosion. The Manual of Paints for Structural Steelwork at Annex A provides data on paints and similar materials for use in the Overseeing Organisation's painting contracts.

Implementation

- 1.5 This Standard must be used forthwith for all schemes currently being prepared provided that, in the opinion of the Overseeing Organisation, this would not result in significant additional expense or delay progress. Design Organisations must confirm its application to particular schemes with the Overseeing Organisation.

2. QUALITY ASSURANCE SCHEME

General

2.1 The quality assurance scheme for paints requires paint manufacturers to obtain a BBA HAPAS Roads and Bridges Certificate or equivalent for their products by following the procedures given in the BBA HAPAS document 'Guideline for the Assessment and Certification of Paints and Similar Protective Coatings' and disclosing information on the formulation and testing to BBA and, when required, to the Highways Agency (HA) before offering paints for use in the Overseeing Organisation's contracts.

2.2 The quality assurance scheme for paints comprises:

- (i) Certification of paints which is administered by the BBA under HAPAS and the HA on behalf of all the United Kingdom Trunk Road Overseeing Organisations to ensure that only paints that give the required level of corrosion protection are used in the protection of steelwork for highway structures; and
- (ii) Testing of 'A' and 'B' paint samples taken from paint supplied to works which must be checked by the Overseeing Organisation in accordance with Chapter 4 to ensure compliance with the certified formulations.

2.3 The certification of paint materials includes the review of manufacturers' formulations and assessment of paint samples to ensure they comply with the performance requirements stated in the BBA HAPAS document 'Guideline for the Assessment and Certification of Paints and Similar Protective Coatings'.

BBA HAPAS Roads and Bridges Certificates of Paint Products

2.4 Copies of BBA HAPAS Roads and Bridges Certificates for those paint products that have gained approval can be obtained from the BBA website: www.bbacerts.co.uk.

Additional Test Clauses to BS 3900

2.5 Annex B provides details of additional tests that may be carried out in the assessment of the performance of paints. A cross reference to these tests is made in the BBA HAPAS document 'Guideline for the Assessment and Certification of Paints and Similar Protective Coatings'.

Permitted Paints for Use in an Overseeing Organisation Works

2.6 The paints permitted for use by the Overseeing Organisation in the Works are listed in the Manual of Paints for Structural Steelwork at Annex A. The paints are used in various protective systems, the details of which are described in Series 1900 (MCHW 1.1900) and Series 5000 (MCHW 1.5000). All paints supplied for the Works must be labelled in accordance with current Chemicals (Hazard Information and Packaging for Supply) Regulations and shall have a current BBA HAPAS Roads and Bridges Certificate or equivalent.

Introduction of New Paint Products

- 2.7 Manufacturers who wish to supply new paint products to the Overseeing Organisation's contracts must obtain a BBA HAPAS Roads and Bridges Certificate or equivalent for their products before offering their products for use in the Overseeing Organisation's contracts.

Arrangements for Specifying Protective Systems for New Works Painting

- 2.8 Protective systems for bridges and other highway structures, including steel in bridge bearings, CCTV masts, cantilever masts and steel lighting columns and bracket arms, are detailed in Series 1900 (MCHW 1.1900). Details for protective coatings are conveyed to tenderers through contract-specific Appendices, based on the Series NG 1900 Appendices (MCHW 2.1900).

Arrangements for Specifying Protective Systems for Maintenance Painting

- 2.9 Protective systems for maintenance painting are detailed in Series 5000 (MCHW1.5000). Details for protective coatings are conveyed to tenderers through contract-specific Appendices, based on Series NG 5000 Appendices (MCHW 2.5000).

3. DESCRIPTION OF THE MANUAL OF PAINTS

Standard Terminology

3.1 Paints are described in the Manual of Paints for Structural Steelwork at Annex A using standard terminology to enable paints to be described in generic terms and without specifying trade names. It is used for the Registered Description in Paint Item Sheets and in Series 1900 and 5000, and may be used in Paint Data Sheets to convey the following information:

- (i) Name of Pigment: where a pigment provides inhibitive or structural properties it is named, e.g. Micaceous Iron Oxide (MIO), Zinc Phosphate. Where pigments provide colour, opacity or act as extenders etc. the pigments are not named.
- (ii) Type of Medium: the type of medium is described, e.g. Polyurethane, Polysiloxane, Epoxy.
- (iii) Use: i.e. Blast Primer, Primer, Undercoat or Finish. A description may be given where the material is suited to a specific use, e.g. maintenance, internal, adhesion promoter.

