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

**SECTION 4 PAINTS AND OTHER
PROTECTIVE COATINGS**

PART 2

BA 27/99

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

SUMMARY

This Advice Note describes the operation of the quality assurance scheme for paints and similar protective coatings used in the protection of motorway and other trunk road steelwork structures. It supersedes and replaces BA 27/93, and has been amended to take account of the variety of contract conditions now in use, recent Health & Safety legislation on the control of solvent emissions into the atmosphere, the introduction of two-pack paint materials and changes to the contact details of participating organisations.

INSTRUCTIONS FOR USE

1. Remove BA 27/93 which is superseded by BA 27/99 and archive as appropriate.
2. Insert BA 27/99 into Volume 2, Section 4, Part 2.
3. Archive this sheet as appropriate.

Note: New contents pages for Volume 2 containing reference to this document are available with BD 35/99.



THE HIGHWAYS AGENCY



**THE SCOTTISH EXECUTIVE DEVELOPMENT
DEPARTMENT**



**THE NATIONAL ASSEMBLY FOR WALES
CYNULLIAD CENEDLAETHOL CYMRU**



**DEPARTMENT OF THE ENVIRONMENT FOR
NORTHERN IRELAND**

Quality Assurance Scheme for Paints and Similar Protective Coatings

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REGISTRATION OF AMENDMENTS

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1. INTRODUCTION

1.1 To ensure that only paints of acceptable quality are used which will not fail prematurely, the Overseeing Organisations operate a quality assurance scheme for paints and similar protective coatings used in the protection of motorway and other trunk road structures. The scheme is administered by Quality Services Civil Engineering (QSCE) Division of the Highways Agency, assisted by the Defence Evaluation and Research Agency (DERA) of the Ministry of Defence, on behalf of all Overseeing Organisations. These procedures have been in use since 1969.

1.2 Except where a standard specified in this document implements or is technically equivalent to a Harmonised European Standard or to a European Standard adopted for use within the European Communities after 31 December 1985, any requirement for products or materials to comply with the specified standard shall be satisfied by compliance with

- (i) a relevant standard or code of practice of a national standards institution or equivalent body of any member state of the European Communities or
- (ii) a relevant international standard recognised in any member state of the European Communities or
- (iii) a relevant technical specification acknowledged for use as a standard by a public authority of any member state of the European Communities or
- (iv) traditional procedures of manufacture of a member state of the European Communities where these are the subject of a written technical description sufficiently detailed to permit assessment of the goods or materials for the use specified or
- (v) a European Technical Approval (ETA) issued in accordance with the Construction Products Directive 89/106/EEC (or until procedures are available for the issue of ETAs, a specification sufficiently detailed to permit assessment) for goods or materials of an innovative nature or subject to innovative processes of manufacture and which fulfil the purpose provided for by the specified standard.

Provided that the proposed standard, code of practice, technical specification, technical description, or European Technical Approval provides in use levels of safety, suitability and fitness for purpose equivalent to those required by the specified standard in so far as they are not inconsistent with the 'Essential Requirements' of the Construction Products Directive (89/106/EEC).

Scope

1.3 This Advice Note describes and gives guidance on the quality assurance scheme for paints and similar protective coatings used in the protection of steel highway structures, and supersedes and replaces BA 27/93, having been amended to take account of the variety of contract conditions now in use, recent Health & Safety legislation on the control of solvent emissions into the atmosphere, the introduction of two-pack paint materials and changes to the contact details of participating organisations. The various forms which need to be completed in operating the scheme are given in Annex A to this Advice Note.

Implementation

1.4 This Advice Note should be used forthwith for all schemes currently being prepared provided that, in the opinion of the Organisation this would not result in significant additional expense or delay progress. Designers should confirm its application to particular schemes with the Overseeing Organisation.

