



Exploration & Production

GENERAL SPECIFICATION

CORROSION

GS COR 352

Internal protection of equipment by painting

04	10/04	General review
03	10/03	General review – Change of Group name and logo
02	10/02	Binders coding, Gas-Oil Tanks paint systems
01	10/01	General review
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Rev.	Date	Notes

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1. Scope

This document defines the technical requirements for the execution of coating operations for the high durability internal protection of equipment against corrosion and/or of products against pollution or contamination.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Standards

Reference	Title
ISO 12944-1	Paints and varnishes – Corrosion protection of steel structures by paint systems. Part 1: General introduction
ISO 12944-2	Paints and varnishes – Corrosion protection of steel structures by paint systems. Part 2: Classifications of environments
ISO 12944-3	Paints and varnishes – Corrosion protection of steel structures by paint systems. Part 3: Design and constructive requirements
ISO 12944-4	Paints and varnishes – Corrosion protection of steel structures by paint systems. Part 4: Surface types and preparation
ISO 12944-7	Paints and varnishes – Corrosion protection of steel structures by paint systems. Part 7: Execution and supervision of painting work
ISO 12944-8	Paints and varnishes – Corrosion protection of steel structures by paint systems. Part 8: Development of specifications for new and maintenance work
ISO 11124-2 to 4	Preparation of steel substrates before application of paints and related products. Specifications for metallic blast-cleaning abrasives
ISO 11125-1 to 7	Preparation of steel substrates before application of paints and related products. Methods for testing metallic blast-cleaning abrasives
ISO 11126-6 to 8 and 10	Preparation of steel substrates before application of paints and related products. Specifications for metallic blast-cleaning abrasives
ISO 11127-1 to 7	Preparation of steel substrates before application of paints and related products. Methods for testing non-metallic blast-cleaning abrasives
ISO 8501-1 to 3	Preparation of steel substrates before application of paints and related products. Visual assessment of surface cleanliness.
ISO 8502-1 to 4	Preparation of steel substrates before application of paints and related products. Tests for the assessment of surface cleanliness

Reference	Title
ISO 8502-6	Preparation of steel substrates before application of paints and related products. Tests for the assessment of surface cleanliness: extraction of soluble contaminants for analysis - The Bresle method
ISO 8502-9	Preparation of steel substrates before application of paints and related products. Tests for the assessment of surface cleanliness: Field method for conductometric determination of water-soluble salts.
ISO 8503-1 to 4	Preparation of steel substrates before application of paints and related products. Surface profile of abrasive blast-cleaned steel
ISO 8504-1 to 3	Preparation of steel substrates before application of paints and related products. Methods for surface preparation
ISO 4578	Adhesives. Determination of peel resistance of high-strength adhesive bonds
ISO 1513	Paints and varnishes. Examination and preparation of samples for testing
ISO 19840	Paints and varnishes. Determination of dry film thickness. Non-destructive magnetic flux method
ISO 2409	Paints and varnishes. Cross-cut test
ISO 4624	Paints and varnishes. Pull-off test
ISO 2812-1 to 2	Paints and varnishes - Determination of resistance to liquids
ISO 6270	Paints and varnishes - Determination of resistance to damp (continuous condensation)
ISO 4628-1 to 6	Evaluation of paint and varnish defects. Designation of intensity, quantity and size of common types of defect.
ISO 9223	Corrosion of metals and alloys. Atmospheres corrosivity. Classification
ISO 3678	Paints and varnishes. Print-free test
ASTM D 4752	Standard test method for measuring MEK resistance of ethyl silicate (inorganic) Zinc-rich primer by solvent rub
ASTM D 4940	Standard test method for conductimetric analysis of water soluble ionic contamination of Blasting abrasives
NF A 49 711	External triple layer polypropylene based coating. Appendix K: Test for evaluating delamination resistance under negative polarization
MIL specification C 4555-E	

Professional Documents

Reference	Title
RAL 840 HR ACQPA	Colors standard "Association pour la Certification et la Qualification en Peinture Anticorrosion". Certified systems by ACQPA

Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
NACE RP 0178	Fabrication details, surface finish requirements, and proper design considerations for tanks and vessels to be lined for immersion service

Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS COR 350	External protection of off-shore and coastal structures and equipment by painting
GS COR 351	External protection of structures and equipment by painting Floating structures
GS COR 354	External protection of on-shore structures and equipment by painting

3. Painting systems

Painting systems are defined according to the following requirements:

- Type of substrate
- Nature of product to be contained

- Minimum and maximum operating temperatures
- Type of equipment

3.1 Reference code for identification of painting systems

3.1.1 Coding system

Part 1: Substrate

AF	Carbon steel or cast iron
AI	Stainless steels and special alloys (including monel, Ni alloys,...)

Part2: Operating temperature

SNNN/SNNN where:

- S is either + or –
- NNN indicates the minimum and maximum operating temperatures (3 digits).

Part 3: System number

These are indicated in suppliers' system sheets figuring in Appendix 3

3.1.2 Identification of painting systems

AF	+121/+300	PXXXX
Parameter 1	Parameter 2	System number

This denotes a painting system for carbon steel, with a minimum operating temperature of 120 °C and a maximum operating temperature of 300 °C.

3.2 Approved systems

The approved systems are given in Appendix 3. They have been qualified through in house testing in TOTAL laboratories, or when relevant, through Third Party testing.

4. General philosophy

When a painting system is used for internal protection of equipment, it will usually be associated with cathodic protection by sacrificial anodes, unless specified otherwise. The painting system chosen should therefore be compatible with CP.

Furthermore, to avoid rapid consumption of sacrificial anodes, internals shall also be painted wherever possible. This is especially the case if internals are made of stainless steel, as these will very rapidly consume sacrificial anodes. From an economic standpoint, careful consideration shall therefore be given to the use of carbon steel when internals can be painted.

5. Technical content of tenders

Tenders shall specify the following:

- Proposed paint system(s) for each piece of equipment to be painted
- Product data sheets A statement showing that all parties involved (CONTRACTOR, SUPPLIER, and APPLICATOR) will be carrying out the work according to the present specification, or if relevant, to the project particular specification. This statement shall also show that the guarantee is jointly underwritten by all parties and specify the durations and performance levels of the guarantee. This statement can consist in either a certificate of homologation by OHGPI (Organisme d'Homologation des Garanties en Peinture Industrielles) or a letter signed by the head office of each party involved.
- For coatings in contact with specific products (food products, jet fuel, etc.), type approval certificate Maximum thickness tolerable for each coat and for the full system,
- Acceptance, storage, and sampling of painting products,
- Safety requirements,
- Maximum thickness tolerable for each coat and for the full system,
- Surface preparation and painting procedures approved by the paint SUPPLIER,
- Inspection test plan with acceptance criteria and frequency of inspection,
- A list of inspection and painting equipment to be used,
- Methods of protection of items to be painted against adverse weather conditions,
- Certificates (ACQPA, FROSIO, NACE, or equivalent) of operators and inspectors.

