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GIS 06-601

Painting of Metal Surfaces

Group Instruction for Supply

**BP GROUP
ENGINEERING TECHNICAL PRACTICES**

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GIS 06-601. This Group Instruction for Supply (GIS) is based on the BP heritage document below:

BP

GS 106-2 Painting of Metal Surfaces.

Amoco

A CP-COAT-ATM-C Corrosion Protection—Coatings—Atmospheric Systems Application—
Specification.
A CP-COAT-00-G Corrosion Protection—Coatings—General—Guide.
A CP-COAT-CLR-R Corrosion Protection—Coatings—Color Coding—Recommended
Practice.
A CP-COAT-MPOC-C Corrosion Protection—Coatings—Maintenance Painting of Offshore and
Coastal Facilities—Construction Specification.

Arco

ES 500 Painting and Protective Coatings.

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Introduction

Value of this Group Instruction for Supply:

There are many national and engineering association standards covering the surface preparation and painting of industrial structures but no internationally recognised standard. BP operates in many different countries throughout the world and this document has been written as a stand-alone guidance document from which specifications can be developed regardless of geographical location.

The general requirements given in this Group Instruction for Supply are based upon experience within BP and within other reputable companies, and guidance provided in recognised national and engineering association standards.

Within the protective coatings industry, there is an ongoing trend towards the reduction in, or the complete removal of, the volatile organic compound (VOC) content of coatings. There is also increasing interest in the use of surface preparation and coating application methods that minimise risks to health and the environment. BP fully supports these initiatives and appropriate references are made within the document.

Application:

This Group Instruction for Supply guides 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 that supports the requirements 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 Group Instruction for Supply, GIS 06-601, refers to certain local, national, or international regulations; 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.

Feedback and Further Information:

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

For feedback and further information, please make comments in the [Engineering Technical Practices Library](#).



1. Scope

1.1. Painting aspect

This GIS defines the requirements with respect to the painting of metal surfaces and covers the following main area- General Requirements for Paints and their Application.

1.2. Applicability

This GIS 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 for building surfaces.
- b. Pipelines (buried or subsea).
- c. Risers on offshore platforms (except in the atmospheric zone).

2. Normative references

BP

GP 44-60	Area Classification (API 500).
GP 44-65	Area Classification (IP 15).

NACE International (NACE)

NACE RP0188	Holiday testing of new protective coatings on conductive substrates.
NACE RP0287	Field Measurement of Surface Profile of Abrasive Blast Cleaned Steel Surfaces using a Replica Tape.
NACE TPC-2	Coatings and Linings for Immersion Service.
NACE 5	Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoatings.

British Standards Institute (BSI)

BS 5378	Safety signs and colours.
BS 2842	Whirling hygrometer.
BS 4800	Painting colours for building purposes.
BS 1710	Identification of pipelines and services.
BS 6374	Lining of equipment with polymeric materials.

International Organisation for Standardization (ISO)

ISO 8501-1	Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness.
ISO 8501-4	Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness following water jetting.
ISO 11126	Preparation of steel substrates before application of paints and related products – Specification for non-metallic blast cleaning abrasives.



ISO 12944	Paints and varnishes. Corrosion protection of steel structures by protective paint systems.
ISO 1461	Hot dip galvanized coatings on fabricated iron and steel articles.

3. Health, safety, and environment

3.1. *Regulations

- a. Account shall be taken of technical, health, safety, and environmental legislation.
- b. Plant and equipment used for surface preparation and coating application shall be maintained in good working condition and shall comply with applicable health, safety, and environmental (HSE) requirements as follows:
 1. National or local law requirements.
 2. Statutory requirements - containers and any associated packaging shall, as appropriate, be marked in accordance with the Certification, Packaging, and Labelling (CPL) Regulations for Carriage of Dangerous Goods by Road and Rail, and Chemicals Hazards Information and Packaging (CHIP) Regulations. Compressors and any associated pressure vessels shall be protected against overpressure. Current test certificates shall be held on site for inspection.
 3. Site regulations - the contractor shall acquaint himself with all installation safety and security restrictions. No work shall be allowed to take place until a Permit to Work or a Form of Authority has been issued. If the contract is scheduled to last for more than six weeks, the Contractor shall notify the Factory Inspector. The Contractor shall not operate any valves or plant associated with the site or structure.
- c. Explosive atmosphere special regulations - blast cleaning and spray painting equipment shall be continuously electrically bonded from the nozzle to the surface being painted and backwards from the nozzle to the compressor, which shall be earthed (grounded). Compressors used shall meet any HSE requirements specified by BP, including those relating to noise. In hazardous areas, non-spark tools shall be used for cleaning purposes and flameproof equipment shall be compulsory.

