

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>								
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE							شماره صفحه : 1 از 20	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	HY	120	QC	PR	0003		V03

## طرح نگهداشت و افزایش تولید 27 مخزن

## SURFACE PREPARATION AND PAINTING PROCEDURE

### نگهداشت و افزایش تولید میدان نفتی بینک

V03	Mar. 2025	IFR	Havayar Co.	M.Fakharian	S.Faramarzpour	
V02	Jun. 2024	IFR	Havayar Co.	M.Fakharian	M.Sadeghian	
V01	Nov. 2023	IFR	Havayar Co.	M.Fakharian	S.Faramarzpour	
V00	Oct. 2023	IFR	Havayar Co.	M.Fakharian	A.M.Mohseni co	
Rev.	Date	Purpose of Issue/Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

#### Status:

IFA: Issued for Approval  
IFR: Issued for Review  
IFI: Issued for Information  
AFC: Approved for Construction

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 <b>HAVAYAR</b> INDUSTRIAL GROUP	
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE							شماره صفحه : 2 از 20	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	HY	120	QC	PR	0003	V03	

### REVISION RECORD SHEET

PAGE	V00	V01	V02	V03	V04	PAGE	V00	V01	V02	V03	V04
1	X	X	X	X		66					
2	X	X	X	X		67					
3	X	X		X		68					
4	X					69					
5	X					70					
6	X					71					
7	X	X	X	X		72					
8	X	X	X	X		73					
9	X	X		X		74					
10	X	X	X			75					
11		X				76					
12		X				77					
13		X		X		78					
14		X				79					
15		X		X		80					
16		X		X		81					
17		X				82					
18		X	X	X		83					
19				X		84					
20				X		85					
21						86					
22						87					
23						88					
24						89					
25						90					
26						91					
27						92					
28						93					
29						94					
30						95					
31						96					
32						97					
33						98					
34						99					
35						100					
36						101					
37						102					
38						103					
39						104					
40						105					
41						106					
42						107					
43						108					
44						109					
45						110					
46						111					
47						112					
48						113					
49						114					
50						115					
51						116					
52						117					
53						118					
54						119					
55						120					
56						121					
57						122					
58						123					
59						124					
60						125					
61						126					
62						127					
63						128					
64						129					
65						130					

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 	
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE								شماره صفحه : 3 از 20
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	HY	120	QC	PR	0003	V03	

1.0	INTRODUCTION .....	4
2.0	GENERAL DEFINITION .....	4
3.0	SCOPE .....	5
4.0	APPLICABLE STANDARDS .....	5
5.0	EXTENT OF SURFACE TO BE PAINTED .....	6
6.0	SURFACE PREPARATION .....	6
7.0	PROCEDURE .....	7
8.0	APPLICATION DETAILS .....	8
9.0	INSPECTION .....	9
10.0	PAINTING WORK INSTRUCTION FOR BARE BLOCK COMPRESSOR .....	10
11.0	APPENDIX#1 .....	15
12.0	PAINTING REPORT .....	17
13.0	DATA SHEETS .....	18

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>								
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE								شماره صفحه : 4 از 20
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	HY	120	QC	PR	0003	V03	

## 1.0 INTRODUCTION

Binak oilfield in Bushehr province is a part of the southern oilfields of Iran, is located 20 km northwest of Genaveh city.

With the aim of increasing production of oil from Binak oilfield, an EPC/EPD Project has been defined by NIOC/NISOC and awarded to Petro Iran Development Company (PEDCO). Also, PEDCO (as General Contractor) has assigned the EPC-packages of the Project to "Hirgan Energy - Design and Inspection" JV.

As a part of the Project, a New Gas Compressor Station (adjacent to existing Binak GCS) shall be constructed to gather of 15 MMSCFD (approx.) associated gases and compress & transfer them to Siahmakan GIS.

## 2.0 GENERAL DEFINITION

The following terms shall be used in this document.

CLIENT:	National Iranian South Oilfields Company (NISOC)
PROJECT:	Binak Oilfield Development – Surface Facilities; New Gas Compressor Station
EPD/EPC CONTRACTOR (GC):	Petro Iran Development Company (PEDCO)
OWNER:	OWNER is collectively refer to National Iranian South Oil Company (NISOC) and Petro Iran Development Company (PEDCO)
EPC CONTRACTOR:	Joint Venture of: Hirgan Energy – Design & Inspection (D&I) Companies
VENDOR:	HAVAYAR Company
EXECUTOR:	Executor is the party which carries out all or part of construction and/or commissioning for the project.
THIRD PARTY INSPECTOR (TPI):	The firm appointed by EPD/EPC CONTRACTOR (GC) and approved by CLIENT (in writing) for the inspection of goods.
SHALL:	Is used where a provision is mandatory.
SHOULD:	Is used where a provision is advisory only.
WILL:	Is normally used in connection with the action by CLIENT rather than by an EPC/EPD CONTRACTOR, supplier or VENDOR.
MAY:	Is used where a provision is completely discretionary.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>								
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE							شماره صفحه : 5 از 20	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	HY	120	QC	PR	0003	V03	

### 3.0 SCOPE

This Specification covers the general requirements for selection of painting materials, surface preparation, application procedure and inspection for protective, coatings and painting of Reciprocate Compressor to be used for BINK Oilfield Wellhead Facilities and Manifold Extension.