6. Certification of personnel

6.1 Operators

Operators shall be individually certified by an approved organization (ACQPA, FROSIO, etc.).

6.2 Inspectors

Inspectors shall be individually certified by an approved organization (ACQPA, FROSIO, NACE international minimum level 3, etc.).

7. Surface Preparation

7.1 Design and preparation before blasting of surfaces to be painted

All structures and equipment shall be designed according to [ISO 12944](#) international standard for high durability paint systems.

All Sharp edges shall be rounded (minimum radius > 2 mm).

The design of the item to be painted shall be such that it creates no interstice and inaccessible area.

All oil or grease shall be removed by washing the item to be painted with appropriate solvents or any other suitable means before beginning blast-cleaning operations. This includes bolt holes in piping assemblies.

Weld spatter and remains of temporary welds, deposits or surface defects shall be eliminated by appropriate means; removal by deep grinding is subject to COMPANY approval.

All mating surfaces of equipment subject to outdoor exposure shall be coated with the full coating system prior to assembly (saddles, skirts, base plates, olded components, flanges, etc.).

CONTRACTOR shall protect all equipment that is not to be painted or may be affected by the presence of abrasives or paint. Special attention shall be paid to avoid splashes of zinc paint on equipment made of austenitic steels.

7.2 Quality of abrasives

Abrasives shall be sealed in watertight packaging. Any product delivered in defective packaging shall be rejected. Products must be stored sheltered from the elements.

Conductivity of abrasives shall be less than $150 \cdot 10^{-6}$ SIEMENS/cm as per [ASTM D4940](#).

The use of copper slag is prohibited.

7.3 Blast cleaning of carbon steel (AF)

All surfaces to be coated shall be blast-cleaned according to:

- the grade of cleanliness ([ISO 8501](#) standard),
- the surface profile Ra ([ISO 8503](#) standard: roughness meter with adapted cut-off or visio tactile surface profile comparator)

specified for each system in Appendix 3

After blast-cleaning, all dust must be removed using a vacuum cleaner before application of the paint ([ISO 8502 – 3](#)).

All blast-cleaned surfaces shall be coated before the deterioration of the "grade of cleanliness". In any case, any surface that has been blast-cleaned shall be coated on the same day.

Before painting works commence, checks for the contamination of the surface by salts shall be checked ([ISO 8502 – 6 & 9](#)).

The blast cleaning procedure shall be submitted to COMPANY for approval.

7.4 Blast cleaning of carbon steel (AF) on automatic production lines

In addition to the requirements of § 5.2:

- All surfaces shall be blast-cleaned to grade of cleanliness Sa 3 ([ISO 8501 -1](#)).
- CONTRACTOR shall ensure that the grit selected can achieve the required surface profile. This requirement includes determination of grit mix, as well as quantity and frequency of renewal. Surface profile shall be checked twice per shift and shall record the results.
- Dust level shall be thoroughly checked ([ISO 8502 – 3](#))

The blast cleaning procedure shall be submitted to COMPANY for approval.

7.5 Blast cleaning of stainless steels (AI)

Stainless steels shall be segregated, carbon steel supports for storage shall be systematically painted, and lifting equipment shall prevent iron contamination.

Stainless steel surfaces to be coated shall be etched or degreased and blast-cleaned with a non-ferrous and chlorine-free abrasive.

The blast cleaning procedure to be submitted to COMPANY shall include:

- Abrasive composition to obtain a surface roughness of $R_a = 10$ microns (8 microns acceptable locally).
- Dust level (level 2 maximum of [ISO 8502 – 3](#))
- Substrate contamination checks. ferrous contamination / direct colorimetry method using Prussian blue (potassium ferricyanide) – no surface pollution can be accepted.

7.6 Surface preparation of galvanised steel (AG)

Galvanized steel to be coated shall be cleaned, degreased and etched using the product specified in the systems.

7.7 Preparation of galvanised or cadmium plated bichromated surfaces (AB)

Galvanized or cadmium-plated bichromated surfaces shall be cleaned and degreased.

8. Paint application

8.1 Procurement and storage

The quantities of paint and thinners required to perform the entire job shall be procured before the work commences, except in cases where the shelf life of the product is less than the anticipated duration of the work.

Thinners, solvents, etc. shall be stored in a suitably ventilated fireproofed building, separate from other painting consumables.

The products shall be delivered in their original sealed packaging and stored in such conditions as to avoid their degradation (controlled temperature, etc.). The packaging shall be clearly marked with the product description, the batch number, the fabrication date and the expiry date.

The expiry dates from the fabrication dates are:

- For zinc ethyl silicate: 6 months
- For other products: 1 year
- Specific cases: according to manufacturer's recommendation with COMPANY approval.

8.2 Samples for QA/QC purposes

From each batch of products used during the work, the CONTRACTOR shall take two samples to be made available to COMPANY.

8.3 Qualification of application procedure for each system

One month before work commences, all the selected systems shall be applied on test plates representative of the structure to be painted. The products used shall be sampled from the same batches than these intended for the works.

The system shall be applied in the presence of the MANUFACTURER of the paint and the OWNER's representative, in climatic conditions that are as similar as possible to worst case conditions that can be foreseen during the work on the construction site. Application shall be performed by the painting specialist who will be responsible for application during the work.

When the painting systems are fully cured, visual inspection and adhesion testing shall be carried out to confirm that the performance of the painting systems meet those specified for each system in Appendix 3.

8.4 Kick off meeting

A technical kick off meeting shall be organized by the CONTRACTOR in the presence of COMPANY and MANUFACTURER to define all the details regarding the work, application procedures, and inspection test plan. All the documentation shall be submitted to COMPANY for review prior to this meeting.

SUPPLIER shall provide CONTRACTOR with technical assistance. All recommendations made by SUPPLIER other than these outlined in datasheets or in the present specification shall be supported by a written statement from SUPPLIER head office.

8.5 Application

8.5.1 General

Paint shall always be applied to surfaces that are dry, clean and degreased, for both coating on substrate and previous coat.