3.2. Safety precautions for pressurised hoses

- a. Pressurised hoses shall be marked and tested and results shall be logged to ensure safe operation.
- b. Test certificates shall be provided giving the maximum safe working pressure.
- c. Hoses and other pressure items shall be checked at least once per week to confirm that any damage or any loss of electrical continuity is not a safety hazard.
- d. The 'dead-man' handle shall only be manually held in position by the blaster.
- e. A log of safety inspections shall be kept.

3.3. *General hazards

- a. Activities associated with the surface preparation works, including access to and from the work place, shall be subject to a Health and Safety Risk Assessment. Hazards shall be identified and safety equipment shall be provided to ensure safe working conditions at all times.
- b. COSHH and environmental assessments shall be carried out (with BP participation) before start of the work.
- c. 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 in accordance with the Environmental Protection Act – EPA – (Duty of Care).

- d. The recommendations of the document, “Personal Protection Advice for the Use of Marine Paints and Compositions,” shall be adhered to.
- e. Items shall be provided to ensure protection of personnel whilst carrying out their duties. Appropriate protective clothing shall be worn at all times. Routine checks shall be made of the integrity of personal protective equipment. Fire fighting equipment shall be deployed in high-risk areas such as paint storage and mixing areas, elevated temperature substrates, and close to diesel driven plant. A portable gas tester should also be provided.
- f. In confined spaces, sufficient ventilation shall be provided at the workplace to prevent operator exposure to dangerous fumes.
- g. 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.
- h. Solvent drums and containers shall be earthed (grounded).
- i. Work areas shall be cordoned off with appropriate warning signs in accordance with BS 5378 and appropriate containment and protection shall be provided to avoid damage to adjacent items.
- j. If surface preparation and painting operations covered in this document are carried out in the vicinity of rivers, lakes, and other watercourses, special precautions may be necessary to prevent the possibility of pollution. Operations shall be carried out in accordance with the Water Resources Act.
- k. No material or plant shall be placed in any building or positions where they could present a hazard to persons performing their normal duties.

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

- a. Fixed scaffolding, staging, trolleys, cradles, etc. shall be used in accordance with the relevant local regulations that are currently in force. In the UK, the requirements shall comply with the Construction (Working Places) Regulations and where relevant SI 1019 - The Offshore Installations (Operational Safety, Health and Welfare) Regulations.
- b. Scaffolding boards shall be firmly fixed or tied down at all times.
- c. Access shall be provided for surface preparation, painting, and detailed inspection of surfaces for compliance with the Specification. The access provided shall enable free movement of operators taking account of any restrictions imposed by protective clothing and equipment.

3.5. Paint manufacturer's information

- a. For all products, Manufacturer’s data sheets and materials safety data sheets containing information on HSE factors shall be supplied. This information shall be provided before start-up and shall be available on site for the full duration of the work.
- b. The data sheets shall give specific information on the chemical composition of the materials involved and the precautions that must be taken during their storage and use.



3.6. Training responsibilities

- a. Contractor's personnel shall receive appropriate training on site safety procedures before commencing work. This shall include the following, as a minimum:
 1. The operation and HSE aspects of all surface preparation and painting equipment.
 2. The main HSE hazards associated with the site and specific work location.
 3. Hazards associated with any of the materials to be used.
 4. HSE regulations, permit-to-work systems, site emergency procedures, accident and incident reporting procedures of the site.
- b. A registered first-aider shall be provided.

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

3.7. Flammable atmospheres

3.7.1. Area classification

- a. BP will advise area classifications for both plant design and construction/maintenance periods. Some classifications (e.g. Zone 1 – in accordance with GP 44-65 hazard classification [Division 1 – in accordance with GP 44-60 hazard classification]) for plant design may preclude the use of certain paint compositions, e.g. paints with aluminium metallic pigments and metal-sprayed aluminium coatings shall not be used in Zone 1 (Division 1) Areas.
- b. The classification for construction or maintenance periods affects the minimum rating permissible for electrical equipment (see clause 6.3.5).
- c. Data for the proposed paint systems and solvents shall be provided to BP 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 improved coatings that may be required by HSE regulations, e.g. reduced VOC content, is still relatively limited, but such coatings may be considered if:

- a. Application conditions are favourable.
- b. Equivalent performance to established systems can be demonstrated.

4. Paint composition and minimum preparatory requirements

4.1. Approvals

- a. Paint purchase shall be only from manufacturers approved by BP for the particular application.



1. Details of generalised composition of paints for BP approval shall be supplied at the tender stage.
 2. The selected composition shall comply with the following clauses.
- b. Surface preparation of external painting shall be in accordance with clause 6 and to a minimum standard ISO 8501-1 Sa 2.5, with the exception of the requirements below in clause 4.2.
 - c. Surface preparation for internal lining shall be a minimum of ISO 8501-1 Sa 3.