### 4.0 APPLICABLE STANDARDS

- BK-GNRL-PEDCO-000-PI-SP-0006-D04                      Specification for Painting
- **Iranian Petroleum Standard (IPS)**
  - IPS-E-TP-100                      Engineering Standard for Paint
  - IPS-C-TP-101                      Construction Standard for Surface Preparation
  - IPS-C-TP-102                      Construction Standard for Surface Painting
  - IPS-M-TP-130                      Material and Equipment Standard for Coloured Alkyd Paint for Top Coat (Finish) Except White
  - PS-M-TP-168                      Material standard for Acrylic Silicon Finish Paint for Temperature Application up to 200°C
  - IPS-M-TP-175                      Material and Equipment Standard for Silicone Alkyd Paint (White or Coloured) as Top Coat (Finish)
  - IPS-M-TP-205                      Material & Equipment Standard for Zinc Rich Epoxy as Primer, Intermediate & Top Coat
  - IPS-M-TP-210                      Material & Equipment Standard for Zinc silicate paint As Primer, Intermediate & Top Coat
  - IPS-M-TP-235                      Material & Equipment Standard for Two Pack Poly Urethane Paint as Top Coat
  - IPS-M-TP-220                      Material & Equipment Standard for Epoxy Polyamide Intermediate Paint
  - IPS-M-TP-225                      Material and Equipment Standard for Epoxy Polyamide Paint as Top Coat (Finish)

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 	
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE								شماره صفحه : 6 از 20
	پروژه	بسته کاری	صادر کننده	تسهيلات	رشته	نوع مدرک	سريال	نسخه	
	BK	GCS	HY	120	QC	PR	0003	V03	

- **INTERNATIONAL CODE AND STANDARDS, Steel Structures Painting Council (SSPC)**

- SSPC-P A1 Paint Application Specification No.1: Shop, Field and Maintenance Painting.
- SSPC-PA2 Paint Application Specification No.2: Measurement of Dry Paint Thickness with Magnetic Gauges.
- SSPC-P A3 Paint Application Guide No.3: A Guide to Safety in Paint Application SSPC-SP COM Surface Preparation Specification Outfaces Preparation Commentary.
- SSPC-SP 3 Surface Preparation Specifications No.3: Power Tool Cleaning

- **American Society of Testing Materials (ASTM)**

- ASTM A153 Specification for zinc coating (hot-dip) on iron and steel
- ASTM A123 Specification for zinc (hot galvanized) coatings on products fabricated from rolled, pressed and forged steel shapes, plates bars and strip
- ASTM D185 Standard Test Methods for Coarse Particles in Pigments, Pastes, and Paints.

## 5.0 EXTENT OF SURFACE TO BE PAINTED

### 5.1. SURFACE TO BE PAINTED

The following surfaces shall be completely painted.

- ❖ Compressor
- ❖ Pump
- ❖ Baseplate
- ❖ Auxiliary piping (Carbon steel parts) and piping supports
- ❖ Vessel & Heat Exchanger

### 5.2. SURFACE NOT TO BE PAINTED

Painting shall not be applied on the following surfaces. (If any)

- ❖ Stainless steel,
- ❖ Nickel, aluminium.
- ❖ Galvanized iron
- ❖ Other metals not subject to corrosion, concrete and masonry surfaces.

## 6.0 SURFACE PREPARATION

- All surfaces to be painted shall be cleaned of oil or grease or other similar materials with solvent and then will be brushed and blasted with air to remove rust or scale.
- All mill-scale, rust scale, paint marks or foreign matter shall be removed by shot-blasting, grit-blasting, or sandblasting.

	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE							شماره صفحه : 7 از 20
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	HY	120	QC	PR	0003	
								V03

- Before shop primer is applied, dust, sand residue, crushed steel shot or any grit and all other contaminants must be removed from the surface using a vacuum cleaner, like air blower.
- For Compressor Body & Snubber & Cooler & Piping (Carbon): A near-white metal blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and other foreign matter. And for Motor, Valves, Pump, Safety valve & Control Panel: Manufacture Standard.
- Surfaces shall be blast cleaned with blasting grade SA 2 ½ in accordance with standard ISO 8501-1 to obtain a roughness 30~100-micron range for Carbon steel surfaces.
- During surface preparation, care shall be taken not to damage or alter identification plates, machined surfaces and parts coated in the factory. These parts shall be properly protected.
- All bolt holes shall be drilled and blunted before blasting.
- Slice shall not be used for blasting. Coper slag size which is used for blasting size is 0.2mm to 0.5mm for Thermal paints and for others this value is between 0.5 mm and 1.68 mm.