Painting works shall not proceed if:

- Temperature of the substrate is less than 3°C above the dew point,
- The relative humidity is more than 85% RH (90% RH for inorganic zinc silicates),
- The weather is rainy or foggy, except under shelter, and subject to verification of the atmospheric conditions,
- The minimum and maximum temperature of the ambient atmosphere and the substrate are outwith the limits given in the product datasheets. Minimum application temperature is 10 °C.

CONTRACTOR shall keep a daily record of the dew point, relative humidity, ambient atmosphere and substrate temperatures (all measured before the work commences and twice per shift and when ambient conditions are obviously changing) to ensure that conditions are acceptable. These records shall be kept and made available to COMPANY.

During the painting works, the APPLICATOR shall also paint two specimen plates (200 mm x 100 mm) per equipment and per system.

Application shall be by airless spray.

Stripe coats shall be applied by brush to all angles, corners, sharp edges, bolt or rivet heads, etc. with the same product than this to be applied on the surface to be painted. The only

exception is inorganic zinc silicates where stripe coats shall be applied using the repair system primer i.e. zinc rich epoxy.

Different colours shall be used for all successive coats of the paint system. The finishing coat of the required colour shall be sufficiently opaque to cover the shade of the undercoat.

The thickness of each coat, including frequency and tolerance shall be checked by the CONTRACTOR according to [ISO 19840](#). The values shall be recorded and made available to COMPANY.

8.5.2 Zinc ethyl silicate

During application, the product shall be stirred at all times.

If relative humidity is low, it shall be sprayed with fresh water for at least two hours after application to enhance curing.

Before the subsequent coat is applied, this primer shall be subjected to a MEK test as per [ASTM D4752](#) to ensure that hydrolysis is complete. If complete hydrolysis is not obtained within eight days of application, the coating shall be completely removed and re-applied.

8.5.3 Galvanized or cadmium-plated bichromated bolting

All surfaces of the bolting shall be coated. The topcoat shall be applied after assembly is completed.

8.6 Repairs

Any defect shall be repaired before the application of further coats. Subject to the agreement of COMPANY, and after determining the type and size of the defects, the following methods of repair shall be applied:

8.6.1 Major defects

The paint shall be removed completely by abrasive blast-cleaning and the entire system shall be re-applied.

8.6.2 Minor defects (localized appearance, mechanical damage, scratches, etc.)

Subject to the agreement of the SUPPLIER of the product, the system shall be removed by localized blast-cleaning, the edges of the sound coating shall be feathered back about 50 mm, and the repair system shall be applied.

9. Checks, inspection and acceptance

9.1 Checks

Throughout the duration of the work, CONTRACTOR's Quality Control department shall check the following points and record the results in its quality control report.

- Construction quality:
 - Rounding of corners, sharp edges to 2 mm radius minimum,
 - Form, quality and continuity of welds.

- Surface preparation quality:
 - Grade of cleanliness: Sa 3 according to [ISO 8501](#),
 - Cleanliness: no grease or oil, dust level 2 maximum according to [ISO 8502-3](#).
 - Anchoring profile: G medium according to [ISO 8502](#).
- Contamination including chlorides: according to [ISO 8502-6 and 9](#), 30 mg/m² maximum.
- Climatic conditions for application: temperature of substrate at least 3 °C above dew point, maximum humidity 85% RH (90% for inorganic zinc silicates), ambient temperature (>10 °C for epoxy, >5 °C for polyurethane), wheather conditions.
- State of curing of primer and of each coat.
- For inorganic zinc silicate: record of spraying with fresh water to enhance hydrolysis (if relevant) and results of MEK test: Level 5 according to [ASTM D4752](#).
- Interval between coats (in accordance to SUPPLIER product datasheets).
- Wet film thickness for each coat immediately after application.
- Number of coats, DFT of each coat and of the final system according to [ISO 19840](#).
- Appearance and colour.
- Porosity

The porosity of the coating shall be checked across the entire surface using a wet sponge or an electrical brush in accordance with the painting system's instructions. No arcing at the voltages specified in the painting system's data sheet shall be permitted.
- Adherence

The tests shall be carried out on the "specimen" plates; they shall be carried out only when the system is completely dry and fully polymerized.

If the results are unsatisfactory, the tests shall be carried out on the corresponding surfaces of the equipment. The required number of in situ tests shall be agreed between APPLICATOR and COMPANY.

 - Systems with DFT less than 200 µm: cross-cut test class 0 according to [ISO 2409](#)
 - Systems with DFT above 200 µm: pull-off test according to [ISO 4624](#): Unless specified in the system sheet in Appendix 3, the minimum values acceptable are 3 MPa for checks made with mechanical equipment (type Ersad, Satec, or equivalent) and 5 MPa for checks made with hydraulic equipment (Type PAT or equivalent). The equipment must be fitted with a gauge indicating the pulling force.
- Visual inspection results: no defects such as "orange peel", cracking, bubbling, pinholes, runs and sags, blistering, etc.
- Compliance of specimen plates (2 per equipment per painting system).

9.2 Inspection test plan

An inspection test plan including all the points in section 9.1 shall be prepared and submitted to COMPANY.

9.3 COMPANY inspection

COMPANY inspector shall have free access to storage areas, workshops, yards where the works will be performed. CONTRACTOR shall also provide COMPANY inspector with all office facilities necessary for the execution of his work (telephone, fax, handling equipment, measuring instruments with valid calibration certificates, etc.).

Upon arrival of COMPANY inspector on site, CONTRACTOR shall supply him with all relevant documentation regarding the works to be carried out.

9.4 Provisional acceptance

For provisional acceptance, COMPANY shall check that all inspections set out in section 9.1 have been carried out and that all results are satisfactory.

9.5 Guarantee

The works shall be covered by a specific guarantee:

- The guarantee shall be jointly underwritten by CONTRACTOR, APPLICATOR, and SUPPLIER.
- Unless otherwise specified in Appendix 3, this guarantee shall be provided for a duration of 5 years.
- The maximum degree of rust shall be Ri2 according to [ISO 4628](#).
- The maximum degree of cracking, blistering, or flaking shall be 3S3 according to [ISO 4628](#).

9.6 Final acceptance

An inspection shall be carried out at the end of the guarantee period to determine if any claims are raised.

10. Technical file

CONTRACTOR shall hand over a technical file to COMPANY at the end of the works which shall include:

- All inspection reports.
- Provisional acceptance reports.
- Guarantee certificates.
- Approval and/or test certificates for coatings in contact with specific products: food products, jet fuel, etc.
- Insurance certificates for the guarantee.