4.2. Primers

4.2.1. Air drying zinc phosphate

- a. Based on air drying alkyd or epoxy ester media, for use at temperatures up to 120°C (248°F).
- b. A minimum zinc phosphate pigment content in the dry film meeting ISO 12944.
- c. Surface preparation shall be a minimum of ISO 8501-1 Sa 2.5 over carbon steel or ISO 8501 ST2/chemical etch over galvanising.

4.2.2. Inorganic zinc silicate

- a. Based on inorganic or ethyl silicate media, dependant on topcoat may be used at temperatures up to 350°C (662°F).
- b. Not less than 85% metallic zinc by weight in the dry film.
- c. Surface preparation shall be a minimum of ISO 8501 Sa 3.

4.2.3. Zinc rich epoxy

- a. Based on polyamide cured two pack epoxy for use on substrates up to temperatures of 120°C (248°F).
- b. A minimum of 80% metallic zinc by weight in the dry film.
- c. Surface preparation shall be a minimum of ISO 8501-1 Sa 2.5

4.2.4. Zinc rich moisture cured polyurethane

- a. A minimum of 80% metallic zinc by weight in the dry film.
- b. For use on substrates of temperatures up to 120°C (248°F).
- c. Surface preparation shall be a minimum of ISO 8501-1 Sa 2.5
- d. Environmental limits during curing shall not exceed the parameters set out for application for this material in clause 6.4.7

4.2.5. Zinc phosphate acrylated rubber

- a. Based on suitably plasticized, or acrylated rubber, for use on substrates operating up to 120°C (248°F).
- b. A minimum of 20% zinc phosphate by weight in the dry film.
If the use of chlorinated rubber coatings is restricted on HSE grounds, acrylated rubber coatings may be specified.
- c. Surface preparation shall be a minimum of ISO 8501-1 Sa 2.5 or sweep abrasive blasted/power tool cleaned over galvanised steel.



4.2.6. 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.
- c. Surface preparation shall be a minimum of ISO 8501-1 Sa 2.5.

4.2.7. Aluminium metal spray

- a. Composition shall be 99,5% aluminium.
- b. Surface preparation shall be a minimum of ISO 8501-1 Sa 3.

4.2.8. Mordant solution (T-wash) for preparation of galvanised surfaces

A phosphoric acid solution incorporating copper salts in a solvent/water solution.

4.3. Finish painting**4.3.1. 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.

4.3.2. Acrylated rubber

- a. Based on plasticized, 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.

Chlorinated rubber coatings have become restricted on HSE grounds, it is suggested that acrylated rubber coatings be specified in their place.

4.3.3. Coal tar epoxy

- a. Two pack formulation incorporating:
 - 1. Pack 1-epoxy resin and suitable pigments.
 - 2. 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 are allowed at BP's direction.

The use of this type of coating is becoming restricted on HSE grounds, it is recommended that alternatives be used if possible; potential substitutes are:

- *Two pack silica filled epoxy coatings.*
- *Two pack glass flake epoxy or polyester coatings.*

4.3.4. 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 550°C (932°F).

4.3.5. Aluminium metal spray

Aluminium and aluminium alloys based on DIN 8566.

4.3.6. Air drying micaceous iron oxide phenolic

- a. Based on a phenolic linseed oil, 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.

4.3.7. 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.

4.3.8. Two pack polyurethane finishes

Acrylic modified polyurethanes with titanium dioxide pigment

If the use of this type of coating becomes restricted on HSE grounds, possible alternatives are:

- *Two pack acrylic coatings.*
- *Two pack acrylic epoxy coatings.*

4.3.9. Glass flake coating

- a. A bisphenol-A compatible polyester or vinyl ester primer is required beneath the high build glass flake pigmented coating. The high build coating shall be a glass flake reinforced bisphenol-A polyester or vinyl ester resin based material, suitable to withstand the specific exposure. This shall contain at least 20% by weight of glass flake.
- b. Surface preparation shall be a minimum of ISO 8501--1 Sa 2.5

5. Contractor's responsibility

5.1. Standard of work and safety

Work shall be carried out in accordance with good painting practice and shall take account of applicable HSE regulations. Particular notice shall be taken of clause 3 of this GIS. See also ISO 12944.

5.2. Personnel/items to be provided by the contractor

Personnel, surface preparation and painting equipment, and inspection and recording instruments shall be supplied. Unless otherwise specified, the following shall be provided:

- a. An evaluation of 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 as detailed in clause 3.5.
- d. Provision and maintenance of plant, equipment, and tools including those listed below.



- e. Air compressors and generators.
- f. Scaffolding, staging, cradles, etc. (Ref clause 3.4).
- 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, holiday detectors, copies of the visual standard ISO 8501-1.
- o. Inspection and test plan.
- p. Documentation of the work.