2. OPERATION OF THE QUALITY ASSURANCE SCHEME

General

2.1 The main elements of the quality assurance scheme are as follows:

- (a) Registration of paint formulations. This includes vetting manufacturers' formulations and screening paint samples to ensure they comply with the performance requirements in the Manual of Paints item sheets (see Chapter 3).
- (b) Checking contract 'A' and 'B' paint samples. This is to ensure paints used in the Contract comply with registered formulations (see Chapter 5).
- (c) Checks on retained samples of paints by the manufacturer. This is to ensure paints supplied to the Overseeing Organisation's contracts consistently meet the performance test requirements in the item sheet (see Chapter 5).

Paint Manufacturers' Formulation Sheets

2.2 Manufacturers' paint formulations are component specifications and are classified as "Commercial-in-Confidence" and held in security by Quality Services Civil Engineering (QSCE) Division of the Highways Agency. They are only divulged, in confidence, to scientists at the DERA Paints and Coatings Laboratory, Farnborough, which is an Executive Agency of the Ministry of Defence, for the purpose of checking that paints conform to the declared formulations.

Paints Used by the Overseeing Department

2.3 The types of paints used by the Overseeing Organisation are listed in the Manual of Paints at Annex A of BD 35 (DMRB 2.4.1). Paints supplied to new works and maintenance painting contracts should be labelled in accordance with current Chemicals (Hazard Information and Packaging for Supply) Regulations.

Introduction of New Paint Manufacturers

2.4 New paint manufacturers who wish to supply paints to the Overseeing Organisation's contracts should confirm their interest by writing to Divisional Director, QSCE Division of the Highways Agency at the address given in Chapter 7.

2.5 Before applying to supply paints, manufacturers should ensure that their quality management systems meet the requirements BS EN ISO 9001. Evidence to this effect may be required before paints are tested. Paint manufacturers should allow up to six months for the pre-registration testing of paint samples at DERA. Alternatively, pre-registration testing of samples may be carried out at a testing laboratory agreed between the paint manufacturer and QSCE Division. The information required before formulations are registered is given in Chapter 3.

Introduction of Alternative Paints

2.6 Paint manufacturers who wish to offer alternative paints to those specified by the Overseeing Organisation should provide evidence of their long term performance as follows:

- (i) Alternative paints to those listed in the Manual of Paints which have a performance record of more than 5 years will be registered following satisfactory testing by an independent, professionally and technically competent testing authority. Provided QSCE are able to confirm a satisfactory performance record by enquiry.
- (ii) Alternative paints to those listed in the Manual of Paints which have a performance record of less than 5 years will be registered following satisfactory testing by an independent, professionally and technically competent testing authority and after satisfactory completion of site trials over a 5 year period.

Arrangements for Specifying Protective Systems for New Works Painting

2.7 Protective systems for bridges and other highway structures, including bridge bearings and lighting columns, are detailed in Clause NG1901 of the Notes for Guidance on the Specification for Highway Works (MCHW 2). The selection of an appropriate protective system for a particular contract will depend mainly on the environment and accessibility for future maintenance. Detailed requirements for protective coatings are conveyed to designers and tenderers through contract-specific Appendices, based on the NG 1900 Series Appendices, including Forms BE/P2 (New Works) Paint System Sheets, a copy of which is included in Annex A.

2.8 Following the award of the contract the Contractor is required to submit a completed Form BE/P2 Paint System Sheet for each structure or paint system to the Overseeing Organisation's Works Agent for approval. Copies of each completed Form BE/P2 are forwarded to the Overseeing Organisation for checking that the proposed paints are registered by the Highways Agency. Following the Overseeing Organisation's written instructions, the approved Form BE/P2 Paint System Sheets are then adopted for the Works.

Arrangements for Specifying Protective Systems for Maintenance Painting

2.9 The methods and standards of surface preparation for maintenance painting are described in Clause NG5001 of the Notes for Guidance on the Specification, Part 5 of MCHW 5.2. Protective systems for maintenance painting are detailed in Clause NG5009 and examples are given in Annex C of the same Notes for Guidance. Detailed requirements for protective coatings are conveyed to designers and tenderers through contract-specific Appendices, based on the Appendices to MCHW 5.2, including Forms BE/P2 (Maintenance) Paint System Sheets

2.10 Following the award of the contract the procedures are similar to those for new works described in Clause 2.8 above

3. REGISTRATION OF MANUFACTURERS' PAINT FORMULATIONS

3.1 When manufacturers submit formulations for paints to QSCE Division with a view to registration, the following information should be provided:

(a) The Formulation

Paint formulation sheets should contain all component details of the paint and be set out in accordance with the standard format. A blank of the standard formulation sheet together with notes for guidance on its completion are included in Annex A.