Appendix 1 Approved list of SUPPLIERS

SUPPLIER	Code	Phone No.	Fax No.	Remarks
AMERON	A	01 30-71-50-50	01-30-53-49-07	technical.nl@ameron-bv.com
BELZONA	B	02-40-94-82-83	02-40-94-98-23	s/c S.O.P.R.E.M soprem@wanadoo.fr
CARBOLINE	C	01-60-06-55-66	01-60-06-55-70	Carboline.France @stoncor.com
HEMPEL	H	03-44-08-28-90	03-44-08-28-99	stephane_moritz@fr.hempel.com
INTERNATIONAL COATINGS	I	02-35-22-13-50	02-35-22-13-52	edward.grattepanche@uk.akzonobel.com
JOTUN	J	01-45-19-38-87	01-45-19-38-94	jose.menaches@jotun.com
SIGMAKALON	SF	04-38-49-94-30	04-38-49-94-39	Frédéric.Coulon@SigmaKalon.com
SAKAPHEN	Sk	02-20-55-22-57	02-20-31-25-20	sakaphen@wanadoo.fr

Appendix 2 List of systems

Important warning: The temperatures indicated in the code are the mini/maxi Operating temperatures.

Item	Code	System N°	Remarks
Storage vessels			
(t < 60°C)		P 103	Hydrocarbons: Crude oil, Condensates, etc.
Hydrocarbons			
Fixed roof	AF -010/+059	P 103	Extend 2 m down from the roof and 1 m up from the bottom
Outer skin roof	AF -010/+059	P 103	
Bottom inner	AF -010/+059	P 103	Additional protection by sacrificial anodes required
Bottom underside	AF -010/+059	P 107	
Industrial water			
Decantation	AF -010/+050	P 104	Additional protection by sacrificial anodes required
Seawater			
Brackish water			
Fire water			
Drinking water			
	AF -010/+050	P 105	Health and safety report
Finished products			
Gas oil	AF -010/+050	P 106	Type approval by authorized organization
Jet fuel	AF -010/+050	P 109	
Factory prepainted			
	AF -010/+400	P 108	Factory prepainting is always eliminated before application of the final system



Item	Code	System N°	Remarks
Process vessels			
Hydrocarbons			
t < 60°C	AF -010/+059	P 101	
t ≥ 60°C	AF -010/+200	P 102	
Industrial water			
Decantation	AF -010/+050	P 104	Additional protection by sacrificial anodes required
Seawater			
Brackish water			
Fire water			
Drinking water			
	AF -010/+050	P 105	Health and safety report
Finished products			
Gas oil	AF -010/+050	P 106	Type approval by authorized organization
Jet fuel	AF -010/+050	P 109	

Appendix 3 SUPPLIERS' systems

Binders coding :

Binders	Codes	Remarks
Acrylic	AY	
Zinc ethyl silicate	ESI	
Rich Zinc epoxy	EPRZ	[Zn] > 80% (ISO 12944-5)
Poor Zinc Epoxy	EPZ	[Zn] < 80% (ISO 12944-5)
Epoxy	EP	
Phenolic Epoxy	EPPH	
Modified Phenol formaldehyde resin	PFM	
Modified Epoxy	EPM	
Vinylic Epoxy	EPVI	
Ester Epoxy	EPES	
Zinc Phosphate Epoxy	EPHZ	
Tar Epoxy	Tar EP	
Glass flake Epoxy	EPGF	
Polyurethane	PUR	
Polyester	PY	
Silicone	SI	
Vinyl-ester	VY	

System No. **P 101 A**
Coating **Process Vessels**
SUPPLIER **AMERON**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Amercoat 253	200 microns	70	85	16 hours	5 days
Tie-coat							
Intermediate	EP	Amercoat 253	200 microns	70	85	16 hours	5 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Amercoat 253	200 microns	70	85	16 hours	5 days
Tie-coat							
Intermediate	EP	Amercoat 253	200 microns	70	85	16 hours	5 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 103 A**
Coating **Hydrocarbon Tanks**
SUPPLIER **AMERON**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Amercoat 71 primer	50 microns	48	85	4 hours	unlimited
Tie-coat	EP	Amercoat 253	175 microns	70	85	16 hours	5 days
Intermediate	EP	Amercoat 253	175 microns	70	85	16 hours	5 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Amercoat 71 primer	50 microns	48	85	4 hours	unlimited
Tie-coat	EP	Amercoat 253	175 microns	70	85	16 hours	5 days
Intermediate	EP	Amercoat 253	175 microns	70	85	16 hours	5 days
Finish coat							

4. Remarks

Pimer coat used only as a holding primer if necessary

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 104 A**
Coating **Industrial Water Tanks**
SUPPLIER **AMERON**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	EP	Amercoat 253	175 microns	70	85	16 hours	5 days
Intermediate	EP	Amercoat 253	175 microns	70	85	16 hours	5 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	EP	Amercoat 253	175 microns	70	85	16 hours	5 days
Intermediate	EP	Amercoat 253	175 microns	70	85	16 hours	5 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 105 A**
Coating **Drinking Water Tank**
SUPPLIER **AMERON**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPM	Amercoat 90 S	150 microns	58	85	24 hours	60 hours
Tie-coat							
Intermediate	EPM	Amercoat 90 S	150 microns	58	85	24 hours	60 hours
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPM	Amercoat 90 S	150 microns	58	85	24 hours	60 hours
Tie-coat							
Intermediate	EPM	Amercoat 90 S	150 microns	58	85	24 hours	60 hours
Finish coat							

4. Remarks

Health and safety report No.

- AL 15014/4 Albury laboratories - UK 29-4-78/462 COT Haarlem HOLLAND
- AL 15014/Y National Council by Albury laboratories.