The first coat only in a paint system is described as a Blast Primer or Primer, all subsequent intermediate coats are described as Undercoats, the last coat being the Finish. A dual purpose paint may be described, e.g. 'Undercoat or Finish'. The type of finish may be described, e.g. sheen, gloss.

- (iv) Component: to convey the number of components that make up the material, e.g. 'single component' or 'two pack' may be described.
- (v) Other: Other descriptions may be given to reflect specific properties, e.g. moisture cured, extended cure, high build.

Item Sheets

3.2 The Manual of Paints for Structural Steelwork at Annex A provides details for paints in the Item sheets. Each Item sheet gives:

- (i) a description of the paint;
- (ii) its colour;
- (iii) its use;
- (iv) its dry film thickness range;
- (v) its build and method of application;
- (vi) an outline composition;

3.3 The Manual of Paints for Structural Steelwork Item sheets does not provide information on the selection of suitable paint systems for new construction or maintenance of existing structures.

4. TESTING OF CONTRACT PAINT SAMPLES

Standard Testing Arrangements

- 4.1 Requirements for the testing of paint samples for new works contracts are given in Series 1900 (MCHW 1.1900) and advice is given in Series NG 1900 (MCHW 2.1900).
- 4.2 Requirements for the testing of paint samples for maintenance painting contracts are given in Series 5000 (MCHW 1.5000) and advice is given in Series NG 5000 (MCHW 2.5000).

5. REFERENCES

Normative References

Manual of Contract Documents for Highway Works, Specification for Highway Works Volume 1 (MCHW 1) – Series 100, Clause 104

BBA HAPAS document ‘Guideline for the Assessment and Certification of Paints and Similar Protective Coatings’ published by British Board of Agrément, Bucknalls Lane, Watford, Herts WD25 9BA

Chemicals (Hazard Information and Packaging for Supply) Regulations 2009

Informative References

Manual of Contract Documents for Highway Works, Specification for Highway Works Volume 1 (MCHW 1) – Series 1900 and 5000

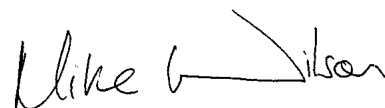
Manual of Contract Documents for Highway Works, Specification for Highway Works Volume 2 (MCHW 2) – Series NG1900 and NG5000

BS 3900 – Methods of test for paints

6. ENQUIRIES

All technical enquiries or comments on this Standard should be sent in writing as appropriate to:

Chief Highway Engineer
The Highways Agency
Temple Quay House
The Square
Temple Quay
Bristol
BS1 6HA



Mike Wilson
Chief Highways Engineer

Director, Trunk Road and Bus Operations
Transport Scotland
8th Floor, Buchanan House
58 Port Dundas Road
Glasgow
G4 0HF



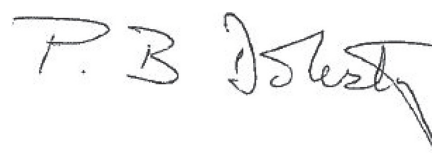
R Brannen
Director, Trunk Road and
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Deputy Director Network Management Division
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Cathays Park
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CF10 3NQ



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These regulations were notified in draft to the European Commission in accordance with Directive 98/34/EC, as amended by Directive 98/48/EC.

ANNEX A MANUAL OF PAINTS FOR STRUCTURAL STEELWORK

CONTENTS		Page
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1 HEALTH AND SAFETY

The Manual of Paints for Structural Steelwork describes materials that may be injurious to health if adequate precautions are not taken. The manual refers only to technical suitability of the materials described. Those involved in the specification or design of works using these materials, and those involved in the manufacture, supply or use of these materials are not absolved from complying with their statutory health and safety obligations.

2 ABBREVIATIONS

NOTE 1: All paint products shall be classified as single-component or two-pack product.

