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GP 06-60

Painting of Metal Surfaces

Group Practice

**BP GROUP
ENGINEERING TECHNICAL PRACTICES**

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GP 06-60. This Group Practice (GP) is based on the heritage document from the merged BP companies as follows:

BP

GS 106-2 Painting of Metal Surfaces.

Amoco

A CP-COAT-00-E Corrosion Protection—Coatings—General—Selection Specification.

A CP-COAT-00-G Corrosion Protection—Coatings—General—Guide.

Arco

ES 500 Painting and Protective Coatings.

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Table of Contents

	Page
Foreword	2
1. Scope	3
2. Normative references.....	3
2.1. General.....	3
2.2. Surface preparation	3
2.3. Coatings	3
3. Terms and definitions.....	3
4. Symbols and abbreviations.....	3
5. Paint schedules	3
5.1. General.....	3
5.2. Schedules A and A(M)	3
5.3. Schedules B and B(M)	3
5.4. Schedule C	3
6. Finish colour schedules	3
7. Stencilling and colour blocks.....	3
7.1. Blocks (corrosive and toxic contents only).....	3
7.2. Stencilled letters	3
Annex A (Normative) Schedule for onshore (New construction).....	3
Annex B (Normative) Schedule for offshore (New construction).....	3
Annex A(M) (Normative) Schedule for onshore maintenance.....	3
Annex B(M) (Normative) Schedule for offshore maintenance.....	3
Annex C (Normative) Schedule for tank lining (New construction and maintenance)	3
Annex D (Normative) Finish colour schedule	3



1. Scope

This GP provides details of the coating systems to be applied in accordance with GIS 06-601 (Group Instruction for Supply). Systems are specified for new construction and maintenance painting of the externals of onshore and offshore plant and equipment and the internal lining of tanks. The systems specified are based on those used previously and which have given good experience within BP.

In order to comply with health, safety, and environmental (HSE) regulations, it is increasingly common to employ compliant coatings with reduced VOC (volatile organic content) e.g. solvent based paints with high solids content (> 70%), and water based paints. In certain regions of the world, the use of paints containing isocyanates (e.g. single and two pack polyurethanes), coal tar filler (e.g. coal tar epoxies and polyurethanes), and residual amounts of carbon tetrachloride (chlorinated rubbers) may be prohibited due to concerns related to health and safety.

If health and safety restrictions apply, compliant materials are recommended. The compliant material shall have comparable performance to those prohibited, which are specified in this document.

2. Normative references

The following normative documents contain requirements that, through reference in this text, constitute requirements of this technical practice. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical practice are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

2.1. General

British Standards Institute (BSI)

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 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.

2.2. Surface preparation

BP

GIS 06-601	Painting of Metal Surfaces.
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International Organisation for Standardisation (ISO)

ISO 8501-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.
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2.3. Coatings

British Standards Institute (BSI)

BS 729	Hot dip galvanised coatings on iron and steel articles.
BS 2569	Sprayed metal coating – Part 2: Protection of iron and steel against corrosion and oxidation at elevated temperatures.
BS 3416	Black bitumen coatings for cold application.

Deutsches Institut für Normung (DIN)

DIN 8566	Part 1: Metals for Thermal Spraying; Solid wires for flame spraying. Part 2: Filler Metals for Thermal Spraying; Solid wires for arc spraying.
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3. Terms and definitions

For the purposes of this GP and GIS 06-601, the following terms and definitions apply:

Atmospheric zone

The part of an offshore structure above the splash zone

Epoxy cladding

High-build epoxy mastic/screed

Splash zone

Above LAT –3 m (–10 ft) to LAT +12 m (+40 ft) or as otherwise defined in the contract document

4. Symbols and abbreviations

For the purpose of this GP, the following symbols and abbreviations apply:

Al	Aluminium
CUI	Corrosion under insulation
CS	Carbon steel
Cu	Copper
DFT	Dry film thickness of a paint coating
HSE	Health, Safety and Environment
LAT	Lowest astronomical tide
MIO	Micaceous iron oxide
Ni	Nickel
SS	Stainless steel
VOC	Volatile organic compound
Zn	Zinc



5. Paint schedules

5.1. General

- a. The paint system(s) appropriate to each particular application, the required surface preparation standard, and the coating thickness of each coat within the system are detailed in Annexes A and B for new construction and Annexes A(M) and B(M) for maintenance. Coating systems are specified for the external protection of a number of different metallic substrates, in both a thermally insulated and uninsulated condition and operating over a range of service temperatures.
- b. Systems detailed in Annex C are specified for the corrosion protection of the internal surfaces of tanks and vessels. Identical systems are specified for both onshore and offshore tanks and vessels, and for new construction and maintenance.