(b) History

The history of each type of paint offered for registration should be attached to the formulation sheet. It must give the date when the paint was first formulated and dates, with reasons, for subsequent changes. Where the paint has already been used on bridges or other highway structures, examples should be included.

(c) Form BE/P5 Paint Data Sheet

The paint manufacturer is required to submit a completed Form BE/P5 Paint Data Sheet with each formulation sheet. The Data Sheet contains information on paint properties and application instructions and is used mainly by the Contractor and the Overseeing Organisation. Separate health and safety data sheets should accompany the Form BE/P5. A blank copy of Form BE/P5 is included in Annex A.

(d) Certificate of Satisfactory Testing

A separate test certificate, confirming that chemical checks and all application and physical performance tests listed in the item sheet have been completed satisfactorily should be submitted by the manufacturer for each type of paint offered for registration. A blank copy of the test certificate is given in Annex A.

(e) Completion of Sample Paint System Sheets by New Manufacturers

To demonstrate they understand the method of specifying paints for contracts, paint manufacturers new to the quality assurance scheme are requested to submit

examples of completed Forms BE/P2 Paint System Sheets with the first set of formulations for registration. The manufacturer should show that he is able to interpret likely requirements when offering paints for the Overseeing Organisation's contracts.

3.2 After formulations have been checked for compliance with the Manual of Paints item sheets, the manufacturer will be requested to submit completed test panels together with samples of paints for confirmatory testing to DERA or other independent testing authority. A testing authority in a member state of the European Community will be acceptable provided that it can demonstrate suitable and satisfactory evidence of technical and professional competence and independence for the tests required. These requirements will be satisfied if the testing authority is accredited in a member state of the European Community in accordance with the relevant parts of the EN 45000 series of standards for the tests carried out.

3.3 Paints with convertible media, which have an established performance record and comply with the Manual of Paints item sheets, will be provisionally registered pending testing of paint samples at a later date provided QSCE Division are able to confirm a satisfactory performance record by enquiry.

3.4 Paints with convertible media, which do not have an established performance record but comply with the Manual of Paints item sheets, will only be registered following satisfactory testing of paint samples by an independent, professionally and technically competent testing authority.

3.5 Paints with non-convertible media, which comply with Manual of Paints item sheets, will only be registered following satisfactory testing of samples by an independent, professionally and technically competent testing authority.

3.6 Any subsequent changes to registered paint formulations have to be notified to QSCE Division and revised formulation sheets submitted explaining why the changes have been made. Revised formulations must be submitted in time to allow for any re-testing of samples which may be necessary and before they are offered in the Overseeing Organisation's contracts.

4. MANUAL OF PAINTS FOR STRUCTURAL STEELWORK

4.1 The Manual of Paints at Annex A of BD 35 (DMRB 2.4.1) is a compendium of item sheets which give outline component and physical performance requirements for paints used in the Overseeing Organisation's contracts. The contents of the Manual of Paints are described in BD 35 (DMRB 2.4.1).

4.2 The Manual of Paints' item sheets provide information for the use of paint manufacturers in the preparation of formulations and testing of paints. The Manual of Paints provides additional information to the data supplied by paint manufacturers in the Form BE/P5 Paint Data Sheet and provides a source of general information on corrosion protection. It does not, however, provide information on the selection of suitable paint systems for new construction or maintenance of existing structures. Guidance on the selection of paint systems should be obtained from the Notes for Guidance on the Specification for Highway Works (MCHW 2 Series NG 1900) for new works or the Notes for Guidance on the Specification, Part 5 of Maintenance Painting of Steel Highway Structures (MCHW 5.2) for existing structures.

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5. TESTING OF CONTRACT PAINT SAMPLES

General

5.1 The advice in this Chapter relates to the standard testing arrangements. It is not wholly applicable in cases where alternative testing arrangements are used, as provided for in Chapter 4 of BD 35 (DMRB 2.4.1).