V03

## 7.0 PROCEDURE

- All dust, oil, grease, impurities, etc. shall be removed from surface prior to painting.
- After surface treatment all painting work should perform before rust appear on the surface. If signs of rust appear, it should be reworked according to regulated surface treatment procedure.
- The use of diluent materials of paint should be strictly performed according to product data sheet or instruction of paint manufacturer.
- After undercoat painting, topcoat painting should be performed with sufficient time to dry according to instruction of paint manufacturer.
- Paint manufacture shall be select from approved vendor list (AVL). The same paint manufacture shall prepare different layer of primer, inter and top coat colour.
- In the colour system, successive layers of colour must be different in terms of shade and hue.
- If painting is done in a closed environment, sufficient ventilation and light must be provided during painting and drying.
- All steel structures or sheets must be lined or coated to protect their surface during transportation, storage, installation, and welding.
- All inaccessible surfaces must be completely painted before installation.
- Special attention should be paid to the colouring of corners, welds, etc., especially to the minimum thickness of the dry film.
- Painting shall be done in following conditions:
  - ❖ Temperature: Min. 5 °C (41°F), Max. 50°C (122 0F)
  - ❖ Humidity : Max 80 %
  - ❖ Drying : Natural drying
- Paint shall not be applied to surface:
  - ❖ During rain, snow, fog or when dust is in suspension in the air, when wind velocity exceeds 7 m/s.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 	
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE								شماره صفحه : 8 از 20
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	HY	120	QC	PR	0003	V03	

- ❖ In areas where harmful particles are in suspension.
- ❖ When surface temperature is less than 3 °C above the surrounding air's dew point.
- ❖ When relative humidity is greater than 80 %.
- ❖ When temperature is below 5 °C.
- ❖ Outside daylight hours on exterior locations.
- ❖ When suddenly, weather changes occur within two hours after painting.
- ❖ When moisture occurs in the form of rain, condensation, frost, etc. on the surface. It is likely to occur when the humidity is more than 80% and the temperature is less than 15 degrees Celsius.

## 8.0 APPLICATION DETAILS

V03

### 8.1 PERSONNEL

Operators shall be qualified to tradesman level as blast-cleaner, painter, applicator etc. The personnel shall have relevant knowledge of health and safety hazard, use of protection equipment, coating materials, mixing and thinning of coatings, coating pot-life, surface requirements etc.

### 8.2 PREPARATION OF PAINTING

Paintings should be prepared for application according to the instructions. Individual components of multi-component paintings must be stirred before mixing. If the thinner is required, only designated thinner should be used and thinning rate may be adjusted according to the job condition.

### 8.3 APPLICATION METHOD

- Airless spray is the most effective in obtaining specified thickness at once and will be performed for this project.
- The spray gun shall be kept at constant distance and perpendicular to the surfaces.

### 8.4 APPLICATION WORK

- Welding seams, corners and edges should always receive a stripe coat before full coating in order to obtain adequate film built.
- Bolt jointing surroundings and flange matching faces should be blanked off or otherwise accepted.
- Special care should be taken to gain uniform thickness.
- Each coat should be allowed enough to dry and interval between coats as per manufacture procedure.



 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 <b>HAVAYAR</b> INDUSTRIAL GROUP	
شماره پیمان: 053 - 073 - 9184	SURFACE PREPARATION AND PAINTING PROCEDURE								شماره صفحه : 9 از 20
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	HY	120	QC	PR	0003	V03	

## 8.5 CLEANING OF TOOLS

The application tools and equipment should be cleaned with the thinner immediately after use.

## 8.6 MIXING METHODE

Mixing shall be carried out by powered mixers and/or shakers. Only small quantities shall be mixed by hand mixing. Mixing directions as furnished by the manufacturer shall be followed. Mechanical agitation during application shall be sufficient to keep pigment in solution.

Mixing in open containers shall be done in a well-ventilated area away from sparks or flames. Paints mixed in original container shall not be transferred until all settled pigment is incorporated in the vehicle. Paints shall not be mixed or kept in suspension by using a bubbling air stream.

Paint shall not remain in spray pots or buckets overnight but shall be gathered in a closed container and remixed before use.

When mixing two-component paints, check and remix each component individually. Then blend the two components at low speed until the mixture is completely uniform in colour. Often, the two components are supplied in different colours so that a good mix can be achieved. Do not mix more than a few litters at a time since the exothermic caused by the mixture may be so high as to make the paint solidify in the container.

Hand mixing of paints is allowed for only containers up to 5 Liters. All large containers shall be rolled on its side before opening, then mixed by mechanical agitators and brought to a uniform consistency. Where pigment separation readily occurs such as heavy or metallic pigments, prevention shall be made for continuous mixing during application.