NOTE 2: Under BUILD AND METHOD OF APPLICATION

'HB'	=	High Build (dft: above 75 µm per coat)
'NB'	=	Normal Build (dft: between 50 and 75 µm per coat)
'LB'	=	Low Build (dft: below 50 µm per coat)
'B'	=	Apply by brush
'AS'	=	Apply by airless spray

3 ITEM SHEETS

Item No. 109		
1.	REGISTERED DESCRIPTION:	Zinc Rich Epoxy Blast Primer (two-pack)
2.	COLOURS:	Grey or tinted grey
3.	USE:	Quick drying blast primer
4.	DRY FILM THICKNESS (dft in μm):	Dft range: As described in the manufacturer's data sheet
5.	BUILD AND METHOD OF APPLICATION:	LB or NB/ AS or B*
6.	OUTLINE COMPOSITION:	
	(i) Pigment Volume Concentration (%):	As described in the manufacturer's declared formulation
	(ii) Pigment:	To include zinc dust to BS EN ISO 3549:2002, minimum 80% by weight in dry film, as described in the manufacturer's declared formulation
	(iii) Medium:	Epoxy resin with separately packed polyamine or polyamide cure agent, as described in the manufacturer's declared formulation
	(iv) Volatile:	As described in the manufacturer's declared formulation
	(v) Mixing Properties:	As described in the manufacturer's declared formulation

*May be brush applied to small areas and used for 'touch in' repairs to scratched or mechanically damaged galvanised coatings on steel components.

Item No. 110				
1.	REGISTERED DESCRIPTION:	Zinc Phosphate Epoxy Blast Primer/Sealer(two-pack)		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	Extended durability Blast Primer		
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	LB/B or AS (B to small areas only)		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	Zinc Phosphate ('BS 5193 : 1991, ISO 6745 : 1990'):	minimum 65%	As described in the manufacturer's declared formulation
		Extenders and anti-settling agents:	to 100%	
	(iii) Medium:	Epoxy resin together with a separately packed polyamide activator:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	As described in the manufacturer's declared formulation		
	(v) Mixing Properties:	As described in the manufacturer's declared formulation		

Item No. 111				
1.	REGISTERED DESCRIPTION:	Zinc Phosphate High Build Quick Drying Epoxy Blast Primer (two-pack)		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	Extended durability quick drying blast primer		
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	HB/AS (small areas by B)		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	Zinc Phosphate ('BS 5193 : 1991, ISO 6745 : 1990'):	minimum 35%	As described in the manufacturer's declared formulation
		Extenders and anti-settling agents:	to 100%	
	(iii) Medium:	Epoxy resin together with a separately packed Polyamide/amine adduct activator with suitable accelerator:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	As described in the manufacturer's declared formulation		
(v) Mixing Properties:	As described in the manufacturer's declared formulation			

Item No. 112				
1.	REGISTERED DESCRIPTION:	MIO High Build Quick Drying Epoxy Undercoat/ Finish (two-pack)		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	Undercoat or finish		
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	HB/AS		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	MIO (BS EN ISO 1248 : 2008):	minimum 80%	As described in the manufacturer's declared formulation
		Extenders and anti-settling agents:	to 100%	
	(iii) Medium:	Epoxy resin together with a separately packed Polyamide/amine adduct activator with suitable accelerator:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	As described in the manufacturer's declared formulation		
	(v) Mixing Properties:	As described in the manufacturer's declared formulation		

Item No. 113			
1.	REGISTERED DESCRIPTION:	Water based epoxy primer for blast cleaned internal surfaces (two-pack)	
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate	
3.	USE:	A water based epoxy primer for anti-corrosive protection of steel surfaces prepared by blast cleaning. For internal use only	
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet	
5.	BUILD AND METHOD OF APPLICATION:	HB/B or AS	
6.	OUTLINE COMPOSITION:		
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation	
	(ii) Pigment:	Colouring pigments to give full opacity at Data Sheet film thickness:	As described in the manufacturer's declared formulation
		Exterior grade barrier pigments and anti-settling agents:	
	(iii) Medium:	Modified amine adduct solution with additives to improve pigment wetting, foam control and 'in-can' stability:	As described in the manufacturer's declared formulation
		Separately packed low molecular weight epoxy resin:	As described in the manufacturer's declared formulation
	(iv) Volatile:	As described in the manufacturer's declared formulation	
	(v) Mixing Properties:	As described in the manufacturer's declared formulation	