5.2 At the start of any contract which involves painting and at times during the contract period, paint samples are despatched by the Contractor to DERA, Farnborough, as described (for new works contracts) in the Specification for Highway Works (MCHW 1), for checking composition and application characteristics against the registered formulation. This is usually done after the inspection has been completed in the shop or at site.

Checks on Paints on Site

5.3 When paint for a contract is delivered to the shop or site, its condition shall be examined and its specific gravity checked before samples are despatched by the Contractor to DERA for further checks. Acceptance limits for specific gravities are given in the General Notes Section of the Manual of Paints.

Checking Contract 'A' and 'B' Paint Samples

5.4 Checking the quality of paint delivered for use is carried out on paint samples taken from previously unopened tins. These are known as 'A' samples. 'A' samples are not required for any contract where the total steelwork content is less than 35 tonnes and providing the steelwork is not designated as having 'difficult access' for subsequent maintenance painting.

5.5 Checking the quality of paint which is being applied is carried out on 500ml samples taken from the painter's kettle or from the airless spray gun nozzle. In the case of two pack products, separate samples of base and additive shall be removed prior to mixing. These are known as 'B' samples. 'B' samples are taken as spot checks at the discretion of the Overseeing Organisation throughout the period of the Contract.

5.6 Requirements for the provision of 'A' and 'B' samples for new works contracts are given in Clause 1910 of the Specification for Highway Works (MCHW 1). More detailed information is given in the Notes for Guidance (MCHW 2).

5.7 When samples of paint taken in the shop or at site have been checked and Form BE/P3 Paint Sample Despatch Sheet (a copy of which is included in Annex A) has been completed, the samples are sealed by the Contractor, packed and despatched by him to DERA.

5.8 Immediately following despatch of the samples, a copy of Form BE/P3 should be sent to DERA and a further copy to the Overseeing Organisation at the appropriate address shown in the form. A copy of Form BE/P2 Paint System Sheet should also be sent to both addresses with the first Form BE/P3 despatched for each contract.

5.9 On completion of tests at DERA, results are reported to the Overseeing Organisation as 'satisfactory', 'non-compliant with the registered formulation' or 'unsatisfactory'. In the case of non-compliant samples, QSCE Division investigates the discrepancy before advising the Overseeing Organisation or their Works Agent as to whether the paint is suitable for use in the Contract. Paints which are unsatisfactory or consistently reported as non-compliant may be de-registered at the discretion of the Director of Division, QSCE Division.

Reporting Tests on 'A' and 'B' Paint Samples

5.10 Results of paint sample tests are reported to the Overseeing Organisation or their Works Agent for the Contract whose name and telephone number should be recorded on Form BE/P3. Results are normally telephoned to the Overseeing Organisation or their Works Agent by the QSCE Division on the day testing is completed at DERA. Written confirmation of test results is sent to the Overseeing Organisation or their Works Agent in Form BE/P4, Paint Sample Analysis Report, a copy of which is included in Annex A.

Batch Testing by the Paint Manufacturer

5.11 The manufacturer is required to carry out testing on retained paint samples from each batch of paint supplied to the Overseeing Organisation's contracts as listed in section 10 of the Manual of Paints item sheet.

6 REFERENCES AND BIBLIOGRAPHY

References

6.1 Design Manual for Roads and Bridges Volume 2:
Section 4: Paints and Other Protective Coatings.

BD 35 Quality Assurance Scheme for Paints and
Similar Protective Coatings (DMRB 2.4.1).

6.2 Manual of Contract Documents for Highway
Works.

Volume 1: Specification for Highway Works.
(March 1998), HMSO (MCHW 1).

Volume 2: Notes for Guidance on the Specification for
Highway Works (March 1998), HMSO (MCHW 2).

Volume 5, Section 2: Maintenance Painting of Steel
Highway Structures (May 1994), HMSO (MCHW 5.2).

6.3 BS EN ISO 9001 Quality systems. Model for
quality assurance in design, development, production,
installation and servicing. British Standards Institution.

