



GS 106-2

PAINTING OF METAL SURFACES

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FOREWORD

Introduction to BP Group Recommended Practices and Specifications for Engineering

The Introductory Volume contains a series of documents that provide an introduction to the BP Group Recommended Practices and Specifications for Engineering (RPSEs). In particular, the 'General Foreword' sets out the philosophy of the RPSEs. Other documents in the Introductory Volume provide general guidance on using the RPSEs and background information to Engineering Standards in BP. There are also recommendations for specific definitions and requirements.

Value of this Guidance for Specification

There is no internationally recognised standard covering painting and therefore this document is written as a stand-alone document. The document gives requirements for painting practice and indicates appropriate painting systems for specific applications.

The general requirements given and the systems indicated are based on those used previously and which have given good experience within BP.

It is appreciated, however, that there is a move to substitute or reduce the VOC (volatile organic compound) content of coatings, from the standpoint of health and environmental protection, and to employ 'clean' technology wherever possible. This Specification, therefore, gives some comment on these aspects, and it is expected that they will become increasingly important in the future.

Application

This Guidance for Specification is intended to guide BP in the use or creation of a fit-for-purpose specification for enquiry or purchasing activity.

Text in italics is Commentary. Commentary provides background information which supports the requirements of the Specification, and may discuss alternative options. It also gives guidance on the implementation of any 'Specification' or 'Approval' actions; specific actions are indicated by an asterisk (*) preceding a paragraph number.

This document may refer to certain local, national or international regulations but the responsibility to ensure compliance with legislation and any other statutory requirements lies with the user. The user should adapt or supplement this document to ensure compliance for the specific application.

Changes from Previous Issue

In order to widen the applicability base to include BP Chemical users, minor modifications have been made to the main text and Appendices C & D have been added.



Feedback and Further Information

Users are invited to feed back any comments and to detail experiences in the application of BP RPSEs, to assist in the process of their continuous improvement.

For feedback and further information, please contact Standards Group, BP Engineering or the Custodian. See Quarterly Status List for contacts.



1. SCOPE

1.1 Painting Aspects

This Specification defines the requirements of BP with respect to painting covering two main areas:-

- (a) General requirements for paints and their application.
- (b) The selection of generic systems for particular applications.

1.2 Applicability

This Specification covers both new construction and maintenance painting for onshore, offshore and internal linings for iron, steel, galvanised steel, stainless steel, and non ferrous materials (Ni based, Cu based and Al alloys).

1.3 Exclusions

- (a) Building surfaces (see [BS 6150](#)).
- (b) Pipelines (buried or subsea).
- (c) Risers on offshore platforms (except in the atmospheric zone).

2. PAINTING SCHEDULES

The following painting schedules are attached to this Specification:-

Schedule A	-	- Onshore	-New Construction
Schedule B		- Offshore	-New Construction
Schedule C		- Tank Lining	-New Construction
Schedule A(M)		- Onshore	-Maintenance
Schedule B(M)		- Offshore	-Maintenance
Schedule C(M)		- Tank Lining	-Maintenance

3. HEALTH, SAFETY AND ENVIRONMENT

* 3.1 Regulations

Account shall be taken of all relevant technical, health, safety and environmental legislation.

Plant and equipment shall be maintained in good condition and shall comply with applicable health, safety, and environmental (HSE) requirements:-



- (a) National or local law requirements.
- (b) Statutory requirements.

Compressors and any associated pressure vessels shall be protected against overpressure. Current test certificates shall be held on site for inspection.

- (c) Site regulations.
- (d) Explosive atmosphere special regulations.

Blast cleaning and spray painting equipment shall be continuously bonded from the nozzle to the surface being painted and backwards from the nozzle to the compressor, which shall be earthed. Compressors used shall meet any HSE requirements specified by BP, particularly those relating to noise.

3.2 Safety Precautions for Pressurised Hoses

Pressurised hoses shall be marked, tested and results logged to ensure safe operation.

Test certificates shall be provided giving the maximum safe working pressure.

Hoses and other pressure items shall be checked at least once per week to confirm that any damage or loss of electrical conductivity will not be a safety hazard.

The 'dead-man' handle shall only be manually held in position by the blaster.

A log of safety inspections shall be kept by the Contractor.

*** 3.3 General Hazards**

All hazards shall be identified and all necessary safety equipment shall be provided to ensure personnel protection.

The Contractor shall carry out COSHH and environmental assessments (with BP participation) prior to start of the work.

At the job planning stage, an assessment of the potential for release of hazardous materials into the environment shall be made, including provisions for the safe disposal of used materials and waste.



Special attention shall be given to personnel protection. The recommendations of the document 'Personal Protection Advice for the Use of Marine Paints and Compositions' shall be adhered to.

The Contractor shall provide all the necessary items to ensure protection of his personnel whilst carrying out their duties. Appropriate protective clothing shall be worn at all times. Routine checks shall be made of the integrity of all personal protective equipment. Fire fighting equipment shall be deployed in high risk areas such as paint mixing areas and close to diesel driven plant. A portable gas tester should also be provided.

Where possible, sufficient ventilation should be provided at the workplace to prevent operator exposure and avoid the need to wear personal protective equipment.

In any event, whilst blasting or spraying of coatings, independent air-fed masks shall be worn such that the operator is unaffected by the environment. The operator's hood should be cleaned and disinfected at least weekly. In particular areas where natural ventilation is insufficient, positive ventilation shall be applied.

Solvent drums and containers shall be earthed.

Work areas shall be cordoned off with appropriate warning signs and appropriate containment to avoid damage to adjacent items. (Refer to [BS 5378](#))

In countries where HSE standards are not available, BP will advise the Contractor on appropriate standards to be adopted.

3.4

Scaffolding, Staging and Accessibility

In the UK, fixed scaffolding, staging, trolleys, cradles, etc. shall be used in accordance with the Construction (Working Places) Regulations and where relevant [SI 1019](#) - The Offshore Installations (Operational Safety, Health and Welfare) Regulations.

All boards are to be firmly fixed or tied down at all times. No loose boards or items of equipment are to be left overnight.

Access shall be provided for painting and inspection of all surfaces in accordance with this Specification, and enabling free movement of operators taking account of the effect of wearing protective clothing on safety aspects.



3.5 Paint Manufacturer's Information

Manufacturer's data sheets and materials safety data sheets containing information on HSE factors shall be provided for all products used, prior to start of the work, and shall be available on site at the job location.

The sheets shall give specific information on the chemical composition of the materials involved and precautions that must be taken.

3.6 Training Responsibilities

Contractor's personnel shall receive appropriate training on site safety procedures before commencing work. They shall be trained in the following:-

- (a) The operation and HSE aspects of all surface preparation and painting equipment.
- (b) The main HSE hazards associated with the site and specific work location.
- (c) Hazards associated with any of the materials to be used.
- (d) HSE regulations, permit to work systems, site emergency procedures, accident and incident reporting procedures of the site.

A registered first-aider shall be provided by the Contractor.

Contractors, sub-contractors and self-employed persons all have the duties of employers under the COSHH regulations.

3.7 Flammable Atmospheres

3.7.1 Area Classification

BP will advise area classifications for both plant design and construction/maintenance periods. Some classification (e.g. Zone 1) for plant design may preclude use of certain paint compositions (see 5.3).

The classification for construction or maintenance periods will affect the minimum rating permissible for the Contractor's electrical equipment (see 6.3.5).

The Contractor shall provide to BP all necessary data for the proposed paint systems and solvents in order to permit area classifications to be determined for the duration of the painting works.



3.7.2 Precautions in Cleaning and Application of Paints

Specific precautions shall be taken to avoid the build-up of flammable atmospheres from cleaning solvents or paints in confined spaces. These shall include attention to weather protection, ventilation and type of lighting used.

3.8 **HSE Restrictions on Coating Systems**

HSE regulations are requiring improved coatings with, for example, reduced VOC content. As a result, the paint industry is developing new products based on:-

- water based technology.*
- high solids epoxies.*

Experience with these is still relatively limited, but such coatings may be considered where:-

- application conditions are favourable.*
- equivalent performance to established systems can be demonstrated.*

4. **CONTRACTOR'S RESPONSIBILITY**

4.1 **Standard of Work and Safety**

Work shall be carried out to good practice and shall take account of all applicable HSE regulations, taking particular note of Section 3 of this specification. See also [BS 5493](#) and SSPC Manual.

4.2 **Personnel/Items to be Provided by the Contractor**

The Contractor shall supply all necessary personnel, equipment, painting, inspection and recording instruments, including (unless specified otherwise) the following:-

- (a) Evaluation of all hazards and provision of proposals to meet HSE requirements.
- (b) Skilled, experienced and competent personnel/ supervision (taking account of work scheduling, transportation and accommodation requirements).
- (c) Product data and materials safety data sheets.
- (d) Provision and maintenance of plant, equipment and tools including those listed below.
- (e) Air compressors and generators.



- (f) Scaffolding, staging, cradles, etc.
- (g) The required lighting to meet the electrical classification for the work area.
- (h) Ventilation, spray booths, weather protection, heating.
- (i) Abrasives.
- (j) Surface preparation equipment; grinders, blasting equipment, vacuum cleaners.
- (k) Paint stores.
- (l) Paint and thinners (from BP approved Manufacturers).
- (m) Paint mixing equipment, spraying equipment, rollers, brushes solvents and clean rags.
- (n) Inspection and testing equipment comprising air and surface thermometers, hygrometers, surface profile gauges, wet and dry film thickness gauges, copies of the visual standard [BS 7079-A1/ISO 8501-1](#).
- (o) Inspection.
- (p) Documentation of the work.

4.3 Protection of Surroundings

The Contractor shall ensure protection of the surroundings to painting works and shall ensure subsequent safe disposal of materials or equipment used. He shall be responsible in the case of any failure in this respect leading to damage which shall be repaired and cleaned as appropriate.

The Contractor shall ensure protection of sensitive items during paint works, e.g. notices, nameplates, lettering, gauges, sight glasses, light fittings.

Blasting dust and grit shall not be allowed to cause contamination of coated surfaces which are not yet dry.