Item No. 114			
1.	REGISTERED DESCRIPTION:	Water based epoxy undercoat/sheen finish for internal use (two-pack)	
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate	
3.	USE:	A water based epoxy undercoat/sheen finish for application on to suitably primed steel surfaces. For internal use only.	
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet	
5.	BUILD AND METHOD OF APPLICATION:	HB/B or AS	
6.	OUTLINE COMPOSITION:		
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation	
	(ii) Pigment:	Colouring pigments to give full opacity at Data Sheet film thickness:	As described in the manufacturer's declared formulation
		Exterior grade barrier pigments and anti-settling agents:	
	(iii) Medium:	Modified amine adduct solution with additives to improve wetting, foam control and 'in-can' stability:	As described in the manufacturer's declared formulation
		Separately packed low molecular weight epoxy resin:	As described in the manufacturer's declared formulation
	(iv) Volatile:	As described in the manufacturer's declared formulation	
	(v) Mixing Properties:	As described in the manufacturer's declared formulation	

Item No. 115				
1.	REGISTERED DESCRIPTION:	High Build Aluminium Epoxy Maintenance Primer for abraded surfaces (two-pack)		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	A high build modified surface tolerant epoxy primer (two-pack) to provide improved adhesion and flexibility when applied to suitably prepared steelwork and existing aged coatings		
4.	DRY FILM THICKNESS (dft in µm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	HB/B or AS		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	Aluminium paste (65% minimum solids):	(15%±5%)	As described in the manufacturer's declared formulation
		Exterior quality pigments and anti-settling agents:	to 100%	
	(iii) Medium:	Modified epoxy resin together with a separately packed Polyamide/amine adduct activator with suitable accelerator:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	As described in the manufacturer's declared formulation		
	(v) Mixing Properties:	As described in the manufacturer's declared formulation		

Item No. 116				
1.	REGISTERED DESCRIPTION:	High Build Epoxy Maintenance Undercoat for abraded surfaces (two-pack)		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	A high build modified surface tolerant epoxy undercoat (two-pack) to provide improved adhesion and flexibility when applied to suitably prepared aged coatings and newly applied primer		
4.	DRY FILM THICKNESS (dft in µm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	HB/B or AS		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	Rutile Titanium Dioxide (BS EN ISO 591-1 : 2000)	minimum 35%	As described in the manufacturer's declared formulation
		Extenders, colouring pigments and anti-settling agents:	to 100%	
	(iii) Medium:	Modified epoxy resin together with a separately packed Polyamide/amine adduct activator with suitable accelerator:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	As described in the manufacturer's declared formulation		
	(v) Mixing Properties:	As described in the manufacturer's declared formulation		

Item No. 121				
1.	REGISTERED DESCRIPTION:	Extended Cure Epoxy MIO (two-pack), Primer, Undercoat and/or finish		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	MIO epoxy with improved adhesion characteristics for treatment of hot dip galvanised steel surfaces		
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	HB/AS (small areas by B)		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	MIO (BS EN ISO 1248: 2008):	minimum 80%	As described in the manufacturer's declared formulation
		Extenders and anti-settling agents:	to 100%	
	(iii) Medium:	Modified epoxy resin together with a separately packed Polyamide/amine adduct curing agent:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	As described in the manufacturer's declared formulation		
	(v) Mixing Properties:	As described in the manufacturer's declared formulation		

Item No. 123			
1.	REGISTERED DESCRIPTION:	High Build Glass Flake Epoxy Undercoat (two-pack)	
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate	
3.	USE:	Undercoat for blast cleaned steel new construction	
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet	
5.	BUILD AND METHOD OF APPLICATION:	HB/AS (stripe coats and small repairs only by brush)	
6.	OUTLINE COMPOSITION:		
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation	
	(ii) Pigment:	'C' type glass flake (nominal size 300 μm or less):	As described in the manufacturer's declared formulation
		Extenders, anti-settling agents, and coloured pigments:	
	(iii) Medium:	Epoxy resin together with a separately packed polyamide adduct or polyamine activator:	As described in the manufacturer's declared formulation
	(iv) Volatile:	As described in the manufacturer's declared formulation	
	(v) Mixing Properties:	As described in the manufacturer's declared formulation	