6.4 BS 7502 General criteria for the assessment of
testing laboratories and laboratory accreditation bodies.

Bibliography

6.5 Health and Safety Commission (1997) Approved
guide to the classification and labelling of substances
and preparations dangerous for supply (Third Edition),
HSE Books.

6.6 Health & Safety Executive (1995) The complete
Idiot's guide to CHIP2, Chemicals (Hazard Information
and Packaging for Supply) Regulations 1994, HSE
Books.

6.7 Health and Safety Executive (1998) COSHH,
The new brief guide for employers, Guidance on the
main requirements of the Control of Substances
Hazardous to Health (COSHH) Regulations 1994, HSE
Books.

7. ENQUIRIES

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

Divisional Director
Quality Services Civil Engineering Division
Highways Agency
St Christopher House
Southwark Street
London SE1 0TE

A J PICKETT
Divisional Director

Director, Road Network Management
and Maintenance Division
The Scottish Executive Development Department
Victoria Quay
Edinburgh EH6 6QQ

N B MACKENZIE
Director, Road Network Management
and Maintenance Division

Director of Highways
The National Assembly for Wales
Cynulliad Cenedlaethol Cymru
Highways Directorate
Government Buildings
Cathays Park
Cardiff CF1 3NQ

K J THOMAS
Director of Highways

Assistant Director of Engineering
Department of the Environment for
Northern Ireland
Roads Service Headquarters
Clarence Court
10-18 Adelaide Street
Belfast BT2 8GB

DO'HAGAN
Assistant Director of Engineering

ANNEX A - STANDARD PAINT FORMS

Contents

(Form BE/P1, Not used)

Form BE/P2, (New Works) Paint System Sheet

Form BE/P3, Paint Samples Despatch List

Form BE/P4, Paint Samples Analysis Report

Form BE/P5, Paint Data Sheet

Standard Formulation Sheet for Paint
(Including explanatory notes on the completion of the formulation sheet)

Certificate of Satisfactory Testing by the Paint Manufacturer

WITHHOLD DRAFT

FORM BE/P2 (NEW WORKS) PAINT SYSTEM SHEET

Annex A

Volume 2 Section 4
Part 2 BA 27/99

1. CONTRACT TITLE:				STRUCT NO:		GRID REF:		2. DATE OF ISSUE OF DOCUMENTS TO TENDERERS:	
3. ENVIRONMENT AND ACCESSIBILITY:						4. REQUIRED DURABILITY OF SYSTEM NO MAINTENANCE: MINOR MAINTENANCE: MAJOR MAINTENANCE:			
5. PAINT SYSTEM TO BE APPLIED FOR:									
6. DETAILS		1st Coat	2nd Coat	3rd Coat	4th Coat	5th Coat	6th Coat		
Registered Description									
Item No. & Colour									
Date registered									
Brand Name and Manfr's ref No.									
Data Sheet No.									
Where applied									
How applied									
Min dry film thickness (mdft)									
Max local dft (see Cl. 1914.7)									
7. STRIPE COAT DESCRIPTION (including Item No. and colour)						8. PAINT MANUFACTURER'S OFFICIAL STAMP			
Shop:			Site:						
9. MINIMUM TOTAL DRY FILM THICKNESS OF PAINT SYSTEM:mm (See Note) NOTE. The minimum total dry film thickness of the paint system, neglecting primers and sealers under 30 μm , shall be 15% greater (to the nearest 25 μm) than the sum of the mdft's of the individual paint coats						10. APPROVED BY:			
						DATE:			

A1/2

August 1999

FORM BE/P3 PAINT SAMPLE DESPATCH LIST: SHEET 1

Contract Title

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Structure Name or No.

Supervising Firm

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Supervising Firm's Representative Name: Tel No

Address:

.....