Paint shall be thinned in accordance with the manufacturer's instructions. Only thinners of the type recommended by the paint manufacturer shall be used.

## 9.0 INSPECTION

Calibration of test devices must be submitted before test operation. Roughness and paint thickness shall be measured by surface roughness test and paint thickness gauge.



### 9.1 EQUIPMENT

Required equipment for surface preparation and painting inspection are including surface roughness meter, dry film thickness measurement, cross check and pressure sensitive tape.

### 9.2 VISUAL INSPECTION

- after painting, the surfaces shall be inspected visually for wrinkle, swelling and other harmful defects. if repair coating is required, applicable surfaces shall be arranged by sand paper and re-coated with the same paint.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 	
شماره پیمان: 053 - 073 - 9184	SURFACE PREPARATION AND PAINTING PROCEDURE								شماره صفحه : 10 از 20
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	HY	120	QC	PR	0003	V03	

### 9.3 COATING THICKNESS INSPECTION

- 1-the average of the acceptable spot readings shall be no less than the specified minimum thickness. no single spot reading shall be less than 80% of the specified minimum.
- 2-the average of the acceptable spot readings shall be no more than the specified maximum thickness. no single spot reading shall be more than 120% of the specified maximum.

### 9.4 ADHESION TEST

painting adhesion has to be verified according to ASTM D 3359. the obtained values must not be worse than 4a (ASTM d 3359).

## 10.0 PAINTING WORK INSTRUCTION FOR BARE BLOCK COMPRESSOR

### 10.1 SCOPE

This procedure covers the surface preparation and application of protective coating for new construction of compressors and auxiliary equipment's at shop.

### 10.2 REFERENCES CODE AND STANDARD

ISO 8501-1, Preparation of steel substrates before application of paints and related products.

- Visual assessment of surface cleanliness - Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.

ISO 8502-3, Preparation of steel substrates before application of paints and related products.

- Test for the assessment of surface cleanliness - Part 3: Assessment of dust on steel surfaces prepared for painting - Pressure-sensitive tape method.

ISO 8502-4, Preparation of steel substrates before application of paints and related products

- Test for assessment of surface cleanliness - Part 4: Guidance on the estimation of the probability of condensation prior to paint application.

ISO 8502-9, Preparation of steel substrates before application of paints and related products.

- Test for assessment of surface cleanliness - Part 9: Field method for the conductometric determination of water-soluble salts.

ISO 8503-2, Preparation of steel substrates before application of paints and related products.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 	
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE								شماره صفحه : 11 از 20
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	HY	120	QC	PR	0003	V03	

- Surface roughness characteristics of blast-cleaned steel substrates - Part 2: Method for the grading of surface profile of abrasive blast-cleaned steel - Comparator procedure.

ASTM D4752, Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub.

-SSPC PA2, Measurement of Dry Coating Thickness with Magnetic Gages.

-SSPC SP1~11, Surface Preparation Specification

### 10.3 GENERAL

- This painting procedure states the condition and requirements for the surface preparation, shop, field and touch-up painting of the equipment, structures and the requirements for paint material, application, inspection, etc.

- All regulations including storage of paint, handling, surface preparation, paint work, safety, etc. shall be compliance with the painting procedure and paint manufacturer's specifications.

- Shop painting shall comply with product data sheets, painting procedure, and material safety data sheets of paint manufacturer.

### 10.4 EXTENT OF SURFACE TO BE PAINTED

- Surfaces to be painted:

The following surfaces shall be completely painted.

- Compressor
- Pump (Case, Head)
- Baseplate
- Epoxy grout contact surface and underside of baseplate
- Auxiliary piping (Carbon steel parts) and piping supports
- Vessel & Heat Exchanger

※ Below items must be painted with Epoxy primer for primer painting.

- Machining (example: coupling, v-pulley, motor pulley, etc.)
- Main oil pump

- Surfaces not to be painted:

Painting shall not be applied on the following surfaces. (If any)

- Plastic, rubber, aluminium, copper, brass, Monel, stainless steel
- Galvanized metal

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 	
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE								شماره صفحه : 12 از 20
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	HY	120	QC	PR	0003	V03	

- Glass, tile and ceramic surfaces
- Auxiliary piping (Stainless steel parts)
- Mechanical seal flange
- V-Belt guard (Aluminum)
- Name plates