Item No. 155			
1.	REGISTERED DESCRIPTION:	'T' Wash adhesion promoter	
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate	
3.	USE:	Mordant wash to promote substrate adhesion properties of coating systems for hot dip galvanized steel. 'T' wash only is not a protective coating	
4.	DRY FILM THICKNESS (dft in μm):	Not applicable	
5.	BUILD AND METHOD OF APPLICATION:	LB/B	
6.	OUTLINE COMPOSITION:	Typical Composition (by weight) Phosphoric Acid 1.7 SG: 9.0% Propylene Glycol Methyl Ether: 16.5% Methylated Spirit/I.P.A.: 16.5% Water: 57.0% Copper Carbonate (Commercial): 1.0%	As described in the manufacturer's declared formulation

Item No. 157			
1.	REGISTERED DESCRIPTION:	Adhesion promoting primer (single-component)	
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate	
3.	DRY FILM THICKNESS (dft in µm):	Dft range: as described in the manufacturer's data sheet	
4.	USE:	<p>To promote substrate adhesion properties of coating systems for hot dip galvanised steel, aluminium and stainless steel surfaces</p> <p>The primer only is not a protective coating</p>	
5.	BUILD AND METHOD OF APPLICATION:	LB/AS or B	
6.	OUTLINE COMPOSITION:		
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation	
	(ii) Pigment:	Anti-corrosive pigments, inert extenders, colouring, pigments and anti-settling agents:	As described in the manufacturer's declared formulation
	(iii) Medium:	Solvent-borne PVB/ epoxy resin blend:	As described in the manufacturer's declared formulation
	(iv) Volatile:	As described in the manufacturer's declared formulation	

Item No. 159			
1.	REGISTERED DESCRIPTION:	Aluminium Epoxy Sealer/Primer (two-pack)	
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate	
3.	USE:	Sealer/Primer for aluminium metal spray coverage	
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet	
5.	BUILD AND METHOD OF APPLICATION:	LB/AS or B	
6.	OUTLINE COMPOSITION:		
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation	
	(ii) Pigment:	Non-Leafing aluminium:	98% to 99%
		Fugitive red dye or synthetic red oxide:	1% to 2%
	(iii) Medium:	Epoxy Resin together with a separately packed Polyamide Resin activator:	As described in the manufacturer's declared formulation
	(iv) Volatile:	As described in the manufacturer's declared formulation	
	(v) Mixing Properties:	As described in the manufacturer's declared formulation	

Item No. 160				
1.	REGISTERED DESCRIPTION:	Red Oxide Moisture Cured Polyurethane Primer/Blast Primer (single-component)		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	Primer/Blast Primer for blasted steel surface for maintenance or new works when the relative humidity is greater than 75% but for use in circumstances when the dew point has not been reached		
4.	DRY FILM THICKNESS (dft in µm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	LB/AS or B		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	Red Oxide (BS EN ISO 1248: 2008):	minimum 20%	As described in the manufacturer's declared formulation
		Extenders and anti-settling agents:	to 100%	
		Aluminium pigment not permitted		
	(iii) Medium:	Aromatic polyisocyanate and water scavenger:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	Aliphatic and/or Aromatic hydrocarbons:	As described in the manufacturer's declared formulation	

Item No. 162				
1.	REGISTERED DESCRIPTION:	MIO Moisture Cured Polyurethane Undercoat/Finish (single-component)		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	Undercoat for maintenance and new works when the relative humidity is greater than 75% but for use in circumstances when the dew point has not been reached		
4.	DRY FILM THICKNESS (dft in µm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	NB or HB/B or AS		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	MIO (BS EN ISO 1248:2008):	minimum 40%	As described in the manufacturer's declared formulation
		Extenders, tinting pigments and anti-settling agents:	to 100%	
		Aluminium pigment not permitted		
	(iii) Medium:	Aromatic polyisocyanate and water scavenger:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	Aliphatic and/or Aromatic hydrocarbons:	As described in the manufacturer's declared formulation	