Painting Firm Inspection

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Paint Manufacturer

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Inspector's Name Inspector's Signature

Samples Despatched From: (Note 1) Date Despatched

SAMPLES: (Numbered A1, A2 etc. or B1, B2 etc.) (See Note 2)																						
Sample No.	Item No.	Manufacturer's Reference No.	Batch No.	S.G. (see Notes 3 & 4)																		

FORM BE/P3 PAINT SAMPLE DESPATCH LIST: SHEET 2

Form BE/P3 is to be completed and single copies are to be forwarded to each of the following within 24 hours of despatch of samples by the Contractor to DERA Farnborough:

- 1 Highways Agency
Quality Services – Civil Engineering Division
Room 3/59
St Christopher House
Southwark Street
London SE1 0TE
2. Stores Receiving Section 107
Paints and Coatings
DERA Farnborough
A7 Building, Room G010
Ively Road
Farnborough
HANTS GU14 0LX

Form(s) BE/P2 Paint System Sheet(s) are to be forwarded with the first Form BE/P3 to both addresses. 'A' samples are to be selected to ensure that manufacturer's labels on containers comply with the specification. Each 'B' sample tin is to be marked with Item No., manufacturer's name and brand reference No., batch No. and sample No. (See Note 2).

The Contractor is to clip down the lids of all tins and to pack, address and despatch the samples. In addition to the address, the Contractor is to label each case (or tin sent loose) as follows: 'Structure name - Date of despatch'.

- Note:
1. State whether from shop (give name and address) or site.
 2. Batch samples comprising unopened containers to be marked A1, A2, etc. Control samples in 0.5 litre tins to be marked B1, B2, etc. Sample Numbers are to run consecutively for each contract, ie A1 and B1 onwards.
 3. For 'A' samples the specific gravity (S.G.) is to be measured from separate tins of the same batch.
For 'B' samples, the S.G. is to be measured when the samples are being taken.
Samples will be rejected unless the measured S.G. is recorded in Form BE/P3.
 4. If the S.G. differs appreciably from the value declared in the manufacturer's data sheet, 'A' or 'B' samples should not be despatched.

FORM BE/P4 PAINT SAMPLE ANALYSIS REPORT

From: QSCE Division, H.A., Room 3/59, St Christopher House, Southwark Street, London SE1 0TE

To: (Name of Supervising Agent for Project)

Address:

Telephone confirmation:

Contract Title:

Bridge Name and/or No.:

Samples Despatched from:

Despatch Date on BE/P3:

Samples and BE/P3 Received at DERA:

Paint Manufacturer:

Satisfactory Samples

Sample No.	Reference No.	Batch No.
------------	---------------	-----------

Unsatisfactory Samples and Technical Comment

Sample No.	Reference No.	Batch No.
------------	---------------	-----------

(QSCE Division)

Date:

Signed:

FORM BE/P5 PAINT DATA SHEET

FOR SINGLE OR TWO PACK PRODUCTS

- Manufacturer :
- Item No and Date Registered :
- Registered Description :
- Brand Name and Reference No :
- Single or Two Pack Product :
- Mixing Ratio- 2 pack products : parts Base to parts Additive by Volume
- Specific Gravity (kg/litre) :
- Volume Solids % :
- Volatile Organic Content (gm solvent/litre) :
- Consistency and Method of Application :
- Manufacturer's Recommended Dry Film Thickness Range (microns)
 - Minimum :
 - Maximum :
- Detailed Application Instructions :
- Flash point : Base.....°C Additive.....°C

		5° C	10° C	20° C	30° C
Drying Times	Surface Dry				
	Hard Dry				
Overcoating Times	Minimum				
	Maximum				

- Cleaning solvent :
- Manufacturer's Additional Recommendations :

STANDARD FORMULATION SHEET FOR PAINT

SHEET NO.