5.3. Protection of surroundings

- a. Precautions shall be taken to ensure protection of surrounding plant and equipment, which is not within the work scope, and subsequent safe disposal of used materials or redundant equipment. Liability for the replacement, repair, and/or cleaning of any adjacent item damaged during the surface preparation and painting activities shall be assumed.
- b. Sensitive items, e.g. notices, nameplates, lettering, gauges, sight glasses, light fittings, etc. shall be protected during the paint works.
- c. Blasting dust and grit shall not be allowed to cause contamination of coated surfaces which are not yet dry.
- d. Precautions shall be taken to preserve prepared and coated surfaces from damage by inclement weather.

5.4. Damage to coatings

- a. Finished paintwork shall not be damaged by other coating activities. Any repairs that arise from negligence shall be without cost to BP.
- b. In the case of painting offsite, protection and packing shall be provided and steps shall be taken during transportation to minimise damage. If some paint damage should occur, remedial work shall be carried out without cost to BP.
- c. The responsibility for the quality of painting work carried out by sub-contractors shall be assumed.

5.5. Quality of finished paint condition

- a. The responsibility for the quality of the finished paint condition shall be assumed. If there is any evidence of "poor performance," the work shall be repeated without cost. "Poor performance" is defined as any evidence of inadequate coverage, inadequate or excessive film thickness, poor adhesion, dirt or grease contamination or inclusion, coating sags or runs, or other evidence of poor application practice.
- b. The coating used shall be suitable for the application and each paint coating shall be applied in accordance with the Manufacturer's recommendations.

Suitable methods for testing paint are given in BS 3900.



5.6. Site clearance

- a. On completion of the work, surplus materials, scaffolding, plant and equipment shall be removed without delay and areas shall be left in a clean and tidy condition in accordance with local legislation.
- b. In the UK, site clearance shall meet the Environmental Protection Act.

6. New external painting**6.1. Paint selection general**

Paint selection shall be in accordance with this GIS and as provided by the relevant technical authority.

6.2. *Painting off-site**6.2.1. General**

Painting of some items may be carried out off-site, subject to BP approval. Such items shall arrive 'on-site' in satisfactory condition or remedial work shall be carried out. The coating shall be stopped a minimum distance of 50 mm (2 in) from any welded attachment points for which welding is to be carried out at site.

6.2.2. Compliance with technical practice

Painting off-site shall not relieve compliance with any aspect of this GIS.

6.2.3. Completely fabricated items

- a. Full preparation/painting may be done before 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 shall be provided for transport to site.
- c. Coating damage incurred during transit shall be repaired fully and in accordance with this GIS at no cost to BP.

6.2.4. Partially or non-fabricated items

- a. These may be prepared/primed and further coated before 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 clause 5 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. If air temperature is below 5°C (41°F).



- b. If relative humidity is $> 85\%$. (Ref. BS 2842).
- c. If metal surface temperature is $< 3^{\circ}\text{C}$ (5°F) above the ambient dew point.
- d. If priming cannot be completed within 4 hours of preparing the surface.

Note: The only relaxation allowable to this requirement is if the work is fully enclosed, the temperature is above 10°C (50°F), the humidity is below 75%, and the original specific standard of surface preparation is fully retained up to the time of coating application. Any such relaxation shall be entirely at BP's discretion.

- e. Outside daylight hours on exterior locations, unless special lighting arrangements have been provided and approved by BP.
- f. If 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 and/or the paint to have dried sufficiently to withstand weather damage.

There is ongoing work evaluating the performance of coatings applied onto substrates prepared outside of the above restrictions. The Technical Authority may be able to provide alternative restrictions on a case-by-case basis.

6.3.3. Surface irregularity removal

- a. Surface irregularities shall be removed/made smooth before surface preparation. Irregularities include:
 - 1. Weld spatter, rough capping, undercut, and slag.
 - 2. Sharp or rough edges and burrs.
 - 3. Surface laminations and laps.
- b. 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 measurement of the remaining wall thickness.

6.3.4. Surface contaminants

- a. 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 ISO 12944. Alternatively, a proprietary salt meter may be used. Identified salt residues shall be removed by washing with clean fresh water.
- b. Cleaning to remove oil and grease shall be carried out in accordance with SSPC SP 1. 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 (grounded) 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 conform to ISO 11126 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 due to the health risk from respirable size particles of silica.
- f. Spent abrasives shall be removed by brushing and vacuum cleaning.
- g. Nozzles for blasting shall have a maximum orifice size of 9 mm (0,35 in) 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 to remove the primer in preparation for painting in accordance with this GIS.