Operating temperature resistance:	less than 50°C		
Guarantee:	3 years	No blistering, flaking, or cracking	
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)			

System No. **P 106 A**
Coating **Gas-Oil Tanks**
SUPPLIER **AMERON**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)

Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Amercoat 56 E	200 microns	71	85	12 hours	6 months
Tie-coat							
Intermediate							
Finish coat							

3. Repair system

Grade of cleanliness

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Amercoat 56 E	200 microns	71	85	12 hours	6 months
Tie-coat							
Intermediate							
Finish coat							

4. Remarks

If the neutralization number exceeds 0.05, apply system 109 A

Operating temperature resistance:	less than 50°C
Guarantee:	3 years No blistering, cracking, or flaking
Qualification / acceptance requirements:	Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)

System No. **P 107 A**
Coating **Hydrocarbon Tanks (Underside)**
SUPPLIER **AMERON**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPGF	Amercoat 385 GF	300 microns	71	85	12 hours	unlimited

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPGF	Amercoat 385 GF	300 microns	71	85	12 hours	unlimited

4. Remarks

Operating temperature resistance:	less than 60°C
Qualification / acceptance requirements:	Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)



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System No. **P 108 A**
Coating **Factory Prepainted Surfaces**
SUPPLIER **AMERON**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	ESI	DSP 210	20 microns	38	90	-	-

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat							

4. Remarks

Operating temperature resistance: less than 60°C

System No. **P 109 A**
Coating **Jet Fuel Tank**
SUPPLIER **AMERON**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Amercoat 56 E	75 microns	71	85	12 hours	6 months
Tie-coat							
Intermediate	EP	Amercoat 56 E	75 microns	71	85	12 hours	6 months
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Amercoat 56 E	75 microns	71	85	12 hours	6 months
Tie-coat							
Intermediate	EP	Amercoat 56 E	75 microns	71	85	12 hours	6 months
Finish coat							

4. Remarks

MIL specification C 4555-E

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	No blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		



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System No. **P 102 B**
Coating **Process Vessels**
SUPPLIER **BELZONA**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - coarse(C) (ISO 8503-2)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPPH	Belzona 1391	1000 microns	100	85	-	-

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPPH	Belzona 1391	1000 microns	100	85	-	-

4. Remarks

Use without H₂S

Application only with rough brush and specific tool.

Operating temperature resistance:		less than 130°C
Guarantee:	3 years	No Blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 6 Mpa (mechanical tester)		

System No. **P 101 C**
Coating **Process Vessels**
SUPPLIER **CARBOLINE**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Carbomastic 18 NT	200 microns	80	80	6 hours	6 days
Tie-coat							
Intermediate	EP	Carbomastic 18 NT	200 microns	80	80	6 hours	6 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Carbomastic 18 NT	200 microns	80	80	6 hours	6 days
Tie-coat							
Intermediate	EP	Carbomastic 18 NT	200 microns	80	80	6 hours	6 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 103 C**
Coating **Hydrocarbon Tanks**
SUPPLIER **CARBOLINE**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Carboline 193 primer	40 microns	52	85	12 hours	unlimited
Tie-coat	EP	Carbomastic 18 NT	175 microns	80	80	6 hours	6 days
Intermediate							
Finish coat	EP	Carbomastic 18 NT	175 microns	80	80	6 hours	6 days

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Carboline 193 primer	40 microns	52	85	12 hours	unlimited
Tie-coat	EP	Carbomastic 18 NT	175 microns	80	80	6 hours	6 days
Intermediate							
Finish coat	EP	Carbomastic 18 NT	175 microns	80	80	6 hours	6 days

3. Remarks

Pimer coat only only as a holding primer if necessary

Operating temperature resistance:		less than 60°C
Guarantee:	3 years 3 years	Blistering 1 (S2) Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 104 C**
Coating **Industrial Water Tanks**
SUPPLIER **CARBOLINE**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Carbomastic 18 NT	150 microns	80	80	6 hours	6 days
Tie-coat							
Intermediate	EP	Carbomastic 18 NT	150 microns	80	80	6 hours	6 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Carbomastic 18 NT	150 microns	80	80	6 hours	6 days
Tie-coat							
Intermediate	EP	Carbomastic 18 NT	150 microns	80	80	6 hours	6 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 105 C**
Coating **Drinking Water Tank**
SUPPLIER **CARBOLINE**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Carboguard 891	125 microns	75	85	8 hours	5 days
Tie-coat							
Intermediate	EP	Carboguard 891	125 microns	75	85	8 hours	5 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Carboguard 891	125 microns	75	85	8 hours	5 days
Tie-coat							
Intermediate	EP	Carboguard 891	125 microns	75	85	8 hours	5 days
Finish coat							

4. Remarks

Health and safety report No. AWWA C210.

Operating temperature resistance:	less than 50°C
Guarantee:	3 years No blistering, cracking, or flaking
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)	



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System No. **P 106 C**
Coating **Gas-Oil Tanks**
SUPPLIER **CARBOLINE**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Carboline 187finish	200 microns	63	85	36 hours	6 days
Tie-coat							
Intermediate							
Finish coat							

3. Repair system

Grade of cleanliness

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Carboline 187finish	200 microns	63	85	36 hours	6 days
Tie-coat							
Intermediate							
Finish coat							

4. Remarks

Operating temperature resistance:	less than 50°C
Guarantee: 3 years	No blistering, cracking, or flaking
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)	



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System No. **P 107 C**
 Coating **Hydrocarbon Tanks (Underside)**
 SUPPLIER **CARBOLINE**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
 Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Carbomastic 18 NT	150 microns	80	80	6 hours	6 days
Tie-coat							
Intermediate	EP	Carbomastic 18 NT	150 microns	80	80	6 hours	6 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Carbomastic 18 NT	150 microns	80	80	6 hours	6 days
Tie-coat							
Intermediate	EP	Carbomastic 18 NT	150 microns	80	80	6 hours	6 days
Finish coat							

4. Remarks

Operating temperature resistance: less than 60°C

Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)



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System No. **P 108 C**
 Coating **Factory Prepainted Surfaces**
 SUPPLIER **CARBOLINE**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
 Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	ESI	Carboweld 11 P 40	25 microns	43	95	24 hours	unlimited
Tie-coat							
Intermediate							
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	ESI	Carboweld 11 P 40	25 microns	43	95	24 hours	unlimited
Tie-coat							
Intermediate							
Finish coat							

4. Remarks

Operating temperature resistance: less than 400°C

System No. **P 109 C**
Coating **Jet Fuel Tank**
SUPPLIER **CARBOLINE**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Carboline 187primer	130 microns	65	85	36 hours	6 days
Tie-coat							
Intermediate	EPPH	Carboline 187finish	130 microns	63	85	36 hours	6 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Carboline 187primer	130 microns	65	85	36 hours	6 days
Tie-coat							
Intermediate	EPPH	Carboline 187finish	130 microns	63	85	36 hours	6 days
Finish coat							

4. Remarks

NAVSEC approval 23236-75

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	No blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 101 H**
Coating **Process Vessels**
SUPPLIER **HEMPEL**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)