4.4 Damage to Coatings

The Contractor shall ensure that finished paintwork is not damaged by his other activities. Any repairs that arise from Contractor negligence shall be to the Contractor's cost.

In the case of painting offsite, the Contractor shall provide adequate protection and packing and exercise care during transportation to minimise damage. If some paint damage should occur then the Contractor shall carry out remedial work at his cost.

The Contractor shall be responsible for paint quality on all sub-contracted items.

4.5 Quality of Finished Paint Condition

The Contractor shall be responsible for the quality of the finished paint condition. If there is any evidence of 'poor performance' the work shall be repeated at the Contractor's expense. 'Poor performance' is defined as any evidence of inadequate coverage, inadequate or excessive film thickness, poor adhesion, dirt, or grease contamination or inclusion or any evidence of breakdown whatsoever.

The paint Manufacturer shall produce and the Contractor shall apply a premium quality paint coating meeting the application and performance standards set by this Specification. Methods of testing paint are given in [BS 3900](#).

The Contractor shall be responsible for ensuring that the coating used is suitable for the application and each paint coating is applied in the optimum manner to achieve a satisfactory performance.

4.6 Site Clearance

On completion of the works, the Contractor shall remove all surplus materials, scaffolding, plant and equipment (without delay), and leave all areas in a clean and tidy condition.

In the UK, site clearance shall meet the requirements of the Environmental Protection Act.

5. PAINT COMPOSITIONS

5.1 Approvals

- * 5.1.1 Paint purchase shall be only from Manufacturers approved by BP for the particular application.



- * 5.1.2 The Contractor shall supply details of generalised composition of paints for BP approval at the tender stage. The selected composition shall comply with the following clauses.
- 5.2 Primers**
- 5.2.1 Air Drying Zinc Phosphate
- (a) Based on air drying alkyd or epoxy ester media.
 - (b) A minimum zinc phosphate pigment content in the dry film meeting [BS 5493](#).
- 5.2.2 Inorganic Zinc Silicate
- (a) Based on inorganic or ethyl silicate media.
 - (b) Not less than 85% metallic zinc by weight in the dry film.
- 5.2.3 Zinc Rich Epoxy
- (a) Based on polyamide cured two pack epoxy.
 - (b) A minimum of 90% metallic zinc by weight in the dry film.
- 5.2.4 Zinc Rich Moisture Cured Polyurethane
- (a) A minimum of 80% metallic zinc by weight in the dry film.
- 5.2.5 Zinc Phosphate Chlorinated or Acrylated Rubber
- (a) Based on suitably plasticised chlorinated or acrylated rubber.
 - (b) A minimum of 20% zinc phosphate by weight in the dry film.
- 5.2.6 Zinc Phosphate Two Pack Epoxy
- (a) Based on polyamide cured two pack epoxy
 - (b) A minimum of 20% zinc phosphate by weight in the dry film.
- 5.2.7 Mordant Solution (T-Wash) for Preparation of Galvanised Surfaces.
- (a) A phosphoric acid solution incorporating copper salts in a solvent/water solution.

5.3 Finish Painting

5.3.1 Two Pack Epoxy

- (a) Based on a polyamide cured two pack epoxy.
- (b) Pigmented with titanium dioxide and/or light-fast coloured pigments to provide the necessary opacity, film build and weather resistance.
- (c) A semi-gloss finish is required.

5.3.2 Chlorinated or Acrylated Rubber

- (a) Based on plasticised chlorinated or acrylated rubber.
- (b) Pigmented with titanium dioxide and/or light-fast coloured pigments to provide the necessary opacity, film build and weather resistance.
- (c) A semi-gloss finish is required.

5.3.3 Epoxy Coal Tar

- (a) Two pack formulation incorporating:-

Pack 1-epoxy resin and suitable pigments
Pack 2-polyamide curing agent and coal tar.
- (b) The epoxy resin shall comprise 35-45% by weight in the mixed resin/coal tar blend.
- (c) The finishing colour shall be black.
- (d) For contrasting of intermediate coats, aluminium or red oxide pigmentations are allowed.
- (e) For low temperature curing, alternative curing agents will be allowed at BP's direction.

5.3.4 Aluminium Silicone

- (a) Based on a one pack formulation comprising leafing aluminium pigment dispersed in silicone or modified silicone media (e.g. acrylic silicone).
- (b) Capable of withstanding continuous atmospheric exposure between 120°C (248°F) and 500°C (932°F).

5.3.5 Aluminium Metallic Pigment and Metal Spray

- (a) Shall not be used on any surface operating above 120°C (248° F) in Zone 1 Areas. Such areas will be specified by BP.

5.3.6 Air Drying Micaceous Iron Oxide Phenolic

- (a) Based on a phenolic linseed oil or phenolic tung oil or alkyd media .
- (b) Contain a minimum of 50% micaceous iron oxide by weight in the dry film.
- (c) Contrasting colours shall be obtained by incorporating leafing aluminium pigment.

5.3.7 Colour Finishes Other than Micaceous Iron Oxide

- (a) Based on titanium dioxide and/or light-fast coloured pigments dispersed in phenolic linseed oil, phenolic tung oil or alkyd media.
- (b) A full gloss finish is required.
- (c) Used in conjunction with appropriate undercoat.

5.3.8 Two Pack Polyurethane Finishes

- (a) Acrylic modified polyurethanes with titanium dioxide pigment.
- (b) *If this type of coating becomes restricted on HSE grounds, then possible alternatives are:-*
 - (i) *Two pack acrylic coatings.*
 - (ii) *Two pack acrylic epoxy coatings.*

5.3.9 Glass Flake Coating

A bisphenol-A polyester or vinyl ester primer is required. The lining material shall be a glass flake reinforced bisphenol-A polyester or vinyl ester resin, suitable to withstand the contents handled and the design conditions. This shall contain at least 20% by weight of flakeglass.

6. NEW EXTERNAL PAINTING

6.1 Paint Selection General

The selection of paint systems for particular applications and required preparation shall be as given in Schedules A, B and C.

*** 6.2 Painting Off-Site**

The Contractor may carry out painting of items off-site, subject to BP approval. The Contractor shall be responsible for the paint condition on arrival of such items 'on-site' and shall carry out any remedial work necessary.

6.2.1 Compliance with Specification

Painting off-site shall not relieve the Contractor of complying with any aspect of this Specification.

*** 6.2.2 Completely Fabricated Items**

- (a) Full preparation/painting may be done prior to transportation to site. This shall be subject to planned inspection and any 'hold points' for such inspection shall be agreed with BP.
- (b) Protection/packing for transport to site shall be provided by the Contractor.
- (c) Care in handling and installation shall be taken to minimise paint damage.

*** 6.2.3 Partially or Non-Fabricated Items**

- (a) These may be prepared/primed and further coated prior to transportation to site with the approval of BP.
- (b) Such painting shall have sufficient durability to withstand the construction period on the site before further painting takes place.

6.3 Surface Preparation for New Painting Work

6.3.1 General

The surface preparation standard shall be as indicated in the paint Schedules A, B and C and as detailed in the following sections and shall remove:-



- (a) Surface irregularities
- (b) Millscale and rust
- (c) Surface contaminants.

* 6.3.2 Working Restrictions

Surface preparation shall not be carried out:-

- (a) When air temperature is below 5°C (41°F).
- (b) When relative humidity is >85%. (Ref. [BS 2842](#))
- (c) When metal surface temperature is <3°C (5°F) above the ambient dew point.
- (d) When priming cannot be completed within 4 hours of preparing the surface.

The only relaxation allowable to this requirement is where the work is fully enclosed, the temperature is above 10°C, the humidity is below 75% and the original specific standard of surface preparation is retained. Any relaxation shall be entirely at BP's discretion.

- (e) Outside daylight hours on exterior locations, unless special lighting arrangements have been approved by BP.
- (f) When directed by BP due to impending adverse weather conditions. Ongoing surface preparation may be suspended if there is unlikely to be sufficient time for painting to be completed.

* 6.3.3 Surface Irregularity Removal

Surface irregularities shall be removed/made smooth prior to surface preparation. Irregularities include:-

- (a) Weld spatter, rough capping, undercut and slag.
- (b) Sharp or rough edges and burrs.
- (c) Surface laminations and laps.

Such irregularities which appear after surface preparation by blast cleaning or hot acid pickling shall be similarly treated. If

grinding is necessary, it shall be subject to BP approval and checking of the remaining wall thickness.

6.3.4 Surface Contaminants

Steel that has been exposed to a salt laden atmosphere, shall be tested for the presence of salts using the potassium ferricyanide test in accordance with [BS 5493](#) Appendix G. Salts shall be removed by washing.

Cleaning to remove oil and grease shall be carried out using proprietary emulsifying agents and then washing with clean water. The surface shall be allowed to dry before proceeding with further preparation and painting.

6.3.5 Blast Cleaning Practice

- (a) Compressed air supply pressure and volume shall meet the work requirement and shall be free from oil and water contamination, Traps, separators and filters shall be emptied and cleaned regularly.
- (b) As an alternative to compressed air, the abrasive may be propelled by a wheelabrator (for workshop use only).
- (c) Equipment shall be earthed to prevent build-up of static electricity. Electrical equipment shall be suitable for the hazardous area classification as advised by BP.
- (d) Abrasives for mild steel substrates shall be angular grit to [BS 7079 Part C \(ISO 8503\)](#) and shall be free from dust, salts and other impurities. Abrasives for the preparation of aluminium and stainless steels shall be non-metallic and capable of producing the required surface profile without contamination of the substrate.
- (e) Sand shall not be used for blast cleaning.
- (f) Spent abrasives shall be removed by brushing and vacuum cleaning.
- (g) Nozzles for blasting shall have a maximum orifice size of 9 mm and shall be of venturi design. Worn nozzles shall be replaced.
- (h) 'Deadman handles' shall be fixed to the blast line as close as practicable to the blast nozzle and shall be held by the blast operator alone.

- (i) Surfaces with a temporary holding primer shall be re-blast cleaned in preparation for painting to this Specification.