6.3.6. Blast cleaning standard

- a. The surface profile on carbon steel shall be 50-75 microns (0,002–0,003 in) with peaks of maximum amplitude 100 microns (0,004 in) as measured with a replica technique (typically Testex tape used in accordance with NACE RP0287), an Elcometer 123 or an agreed equivalent method.
- b. Blasting shall be carried out to achieve quality to ISO 8501-1 or local equivalent and the level specified in clause 4.
- c. Reference shall be made to ISO 8501-1 for photographs of equivalents to these qualities.

6.3.7. Restrictions on surface preparation methods other than abrasive blasting

Methods other than blasting may be used subject to the following:

- a. Manual/power driven tools or alternative methods may be used if abrasive blast cleaning is impractical or not permitted by BP.
- b. Use of alternative cleaning methods to blasting shall be subject to BP approval.
- c. If there is a flammable atmosphere present, restrictions may be applied by BP.

6.3.8. Power tool cleaning

If power tool cleaning is carried out, 100% of the surface shall be cleaned using power wire brushing in accordance with SSPC-SP 3. Preparation shall be to ISO 8501-1 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

Galvanised surfaces shall be:

- a. Thoroughly degreased with emulsifying agents.
- b. Wire brushed or sweep blasted to remove corrosion products and degreased with emulsifying agent.



6.3.11. Stainless steel, nickel and copper based alloys

- a. Stainless steel, nickel, and copper based alloys, if specified to be painted, shall be:
 1. Degreased.
 2. Blasted with chloride free abrasive such as alumina to give a minimum surface profile of 40 microns (0,001 6 in). Copper slag abrasives are not acceptable. If grit blasting is impractical, the surfaces may be prepared by hand or power tools using P60 grade paper.
 3. Cleaned with equipment that has not been used on carbon steel.
- b. 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

Aluminium, if specified to be painted, shall be:

- a. Degreased.
- b. Abrasive blasted with a non-metallic abrasive such as alumina to give a minimum surface profile of 40 microns (0,001 6 in).

6.4. Paint application (new work)**6.4.1. Paint schedules**

Specific paint materials are detailed in clause 4.

6.4.2. Single source of supply

Coating materials, including thinners and equipment cleaners, in any one system, shall originate from one paint manufacturer.

6.4.3. Manufacturer's recommendations

- a. Painting shall conform to the paint manufacturer's recommendations. These shall include: storage, mixing, thinning, pot life, application method, drying/curing period, interval between coats.
- b. Written confirmation shall be provided from manufacturers that paints conform to this GIS.
- c. In the event of non-compliance with this GIS, BP will decide on the course of action after discussion with the Contractor/Manufacturer.

6.4.4. Paint mixing

- a. The condition of the paint shall be checked before preparation begins and any unsatisfactory materials shall be discarded.
- b. Hand mixing is permitted for containers up to 5 litres (1 gal). Mechanical agitators shall be used for containers larger than 5 litres (1 gal). If 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.

- a. Material shall be discarded once the Manufacturer's pot life has expired regardless of apparent condition.



- b. If stated in the application data sheet, materials shall be allowed to stand for the specified induction period subsequent to mixing but before application.
- c. If two pack materials are being used, new material shall not be added to any old material left in the pot.

6.4.6. Restrictions on painting

Unless a relaxation is provided by BP, painting shall not take place under the following conditions:

- a. Under adverse weather conditions, e.g. rain, fog, snow, sandstorms, or when such conditions are likely before the paint has become dry.
- b. If the ambient temperature is below 5°C (41°F).
- c. If the ambient temperature is above 40°C (104°F).
- d. If the relative humidity is > 85%.
- e. If metal surface temperature is < 3°C (5°F) above the ambient dew point.
- f. Outside daylight hours on exterior locations.
- g. In exposed locations, painting may be suspended due to wind speed or wave height at the direction of BP.

6.4.7. Moisture-cured polyurethanes

- a. Applications of moisture-cured polyurethane shall be restricted as defined in 6.4.6 except as modified below.
- b. Painting shall not take place if:
 - 1. The ambient temperature is below 3°C (5°F).
 - 2. The relative humidity is > 90%.
 - 3. Metal surface temperature is < 2°C (4°F) above the ambient dew point.
 - 4. Surface moisture is present or when weather conditions are deteriorating (see also 6.3.2).
- c. Manufacturer's recommendations regarding overcoating times for the specific conditions of temperature and humidity shall be strictly adhered to.