Roughness Ra 13/15 microns

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPM	Hempadur 4575	200 microns	81	85	6 hours	3 days
Tie-coat							
Intermediate	EPM	Hempadur 4575	200 microns	81	85	6 hours	3 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPM	Hempadur 4575	200 microns	81	85	6 hours	3 days
Tie-coat							
Intermediate	EPM	Hempadur 4575	200 microns	81	85	6 hours	3 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		



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System No. **P 103 H**
Coating **Hydrocarbon Tanks**
SUPPLIER **HEMPEL**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)

Roughness Ra 13/15 microns

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPM	Hempadur 4575	175 microns	81	85	6 hours	3 days
Tie-coat							
Intermediate	EPM	Hempadur 4575	175 microns	81	85	6 hours	3 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPM	Hempadur 4575	175 microns	81	85	6 hours	3 days
Tie-coat							
Intermediate	EPM	Hempadur 4575	175 microns	81	85	6 hours	3 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 104 H**
Coating **Industrial Water Tanks**
SUPPLIER **HEMPEL**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)

Roughness Ra 13/15 microns

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPM	Hempadur 4575	150 microns	81	85	6 hours	3 days
Tie-coat							
Intermediate	EPM	Hempadur 4575	150 microns	81	85	6 hours	3 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPM	Hempadur 4575	150 microns	81	85	6 hours	3 days
Tie-coat							
Intermediate	EPM	Hempadur 4575	150 microns	81	85	6 hours	3 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 105 H**
Coating **Drinking Water Tank**
SUPPLIER **HEMPEL**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Hempadur 3553	150 microns	100	85	24 hours	5 days
Tie-coat							
Intermediate	EP	Hempadur 3553	150 microns	100	85	24 hours	5 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Hempadur 3553	150 microns	100	85	24 hours	5 days
Tie-coat							
Intermediate	EP	Hempadur 3553	150 microns	100	85	24 hours	5 days
Finish coat							

4. Remarks

Certificate from "Water research centre, Slough, England" - Fresh water tank and pipes internal.

Operating temperature resistance:	less than 50°C
Guarantee:	3 years No blistering, cracking, or flaking
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)	



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System No. **P 106 H**
Coating **Gas-Oil Tanks**
SUPPLIER **HEMPEL**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Hempadur 8567	100 microns	68	80	3 hours	10 days
Tie-coat							
Intermediate	EP	Hempadur 8567	100 microns	68	80	3 hours	10 days
Finish coat							

3. Repair system

Grade of cleanliness

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Hempadur 8567	100 microns	68	80	3 hours	10 days
Tie-coat							
Intermediate	EP	Hempadur 8567	100 microns	68	80	3 hours	10 days
Finish coat							

3. Remarks

Operating temperature resistance:	less than 50°C
Guarantee: 3 years	No blistering, cracking, or flaking
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)	

System No. **P 107 H**
Coating **Hydrocarbon Tanks (Underside)**
SUPPLIER **HEMPEL**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPM	Hempadur multi-strength 4575	300 microns	81	85	6 hours	30 days

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPM	Hempadur multi-strength 4575	300 microns	81	85	6 hours	30 days

4. Remarks

Operating temperature resistance:	less than 60°C
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)	

System No. **P 108 H**
Coating **Factory Prepainted Surfaces**
SUPPLIER **HEMPEL**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	ESI	Shopprimer ZS 1589	20 microns	25	85	4 hours	1 year
Tie-coat							
Intermediate							
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat							
Intermediate							
Finish coat							

4. Remarks

Operating temperature resistance: less than 400°C

System No. **P 109 H**
Coating **Jet Fuel Tank**
SUPPLIER **HEMPEL**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Hempadur 1540	100 microns	48	80	13 hours	3 days
Tie-coat							
Intermediate	EP	Hempadur 1540	100 microns	48	80	13 hours	3 days
Finish coat	EP	Hempadur 1540	100 microns	48	80	13 hours	3 days

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Hempadur 1540	100 microns	48	80	13 hours	3 days
Tie-coat							
Intermediate	EP	Hempadur 1540	100 microns	48	80	13 hours	3 days
Finish coat	EP	Hempadur 1540	100 microns	48	80	13 hours	3 days

4. Remarks

Aviation certificate: BP Arabian agencies, UAE.

Shell International Trading Company, London.

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	No blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 101 I**
Coating **Process Vessels**
SUPPLIER **INTERNATIONAL COATINGS**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	EP	Interline 925	200 microns	100	85	12 hours	48 hours
Intermediate	EP	Interline 925	200 microns	100	85	12 hours	48 hours
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	EP	Interline 925	200 microns	100	85	12 hours	48 hours
Intermediate	EP	Interline 925	200 microns	100	85	12 hours	48 hours
Finish coat							

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		



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System No. **P 102 I**
 Coating **Process Vessels**
 SUPPLIER **INTERNATIONAL COATINGS**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
 Roughness Grit - coarse(C) (ISO 8503-2: 1988)

3. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	VY	Interline 955	600 microns	85	80	2 hours	24 hours
Intermediate	VY	Interline 955	600 microns	85	80	-	-
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	VY	Interline 955	600 microns	85	80	2 hours	24 hours
Intermediate	VY	Interline 955	600 microns	85	80	-	-
Finish coat							

3. Remarks

Use without H₂S

Operating temperature resistance:		less than 150°C
Guarantee:	3 years	No blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 6 Mpa (mechanical tester)		

System No. **P 103 I**
Coating **Hydrocarbon Tanks**
SUPPLIER **INTERNATIONAL COATINGS**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Interline 982	30 microns	30	85	24 hours	28 days
Tie-coat							
Intermediate	EPGF	Interline 910	400 microns	100	85	12 hours	48 hours
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Interline 982	30 microns	30	85	24 hours	28 days
Tie-coat							
Intermediate	EPGF	Interline 910	400 microns	100	85	12 hours	48 hours
Finish coat							

3. Remarks

Pimer coat only to protect surface preparation if necessary

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 104 I**
Coating **Industrial Water Tanks**
SUPPLIER **INTERNATIONAL COATINGS**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EP	Interline 925	400 microns	100	85	12 hours	48 hours

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EP	Interline 925	400 microns	100	85	12 hours	48 hours

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		



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System No. **P 105 I**
Coating **Drinking Water Tank**
SUPPLIER **INTERNATIONAL COATINGS**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EP	Interline 925	300 microns	100	85	12 hours	48 hours

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EP	Interline 925	300 microns	100	85	12 hours	48 hours

4. Remarks

The Water Quality Centre certificate ref: P 22368/C23592/2400

Operating temperature resistance:	less than 50°C
Guarantee:	3 years No blistering, cracking, or flaking
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)	