6.3.6 Blast Cleaning Standard

- (a) The surface profile on carbon steel shall be 50-75 microns with peaks of maximum amplitude 100 microns (as measured with a replica technique, typically Testex, Elcometer 123 or agreed equivalent).
- (b) Blasting shall be carried out to achieve quality to [BS 7079](#) or local equivalent and the level specified in the attached Schedules.
- (c) Reference shall be made to [BS 7079](#) Part A1 for photographs of equivalents to these qualities.

* 6.3.7 Restrictions on Methods Other than Blasting

Methods other than blasting are restricted as follows:-

- (a) Only where blast cleaning is impractical or not permitted by BP shall manual/power driven tools or alternative techniques be used.
- (b) Use of alternative cleaning methods to blasting shall be subject to BP approval.
- (c) Where there is a flammable atmosphere present, restrictions may be applied by BP.

6.3.8 Power Tool Cleaning

Where power tool cleaning is carried out, 100% of the surface shall be covered using power wire brushing to SSPC-SP3. Preparation shall be to [BS 7079 Part A1 St 3](#).

In some locations, e.g. welds, it may be necessary to use power impact tools, e.g. needle guns, scrapers and hammers, followed by brush cleaning.

* 6.3.9 Proprietary Acid Descaling/Derusting and Hot Passivation

This may be used in some circumstances as an alternative to blasting, subject to BP approval.

Such a process (see SSPC SP 8) e.g. Jenolising, may be used instead of blasting, provided it is compatible with the paint system, adequate health and safety procedures are employed and it is approved by BP.



6.3.10 Galvanised Surfaces

- (a) Thoroughly degrease with emulsifying agents.
- (b) Chemically etch by a proprietary T-wash solution .
- (c) Weathered surfaces shall be wire brushed or sweep blasted to remove all corrosion products and degreased with emulsifying agent.

6.3.11 Stainless Steel, Nickel and Copper Based Alloys

Where specified to be painted:-

- (a) Degrease.
- (b) Blast with chloride free abrasive such as alumina to give a surface profile of 25-50 microns. Copper slag abrasives are not acceptable. Where grit blasting is impractical, the surfaces may be prepared by hand or power tools using P60 grade paper.
- (c) Cleaning equipment used on carbon steel shall not be subsequently used on stainless steel.
- (d) Stainless steel surfaces shall be protected from contamination by debris produced during grit blasting of adjacent carbon steel. If contamination does occur, cleaning should be carried out using a power disc.

6.3.12 Aluminium

Where specified to be painted:-

- (a) Degrease
- (b) Abrasive blast with a non-metallic abrasive such as alumina to give a surface profile of 25-50 microns.

6.4 Paint Application (New Work)

6.4.1 Paint Schedules

Specific paint materials for each application shall be as given in Schedules A, B and C.

6.4.2 Single Source of Supply



All coating materials including thinners and equipment cleaners in any one system, shall originate from one paint Manufacturer.

* 6.4.3 Manufacturer's Recommendations

Painting shall conform with the paint Manufacturer's recommendations. These shall include:- storage, mixing, thinning, pot life, application method, drying/curing period, interval between coats.

The Contractor shall provide written confirmation from Manufacturers that paints conform to this Specification.

In the event of non-compliance with this Specification, BP will decide on the course of action after discussion with the Contractor/Manufacturer.

6.4.4 Paint Mixing

Hand mixing is permitted for containers up to 5 litres. Mechanical agitators shall be used for all containers larger than 5 litres. Where pigment separation readily occurs e.g. zinc silicate primers, continuous mixing shall be carried out during application.

6.4.5 Two Pack Paints - Mixing and Pot Life

Manufacturer's mixing instructions and the maximum pot life of two pack paints shall be strictly adhered to.

* 6.4.6 Restrictions on Painting

Painting shall not take place:-

- (a) Under adverse weather conditions, e.g. rain, fog, snow, sandstorms or when such conditions are likely before the paint has become dry.
- (b) When the ambient temperature is below 5°C (41°F).
- (c) When the ambient temperature is above 40°C (104°F).
- (d) When the relative humidity is >85%.
- (e) When metal surface temperature is <3°C (5°F) above the ambient dew point.
- (f) Outside daylight hours on exterior locations.

- (g) Painting may be suspended due to wind speed or wave height at the direction of BP.

6.4.7 Moisture Cured Polyurethanes

Applications of moisture cured polyurethanes shall be restricted as defined in 6.4.6 except as modified below.

Painting shall not take place:-

- (a) When the ambient temperature is below 3°C.
- (b) When the relative humidity is >90%.
- (c) When metal surface temperature is <2°C (4°F) above the ambient dew point.
- (d) When surface moisture is present or when weather conditions are deteriorating.

Manufacturer's recommendations regarding overcoating times for the specific conditions of temperature and humidity shall be strictly adhered to.

6.4.8 Application

The paint shall be applied in a uniform manner to the prescribed film thickness given in Schedules A, B and C without any runs, sags or other blemishes.

Where two or more coats of the same paint are specified, they shall be of contrasting colours.

Crevices created by two surfaces in close contact which cannot be protected by painting should be mastic sealed on both sides.

Brush application shall involve:-

- (a) Utilisation in areas that cannot be properly spray coated.
- (b) Working paint into all crevices and corners.
- (c) Application without runs and sags.
- (d) Stripe coating of sharp edges, corners and welds shall be before application of the finish paint coat to ensure adequate protection in these areas.

- (e) Brush application of primers shall be used on hand prepared or mechanically prepared surfaces.

Spray application shall require:-

- (a) A compressed air supply having sufficient capacity to meet the work requirement and free from oil and water contamination.
- (b) The cleaning of lines and pots before addition of new materials.
- (c) Spray overlap of the previous pass by 50%.
- (d) Large surfaces shall be painted with passes in two directions at right angles.

* 6.4.9 Priming

All prepared surfaces shall be primed before visible rerusting occurs or within 4 hours, whichever is sooner. The only relaxation allowable to this requirement is where the work is fully enclosed, the temperature is above 10C and the humidity is below 75% when this period may be extended at BP's discretion. In any event the prepared surface shall show no sign of deterioration prior to paint application.

Acid-desaled steel surfaces shall be primed as soon as the surface is dry and while it is still warm. A holding primer may be used to facilitate the shop or site handling procedure. If used however, this shall in no way replace the function or part of the film thickness of the specified priming coat.

Zinc silicate primers, which shall be applied to grit blasted surfaces only, shall be sealed with a tie coat as soon as practicable after complete curing has taken place. This is to avoid salt or chemical contamination of the porous primer. The tie coat shall achieve sound adhesion to the zinc silicate primer and be compatible with the finishing coat.

6.4.10 Paint Thickness

The paint system shall be as specified in the attached Schedules A, B and C and to the minimum thicknesses indicated.

Maximum dry film thickness should not exceed the specified minimum dry film thickness by more than 25% and there shall be no wrinkling or mud cracking.

6.4.11 Paints for Stainless Steels, Nickel & Copper Based Alloys

Paints shall be:-

- (a) Free of chlorides.
- (b) Free of low melting point metals (Zn, Al, Sn and Pb).

6.4.12 Intervals Between Coats

Time intervals shall comply with Manufacturer's recommendations and should be kept to a minimum to prevent contamination between coats. If contamination does occur, it shall be removed, by washing with a proprietary detergent solution , and rinsing with clean fresh water.

6.4.13 Colour Coding

The general finished colour for onshore plant and equipment shall be micaceous iron oxide grey to approximately BS 4800 shade 00A05 unless otherwise required by BP.

Where a finish colour other than grey is required, the final coat of micaceous iron oxide paint shall be replaced by one or more coats of a high build undercoat of the corresponding coating type and required colour(s) to give an equivalent dry film thickness.

For offshore topsides the finish colour shall be to [BS 4800](#) shade 08B15. Pipework and equipment shall be individually colour coded using either a single colour or a combination of colours. The colour coding for pipework may be full length or be applied as bands spaced in accordance with [BS 1710](#). Pipework shall also be marked with arrows showing the direction of flow. The primary colours used for colour coding shall generally conform to [BS 1710](#).

Pipework and equipment on fire water duty shall be red to [BS 4800](#) shade 04E53.

The finish colour schedule given in Appendix C shall be used unless a different site specific colour coding system is already in place.

* 6.4.14 Damage to Paintwork

Areas which have been damaged without exposing the primer shall be washed with a proprietary detergent solution and rinsed with fresh water. This shall be followed by abrading and ensuring that edges of sound paint are chamfered. The area shall then be sprayed with appropriate mid coats and finishing coat.



More serious damage to paintwork shall be re-prepared by blast cleaning to the original standard and recoating with the specified system to restore the film thickness.

Preparation shall extend 25 mm (1 in) into the sound paintwork and a further 25 mm (1 in) of sound paintwork shall be lightly blasted to etch the surface.

Repainting shall cover the prepared surface and the etched paintwork.

Where blast cleaning is impractical or not permitted then preparation with power discs, needle guns, power wire brushes, etc. may be carried out at BP's discretion. An alternative primer to that originally specified may be required to accommodate the change in method of surface preparation. The change in primer shall be at BP's discretion only.

6.4.15 Contamination of Adjacent Items

The Contractor shall avoid paint contamination of adjacent plant, equipment and property. Appropriate protection shall be provided where necessary. If any contamination does occur then the Contractor shall remove it or replace the damaged items.

* 6.4.16 Policy on Subsea Coating - Uncoated Areas

BP's corrosion control policy is for subsea coatings to be used in combination with cathodic protection where the projected life span is greater than 15 years. The cathodic protection design may allow for a limited number of uncoated areas below the water line e.g. around closure welds. The objective of this is to assist the Contractor at the construction site and minimise disruption to other activities. The extent of such areas are to be agreed with BP.



6.4.17 Galvanising

Items shall be galvanised to [BS 729](#).

Details of coating to be applied over galvanising in certain instances are given in the Schedules (see also 6.3.10).

7. INTERNAL LINING OF TANKS AND VESSELS

7.1 General

The selection of coating materials shall be according to Schedule C of this Specification.