6.4.8. Application

- a. The paint shall be applied in a uniform manner without any runs, sags, or other blemishes.
- b. If two or more coats of the same paint are specified, they shall be of contrasting colours.
- c. Crevices created by two surfaces in close contact, which cannot be protected by painting, should be mastic sealed on both sides.
- d. Brush application shall involve:
 - 1. Utilisation in areas that cannot be properly spray coated.
 - 2. Working paint into all crevices and corners.
 - 3. Application without runs and sags.
 - 4. The application of an additional stripe coating of primer or intermediate coat to all sharp edges, corners, and welds before application of the final coat regardless of the method of coating application. This is in addition to the number of coats stated in the painting schedules.



5. Brush application of primers shall be used on hand prepared or mechanically prepared surfaces.
- e. Spray application shall require:
 1. A compressed air supply having sufficient capacity to meet the work requirement and free from oil and water contamination.
 2. The cleaning of lines and pots before addition of new materials.
 3. Spray overlap of the previous pass by 50%.
 4. Large surfaces shall be painted with passes in two directions at right angles.

6.4.9. Priming

- a. Prepared surfaces shall be primed before visible re-rusting occurs or within 4 hours, whichever is sooner. The only relaxation allowable to this requirement is if the work is fully enclosed, the temperature is above 10°C (50°F), 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 before paint application.
- b. Acid-descaled 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, before application of the full coating system. However, the thickness of the holding primer shall be in addition to the thickness of the priming coat specified in the relevant schedule.
- c. 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 subsequent coat.

6.4.10. Paint thickness

- a. The generic paint systems in clause 4 shall be applied to manufacturer's recommended thicknesses.
- b. 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 for stainless steels, nickel & copper based alloys shall be free of:

- a. Chlorides.
- b. Low melting point metals (Zn, Al, Sn, and Pb).

6.4.12. Intervals between coats

Overcoating 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, rinsed with clean fresh water, and allowed to dry fully before the application of further coats.

6.4.13. Colour coding

- a. 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.
- b. If 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.



- c. 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.
- d. Pipework and equipment on fire water duty shall be red to BS 4800 shade 04E53.
- e. The finish colour schedule shall be as specified.

6.4.14. Damage to paintwork

- a. Areas that 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 or brushed with appropriate mid coats and finishing coat.
- b. More significant coating damage involving the removal of large areas of coating down to bare metal shall be re-prepared by blast cleaning to the original standard and recoated with the specified system.
- c. 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.
- d. Repainting shall cover the prepared surface and the etched paintwork.
- e. If blast cleaning is impractical, not permitted, or small areas of coating damage exist in otherwise sound paint, 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

Paint contamination of adjacent plant, equipment, and property not included in the scope of work shall be avoided. Appropriate protection shall be provided as necessary. If any contamination does occur, it shall be removed or the damaged items shall be replaced.

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 if 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 is to be agreed with BP.

6.4.17. Galvanising

Items shall be galvanised in accordance with ISO 1461.

7. Internal lining of tanks and vessels

7.1. General

- a. Coating materials shall be selected dependent on the resistance to the product being contained.
- b. The internal lining of tanks and vessels shall be in accordance with the requirements for new external painting except as amended below.



- c. For general reference see NACE handbook - Coatings and Linings for Immersion Service (TPC-2).

7.2. Coverage

- a. The lining shall extend over the total internal surface including the bore of nozzles and over the faces of flanges. If the flange faces are weld overlaid with corrosion resistant alloy (CRA), the lining shall terminate on the CRA. To ensure correct sealing, flake glass coating on flange faces shall be press moulded or machined flat.
- b. If cathodic protection anodes are fitted before coating application, precautions shall be taken to ensure that the active surfaces of the anodes are not coated.

7.3. *Surface preparation

- a. Surface preparation shall generally conform to the requirements of BS 6374 Part 4 except as otherwise advised below.
- b. Items which require grinding smooth shall be identified and brought to the attention of BP for action.
- c. Surfaces to be lined shall be ground smooth such that sharp edges and corners are removed to achieve a minimum radius of 4 mm (0,16 in) for convex surfaces and 6 mm (0,24 in) for concave surfaces.
- d. Welds shall be ground smooth and shall be free from porosity, undercut, cracks, and cavities.
- e. Blast cleaning shall be carried out to ISO 8501-1 Sa 3.

7.4. Inspection

- a. 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.
- b. Personnel shall avoid damage to the coating and shall put on appropriate clean overshoes before entering the vessel.

7.5. Testing

- a. Film thickness checks shall be made throughout the lining operation see also clause 6.4.8 and 6.4.10.
- b. After drying of each coat, further thickness checks shall be made over the whole surface using a magnetic thickness gauge or equivalent.
- c. 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.
- d. Coating holidays shall be fully investigated and defective coating shall be removed and replaced.

7.6. Glass flake coating

- a. The lining shall have a thickness of 1,0 mm (0,04 in) (tolerance $-0, +0,5$ mm ($-0, +0,02$ in) except in areas of difficult access where the upper tolerance shall be $+1,0$ mm (0,04 in). Any variation in thickness shall be by smooth transition.