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System No. **P 106 I**
 Coating **Gas-Oil Tanks**
 SUPPLIER **INTERNATIONAL COATINGS**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
 Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Interline 910	200 microns	100	85	12 hours	48 hours
Tie-coat							
Intermediate							
Finish coat							

3. Repair system

Grade of cleanliness

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Interline 910	200 microns	100	85	12 hours	48 hours
Tie-coat							
Intermediate							
Finish coat							

4. Remarks

Operating temperature resistance:	less than 50°C
Guarantee:	3 years No blistering, cracking, or flaking
Qualification / acceptance requirements:	Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)



System No. **P 107 I**
 Coating **Hydrocarbon Tanks (Underside)**
 SUPPLIER **INTERNATIONAL COATINGS**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
 Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPM	Interzone 954	300 microns	85	85	12 hours	14 days

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPM	Interzone 954	300 microns	85	85	12 hours	14 days

4. Remarks

Operating temperature resistance:	less than 60°C
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)	



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System No. **P 108 I**
Coating **Factory Prepainted Surfaces**
SUPPLIER **INTERNATIONAL COATINGS**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	ESI	Interplate NQA 805 / NQA 806	25 microns	30	90	24 hours	unlimited

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	ESI	Interplate NQA 805 / NQA 806	25 microns	30	90	24 hours	unlimited

4. Remarks

IS approval No. 26192 according to French standard NF J 17-115 (REF: DLC/790 425)

Operating temperature resistance: less than 400°C



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System No. **P 109 I**
 Coating **Jet Fuel Tank**
 SUPPLIER **INTERNATIONAL COATINGS**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
 Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPGF	Interline 910	400 microns	100	85	12 hours	48 hours

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPGF	Interline 910	400 microns	100	85	12 hours	48 hours

4. Remarks

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	No blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		



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System No. **P 101 J**
Coating **Process Vessels**
SUPPLIER **JOTUN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	EPPH	Tankguard storage	200 microns	63	85	10 hours	30 days
Intermediate	EPPH	Tankguard storage	200 microns	63	85	10 hours	30 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	EPPH	Tankguard storage	200 microns	63	85	10 hours	30 days
Intermediate	EPPH	Tankguard storage	200 microns	63	85	10 hours	30 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		



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System No. **P 102 J**
Coating **Process Vessels**
SUPPLIER **JOTUN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit – coarse (C) (ISO 8503-2: 1988)

4. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	VY	Chemflake special	600 microns	96	80	2 hours	24 hours
Intermediate	VY	Chemflake special	600 microns	96	80	-	-
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	VY	Chemflake special	600 microns	96	80	2 hours	24 hours
Intermediate	VY	Chemflake special	600 microns	96	80	-	-
Finish coat							

3. Remarks

Use without H₂S

Operating temperature resistance:		less than 150°C
Guarantee:	3 years	No blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 6 Mpa (mechanical tester)		

System No. **P 103 J**
Coating **Hydrocarbon Tanks**
SUPPLIER **JOTUN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Tankguard storage	175 microns	63	85	10 hours	30 days
Tie-coat							
Intermediate	EPPH	Tankguard storage	175 microns	63	85	10 hours	30 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Tankguard storage	175 microns	63	85	10 hours	30 days
Tie-coat							
Intermediate	EPPH	Tankguard storage	175 microns	63	85	10 hours	30 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		



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System No. **P 104 J**
Coating **Industrial Water Tanks**
SUPPLIER **JOTUN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Tankguard storage	200 microns	63	85	10 hours	30 days
Tie-coat							
Intermediate	EPPH	Tankguard storage	200 microns	63	85	10 hours	30 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Tankguard storage	200 microns	63	85	10 hours	30 days
Tie-coat							
Intermediate	EPPH	Tankguard storage	200 microns	63	85	10 hours	30 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 105 J**
Coating **Drinking Water Tank**
SUPPLIER **JOTUN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EP	Tankguard Aqua	300 microns	100	85	10 hours	7 days

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EP	Tankguard Aqua	300 microns	100	85	10 hours	7 days

4. Remarks

FOLKEHELSA – National Institute of public Health report n° 00/191 – MINT/INST/523.2

Operating temperature resistance:	less than 50°C
Guarantee:	3 years No blistering, cracking, or flaking
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)	

System No. **P 106 J**
Coating **Reservoirs A Gas-Oil**
SUPPLIER **JOTUN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Tankguard storage	200 microns	63	85	10 hours	30 days
Tie-coat							
Intermediate							
Finish coat							

3. Repair system

Grade of cleanliness

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Tankguard storage	200 microns	63	85	10 hours	30 days
Tie-coat							
Intermediate							
Finish coat							

4. Remarks

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	No blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 107 J**
Coating **Hydrocarbon Tanks (Underside)**
SUPPLIER **JOTUN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPM	Primastic universal R/t	300 microns	75	85	10 hours	unlimited

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EPM	Primastic universal R/t	300 microns	75	85	10 hours	unlimited

4. Remarks

Operating temperature resistance:	less than 60°C
Qualification / acceptance requirements:	Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)



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System No. **P 108 J**
 Coating **Factory Prepainted Surfaces**
 SUPPLIER **JOTUN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
 Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Shop Primer Iron Oxide	25 microns	25	95	7 hours	unlimited
Tie-coat		Epoxy two-pack					
Intermediate							
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Shop Primer Iron Oxide	25 microns	25	95	7 hours	unlimited
Tie-coat		Epoxy two-pack					
Intermediate							
Finish coat							

4. Remarks

Lloyd's Register of Shipping certificate

Operating temperature resistance: less than 400°C

System No. **P 109 J**
Coating **Jet Fuel Tank**
SUPPLIER **JOTUN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	EPPH	Tankguard storage	125 microns	63	85	10 hours	30 days
Intermediate	EPPH	Tankguard storage	125 microns	63	85	10 hours	30 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	EPPH	Tankguard storage	125 microns	63	85	10 hours	30 days
Intermediate	EPPH	Tankguard storage	125 microns	63	85	10 hours	30 days
Finish coat							

4. Remarks

Approvals according to Defence standard 80-97 Annex G issue 3 by DERA Paints and Coatings

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	No blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		