The internal lining of tanks and vessels shall be in accordance with the requirements for new external painting except as amended below.

For General Reference see NACE handbook - coatings and linings for immersion service and NACE Document [TPC-2](#).

7.2 Coverage

The lining shall extend over the total internal surface including the bore of nozzles and over the faces of all flanges, unless the latter are weld overlaid with corrosion resistant alloy (CRA) in which case the lining shall terminate on the CRA. To ensure correct sealing, flake glass coating on flange faces shall be press moulded or machined flat.

Where cathodic protection anodes are installed, care shall be taken to minimise damage to the coating at the attachment points and to ensure that the active surfaces of the anodes are not coated.

* 7.3 Surface Preparation

Surface preparation shall generally conform to the requirements of [BS 6374](#) Part 4 except where otherwise advised below.

The Contractor shall identify items which require grinding smooth and bring them to the attention of BP for action.

The surfaces to be lined shall be ground smooth such that all sharp edges and corners are removed to achieve a minimum radius of 4 mm for convex surfaces and 6 mm for concave surfaces.

All welds shall be ground smooth and shall be free from porosity, undercut, cracks and cavities.

Blast cleaning shall be carried out to [BS 7079 Part A1/ISO 8501-1 Sa 3](#).



7.4 Inspection

The lining shall be inspected for any irregularities such as raised areas, pinholes, soft spots, disbondment, discontinuities and delaminations. Inspection shall include electrical discontinuity testing in accordance with [NACE RP0188](#). Any defect shall be marked for repair.

Contractor's personnel shall take care to avoid damage to the coating and shall wear appropriate overshoes.

7.5 Testing

Thickness checks shall be made throughout the lining operation with a wet film thickness comb to ensure that the lining thickness specification is met.

After curing of each coat, further thickness checks shall be made over the whole surface using a magnetic thickness gauge.

The lining shall be electrically tested after the application of the full coating system and curing has taken place. This shall be carried out over the entire lined surface and the test voltage shall be in accordance with [NACE RP0188](#) and the coating Manufacturer's recommendations. This testing shall be carried out in the presence of BP.

All coating holidays shall be fully investigated and all defective coating removed and replaced in accordance with this Specification. All repaired areas shall be re-tested for holidays.

7.6 Glass Flake Coating

The lining shall have a thickness of 1.5 mm (tolerance -0,+0.5 mm except in areas of difficult access where the upper tolerance shall be +1.0 mm. Any variation in thickness shall be by smooth transition.

The lining shall be applied as a multi-coat system, with each coat pigmented in a different colour.

Application of the system shall be by the Manufacturer or his approved Subcontractor.

Following curing, any soft spots shall be removed and these areas together with any which are low in film thickness shall receive additional coats. The surface shall be prepared to ensure a satisfactory bond of the repair material.

Any pinholes shall be ground out and fresh lining material applied overlapping the sound material by a minimum of 25 mm.

The lining shall be checked by an acetone wipe test to ensure that it is fully cured.

7.7 Storage, Handling and Transportation

Removable internal fittings shall be re-installed with extreme care to ensure that the internal lining is not damaged.

Care shall be taken with storage and transport of internally coated items to avoid damage to the lining. Openings shall be sealed with soft face blanks.

8. MAINTENANCE PAINTING

8.1 Paint Selection General

The selection of maintenance painting systems for particular applications and the required preparation shall be as given in the Schedules A(M), B(M) and C(M).

8.2 Surface Preparation For Maintenance Painting

8.2.1 Conformance With New Construction Procedure

Surface preparation for maintenance work shall be as for new construction except as amended below.

8.2.2 Surface Examination

Existing paintwork shall be thoroughly examined and all areas of loosened paint and rust formation shall be noted so that work can be concentrated there. If such areas cannot be exactly defined, overall preparation shall be carried out.

*** 8.2.3 Flammable Atmospheres - Precautions**

Where there is a risk of a flammable atmosphere being present, BP may, with the relevant safety authority, impose restrictions on methods of cleaning.



8.2.4 Permits

Appropriate permits shall be obtained by the Contractor for work in the area concerned and no work shall commence until such permits are issued.

8.2.5 Protection of Adjacent Surfaces

Suitable screening shall be applied to protect adjacent surfaces before spot blasting takes place. In some cases, PVC masking tape will be suitable for protection. If damage does occur then reinstatement shall be made at the Contractor's expense.

* 8.2.6 Surface Preparation of Painted Carbon Steel Surfaces

Existing paintwork shall have any oil or grease removed prior to further coating. Surfaces shall be washed down with an approved emulsifiable degreaser and be rinsed with clean fresh water. Bolt holes shall be cleaned prior to blast cleaning.

All loosened paintwork shall be removed to a firm edge and other surface irregularities such as grit or dirt inclusions and blistering shall be removed by scraping or chipping, as appropriate. All areas of corrosion shall be prepared by grit blasting.

In cases where blast cleaning is not permitted, then power tool cleaning shall be carried out utilising power wire brushes, power discs or needle guns. If required by BP, then non-sparking items shall be used. Areas that cannot be power tool cleaned shall be prepared using hand tools i.e. brushes, scrapers, chipping hammers, etc.

Special attention shall be given to the preparation of weld areas. Where it is not possible to use a power disc or wire brush, impact tools shall be applied (vibratory or rotary hammers, needle guns and chisels) followed by hand wire brush cleaning. Areas on which blasting is carried out shall be enclosed where practicable and dust extraction and collection equipment shall be employed to minimise contamination elsewhere.

Where prepared surfaces are taken up to an existing painted surface, the paint in the joint area shall be carefully feathered out. Hard glossy surfaces may require abrading at the discretion of BP.

Specific safety measures shall be employed when preparing surfaces previously primed with lead-pigmented coatings to ensure that the surface preparation debris is adequately contained and disposed of.

8.2.7 Preparation of Painted Galvanised Steel Surfaces



Galvanised surfaces having loosened paint and areas of corrosion shall be prepared by hand scraping to a firm edge and be steel wire brushed to remove all corrosion products and surface contaminants.

The galvanised surface shall be cleaned by wiping with rags or brushes wetted with detergents and finally wiped down with clean dry cloths.

* 8.2.8 Wet Blasting

Wet blasting shall only be applied where dry blasting is not permitted. It is used for the following purposes:-

- (a) To provide increased safety against sparking.
- (b) To minimise atmospheric and surface pollution.
- (c) To prepare surfaces which are salt contaminated and spend much of their time in wet conditions.
- (d) To selectively remove individual damaged top coats from intact undercoats.

When wet blasting is used it shall be:-

- (a) Subject to BP approval.
- (b) To a similar standard to that achieved by dry blasting.
- (c) With potable water only.

The equipment shall allow individual control of air pressure, water and grit. The Contractor may be required to use a corrosion inhibitor to prevent flash rusting of the prepared substrate. The corrosion inhibitor and its concentration in the water shall be approved by the coating Manufacturer.

8.3 Paint Application (Maintenance)

8.3.1 Conformance with New Construction Painting

Maintenance painting shall be carried out as for new construction painting except as modified below.

It shall be the Contractor's responsibility to check with the paint Manufacturer, the compatibility of the maintenance paint system with the existing paint system.

8.3.2 Priming

Surfaces shall be primed before any deterioration of the preparation occurs or within 4 hours, whichever is the sooner. Where patch priming is carried out, this shall extend 50 mm (2 in) on to the adjacent prepared sound paintwork.

* 8.3.3 Paint Schedules

The maintenance painting schemes and required minimum dry film thicknesses shall be as specified in the Schedules A(M), B(M) and C(M).

Where existing paint surfaces are overcoated, the required additional film thickness shall be at the discretion of BP.

8.3.4 Damage to Paintwork

All damage to paintwork incurred shall be re-prepared to the original standard, patch primed, undercoated and finished. Patch painting shall extend 50 mm (2 in) on to the sound paintwork.

8.3.5 Colour

The finishing colour shall match the existing scheme unless otherwise specified. All colour bandings and identifying markings shall be restored (see 6.4.13).

8.3.6 Stripe Coating

Stripe coating by brush shall be carried out on all welds, seams, corners and edges and shall be in addition to the requirements of the Schedules.

9. QUALITY ASSURANCE

* 9.1 Inspection/Quality Control

The Contractor shall nominate from his own workforce, the person or persons responsible for inspection/quality control. Details of the qualifications of such persons shall be submitted to BP for approval.

Verification of the vendor's quality system is normally part of the pre-qualification procedure, and is therefore not specified in the core text of this specification. If this is not the case, clauses should be inserted to require the vendor to operate and be prepared to demonstrate the quality system to BP.

Further suggestions may be found in the BP Group RPSEs Introductory Volume



*** 9.2 Representative Panels**

Material samples and test panels to be provided by the Contractor will be specified by BP where necessary.

The Contractor shall prepare and coat two 300 mm square sample plates with each coating system required. This shall take place at least 7 days before starting the work and shall be witnessed by the Contractor's Inspector and BP.

*** 9.3 Pre-Start Meeting**

A pre-start meeting shall be held at least one week prior to commencement of the work to discuss work plans, and quality and HSE aspects. This shall include attendance by the Contractor's personnel responsible for inspection and a representative of the coating Manufacturer.

The coated sample plates shall be made available at the pre-start meeting. When approved by BP, these plates shall provide the acceptance criteria for destructive testing and shall stand as references for the quality of work required.

9.4 Coating Manufacturer's Support

The coating Manufacturer's technical representative shall support the coating Contractor by:-

- (a) Being at the pre-start meeting.
- (b) Being on site at the start of application (when required).
- (c) Providing expertise in case of any problems with his material and its application.
- (d) Making sufficient site visits during the contract to ensure that the coatings are being applied in accordance with the Manufacturer's recommendations.
- (e) Providing a written report to the Contractor and to BP following each site visit.

10. INSPECTION

10.1 Contractor's Inspection

10.1.1 Contractor's Responsibility



The Contractor is responsible for ensuring that the correct paint materials are obtained and applied such that work is performed to the standards of quality required by this Specification and meeting the appropriate HSE requirements.