- b. The lining shall be applied as a multi-coat system, with each coat pigmented in a different colour (see also clause 6.4.8).
- c. Application of the system shall be carried out under the supervision of the Manufacturer or his approved Subcontractor. Approved Subcontractors shall have undergone appropriate training as directed by the Manufacturer.
- d. Following curing, any soft spots shall be fully removed and the area shall be re-prepared. Any pinholes shall be ground out. The surface of the intact coating and any exposed substrate shall be prepared in accordance with the Manufacturer's recommendations to ensure a satisfactory bond of the repair material.
- e. The above areas, together with any which are low in film thickness, shall receive additional coats.
- f. The lining shall be checked by an acetone wipe test to ensure that it is fully cured.

7.7. Storage, handling, and transportation

- a. Removable internal fittings shall be re-installed ensuring that the internal lining is not damaged.
- b. Internally coated items shall be stored and transported so as 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 shall be compatible with the existing and shall be deemed appropriate for the application parameters.

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 areas of loosened paint and rust formation shall be noted so that work can be concentrated at these locations. 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 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 erected to protect adjacent surfaces before spot blasting takes place. In some cases, PVC masking tape is suitable for protection. If damage does occur then reinstatement shall be made at no cost to BP.



8.2.6. Surface preparation of painted carbon steel surfaces

- a. Algae and mould growth shall be removed from paintwork by treatment with a biocide and left for 24 hours. The treated surface shall then be scrubbed with stiff bristle brushes and clean water or alternatively cleaned by high-pressure water blasting.
- b. Existing paintwork shall have any oil or grease removed before further coating using lint-free swabs that shall be used once only. Surfaces shall be washed down with an approved emulsifiable degreaser and be rinsed with clean fresh water. Bolt holes shall be cleaned before blast cleaning. 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. Areas of corrosion shall be prepared by grit blasting.
- c. If blast cleaning is not permitted, power tool cleaning shall be carried out utilising power wire brushes, power discs, or needle guns. If required by BP, then non-sparking tools shall be used. Areas that cannot be power tool cleaned shall be prepared using hand tools, i.e. wire brushes, scrapers, chipping hammers, etc.
- d. If 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, if practicable, and dust extraction and collection equipment shall be employed to minimise contamination elsewhere.
- e. If prepared surfaces are taken up to an existing painted surface, the paint in the joint area shall be feathered out. Hard glossy surfaces may require abrading at the discretion of BP. The first 50 mm (2 in) of intact coating surrounding the prepared area shall be cleaned and abraded.
- f. Wet blast systems or enclosed recovery systems shall be employed when preparing surfaces previously primed with lead-pigmented coatings. This is to ensure that the surface preparation debris is adequately contained and disposed of correctly.

8.2.7. Preparation of painted galvanised steel surfaces

- a. Galvanised surfaces having loosened paint and areas of corrosion shall be prepared by sweep abrasive blasting using non-metallic grit; or by hand scraping and wire brushing to a firm edge. Corrosion products and surface contaminants shall be removed.
- b. 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 and water jetting

- a. Wet blasting and water jetting shall only be used if dry blasting is not permitted. They shall be used for the following purposes:
 1. To provide increased safety against sparking.
 2. To minimise atmospheric and surface pollution and damage to sensitive control equipment.
 3. To prepare surfaces which are salt contaminated and spend much of their time in wet conditions.
 4. To selectively remove individual damaged top coats from intact undercoats.
- b. If wet blasting and water jetting is used, it shall be:
 1. Subject to BP approval.
 2. To a similar standard to that achieved by dry blasting.
 3. With potable water only.



- c. The equipment shall allow individual control of air pressure, water, and grit. A corrosion inhibitor may be required to prevent flash rusting of the prepared substrate. The corrosion inhibitor and its concentration in the water shall be approved by the coating Manufacturer.
- d. The cleanliness of surfaces prepared by wet abrasive blasting should be assessed using ISO 8501-1 and a minimum cleanliness of Sa 2½ specified. NACE 5 or draft ISO 8501-4 should be used to establish the cleanliness of surfaces prepared by water jetting, and a minimum cleanliness of WJ-1 specified.
- e. Surfaces prepared by wet abrasive blasting and water jetting flash rust at a much faster rate than surfaces prepared by dry blasting. NACE 5 or draft ISO 8501-4 should be used to assess the level of flash rusting. Flash rusting should not be allowed to progress beyond the NACE designation Light (L) before application of the primer.

8.3. Paint application (maintenance)

8.3.1. Conformance with new construction painting

- a. Maintenance painting shall be carried out as for new construction painting except as modified below.
- b. To control environmental conditions (temperature and relative humidity), it may be necessary to encapsulate the area during paint application and the critical stages of paint drying/curing.
- c. Compatibility between the maintenance and existing paint systems shall be confirmed with the paint Manufacturer.