## 10.5 SURFACE PREPARATION

- All rough welds, burrs, weld spatters, indentations, and all other sharp surface projections shall be ground smooth prior to further surface preparation.
- Steel and fabrication defects such as weld spatter, lamination scabs, sharp edges of welds before or after blast cleaning shall be repaired after welding in stage of assembly.
- Soluble salt shall be washed with fresh water when salt contents are measured as above than 100 mg/m<sup>2</sup> as per ISO 8502-9.
- Any oil and grease on the surface before preparation shall be removed with alkaline detergent. Agitate the surface to activate the cleaner and before it dries, wash the treated area using fresh water.
- Surface of carbon steel shall be dry abrasive blast cleaned to Sa 21/2 (ISO 8501-1) using abrasive media suitable to achieve a sharp and angular surface profile. Abrasive shall be dry and oil-free. The surface preparation of shop primed area should be followed in painting work instruction.
- Roughness of blasted steel shall be 35~60μm, grade to Medium S (ISO 8503-1).
- At the completion of abrasive blasting the prepared surface shall be cleaned to remove residues of corrosion products and abrasive media, and inspected for surface particulate contamination. Maximum contamination level is rating 2 (ISO 8502-3). Dust size shall be no greater than class 2.
- Blast cleaning shall not be conducted when the temperature of surface is 3°C less than dew point of surrounding air or when the relative humidity of the air is more than 80% (ISO 8502-4).

## 10.6 PAINT APPLICATION

- All carbon steel shall be treated in accordance with this procedure and the data sheets of the paint manufacturers.
- The surface shall be clean and free from contamination and painting works shall not be applied to the wet surface.
- Painting works shall be applied within 4 hours after the surface have been prepared, but in any event before visible rusting occurs.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 	
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE							شماره صفحه : 13 از 20	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	HY	120	QC	PR	0003		V03

- **Mixing and thinning:**

- All coating material shall be mixed by solvent proof mechanical stirrer for a sufficient time in order to for proper mixing of one or two packs paint and bring the material to a uniform consistency. Sticks shall not be used.

- Continuous agitation type spray pots shall be used when applying heavily metal pigmented paint such as zinc loaded paint.

- Thinner shall not be added to primer or paints unless necessary for proper application according to the manufacturer's recommendation. The type of thinner used must comply with the manufacturer's recommendation.

- Painting shall be performed when the following temperature and relative humidity limits are satisfied.

- Minimum temperature                      5°C (41°F)
- Maximum temperature                      43°C (109°F)
- Maximum relative humidity                80%



- No painting shall be applied outdoor when it is foggy, rainy or excessive wind. If chemical contamination occurs in paint, it should be removed by washing with water or solvent before painting.

- If the spraying device are used, the coating manufacturer's instructions are to be observed with regard to the type and dimensions of the spray gun used.



Brush or roller shall not be used to achieve the specified thickness. Brush and roller may be used in small area for repairing.

- Special care should be taken to gain uniform thickness, and each coat should be allowed enough to dry and interval between coats.

- The application tools and equipment's should be cleaned with the thinner immediately after use.

## 10.7 REPAIR AND TOUCH UP

The damaged parts caused by burns, welds, scratches, impact and so on during fabrication, handling, storage, shipping and erection, coating defects such as loss of adhesion, blistering, peel off, crack, running and sagging, over spray etc. must be repaired in accordance with this painting procedure.

- **Surface preparation:**

- Damages to the coating layers:

1) Prepare the area through sandpapering or grinding, followed by thorough washing. When the surface is dry the coating may be over coated by itself, reference to this procedure in above paragraph.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 	
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE								شماره صفحه : 14 از 20
	پروژه	بسته کاری	صادرکننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	HY	120	QC	PR	0003	V03	

2) Always observe the maximum over coating intervals. If the maximum over coating interval is exceeded the surface shall be carefully sanded removing the top of surface followed by thorough fresh water washing in order to remove zinc salts. Alternatively, the surface can be abrasive swept.

- Damages exposing bare substrate:

The type of surface preparation for the damages to the bare substrate shall be determined by the extent of rusting from the damaged area.

1) Rusted area and coating defects area shall be prepared by blast. If blast cleaning is impossible, hand/power tool cleaning shall be conducted.

2) Non-rusted area and slightly damaged area shall be prepared by hand tool or power tool cleaning.

3) Welds and other damage caused by hot work shall be prepared and repaired by power tool cleaning with SSPC SP11.

4) Overlapping zone to intact coating shall have feathered back by hand or power tool to establish smooth transition of surrounding coating.

- Coating application

- The coating system for touch up shall be conformed to the painting system indicated of this procedure.

- Coating for touch up shall be done with brush, roller or spray equipment according to circumstance.

## 10.8 INSPECTION

### Visual inspection:

- After painting, the surfaces shall be inspected visually for wrinkle, swelling and other harmful defects.

-The (Munsell / RAL) colour chart or similar paint system may be used for the examination of the finish coating colour of each coat.

### Film thickness inspection

Measurement:

1) Film thickness shall be measurement of dry paint thickness with magnetic gauges.

2) As a rule, film thickness shall be measured at the shop or field for each coat dry film thickness and the record shall be prepared for each coat.