10.1.2 General Requirements

Paintwork shall be subject to inspection on a continuous basis by the Contractor's nominated person (see 9.1) who shall make a daily record and report in writing the results of his inspections and tests to BP.

10.1.3 Contractor's Inspection Records

These shall include details of the following:-

- (a) Receipt and correct storage of coating materials including batch numbers and product reference numbers.
- (b) Items being painted/lined.
- (c) Location of work.
- (d) Ambient conditions, recorded at least 4 times per day at the place of work. i.e. atmospheric temperature/relative humidity/dewpoint/metal surface temperature and general weather conditions.
- (e) Condition of abrasives and equipment.
- (f) Surface preparation quality and profile, recorded by replica technique at least 4 times per day on prepared steel surfaces.
- (g) Colour, wet and dry film thickness of paint coating on each item painted.
- (h) Repairs or other further work necessary.
- (i) Calibration of inspection instruments.
- (j) Details of any problems together with details of their resolution and actions taken to prevent their recurrence.
- (k) Signature of Contractor's personnel responsible for inspection approving individual items of work.

* 10.1.4 Contractor's Inspection Equipment



The Contractor shall have a comprehensive range of inspection equipment. All this equipment shall be approved by BP prior to start of the work. The Contractor shall have available calibration certificates for all instruments for inspection by BP.

10.2 BP's Specialist Inspection

*** 10.2.1 BP's Personnel and Responsibilities**

BP may appoint a specialist painting inspector to monitor the work. This however in no way reduces the responsibility of the Contractor to carry out his own inspection and to make reports to BP.

The work may be subject to inspection and approval at any stage by BP who shall have authority to take any action necessary.

*** 10.2.2 Access and Facilities**

The Contractor shall provide access and facilities for BP's Inspector to enable him to carry out his duties. He shall be given reasonable notice of commencement of particular surface preparation and painting work.

If necessary, BP's Inspector may call in third party expertise if particular problems occur. Access shall also be provided for the coating Manufacturer's representative.

11. TESTING

11.1 Surface Amplitude

The surface amplitude shall be measured by direct assessment of replicas taken from the surface in accordance with [NACE RP0287](#). Blast cleaned reference panels shall be prepared as a reference. Replica tape and portable micrometers shall be used.

11.2 Relative Humidity

A whirling hygrometer shall be used to measure the relative humidity before blasting and painting in order to ensure the specified limits are not exceeded.

11.3 Chlorides

Surfaces may be checked for soluble chloride content. Surfaces washed by a proprietary detergent solution and subsequently washed with fresh water may also have the soluble chloride level checked on the washed surface. The Contractor will provide test papers (typically 'Quantabs' or 'Merckoquant' or agreed equivalent) to enable testing.



11.4 Curing of Zinc Silicate Primers

Zinc silicate primer coats shall be tested for adequate curing before overcoating. A solvent test as recommended by the Manufacturer shall be carried out.

11.5 Film Thickness

The wet film thickness shall be spot checked by comb gauge in random areas as an initial indication of the required dry film thickness.

The dry film thickness of each individual coat and of the total coating system shall be checked by magnetic thickness gauge. This shall be calibrated as a minimum, twice daily using foils in the thickness range being measured and a steel plate with a surface representative of that being achieved in practice.

Readings shall be taken at the frequency of at least four per square metre of painted surface. Particular attention shall be given to areas which are more difficult to coat e.g. corners. Results shall comply with requirements stated in the Schedules.

12. STORAGE

*** 12.1 Safe Storage**

The Contractor shall store paint with adequate ventilation and with intrinsically safe power and lighting systems and to BP approval.

All oil, solvent, or paint coated rags shall be stored in closed labelled containers.

12.2 Equipment Storage

All equipment, vessels and tankage shall be stored in such a manner as to ensure freedom from any type of impact damage.

13. DOCUMENTATION

13.1 Procedures

- * 13.1.1** The Contractor shall submit his proposals for all aspects of the work for the approval of BP prior to commencement of the work. This will include:-

(a) Proposals for the work.



- (b) Use of any subcontractors.
- (c) Location of work.
- (d) Choice of materials.
- (e) A quality plan showing the QA/QC programme and what checks will be carried out.
- (f) Items to be coated.
- (g) Painting Schedule to be used.
- (h) Preparation to be carried out.
- (i) Paint system data/material safety data sheets.
- (j) Precautions to be taken.
- (k) Planning schedules.
- (l) Inspection and testing.
- (m) HSE method statement for handling the hazards identified (see section 3.3).
- (n) Reporting.

13.2 Painting Records

The Contractor shall operate a comprehensive recording/ reporting system on all aspects of the painting:-

- (a) Including aspects covered above.
- (b) Details of environmental conditions.
- (c) Details of repair work and reasons necessary.

The data shall be set out on paint record forms within 24 hours of carrying out the work to which they refer. They shall be collated and indexed for ease of consultation.

13.3 Final Report

On completion of the work, a report is required giving full details of surface preparation and system used together with Manufacturer's data sheets and records of all measurements.

SCHEDULE A - ONSHORE, NEW CONSTRUCTION

Scope : External Surfaces.

Items : Structural Steel, Tanks, Vessels, Piping, Plant, Equipment.

System	Scope	Service Temperature
A1	CS Uninsulated	(<0°C to 120°C).
A2	CS Uninsulated	(121°C to 350°C).
A3	CS/Low Alloy Uninsulated	(351°C to 550°C).
A4	CS Insulated	(<0°C to 120°C).
A5	CS Insulated	(121°C to 350°C).
A6	CS Fireproofed.	
A7	Galvanised Steel.	
A8	Austenitic SS	(51°C to 120°C).
A9	Austenitic SS	(>120°C)
A10	CS Marine Structures and Jetties	



SCHEDULE A - ONSHORE, NEW CONSTRUCTION

System	Scope	Specification	Thickness
A1-1	CS Uninsulated <0°C to 120°C (Standard exposure)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Midcoat - MIO 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane	1 x 50µDFT 1 x 125µDFT 1 x 50µDFT Total 225µDFT
A1-2	CS Uninsulated <0°C to 120°C (Tank roof and severe exposure)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Midcoat - MIO 2 pack epoxy - 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane	1x 50µDFT 1x 100µDFT 1x 100µDFT 1x 50µDFT Total 300µDFT
A2	CS Uninsulated 121°C to 350°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Modified Al silicone (Alternative pigments to be used in Zone 1 areas)	1 x 60µDFT 1 x 30µDFT Total 90µDFT
A3	CS/Low Alloy Uninsulated 351°C to 550°C	Prepare - Blast BS 7079 Sa 3 First - Al metal spray Finish - Al Silicone * *Check temperature capability	1 x 150µDFT 1 x 20µDFT Total 170µDFT
A4-1	CS Insulated <0°C to 120°C (Standard exposure)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Finish - MIO 2 pack epoxy	1 x 50µDFT 1 x 125µDFT Total 175µDFT
A4-2	CS Insulated <0°C to 120°C (Severe exposure)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Finish - MIO 2 pack epoxy	1 x 50µDFT 2 x 100µDFT Total 250µDFT
A5	CS Insulated 121°C to 350°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Modified Al silicone (Alternative pigments to be used in Zone 1 areas)	1 x 60µDFT 1 x 20µDFT Total 80µDFT

System	Scope	Specification	Thickness
A6-1	CS Fireproofed	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - 2 pack epoxy tie coat	1 x 60µDFT 1 x 25µDFT Total 85µDFT
A6-2	CS Fireproofed (Alternative)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy If fire-proofing is not to be applied within 7 days, use a two pack epoxy tie coat as in A6-1.	1 x 50µDFT Total 50µDFT
A7	Galvanised Steel (80 µ)	Prepare - Clean emulsifying agent/ rinse with clean water - Chemical etch/rinse with Mordant solution Priming - Zn phosphate 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane (Thickness excluding galvanising)	1 x 60µDFT 1 x 50µDFT Total 110µDFT
A8	Austenitic SS 51°C to 120°C (Also <51°C if under insulation)	Prepare - Blast Sa 2 1/2 equivalent Priming - Red oxide 2 pack polyurethane * Midcoat - MIO 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane *Successful track record on SS required	1 x 50µDFT 1 x 100µDFT 1 x 50µDFT Total 200µDFT
A9	Austenitic SS >120°C	Prepare - Blast Sa 2 1/2 equivalent Coating - Foster Atlas Heat Resistant Coating 57-73 or approved equivalent	2 x 80µDFT Total 160µDFT
A10	CS Structures and Jetties. (Below main deck level).	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Red oxide 2 pack epoxy Finish - Epoxy coal tar	1 x 25µDFT 2 x 150µDFT Total 325µDFT

SCHEDULE B - OFFSHORE, NEW CONSTRUCTION

Scope : External Surfaces.

Items : Structural Steel, Tanks, Vessels, Piping, Plant, Equipment.