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System No. **P 101 SF**
 Coating **Process Vessels**
 SUPPLIER **SIGMA COATINGS-FREITAG**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
 Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Sigma Novaguard	200 microns	100	85	24 hours	20 days
Tie-coat							
Intermediate	EPPH	Sigma Novaguard	200 microns	100	85	24 hours	20 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPPH	Sigma Novaguard	200 microns	100	85	24 hours	20 days
Tie-coat							
Intermediate	EPPH	Sigma Novaguard	200 microns	100	85	24 hours	20 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 103 SF**
Coating **Hydrocarbon Tanks**
SUPPLIER **SIGMA COATINGS-FREITAG**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Sigmacover primer	50 microns	57	85	8 hours	6 months
Tie-coat	EPPH	Sigma Novaguard	200 microns	100	85	24 hours	20 days
Intermediate	EPPH	Sigma Novaguard	200 microns	100	85	24 hours	20 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Sigmacover primer	50 microns	57	85	8 hours	6 months
Tie-coat	EPPH	Sigma Novaguard	200 microns	100	85	24 hours	20 days
Intermediate	EPPH	Sigma Novaguard	200 microns	100	85	24 hours	20 days
Finish coat							

3. Remarks

Pimer coat only as holding primer if necessary

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 104 SF**
Coating **Industrial Water Tanks**
SUPPLIER **SIGMA COATINGS-FREITAG**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	EPPH	Sigma Novaguard	150 microns	100	85	24 hours	20 days
Intermediate	EPPH	Sigma Novaguard	150 microns	100	85	24 hours	20 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat	EPPH	Sigma Novaguard	150 microns	100	85	24 hours	20 days
Intermediate	EPPH	Sigma Novaguard	150 microns	100	85	24 hours	20 days
Finish coat							

4. Remarks

Operating temperature resistance:		less than 60°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 105 SF**
Coating **Drinking Water Tank**
SUPPLIER **SIGMA COATINGS-FREITAG**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPM	Sigmaguard CSF 75	200 microns	100	85	24 hours	20 days
Tie-coat							
Intermediate	EPM	Sigmaguard CSF 75	200 microns	100	85	24 hours	20 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EPM	Sigmaguard CSF 75	200 microns	100	85	24 hours	20 days
Tie-coat							
Intermediate	EPM	Sigmaguard CSF 75	200 microns	100	85	24 hours	20 days
Finish coat							

4. Remarks

Certificate from "KIWA, Holland, ref. VGB No. 35 and National Institute of Public Health, Norway, ref. No. Inr.SK 551/82".

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	Blistering 1 (S2)
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		

System No. **P 106 SF**
Coating **Gas-Oil Tanks**
SUPPLIER **SIGMA COATINGS-FREITAG**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Sigmaguard CSF	200 microns	100	85	24 hours	20 days
Tie-coat							
Intermediate							
Finish coat							

3. Repair system

Grade of cleanliness

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Sigmaguard CSF	200 microns	100	85	24 hours	20 days
Tie-coat							
Intermediate							
Finish coat							

4. Remarks

Operating temperature resistance:	less than 50°C
Guarantee: 3 years	No blistering, cracking, or flaking
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)	

System No. **P 107 SF**
Coating **Hydrocarbon Tanks (Underside)**
SUPPLIER **SIGMA COATINGS-FREITAG**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EP	Sigmaguard CSF	300 microns	100	85	24 hours	20 days

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats@ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	EP	Sigmaguard CSF	300 microns	100	85	24 hours	20 days

4. Remarks

Operating temperature resistance:	less than 60°C
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)	



Exploration & Production

General Specification

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Appendix 3

System No. **P 108 SF**
 Coating **Factory Prepainted Surfaces**
 SUPPLIER **SIGMA COATINGS-FREITAG**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
 Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	ESI	Sigmaweld MC	25 microns	25	90	3 days	6 months
Tie-coat							
Intermediate							
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer							
Tie-coat							
Intermediate							
Finish coat							

4. Remarks

Operating temperature resistance:	less than 400°C
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System No. **P 109 SF**
Coating **Jet Fuel Tank**
SUPPLIER **SIGMA COATINGS-FREITAG**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit - medium(G) (ISO 8503-2: 1988)

2. Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Sigmaguard CSF	200 microns	100	85	24 hours	20 days
Tie-coat							
Intermediate	EP	Sigmaguard CSF	200 microns	100	85	24 hours	20 days
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	EP	Sigmaguard CSF	200 microns	100	85	24 hours	20 days
Tie-coat							
Intermediate	EP	Sigmaguard CSF	200 microns	100	85	24 hours	20 days
Finish coat							

3. Remarks

MIL-C-4556 E dated 14/01/92

Operating temperature resistance:		less than 50°C
Guarantee:	3 years	No blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 4 Mpa (mechanical tester)		



Exploration & Production

General Specification

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Appendix 3

System No. **P 102 Sk**
 Coating **Process Vessels**
 SUPPLIER **SAKAPHEN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
 Roughness Grit - medium(G) (ISO 8503-2: 1988)

2 Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	PFM	Si 14 EG	220 microns	100	-	-	-

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer Tie-coat Intermediate Finish coat	PFM	Si 14 EG RE	220 microns	100	70	-	-

4. Remarks

Operating temperature resistance:		less than 200°C
Guarantee:	3 years	No blistering
	3 years	Degree of rusting Ri 2
Qualification / acceptance requirements: Minimum mechanical pull-off test value of 21 Mpa (mechanical tester)		

System No. **P 102 Sk bis**
Coating **Process Vessels**
SUPPLIER **SAKAPHEN**

1. Surface preparation

Grade of cleanliness Sa 3 (ISO 8501-1: 1988)
Roughness Grit – (Coarse) (ISO 8503-2: 1988)

2 Coating system

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	VY	VCF 14 EG	600 microns	100	65	8 hours	72 hours
Tie-coat							
Intermediate	VY	VCF 14 EG	600 microns	100	65	-	-
Finish coat							

3. Repair system

Grade of cleanliness Sa 2 ½ (ISO 8501-1: 1988)

Constitution	Binder	SUPPLIER's reference	Nominal thickness	Volume of solids (%)	RH max. (%)	Interval between coats @ 20 °C & 60% RH	
						min.	max.
Primer	VY	VCF 14 EG	600 microns	100	65	8 hours	72 hours
Tie-coat							
Intermediate	VY	VCF 14 EG	600 microns	100	65	-	-
Finish coat							

4. Remarks

Use without H₂S

Operating temperature resistance:		less than 180°C
Guarantee:	3 years	No blistering
	3 years	Minimum mechanical pull-off test value: 6 MPa
Qualification / acceptance requirements:		Degree of rusting Ri 2
		Minimum mechanical pull-off test value of 6 Mpa (mechanical tester)