Number of measurements and measured values:

1) The number and position of measurements shall be determined with due consideration given to the size and shape of items to be painted.

2) Measurements shall be carried out three times at each measuring point. The average of three measurements shall be taken as the measured value for the item concerned.

Rating of measured value:

When the measured values satisfy the following requirements, they shall be deemed acceptable:

1) Average of measured film thickness: 90% or prescribed film thickness

2) Minimum of measured film thickness: 70% or prescribed film thickness.

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>								
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE							شماره صفحه : 15 از 20	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	HY	120	QC	PR	0003	V03	

## 10.9 STORAGE OF PAINT

The storage area should be well ventilated and protected from sparks, flame, direct exposure to sun or excessive heat, preferably located in isolated room.

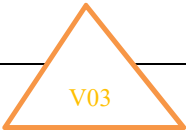
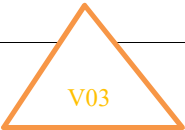
## 11.0 APPENDIX#1

V03

Tag Name	Insulation(Y/N)	Operating Temp. (°C)	Surface Preparation	Primer Coat *		Mid Coat *		Top Coat *			Total Thk. (µm)
				IPS No.	Min. D.F.T (µm)	IPS No.	Min. D.F.T (µm)	IPS No.	Min. D.F.T (µm)	RAL / COLOR	
Compressor Body	N	149	SP-6	Epoxy Primer	60	-	-	Silicone Acrylic	20	Munsell No.6	80
Common Bed & Structure	N	~120	SA 2 1/2	205	75	220	80	235	50	7047/ Tele gray 4	205
Piping (Carbon Steel)	N	~120	SA 2 1/2	205	75	220	80	235	50	7047/ Tele gray 4	205
Piping (Carbon Steel)	N	121~200	SA 3	210	70	168	25	168	25	7047/ Tele gray 4	120
Piping (Carbon Steel)	Y	SA 2 1/2	205	50	220	2*100	-	-	-	250	SA 2 1/2
Piping (Carbon Steel)	Y	121~350	SA 3	210	70	-	-	Silicon Aluminum	25	-	95
Piping (Stainless steel)	Y/N	No Paint									
Vessel (Suc. Snubber)	Y	~120	SA 2 1/2	205	50	220	2*100	-	-	-	250



 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>								
شماره پیمان: 053 - 073 - 9184	SURFACE PREPARATION AND PAINTING PROCEDURE								شماره صفحه : 16 از 20
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	نسخه	
	BK	GCS	HY	120	QC	PR	0003	V03	

Vessel (Disch. Snubber)	Y	121~350	SA 3	210	70	-	-	Silicon Aluminum	25	-	95
Collecting pot	N	~120	SA 2 1/2	205	75	220	80	235	50	7047 Tele gray 4	205
Water Reservoir	N	~120	SA 2 1/2	205	75	220	80	235	50	7047 Tele gray 4	205
Coupling Cover	N	Manufacture Standard									
Air Cooler (Stainless steel)	N	 No Paint									
Air Cooler (Carbon Steel)	N	~120	SA 2 1/2	205	75	220	80	235	50	7047/ Tele gray 4	205
Safety Valve	N	Manufacture Standard									
Motor	N	Manufacture Standard									
Pump	N	Manufacture Standard									
Filter	N	 Manufacture Standard									
Strainer	Y	SA 2 1/2	205	50	220	2*100	-	-	-	250	SA 2 1/2
Valves	N	Manufacture Standard									








**IPS No. description:**

- **205:** Zinc-Rich Epoxy Paint (Organic Zinc-Rich) IPS-M-TP-205
- **220:** Epoxy Polyamide Intermediate Paint IPS-M-TP-220
- **235:** Two Pack Aliphatic Polyurethane Paint IPS-M-TP-235
- **210:** Zinc Silicate (Inorganic Zinc Rich) Paint IPS-M-TP-210
- **168:** Acrylic Silicon Finish Paint for Temperature up to 200°C IPS-M-TP-168
- DFT: Dry Film Thickness
- According to the IPS standard, the RAL of each layer is different.



	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد 03_BK-HD-GCS-CO-0008)			
	شماره پیمان: 053-073-9184		شماره صفحه: 17 از 20	
<b>SURFACE PREPARATION AND PAINTING PROCEDURE</b>				
پروژه BK	بسته کاری GCS	صادر کننده HY	تسهیلات 120	رشته QC
		نوع مدرک PR	سریال 0003	نسخه V03