System	Scope	Service Temperature
	Subsea	
B1	CS Subsea - Below LAT.	
	Splash Zone	
B2	CS Splash Zone - Above LAT to underneath main deck, Rising main caissons/conductors.	
	Upper (Atmospheric) Zone	
B3	CS Uninsulated -	(<0°C to 120°C).
B4	CS Uninsulated -	(121°C to 350°C).
B5	CS/Low Alloy Uninsulated -	(351°C to 550°C).
B6	CS Insulated -	(<0°C to 120°C).
B7	CS Insulated -	(121°C to 350°C).
B8	CS Fireproofed.	
B9	Galvanised Steel - Structure, Handrail.	
B10	Galvanised Steel - Grating.	
B11	Deck - Heavy Duty Non Slip.	
B12	Deck - Light Duty Non Slip.	
B13	Deck - Aluminium Helideck.	
B14	Austenitic SS - & Mixed Metals (SS/CS/Ni base) & Cu based where required.	(51°C to 120°C)
B15	Austenitic SS	(>120°C)

Schedule B - Offshore, New Construction

System	Scope	Specification	Thickness
Subsea			
B1	CS Subsea Below LAT	Prepare - Blast BS 7079 Sa 2 1/2 Finish - Epoxy Coal tar	2 x 150µDFT Total 300µDFT
Splash Zone			
B2-1	CS Splash Zone Above LAT to under main deck. Rising main caissons/ conductors	Prepare - Blast BS 7079 Sa 2 1/2 Finish - Epoxy coal tar	3 x 200µDFT Total 600µDFT
B2-2	CS Splash Zone Above LAT to the Spider deck Rising main caissons/ conductors (Alternative)	Prepare - Blast BS 7079 Sa 2 1/2 Finish - Two pack epoxy cladding	1 x 3 mm Total 3mm DFT
Upper Atmospheric Zone			
B3-1	CS Uninsulated <0°C to 120°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Tiecoat - 2 pack epoxy Inter - 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane	1 x 60µDFT 1 x 25µDFT 2 x 100µDFT 1 x 50µDFT Total 335µDFT
B3-2	CS Uninsulated <0°C to 120°C (For small areas, touch-up, site tie-ins, risers above clad/ coating where B3-1 used)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Inter - 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane	1 x 50µDFT 2 x 125µDFT 1 x 50µDFT Total 350µDFT
B4	CS Uninsulated 121°C to 350°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Modified Al silicone (Alternative pigments to be used in Zone 1 areas)	1 x 60µDFT 1 x 20µDFT Total 80µDFT



System	Scope	Specification	Thickness
B5-1	CS/Low Alloy Uninsulated 351°C to 550°C	Prepare - Blast BS 7079 Sa 3 First - Al metal spray (BS 2569 Part 2) Finish - Al silicone * * Check temperature capability	1 x 150µDFT 1 x 20µDFT Total 170µDFT
B5-2	CS/Low Alloy Uninsulated 351°C to 550°C (Alternative)	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Al silicone * *Check temperature capability	1 x 60µDFT 1 x 20µDFT Total 80µDFT
B6-1	CS Insulated <0°C to 120°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Tiecoat - 2 pack epoxy Finish - MIO 2 pack epoxy	1 x 60µDFT 1 x 25µDFT 2 x 75µDFT Total 235µDFT
B6-2	CS Insulated <0°C to 120°C (Small areas, touch up, site tie-ins)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Finish - MIO 2 pack epoxy	1 x 50µDFT 2 x 100µDFT Total 250µDFT
B7	CS Insulated 121°C to 350°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Al silicone (Alternative pigments to be used in Zone 1 areas)	1 x 60µDFT 1 x 20µDFT Total 80µDFT
B8-1	CS Fireproofed	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - 2 pack epoxy tie coat	1 x 60µDFT 1 x 25µDFT Total 85µDFT
B8-2	CS Fireproofed (Alternative)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy * * If fire-proofing is not to be applied within 7 days, use a two pack epoxy tie coat as in B8-1.	1 x 50µDFT Total 50µDFT
B9	Galvanised Steel Structure Hand- rail BS 729	Prepare - Clean emulsifying agent/ rinse with clean water - Chemical etch/rinse with Mordant solution Priming - Zn phosphate epoxy Finish - Acrylic modified 2 pack polyurethane (Thickness excluding galvanising)	1 x 60µDFT 2 x 50µDFT Total 160µDFT

System	Scope	Specification	Thickness
B10	Galvanised Steel Grating BS 729	Prepare - Degrease/Etch Finish - Bitumen to BS 3416 (Dip)	2 x 40µDFT Total 80µDFT
B11	Deck- Heavy Duty Non Slip	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich 2 pack epoxy Finish - Sand filled modified epoxy cladding, cover with non-sparking aggregate, sweep away excess Seal - 2 pack epoxy	1 x 50µDFT 1 x 3mm DFT 1 x 50µDFT Total 3mm+DFT
B12	Deck- Light Duty Non Slip	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Finish - 2 pack epoxy + non-sparking aggregate	1 x 50µDFT 1 x 250µDFT Total 300µDFT
B13	Deck- Aluminium Helideck	Prepare - Blast BS 7079 Sa 2 1/2 equivalent (non metallic abrasive) Priming - 2 pack epoxy * Finish - 2 pack epoxy + non-sparking aggregate *Successful track record on aluminium required	1 x 50µDFT 1 x 500µDFT Total 550µDFT
B14	Austenitic SS 51°C to 120°C (Also <51°C if under insulation) & Mixed Metals (SS/CS/Ni base) & Cu based where required	Prepare - Blast BS 7079 Sa 2 1/2 equivalent Priming - Red oxide 2 pack polyurethane * or 2 pack epoxy * Midcoat - MIO 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane *Successful track record on SS required	1 x 50µDFT 1 x 125µDFT 1 x 50µDFT Total 225µDFT
B15	Austenitic SS >120°C	Prepare - Blast Sa 2 1/2 equivalent Coating - Foster Atlas Heat Resistant Coating 57-73 or approved equivalent	2 x 80µDFT Total 160µDFT

SCHEDULE C - TANK LINING, NEW CONSTRUCTION

Scope : Internal Surfaces.

Items : Tanks and vessels.

System	Scope
C1	CS Potable Water Tanks.
C2	CS Crude Oil Storage Tanks, Floor Area & Roof Space.
C3	CS Ballast, Emulsion Breaker, Slops Tanks Raw and Treated Water Tanks.
C4	CS Process Oil Tanks and Separators, Heat exchanger channels.



Schedule C - Tank Lining, New Construction

System	Scope	Specification	Thickness
C1	CS Potable Water Tank	Prepare - Blast BS 7079 Sa 3 Priming - Red oxide 2 pack epoxy* Finish - 2 pack epoxy * *To comply with BS 6920 and meet Water Bylaws Advisory Council requirements	1 x 50µDFT 3 x 125µDFT Total 425µDFT
C2-1	CS Crude Storage Tank Floor + 1.5 m of tank shell + Roof space for fixed roof tanks	Prepare - Blast BS 7079 Sa 3 Priming - Red oxide 2 pack epoxy Finish - Epoxy coal tar Note - Includes:- Roof and all fittings down to 1.5 m below top of upper shell strake.	1 x 50µDFT 3 x 125µDFT Total 425µDFT
C2-2	CS Crude Storage Tank Floor + 1.5 m of tank shell + Roof space for fixed roof tanks (Alternative)	Prepare - Blast BS 7079 Sa 3 Priming - Red oxide 2 pack epoxy Finish - 2 pack epoxy Note - Includes:- Roof and all fittings down to 1.5 m below top of upper shell strake.	1 x 50µDFT 3 x 125µDFT Total 425µDFT
C3-1	CS Ballast, Emulsion, Slops Raw Water	Prepare - Blast BS 7079 Sa 3 Priming - Red oxide 2 pack epoxy Finish - Epoxy coal tar	1 x 50µDFT 3 x 125µDFT Total 425µDFT
C3-2	CS Ballast, Emulsion, Slops, Raw Water (Alternative)	Prepare - Blast BS 7079 Sa 3 Priming - Red oxide 2 pack epoxy Finish - 2 pack epoxy	1 x 50µDFT 3 x 125µDFT Total 425µDFT
C4-1	CS Process Oil Tanks, Separators, Heat exchanger channels <90°C/<10barg.	Prepare - Blast BS 7079 Sa 3 Finish - Epoxy high performance	4 x 50µDFT Total 200µDFT

System	Scope	Specification	Thickness
C4-2	CS Process Oil Tanks, Separators, Heat exchanger channels <90°C/>10 barg	Prepare - Blast BS 7079 Sa 3 Priming - Polyester Finish - Glass flake filled polyester or vinyl ester	1 x 50µDFT 2 x ½mm DFT Total 1mm+DFT
C4-3	CS Process Oil Tanks, Separators, Heat exchanger channels >90°C/>10 barg.	Prepare - Blast BS 7079 Sa 3 Priming - Vinyl ester Finish - Glass flake reinforced vinyl ester	1 x 50µDFT 3 x ½mm DFT Total 1½mm+DFT



Schedule A(M) - Onshore, Maintenance

Scope : External Surfaces.

Items : Structural Steel, Tanks, Vessels, Piping, Plant, Equipment.

System	Scope	Service Temperature
AM1	CS Uninsulated	(<0°C to 120°C)
AM2	CS Uninsulated	(121°C to 350°C)
AM3	CS/Low Alloy Uninsulated	(351°C to 550°C)
AM4	CS Insulated	(<0°C to 120°C)
AM5	CS Insulated	(121°C to 350°C)
AM6	CS Fireproofed (not included).	
AM7	Galvanised steel.	
AM8	Austenitic SS	(51°C to 120°C)
AM9	Austenitic SS	(>120°C)

AM10 CS Marine Structures and Jetties.