Item No. 164				
1.	REGISTERED DESCRIPTION:	Moisture Cured Polyurethane Finish (single-component)		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	Semi-gloss finish for maintenance or new work when the relative humidity is greater than 75% but for use in circumstances when the dew point has not been reached		
4.	DRY FILM THICKNESS (dft in µm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	LB/B or NB/AS		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	Rutile Titanium Dioxide (BS EN ISO 591-1 : 2000) and tinting pigments:	As described in the manufacturer's declared formulation	
		Exterior quality extenders and anti-settling agents:		to 100%
		Aluminium pigment not permitted		
	(iii) Medium:	Aliphatic polyisocyanate and water scavenger:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	Aliphatic and/or Aromatic hydrocarbons:	As described in the manufacturer's declared formulation	

Item No. 167		
1.	REGISTERED DESCRIPTION:	Epoxy Acrylic Finish (two-pack)
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate
3.	USE:	As a decorative semi-gloss finish for new works or maintenance
4.	DRY FILM THICKNESS (dft in μm):	Dft range: As described in the manufacturer's data sheet.
5.	BUILD AND METHOD OF APPLICATION:	NB/AS or B*
6.	OUTLINE COMPOSITION:	
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation
	(ii) Pigment:	Rutile Titanium Dioxide (BS EN ISO 591-1:2000) and tinting pigments as described in the manufacturer's declared formulation
	(iii) Medium:	Carboxy functional styrene acrylic with separately packed liquid epoxy resin cure agent, as described in the manufacturer's declared formulation
	(iv) Volatile:	As described in the manufacturer's declared formulation
	(v) Mixing Properties:	As described in the manufacturer's declared formulation

* May be brush applied to small areas only

Item No. 168				
1.	REGISTERED DESCRIPTION:	Polyurethane (two-pack) Gloss Finish		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	Gloss Finish for new works or maintenance		
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	LB/B or NB/AS		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	Rutile Titanium Dioxide (BS EN ISO 591-1 : 2000) and tinting pigments:	As described in the manufacturer's declared formulation	
		Exterior quality extenders and anti-settling agents:		to 100%
		Aluminium pigment not permitted		
	(iii) Medium:	Hydroxyl functional acrylic/aliphatic poly isocyanate curing agent:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	As described in the manufacturer's declared formulation		
	(v) Mixing Properties:	As described in the manufacturer's declared formulation		

Item No. 169				
1.	REGISTERED DESCRIPTION:	Polyurethane (two-pack) Semi-Gloss Finish		
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate		
3.	USE:	Semi-gloss finish for new works or maintenance		
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet		
5.	BUILD AND METHOD OF APPLICATION:	NB/B or HB/AS (small areas by B)		
6.	OUTLINE COMPOSITION:			
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation		
	(ii) Pigment:	Rutile Titanium Dioxide (BS EN ISO 591-1 : 2000) and tinting pigments:	As described in the manufacturer's declared formulation	
		Exterior quality extenders and anti-settling agents:		to 100%
		Aluminium pigment not permitted		
	(iii) Medium:	Hydroxyl functional acrylic/aliphatic poly isocyanate curing agent:	As described in the manufacturer's declared formulation	
	(iv) Volatile:	As described in the manufacturer's declared formulation		
	(v) Mixing Properties:	As described in the manufacturer's declared formulation		

Item No. 185			
1.	REGISTERED DESCRIPTION:	Organic Modified Polysiloxane (two-pack) Gloss Finish	
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate	
3.	USE:	Gloss Finish for new works or maintenance	
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet	
5.	BUILD AND METHOD OF APPLICATION:	NB/B or HB/AS	
6.	OUTLINE COMPOSITION:		
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation	
	(ii) Pigment:	Rutile Titanium Dioxide (BS EN ISO 591-1 : 2000) or other exterior quality tinting pigments:	As described in the manufacturer's declared formulation
		Exterior quality extenders and anti-settling agents:	
	(iii) Medium:	Organic Modified Polysiloxane:	As described in the manufacturer's declared formulation
	(iv) Volatile:	Aliphatic/Aromatic Hydrocarbons:	As described in the manufacturer's declared formulation
	(v) Mixing Properties:	As described in the manufacturer's declared formulation	
7.	ADDITIONAL TESTING REQUIREMENTS:	Flexibility (Conical mandrel test): 'BS EN ISO 6860:2006, BS 3900-E11: 2006'. After 1 month ambient cure at 23°C and 50(\pm 5)% relative humidity. No cracking or disbondment beyond 20mm from small radius.	