## 12.0 PAINTING REPORT

		<b>SAND BLAST &amp; PAINTING INSPECTION REPORT</b>										
Project :		Equipment :		Date :								
Serial No :		Procedure No.:		Report No :								
Type Of surface Prepration: SAND BLAST SA 2 1/2 <input type="radio"/> SHOT BLAST <input type="radio"/> Pickling <input type="radio"/>												
Painting Method: Airless <input type="radio"/> Air Spray <input type="radio"/> Brush <input type="radio"/> Roller <input type="radio"/>												
Type Of Segment:		Type Of Preparation: SAND BLAST TO NEAR WHITE METAL SA 2 1/2										
Type of Sand: Copper Slag		Degree Of Preparation: ....		Roughness:								
Surface Temperature: ..... °C		Humidity:		Durtion Time Between Blasting And Painting : Max. 1 hours								
Painting Manual:												
LAYER No. :	1		2		3							
NEW/REPAIR	NEW		NEW		NEW							
INTERNAL /EXTERNAL	EXTERNAL		EXTERNAL		EXTERNAL							
MEASSURING POINT	Body (UP)		Body (MIDDLE)		Body (DOWN)							
KIND OF PAINT												
DRY FILM Thick (µm)	1	2	3	Ave	1	2	3	Ave	1	2	3	Ave
Test Result	Accept <input type="radio"/> Reject <input type="radio"/>		Accept <input type="radio"/> Reject <input type="radio"/>		Accept <input type="radio"/> Reject <input type="radio"/>							
Classification Of Adhesion Testing: CROSS CUT <input type="radio"/> X-CUT <input checked="" type="radio"/> PULL OFF <input type="radio"/>												
Result of adhesion test : Acc <input type="checkbox"/> Rej <input type="checkbox"/>												
Calssification	5B <input type="radio"/>	4B <input type="radio"/>	3B <input type="radio"/>	2B <input type="radio"/>	1B <input type="radio"/>	0B <input type="radio"/>						
												
	HAVAYAR		TPI		HE / DI							
	Vendor		Third Party Ins.		PEDCO							
	Name & Sign:		Name & Sign:		Name & Sign:							
Date:		Date:		Date:								
		EPC Contractor		EPD/ EPC Contractor (GC)								
		Name & Sign:		Name & Sign:								
		Date:		Date:								
		Owner		Name & Sign:								
		Date:		Date:								

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 	
شماره پیمان: 053 – 073 – 9184	SURFACE PREPARATION AND PAINTING PROCEDURE							شماره صفحه : 18 از 20	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	HY	120	QC	PR	0003	V03	

## 13.0 Data sheets



### RZ – 5116 Two Component Zinc Rich Epoxy

#### Product Description

RZ-5116 is a high solid , two component ,polyamide cured zinc rich epoxy coating which complies with the composition and performance requirements of SSPC –Paint 20 , Level 2 and IPS-M-TP-205

#### Recommended Use

RZ-5116 is designed to provide protection against corrosion for steel structures, tanks , piping, valves and other steel surfaces exposed to moderate severe industrial environments , C4 and C5i based on ISO12944 . It can be used as a touch-up primer for repairing of inorganic zinc silicate coating and damage galvanized surfaces.

#### Outstanding Characteristics

- Fast dry and fast overcoating time.
- good cathodically protection properties.
- It can be used as prefabrication primer.
- Good adhesion to blast cleaned steel (Sa2 ½) and power tools cleaned to ST3
- Excellent salt spray resistance.

#### Surface Preparation

Remove oil and grease, etc. with suitable detergent. Remove salt and other contaminants by (high pressure) fresh water cleaning.

Abrasive blasting to Sa 2½, SSPC-10 with a sharp-edged surface profile corresponding to Rugotest No. 3, BN9a, keane-Tator comparator, 2.0 G/S or ISO comparator, medium (G).

For repair and maintenance, remove oil and grease ,salts and other contaminants .Clean damaged areas by power tool cleaning to minimum ST3 or Sa2 by abrasive blasting.

#### Technical Data

Finish	Flat
Color	Grey 843
Volume Solids	65± 3%
Specific Gravity	2.75 ± 0.05 gr/cm <sup>3</sup>
Flash Point	25 °C
Recommended D.F.T.	50-75 microns
Theoretical coverage	13 -8.6 m <sup>2</sup> /lit 4.7-3.15 m <sup>2</sup> /kg
Touch dry	15 minutes at 25 °C
Thermal Resistance	Up to 160 C
Shelf life	12 months

#### Application Details

Application method	Air/Airless spray, Brush, Roller
Nozzle orifice	0.017" -0.019"
Nozzle pressure	150 bar / 2200 Psi
Ambient temperature	5-45° C
Mixing	14 /1 by weight 4 /1 by volume
Thinner/Cleaner	RZT- 51
Pot Life	Min 8 hours at 25C
Recoat interval min:	6-8 hours 25°C
Recoat interval max:	see Remarks overleaf

Revised  
SEP 2017

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 <b>HAVAYAR</b> INDUSTRIAL GROUP	
شماره پیمان: 053 - 073 - 9184	SURFACE PREPARATION AND PAINTING PROCEDURE							شماره صفحه : 19 از 20	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	HY	120	QC	PR	0003	V03	



## RZ - 5141-6

### High Build Polyamide Cured Epoxy

#### Product Description

RZ-5141-6 is a two component, multi purposed polyamide cured, high build epoxy coating applicable as intermediate , complies with IPS-M-TP-220 and SSPC-Paint22.