Schedule A(M) - Onshore, Maintenance

System	Scope	Specification	Thickness
AM1-1	CS Uninsulated <0°C to 120°C (Standard exposure)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Midcoat - MIO 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane	1 x 50µDFT 1 x 125µDFT 1 x 50µDFT Total 225µDFT
AM1-2	CS Uninsulated <0°C to 120°C (Tank roof & severe exposure)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Midcoat - MIO 2 pack epoxy Finish - 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane	1 x 50µDFT 1 x 100µDFT 1 x 100µDFT 1 x 50µDFT Total 300µDFT
AM1-3	CS Uninsulated <0°C to 120°C (Power tool)	Prepare - BS 7079 Power tool St 3 Priming - Epoxy aluminium Midcoat - MIO 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane	1 x 125µDFT 1 x 125µDFT 1 x 50µDFT Total 300µDFT
AM1-4	CS Uninsulated <0°C to 120°C (Power tool & severe exposure)	Prepare - BS 7079 Power tool St 3 Priming - Epoxy aluminium Midcoat - MIO 2 pack epoxy Finish - 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane	1 x 125µDFT 1 x 100µDFT 1 x 100µDFT 1 x 50µDFT Total 375µDFT
AM1-5	CS Uninsulated <0°C to 20°C (Humidity up to 90 %)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich moisture cured polyurethane Midcoat - Moisture cured MIO polyurethane Finish - Acrylic modified 2 pack polyurethane	1 x 50µDFT 2 x 75µDFT 1 x 50µDFT Total 250µDFT
AM1-6	CS Uninsulated <0°C to 20°C (Chlorinated rubber maintenance)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy * Midcoat - Chlorinated or acrylated rubber Finish - Chlorinated or acrylated rubber * Overlap of zinc rich epoxy primer on to existing chlorinated rubber coatings to be minimised	1 x 50µDFT 2 x 75µDFT 1 x 75µDFT Total 275µDFT

System	Scope	Specification	Thickness
AM1-7	CS Uninsulated <0°C to 120°C (Oil modified Alkyd maintenance)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn phosphate oil modified Alkyd or linseed/tung oil phenolic Finish - MIO Alkyd or linseed/tung oil phenolic	2 x 50µDFT 2 x 60µDFT Total 220µDFT
AM1-8	CS Uninsulated <0°C to 120°C (Wet abrasive blasting)	Prepare - Wet blast BS 7079 Sa 2 1/2 Priming - 1 coat 2 pack epoxy wet blast primer Midcoat } As per the Finish } corresponding maintenance system compatible with original, see AM1-1, 1-2, 1-6 & 1-7	1 x 50µDFT Total 50µDFT
AM2	CS Uninsulated 121°C to 350°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Modified Al silicone (Alternative pigments to be used in Zone 1 areas)	1 x 60µDFT 1 x 20µDFT Total 80µDFT
AM3	CS/Low Alloy Uninsulated 351°C to 550°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Al silicone * *Check temperature capability	1 x 60µDFT 1 x 20µDFT Total 80µDFT
AM4-1	CS Insulated <0°C to 120°C	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Finish - MIO 2 pack epoxy	1 x 50µDFT 2 x 100µDFT Total 250µDFT
AM4-2	CS Insulated <0°C to 120°C (Power tool clean)	Prepare - BS 7079 Power tool St 3 Priming - Epoxy aluminium Finish - MIO 2 pack epoxy	1 x 125µDFT 2 x 100µDFT Total 325µDFT
AM5	CS Insulated 121°C to 350°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Modified Al silicone (Alternative pigment to be used in Zone 1 areas)	1 x 60µDFT 1 x 20µDFT Total 80µDFT
AM6	CS Fireproofed	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy If fire-proofing is not to be applied within 7 days, use a two pack epoxy tie coat (25µ).	1 x 50µDFT Total 50µDFT

System	Scope	Specification	Thickness
AM7-1	Galvanised (2 pack epoxy maintenance)	Prepare - Power tool clean/ Degrease Priming - Zn phosphate 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane (Thickness excluding galvanising)	 1 x 60µDFT 1 x 50µDFT Total 110µDFT
AM7-2	Galvanised (Chlorinated rubber maintenance)	Prepare - Power tool clean/ Degrease Priming - Zn phosphate Chlorinated or acrylated rubber Finish - Chlorinated or acrylated rubber (Thickness excluding galvanising)	 1 x 60µDFT 1 x 75µDFT Total 135µDFT
AM7-3	Galvanised (Oil modified Alkyd)	Prepare - Power tool clean/ Degrease Priming - Zn phosphate oil modified Alkyd or linseed/tung oil phenolic Finish - MIO Alkyd or linseed/tung oil phenolic (Thickness excluding galvanising)	 1 x 50µDFT 1 x 60µDFT Total 110µDFT
AM8-1	Austenitic SS 51°C to 120°C (Also <51°C if under insulation)	Prepare - Blast Sa 2 1/2 equivalent Priming - 2 pack polyurethane * Midcoat - MIO 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane *Successful track record on SS required	 1 x 50µDFT 1 x 100µDFT 1 x 50µDFT Total 200µDFT
AM8-2	Austenitic SS 51°C to 120°C (Also <51°C if under insulation)	Prepare - Blast Sa 2 1/2 equivalent Priming - 2 pack epoxy * Midcoat - MIO 2 pack epoxy Finish - 2 pack epoxy *Successful track record on SS required	 1 x 50µDFT 1 x 100µDFT 1 x 100µDFT Total 250µDFT
AM9	Austenitic SS >120°C	Prepare - Blast Sa 2 1/2 equivalent Coating - Foster Atlas Heat Resistant Coating 57-73 or approved equivalent	 2 x 80µDFT Total 160µDFT
AM10	CS Marine Structures & Jetties (Below main deck level)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - 2 pack epoxy Finish - Epoxy coal tar	 1 x 50µDFT 2 x 150µDFT Total 350µDFT

SCHEDULE B(M) - OFFSHORE, MAINTENANCE

Scope : External Surfaces.

Items : Structural Steel, Tanks, Vessels, Piping, Plant, Equipment.

System	Scope	Service Temperature
	Subsea	
BM1	CS Subsea - Below LAT.	
	Splash Zone	
BM2	CS Splash Zone - Above LAT to underneath main deck, Rising main caissons/conductors.	
	Upper (Atmospheric) Zone	
BM3	CS Uninsulated -	(<0°C to 120°C).
BM4	CS Uninsulated -	(121°C to 350°C).
BM5	CS/Low Alloy Uninsulated -	(351°C to 550°C).
BM6	CS Insulated -	(<0°C to 120°C).
BM7	CS Insulated -	(121°C to 350°C).
BM8	CS Fireproofed.	
BM9	Galvanised Steel - Structure, Handrail.	
BMI0	Galvanised Steel - Grating.	
BM11	Deck - Heavy Duty Non Slip.	
BM12	Deck - Light Duty Non Slip.	
BM13	Deck - Aluminium Helideck.	
BM14	Austenitic SS & Mixed Metals (SS/CS/Ni base) & Cu based where required.	(51°C to 120°C)
BM15	Austenitic SS	(>120°C)



Schedule B(M) - Offshore, Maintenance

System	Scope	Specification	Thickness
Splash Zone			
BM2-1	CS Splash Zone Above LAT to under main deck + Rising main caissons/ conductors	Prepare - Blast BS 7079 Sa 2 1/2 Finish - Epoxy coal tar	3 x 200µDFT Total 600µDFT
BM2-2	CS Splash Zone Above LAT to the spider deck +Rising main caissons/ conductors (Alternative)	Prepare - Blast BS 7079 Sa 2 1/2 Finish - Two pack epoxy cladding	1 x 3mm DFT Total 3mm DFT
Upper (Atmospheric) Zone			
BM3-1	CS Uninsulated <0° to 120°C	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Midcoat - MIO 2 pack epoxy - 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane	1 x 50µDFT 1 x 100µDFT 1 x 100µDFT 1 x 50µDFT Total 300µDFT
BM3-2	CS Uninsulated <0°C to 120°C (Power tool)	Prepare - BS 7079 Power tool St 3 Priming - Epoxy aluminium Midcoat - MIO 2 pack epoxy - 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane	1 x 125µDFT 1 x 100µDFT 1 x 100µDFT 1 x 50µDFT Total 375µDFT
BM3-3	CS Uninsulated <0°C to 120°C (Chlorinated rubber maintenance)	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy * Midcoat - Chlorinated or acrylated rubber Finish - Chlorinated or acrylated rubber * Overlap of zinc rich epoxy primer on to existing chlorinated rubber coatings to be minimised	1 x 50µDFT 2 x 75µDFT 1 x 75µDFT Total 275µDFT



BM3-4	CS Uninsulated <0°C to 120°C (Chlorinated rubber maintenance)	Prepare - Power tool BS 7079 St 3 Priming - Epoxy aluminium Midcoat - Chlorinated or acrylated rubber Finish - Chlorinated or acrylated rubber	1 x 125µDFT 2 x 75µDFT 1 x 75µDFT Total 350µDFT
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System	Scope	Specification	Thickness
BM3-5	CS Uninsulated <0°C to 120°C (Wet abrasive blasting)	Prepare - Wet blast BS 7079 Sa 2 1/2 Priming - 1 coat 2 pack epoxy wet blast primer Midcoat } As per corresponding Finish } maintenance system compatible with original - see BM3-1, 3-3 and 3-4	1 x 50µDFT
BM4	CS Uninsulated 121°C to 350°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Modified Al silicone (Alternative pigment to be used in Zone 1 areas)	1 x 60µDFT 1 x 20µDFT Total 80µDFT
BM5	CS/Low Alloy Uninsulated 351°C to 550°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Al silicone * *Check temperature capability	1 x 60µDFT 1 x 20µDFT Total 80µDFT
BM6-1	CS Insulated <0°C to 120°C	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Finish - MIO 2 pack epoxy	1 x 50µDFT 2 x 100µDFT Total 250µDFT
BM6-2	CS Insulated <0°C to 120°C (Power tool)	Prepare - BS 7079 Power tool St 3 Priming - Epoxy aluminium Finish - MIO 2 pack epoxy	1 x 125µDFT 2 x 100µDFT Total 325µDFT
BM7	CS Insulated 121°C to 350°C	Prepare - Blast BS 7079 Sa 3 Priming - Inorganic Zn silicate Finish - Modified Al silicone (Alternative pigment to be used in Zone 1 areas)	1 x 60µDFT 1 x 20µDFT Total 80µDFT
BM8	CS Fireproofed	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy * * If fire-proofing is not to be applied within 7 days, use a two pack epoxy tie coat (25µ).	1 x 50µDFT Total 50µDFT
BM9-1	Galvanised Steel Structure, Handrail/Ladders	Prepare - Power tool clean/Degrease Priming - Zn phosphate epoxy Finish - Acrylic modified 2 pack polyurethane (Thickness excluding galvanising)	1 x 60µDFT 1 x 50µDFT Total 110µDFT