1. PAINT MANUFACTURER :
2. REGISTERED DESCRIPTION :
ITEM No. :
3. DATE REGISTERED :
4. BRAND NAME :
MANUFACTURER'S REF. No. :
DATA SHEET No. :
5. % COMPOSITION BY WEIGHT AND CONSTITUENTS
 - a. PIGMENT Consisting of :
 - b. BINDER Consisting of :
 - c. VOLATILE Consisting of :
6. VOLATILE ORGANIC CONTENT (gm/l) :
7. PIGMENT VOLUME CONCENTRATION :
VOLUME OF SOLIDS :
CONTRAST RATIO :
VISCOSITY :
8. SPECIFIC GRAVITY (kg/l) :
9. DRYING TIMES Surface dry :
Hard dry :
Recoating :
10. COLOUR :
11. TEMPERATURE AT WHICH APPLICATION SHOULD BE SUSPENDED :
TEMPERATURE AT WHICH DRYING IS UNDULY PROTRACTED :
12. BUILD & METHOD OF APPLICATION :
13. COMMENTS OR ADDITIONAL INFORMATION (by Paint Manufacturer):
14. MIXING RATIO (for 2 pack materials) :..... parts Base to parts Additive (by vol)

STANDARD FORMULATION SHEET FOR PAINT (Example)

SHEET No. 1

1. PAINT MANUFACTURER :
2. REGISTERED DESCRIPTION : (Standard terminology to be used) (Note 1)
ITEM No. : (Note 2)
3. DATE REGISTERED : (Note 3)
4. BRAND NAME : Manufacturer to state up-to-date brand
MANUFACTURER'S REF. No : name & Ref No.
DATA SHEET No. (Note 4): : Ref No. if changed within last 12 months
5. % COMPOSITION BY WEIGHT AND CONSTITUENTS
- a. PIGMENT(x %) consisting of : (% and type of main pigment) (Note 5)
(% and type of each extender)
(% and type of each tinting pigment)
(% and type of anti-settling agent)
100%
- b. BINDER(y %) consisting of : (% of (named) varnish (Note 6)
Any major addition to be stated)
or
(i) (% and type(s) of resin)
(ii) (% and description of oils in cook)
(iii) (% and description of oil(s) added after cook)
100%
- c. VOLATILE (z %) consisting of : (% and type(s) of solvent)-----
100%
- (Note: $x+y+z = 100\%$. Constituents of pigment, binder and volatile each to total 100%)
6. VOLATILE ORGANIC CONTENT:grams solvent / litre of paint
7. PIGMENT VOLUME CONCENTRATION : (%)
VOLUME OF SOLIDS : (%)
CONTRAST RATIO : (eg Complete obliteration at stated dft)
VISCOSITY : (in poise to BS3900/A7)
8. SPECIFIC GRAVITY : (kg/litre)
9. DRYING TIMES Surface dry : (to BS EN ISO 1517)
Hard dry : (to-BS EN 29117)
Recoating : (Note 7)
10. COLOUR : (to BS 4800)

11. TEMPERATURE AT WHICH APPLICATION SHOULD BE SUSPENDED:
TEMPERATURE AT WHICH DRYING IS UNDULY PROTRACTED:
12. BUILD & METHOD OF APPLICATION: (eg NB B) (Note 8)
13. COMMENTS OR ADDITIONAL INFORMATION (by Paint Manufacturer):
(eg Material as formulated is suitable for application by brush or airless spray).
14. MIXING RATIO (2 pack products): parts Base to parts Additive (Volume)

WITHHDRAWN

EXPLANATORY NOTES ON THE COMPLETION OF THE STANDARD FORMULATION SHEET FOR PAINT**Note 1. Registered Description**

The registered description appears in Specifications and in Data Sheets and must be written in Standard Terminology.

Note 2. Item No

Paints used by the Overseeing Organisation for steel highway structures are listed in the Manual of Paints. Each paint is described in broad component outline on a separate and numbered Item Sheet. Each paint offered must comply with the relevant Item Sheet.

Note 3. Date Registered

The registration date will be provided by QSCE Division after the paint formulation has been vetted, and, where required, after a sample of the paint has undergone confirmatory testing.

Note 4. Data Sheets

A numbered data sheet (Form BE/P5) is required for each paint. The data sheet must be provided by the paint manufacturer for the use of the applicator, and it must give ALL relevant information, for the application of the paint.

Note 5a. Main Pigment and Extenders

State British Standard number where applicable. If no standards are quoted further information may be requested eg. grade and source of supply for Titanium Dioxide.