8.3.2. Priming

- a. Surfaces shall be primed before any deterioration of the preparation occurs or within 4 hours, whichever is sooner. If patch priming is carried out, this shall extend 50 mm (2 in) onto the adjacent prepared sound paintwork.
- b. Any damage to galvanising shall be repaired using a zinc rich epoxy.
- c. Surface tolerant epoxy primers shall be applied if the substrate remains wet after wet abrasive blasting and water jetting.

8.3.3. Paint schedules

- a. The maintenance painting required minimum dry film thickness shall be at the discretion of BP and in accordance with Manufacturer's requirements.
- b. If existing paint surfaces are overcoated, the required additional film thickness shall be at the discretion of BP.

8.3.4. Damage to paintwork

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

8.3.5. Colour

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

8.3.6. Stripe coating

Stripe coating by brush shall be carried out on 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 person or persons responsible for inspection/quality control shall be nominated. 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 GIS. 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.

9.2. *Representative panels

- a. BP will specify material samples and test panels to be provided as necessary.
- b. Two 300 mm (12 in) square sample plates shall be prepared and coated 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. A pre-start meeting shall be held at least one week before 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.
- b. 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 (if required).
- c. Providing expertise in case of any problems with the materials and their 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. General requirements

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

10.1.2. 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; the latter recorded by replica technique or equivalent 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.

10.1.3. Contractor's inspection equipment

A comprehensive range of inspection equipment shall be provided. The equipment shall be subject to approval by BP before start of the work. Up-to-date calibration certificates shall be available for instruments for inspection by BP.

10.2. BP's specialist inspection

10.2.1. BP's personnel and responsibilities

- a. BP may appoint a specialist painting inspector to monitor the work. This in no way removes the responsibility to carry out the work to a high standard and to conduct inspection and to make reports to BP.
- b. The work may be subject to inspection and approval at any stage by BP who shall have authority to take any action necessary to ensure the quality of the workmanship is maintained.

10.2.2. Access and facilities

- a. Access and facilities shall be provided 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.
- b. 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 panels shall be prepared as a reference. Replica tape and portable micrometers shall be used (see also clause 6.3.6).

11.2. Relative humidity

A whirling hygrometer shall be used to measure the relative humidity, before and during 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. Test papers, (typically quantitative test strips such as those manufactured by Hach (Quantabs) or Merck (Merckoquant) or agreed equivalent, shall be provided 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

- a. The wet film thickness shall be spot checked by comb gauge in random areas as an initial indication of the required dry film thickness.
- b. 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 over a steel plate with a surface profile representative of that being achieved in practice.
- c. Dry film thickness measurements shall be taken at the frequency of at least four per square metre (three per square yard) of painted surface.

12. Storage**12.1. *Safe storage**

- a. Paint shall be stored in accordance with the Manufacturer's recommendations and intrinsically safe power and lighting systems shall be utilised subject to BP approval.
- b. Oil, solvent, or paint coated rags shall be stored in closed labelled containers.

12.2. Equipment storage

Surface preparation and coating equipment shall be stored in such a manner as to ensure freedom from any type of impact damage.

13. Documentation**13.1. Procedures**

Proposals for all aspects of the work shall be submitted for the approval of BP before commencement of the work. This includes:

- a. Manning levels and organisation chart.
- b. Identification of any proposed 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. A punch list of items to be coated.
- g. Painting schedules to be used.
- h. Surface preparation methods and standards to be achieved.
- i. Coating application method.



- j. Paint system data/material safety data sheets.
- k. Work plan.
- l. Inspection and testing procedures.
- m. HSE method statement for handling the hazards identified (see clause 3.3).
- n. Reporting system.

13.2. Painting records

- a. A comprehensive daily recording/reporting system shall be operated on all aspects of the painting described above:
 - 1. Including aspects covered above.
 - 2. Details of environmental conditions.
 - 3. Details of repair work and reasons necessary.
- b. The data shall be set out on paint record forms and submitted to BP within 24 hours of carrying out the work to which they refer. The master set of reports shall be collated and indexed for ease of consultation at any stage during the progress of the work.

13.3. Final report

Within 1 month of completion of the work, a report shall be issued to BP giving full details of surface preparation and coating systems used together with Manufacturer's data sheets and records of measurements, instruments, and tests.



Bibliography

British Standards Institute (BSI)

- [1] BS 3900 Method of test for paints
- [2] BS 6150 Painting of Buildings – Code of Practice

Society for Protective Coatings (SSPC)

- [3] SSPC-SP 8 Surface Preparation Specification No. 8, Pickling

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