System	Scope	Specification	Thickness
BM9-2	Galvanised Steel Structure Handrail (Chlorinated rubber maintenance)	Prepare - Blast tool clean/ Degrease Priming - Zn phosphate chlorinated or acrylated rubber Finish - Chlorinated or acrylated rubber (Thickness excluding galvanising)	1 x 60µDFT 1 x 75µDFT Total 135µDFT
BMI0	Galvanised Steel-Grating BS 729	Replace when necessary	
BM11-1	Deck - Heavy Duty Non Slip	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich 2 pack epoxy Finish - Sand filled modified epoxy cladding, cover with aggregate, sweep away excess. Seal - 2 pack epoxy	1 x 50µDFT 1 x 3mm DFT 1 x 50µDFT Total 3mm+DFT
BM11-2	Deck - Heavy Duty Non Slip (Power Tool)	Prepare - BS 7079 Power tool St 3 Finish - Non skid tiles adhesively bonded to the substrate	1 x 3 mm Total 3 mm
BM12-1	Deck - Light Duty Non Slip	Prepare - Blast BS 7079 Sa 2 1/2 Priming - Zn rich epoxy Finish - 2 pack epoxy + non-sparking aggregate	1 x 50µDFT 1 x 250µDFT Total 300µDFT
BM12-2	Deck - Light Duty Non Slip (Power tool)	Prepare - Power tool BS 7079 St 3 Priming - Epoxy aluminium Finish - 2 pack epoxy + non-sparking aggregate	1 x 125µDFT 1 x 250µDFT Total 375µDFT
BM13	Deck - Aluminium Helideck	Prepare - Blast Sa 2 1/2 equivalent (non metallic abrasive) Priming - 2 pack epoxy * Finish - 2 pack epoxy + non-sparking aggregate *Successful track record on Aluminium required	1 x 50µDFT 1 x 500µDFT Total 550µDFT

System	Scope	Specification	Thickness
BM14	Austenitic SS 51°C to 120°C (Also <51°C if under insulation) & Mixed Metals (SS/CS/Ni base) & Cu based where required	Prepare - Blast Sa 2 1/2 equivalent Priming - Red oxide 2 pack polyurethane * or 2 pack epoxy * Midcoat - MIO 2 pack epoxy Finish - Acrylic modified 2 pack polyurethane *Successful track record on SS required	1 x 50µDFT 1 x 125µDFT 1 x 50µDFT Total 225µDFT
BM15	Austenitic SS >120°C	Prepare - Blast Sa 2 1/2 equivalent Coating - Foster Atlas Heat Resistant Coating 57-73 or approved equivalent	2 x 80µDFT Total 160µDFT

Schedule C(M) - Tank Lining, Maintenance

Scope : Internal Surfaces.

Items : Tanks and vessels.

System	Scope
CM1	CS Potable Water Tanks.
CM2	CS Crude Oil Storage Tanks, Floor Area & Roof Space.
CM3	CS Ballast, Emulsion Breaker, Slops Tanks Raw and Treated Water Tanks.
CM4	CS Process Oil Tanks and Separators, Heat exchanger channels.

Note All Maintenance Systems shall be the same as the systems specified for New Construction C1, C2, C3 and C4.



DEFINITIONS AND ABBREVIATIONS

Definitions

Standardised definitions may be found in the BP Group RPSEs Introductory Volume.

amplitude:	peak to valley height in a surface profile after surface preparation.
atmospheric zone:	the part of an offshore structure above the splash zone.
dewpoint:	the temperature at which air has reached the saturation point and condensation starts to occur.
splash zone:	above LAT -3 m to LAT + 12 m or as otherwise defined in the contract document.
submerged:	below LAT -3 m.

Abbreviations

Al	Aluminium
ASTM	American Society for Testing and Materials
BS	British Standard
COSHH	Control of Substances Hazardous to Health
CRA	Corrosion Resistant Alloy
CS	Carbon steel
Cu	Copper
DFT	Dry Film Thickness of a paint coating
HSE	Health, Safety and Environment
ISO	International Organisation for standardisation
LAT	Lowest astronomical tide
MIO	Micaceous iron oxide
NACE	National Association of Corrosion Engineers
Ni	Nickel
Pb	Lead
SI	Système Internationale d'Unités
Sn	Tin
SS	Stainless steel
SSPC	Steel Structures Painting Council
VOC	Volatile Organic Compound
Zn	Zinc

LIST OF REFERENCED DOCUMENTS

A reference invokes the latest published issue or amendment unless stated otherwise.

Referenced standards may be replaced by equivalent standards that are internationally or otherwise recognised provided that it can be shown to the satisfaction of BP's professional engineer that they meet or exceed the requirements of the referenced standards.

Coatings General

NACE	Coatings and linings handbook
NACE TPC-2	Coatings and linings for immersion service
Paintmakers Association	Personal Protection Advice for the Use of Marine Paints and Compositions
BS 1710	Identification of pipelines and services
BS 4800	Paint colours for building purposes
BS 5378	Safety signs and colours
BS 5493	Code of Practice for protective coating of iron and steel structures against corrosion.
BS 6150	Code of Practice for Painting of Buildings
BS 6920	Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water.

Surface Preparation

NACE RP-02-87	Surface profile measurement of blast cleaned surfaces using replica tapes.
SSPC	Steel structures painting council (SSPC Pittsburgh, PA) Good painting practice and surface preparation specifications SP1 to 10. SP3 - Power Cleaning SP8 - Chemical Treatment for the Preparation of Steel Surfaces to Receive Paint.



BS 2451	Chilled iron, shot and grit.
BS 2842	Whirling hygrometers
BS 7079 - C4} ISO 8503- 4 }	Preparation of steel substrates before application of paints and related products.
BS 7079 - A1} ISO 8501 - 1 }	Specification for rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.

Coatings

ASTM A123	Zinc (Hot-Galvanised) coatings on products fabricated from rolled, pressed and forged steel shapes, plates, bars and strip.
BS 729	Hot dip galvanised coatings on iron and steel articles.
BS 2569	Sprayed metal coating:- Pt 2 Protection of iron and steel against corrosion and oxidation at elevated temperatures
BS 3416	Black bitumen coatings for cold application
BS 6374	Pt 4: Lining of equipment with polymeric materials for the process industries. Specification for lining with cold curing thermosetting resins.

Coatings Testing

NACE RP-01-88	Holiday testing of protective coatings
BS 3900	Methods of testing for paints

Health and Safety - UK Legislation

	Construction (Working Place) Regulations
	The Health and Safety at Work Act 1974.
SI 840	The Health and Safety at Work Act 1974 (Application Outside Great Britain) Order 1989.
C43	Environmental Protection Act



SI 1019	The Offshore Installations (Operational Safety, Health and Welfare) Regulations 1976
SI 1657	The Control of Substances Hazardous to Health (COSHH)
General	
BS 5423	Specification for portable fire extinguishers.

FINISH COLOUR SCHEDULE

Note: Applies to all piping, steelwork, equipment, etc. including component items from suppliers ie. Proprietary Equipment.

Item		Finished Colour	Col Ref No (BS 4800)
1.0	PIPING AND VALVES		
1.1	Process	Grey (up to 120°C) Aluminium (above 120°C)	00A05/Aluminium
1.2	Utilities		
1.2.1	All other than cooling water or firewater lines	Grey (up to 120°C) Aluminium (above 120°C)	00A05/Aluminium
1.2.2	Cooling water lines	Green Gloss	14E53
1.3	Acid, Alkali and all other corrosive contents ie corrosive to the person except toxic lines (Used only where specified by BP)	Grey with yellow banding pitched at intervals depending on pipe geometry	00A05/10E53
1.4	Toxic Lines (Used only where specified by BP)	Grey with tangerine banding pitched at intervals depending on pipe geometry	00A05/06E51

1.5	Instrument Air Lines and MICC Normally left unpainted but where identification may be required, eg at back of panel, MICC shall be black and copper instrument air lines grey	Black Grey Gloss	00E53 00A09
1.6	Outdoor Instrumentation Items eg control valves, transmitters, gauges. Where such items require painting for weather protection, they shall be black.	Black	00E53
2.0	FIRE FIGHTING EQUIPMENT		
	Valves, hydrants, hose boxes, firewater and foam-lines, dry risers	Red Gloss	04E53
3.0	MOVING EQUIPMENT		
3.1	Pumps, compressors, turbines stirrers, blowers, rotary air locks, screw feeders, etc (and their concrete bases inside buildings)	Mushroom Gloss	08B21
3.2	Motors and their field mounted switchgear	Tangerine Gloss	06E51
4.0	FIRE HEATERS - HEAT EXCHANGERS - STORAGE TANKS - VESSELS		



	All contents except acid, alkali and other corrosive or toxic contents	Grey (up to 120°C) or aluminium (above 120°C) Number and description stencilled straight on - see Appendix 4	00A05/Aluminium
5.0	FIRE HEATERS - HEAT EXCHANGERS - STORAGE TANKS - VESSELS		
	Acid alkali and other corrosive storage except toxic contents (used only where specified by BP)	Grey (up to 120°C) or Aluminium (above 120°C). Number and description stencilled on yellow block - see Appendix VI	00A05/Aluminium/IOE 53
6.0	FIRE HEATERS - HEAT EXCHANGERS - STORAGE TANKS - VESSELS		
	Toxic contents (Used only where specified by BP)	Grey (up to 120°C) or Aluminium (above 120°C) number and description stencilled on Tangerine block - see Appendix VI	00A05/Aluminium/06E 51
7.0	CHLORINE STORAGE		
	(Used only where specified by BP)	White, number and description stencilled on yellow block - see Appendix VI	00A01
8.0	STRUCTURAL STEELWORK		
	Pipe supports etc	Grey	00A05



9.0 GALVANISED HANDRAILS,
STANDARDS, LADDER CAGES
& GATES

(Overpainted)

Tangerine

06E51



STENCILLING AND COLOUR BLOCKS

1. BLOCKS (corrosive and toxic contents only)

Shall be painted in a prominent and easily readable position as directed by BP and shall be not less than 600 long and 600 deep. Colour is yellow gloss IOE53 (BS 4800) for corrosive contents, and tangerine gloss 06E51 (BS 4800) for toxic contents. Pipework contents shall be banded at intervals to be agreed with BP.

2. STENCILLED LETTERS

Stencilled letters shall be not less than 38mm but preferably 50mm high and shall be black gloss for both colour blocks and straight-on stencilling.

Stencilled information shall consist of the following:-

- Plant Item Number

-Description of Plant Item

-Name of Contents - Corrosive and toxic contents only. May be omitted where covered by plant item description.