Note 6. Binder

The name of the supplier must be given. If the supplier is changed QSCE Division must be informed. Changes in suppliers can affect the paint and re-tests must be made by the manufacturer wherever this possibility exists. Confirmatory testing by an independent testing organisation may also need to be undertaken.

Examples	(i)	25% Pure Phenolic Resin	(Formacite 1600)
		5% Maleic Resin	(Malrex X)
or	(i)	45% Alkyl Phenol (parateriary butyl phenol)	MP 60° - 80°C
		5% Rosin Maleic Adduct esterified with pentaerythritol	MP 110°C
	(ii)	50% 47p Linseed Stand Oil (Oils cooked with resins)	
	(iii)	Nil	

As a guide to the paint manufacturer, each main constituent of the paint must be identifiable.

Note 7. Recoating

The recoating time should only be given after thorough testing. It may vary depending on the type of paint used for overcoating. For instance, in compound systems where acrylated rubber is applied over oleo-resinous paints, recoating times may need to be extended. Recoating times will also be shown in the Paint Data Sheet (Form BE/P5) where it is the responsibility of the paint manufacturer to give detailed information.

Note 8. Build and Method of Application

The 'Build' of paints is described for the purposes of the Manual of Paints as being either 'Normal Build' or 'High Build'. Normal Build paints can be applied up to about 50 µm dry film thickness, High Build paints being used where thicker coatings are required.

The method of application for the paint as formulated will be either brushing, air pressure spray or airless spray. Application of paints by roller is not permitted.

The Manual of Paints refers to Normal Build as: NB
High Build as: HB
Brushing quality as: B
Air pressure spray quality as: S
Airless spray quality as: AS

Note 9. Additional Note for 2-pack Materials

Separate formulation sheets are required for the base, additive, and mixed material.

Details for points 1 to 7 inclusive are required for the base and additive components.

Details for points 1 to 13 inclusive are required for the mixed material.

General Note

Collectively paint manufacturers have a great variety of formulation sheets of their own design. However the information must be supplied in the standard formulation sheet format.

CERTIFICATE OF SATISFACTORY TESTING

Paint Manufacturer.....

Item Sheet No.....

Manufacturer's Ref No.....

Sample No.....

A: CHEMICAL TEST RESULTS

TEST	DECLARED (Percentage)	RESULT (Percentage)
A1 Pigment		
A2 Binder		
A3 Volatile/ BS 3900 Part B18		
A4 Major Pigment		

B: PAINT PROPERTIES

TEST/METHOD	ITEM SHEET REQUIREMENT	RESULT
Density/ BS 3900 Part A19(ISO 2811-1)		
Flashpoint/ BS 3900 Part A8		
Viscosity/ BS 3900 Part A7		
Tolerance To Sagging Manual of Paints Appendix 1. Cl. A1		
Volume Solids/ BS 3900 Part A10		
Application and Appearance/ Manual of Paints Appendix 1. Cl. A2		
Opacity/complete obliteration at stated dft		
Colour/ BS 3900 Part D1		
Surface Dry/ BS EN ISO 1517		
Hard Dry/ BS EN 29117		
Overcoating/ Manual of Paints Appendix 1. Cl. A3		

C: PHYSICAL PROPERTIES AND ARTIFICIAL ENVIRONMENT PERFORMANCE TEST REQUIREMENTS

TEST/METHOD	ITEM SHEET REQUIREMENT	RESULT
Scratch/ BS 3900 Part E2		
Impact/ BS 3900 Part E7		
Adhesion/ Manual of Paints Appendix 1. Cl. A5		
Salt Spray/ BS 3900 Part F12		
Sulphur Dioxide/ BS EN ISO 3231		
Artificial Weathering/ 1. BS 3900 Part F16 2. BS 3900 Part E7		

WITHHOLD DRAFT

D: ADDITIONAL TESTS

I confirm that the above tests have been completed satisfactorily in accordance with Manual of Paints Item sheet requirements

1. Signed on behalf of testing authority.....
Testing authority Date.....
.....

2. Signed on behalf of paint manufacturer(Chief Chemist)
Paint Manufacturer’s Official Stamp:

NOTE: The Paint Manufacturer must retain test panels until the formulation is registered by QSCE Division.