5.2. Schedules A and A(M)

- a. Schedule A for new construction and A(M) for maintenance are contained within Annex A and A(M) respectively. These provide details of coating systems suitable for providing corrosion protection to structural steel, tanks, vessels, piping, plant, and equipment located onshore. The different substrates and service conditions covered by these schedules are detailed below.

System	Scope	Service Temperature
A1 & AM1	CS Uninsulated	< 0°C to 120°C (< 32°F to 248°F)
A2 & AM2	CS Uninsulated	121°C to 350°C (249°F to 662°F)
A3 & AM3	CS/Low Alloy Uninsulated	351°C to 550°C (663°F to 1 022°F)
A4 & AM4	CS Insulated	< 0°C to 120°C (< 32°F to 248°F)
A5 & AM5	CS Insulated	121°C to 350°C (249°F to 662°F)
A6 & AM6	CS Fireproofed	
A7 & AM7	Galvanised Steel	
A8 & AM8	Austenitic SS	51°C to 120°C (124°F to 248°F)
A9 & AM9	Austenitic SS	> 120°C (> 248°F)
A10 & AM10	CS Marine Structures and Jetties	

5.3. Schedules B and B(M)

Schedules B for new construction and B(M) for maintenance, contained within Annex B and B(M) respectively, provide details of systems suitable for providing corrosion protection to structural steel, tanks, vessels, piping, plant, and equipment located offshore. The different substrates and service conditions covered by these schedules are detailed below.



System	Scope	Service Temperature
	Subsea	
B1 & BM1	CS Subsea - Below LAT	
	Splash Zone	
B2 & BM2	CS Splash Zone - Above LAT to underneath main deck, Rising main caissons/conductors	
	Upper (Atmospheric) Zone	
B3 & BM3	CS Uninsulated	< 0 °C to 120 °C (< 32 °F to 248 °F)
B4 & BM4	CS Uninsulated	121 °C to 350 °C (249 °F to 662 °F)
B5 & BM5	CS/Low Alloy Uninsulated	351 °C to 550 °C (663 °F to 1 022 °F)
B6 & BM6	CS Insulated	< 0 °C to 120 °C (< 32 °F to 248 °F)
B7 & BM7	CS Insulated	121 °C to 350 °C (249 °F to 662 °F)
B8 & BM8	CS Fireproofed	
B9 & BM9	Galvanised Steel - Structure, Handrail	
B10 & BM10	Galvanised Steel - Grating	
B11 & BM11	Deck - Heavy Duty Non Slip	
B12 & BM12	Deck - Light Duty Non Slip	
B13 & BM13	Deck - Aluminium Helideck	
B14 & BM14	Austenitic SS - & Mixed Metals (SS/CS/Ni base) & Cu based where required	51 °C to 120 °C (124 °F to 248 °F)
B15 & BM15	Austenitic SS	> 120 °C (> 248 °F)

5.4. Schedule C

Schedule C, contained within Annex C, provides details of systems suitable for providing corrosion protection to the internals of tanks and vessels located both onshore and offshore. The systems specified in Schedule C are suitable for both new construction and maintenance.

System	Scope
C1 & CM1	CS potable water tanks.
C2 & CM2	CS crude oil storage tanks, floor area & roof space.
C3 & CM3	CS ballast, emulsion breaker, slops tanks raw and treated water tanks.
C4 & CM4	CS process oil tanks and separators, heat exchanger channels.

6. Finish colour schedules

Finish colour schedules for the following items are detailed in Annex D.

- Piping and valves.
- Fire fighting equipment.
- Moving equipment.
- Fire heaters, heat exchanges, storage tanks, and vessels.
- Chlorine storage units.
- Structural steelwork.
- Galvanised handrails, supports, ladder cages, and gates.