Item No. 200			
1.	REGISTERED DESCRIPTION:	Grease Paint Penetrating Primer	
2.	COLOURS:	Tint contrasting to undercoat sufficient to show application	
3.	USE:	Penetrating primer for use with Item 201	
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet	
5.	BUILD AND METHOD OF APPLICATION:	B (AS for internal surfaces of lighting columns and other difficult access situations)	
6.	OUTLINE COMPOSITION:		
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation	
	(ii) Pigment:	As described in the manufacturer's declared formulation	
	(iii) Medium:	Calcium soap of oxidised petroleum, hydrocarbon resins and de-watering agent:	As described in the manufacturer's declared formulation
	(iv) Volatile:	White spirit or SBP solvents:	As described in the manufacturer's declared formulation

Item No. 201			
1.	REGISTERED DESCRIPTION:	Grease Paint Undercoat/Finish	
2.	COLOURS:	As the manufacturer's declared colour given with reference to BS 4800 and/or BS 381C where appropriate	
3.	USE:	Undercoat and Finish over penetrating primer	
4.	DRY FILM THICKNESS (dft in μm):	Dft range: as described in the manufacturer's data sheet	
5.	BUILD AND METHOD OF APPLICATION:	HB/B or AS	
6.	OUTLINE COMPOSITION:		
	(i) Pigment volume concentration (%):	As described in the manufacturer's declared formulation	
	(ii) Pigment:	Rutile Titanium Dioxide (BS EN ISO 591-1 : 2000) or other exterior quality and tinting pigments:	100% As described in the manufacturer's declared formulation
	(iii) Medium:	Calcium soap of oxidised petroleum wax:	As described in the manufacturer's declared formulation
	(iv) Volatile:	White spirit or SBP solvents:	As described in the manufacturer's declared formulation

ANNEX B ADDITIONAL TEST CLAUSES TO BS 3900

B1 Application and Appearance

i. Airless spray grade

A single coat of paint shall be applied using the size and pressures recommended in the paint manufacturer's data sheet to a 300 mm x 300 mm, or larger, burnished steel panel.

The paint shall be applied to give the wet film thickness stated in the paint manufacturer's data sheet.

The film shall be allowed to dry for 24 hours in a vertical position at a temperature of $23^{\circ} \pm 2^{\circ}\text{C}$ and shall be free from cracking, cratering, pinholing, rivelling, sagging, bittiness, cissing or other surface defects.

ii. Brushing grade

A single coat of paint shall be applied to a 300 mm x 300 mm, or larger, burnished steel panel to give the wet film thickness stated in the paint manufacturer's data sheet or, where the wet film thickness is not given, the maximum dry film thickness stated in the paint manufacturer's data sheet.

The film shall be allowed to dry for 24 hours in a vertical position at a temperature of $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and shall be free from cracking, cratering, rivelling, sagging, bittiness, cissing or other surface defects.

B2 Overcoating

A single coat of paint shall be applied to a 300 mm x 300 mm, or larger, burnished steel panel to give the wet film thickness stated in the paint manufacturer's data sheet.

After air drying at $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$ for the period of time stated in the paint manufacturer's data sheet, the paint shall be overcoated with the next coat in the system. The second coat of paint shall be applied at the wet film thickness stated in the paint manufacturer's data sheet or, where the wet film thickness is not stated, the maximum dry film thickness stated in the paint manufacturer's data sheet.

When dry the combined paint coats shall be free from any wrinkling, rivelling or other surface defect caused by overcoating the first coat of paint with the second coat of paint.

ANNEX C STANDARDS REFERRED TO IN ANNEX A

BS 381C : 1996 Specification of colours for identification, coding and special purposes

‘BS EN ISO 6860: 2006, BS 3900-E11: 2006’ Paints and varnishes. Bend test (conical mandrel)

BS EN ISO 1248 : 2008 Iron oxide pigments – Specifications and methods of tests

BS 4800 : 2011 Schedule of paint colours for building purposes

‘BS 5193 : 1991, ISO 6745 : 1990’ Specification for zinc phosphate pigments for paints

BS EN ISO 591-1 : 2000 Titanium dioxide pigments for paints. Specifications and methods of test

BS EN ISO 3549: 2002 Zinc dust pigments for paints – Specifications and test methods