#### Recommended Use

As a high build, high performance protective coating in aggressive environment over concrete or metal substrate. (interior and exterior surfaces).  
It can be used directly on cured zinc silicate primer or spray metalized surfaces.

#### Outstanding Characteristics

- Excellent oil resistance.
- Excellent chemical resistance against weak acids and alkalis.
- Resistance to transit and handling damages.
- Corrosion resistance in moderately to severely marine & industrial environment.
- Resistance to water.
- High abrasion resistance.
- Compatible with zinc silicate and epoxy primers.
- High abrasion resistance.

#### Surface Preparation

The surface must be clean and dry. All dirt, grease, mill-scales and any other foreign materials should be removed. Old primed surfaces must be smoothly wire brushed.

\*A completely clean surface is mandatory to ensure intercoat adhesion, especially at long recoating intervals, any dirt,oil,and grease has to be removed,e.g. with suitable detergent.  
All of the salt to be removed by fresh water hosing. To check an adequate quality of the surface cleaning a test patch is recommended before recoating.

#### Technical Data

Finish	Semi Flat
Color	White, Cream
Volume Solids	62 ± 3%
Specific Gravity	1.4 ± 0.05 gr/cm <sup>3</sup>
Flash Point	26 °C
Recommended D.F.T.	75-100 microns
Theoretical Coverage	8.2- 6.2 m <sup>2</sup> /lit 5.8- 4.4 m <sup>2</sup> /kg
Touch dry	2 hrs at 25 °C
Fully cured	7 days at 25 °C
Thermal Resistance	Up to 120 °C
Shelf life	12 months at 25 °C

#### Application Details

Application method	Air/Airless spray , Brush, Roller
Nozzle orifice	0.017"-0.023"
Nozzle pressure	200 bar / 2900 Psi
Ambient temperature	5-45 °C
Mixing ratio	Base / Hardener 5 / 1 by weight
Thinner/Cleaner	RZT- 51
Pot life	8 hrs at 25°C
Recoat interval min:	(see Remarks overleaf)
Recoat interval max:	(see Remarks overleaf)

Revised  
May 2020

 NISOC	<p>نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض</p> <p>خرید پکیج های کمپرسور گاز (رفت و برگشتی) بینک (قرارداد BK-HD-GCS-CO-0008_03)</p>							 <b>HAVAYAR</b> INDUSTRIAL GROUP	
شماره پیمان: 053 - 073 - 9184	SURFACE PREPARATION AND PAINTING PROCEDURE							شماره صفحه : 20 از 20	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	HY	120	QC	PR	0003	V03	



## RZ – 6131-3 Polyurethane Topcoat

### Product Description

RZ-6131-3 is a two component, solvent based, weatherable aliphatic polyurethane topcoat.

### Recommended Use

As a protective finish coat for protection of structural steel where superior performance, attractive appearance, gloss retention and high corrosion resistance is required, such as chemical plants, pulp & paper mills, off-shore platforms, petroleum refineries and containers.

### Outstanding Characteristics

- Excellent corrosion resistance
- High weather and chemical resistance
- Excellent gloss and color retention
- Excellent resistance to impact and abrasion resistance.
- Excellent U.V resistance.
- Confirmed with SSPC Paint 36 .

### Surface Preparation

The surface must be clean and dry. All dirt, grease, mill-scales and any other foreign materials should be removed. For old primed surfaces, it may be necessary to roughen the surface

- \* A completely clean surface is mandatory to ensure intercoat adhesion, especially at long recoating intervals, any dirt, oil, and grease has to be removed, e.g. with suitable detergent.
- All of the Salt to be removed by fresh water hosing. To check an adequate quality of the surface cleaning a test patch is recommended before actual recoating.

### Technical Data

Finish	Gloss, Semi gloss
Color	White, grey (Upon request)
Volume Solids	48 ± 2%
Specific Gravity	1.2 ± 0.1 gr/cm <sup>3</sup>
Flash Point	30 °C
Recommended D.F.T.	40 - 60 microns
Theoretical Coverage	12-8 m <sup>2</sup> /lit. 10-6.6 m <sup>2</sup> /kg
Practical Coverage	Depends on loss factor
Touch dry	2 hrs at 25°C
Fully cured	7 days at 25 °C
Thermal Resistance	Up to 120 °C
Shelf life	12 months at 25 °C

### Application Details

Application method	Air/Airless spray . Brush, Roller
Nozzle orifice	0.017"-0.019"
Nozzle pressure	150 bars / 2200 Psi
Application temperature	5-45° C
Mixing ratio	Base / Hardener 5 / 1 by weight
Thinner/Cleaner	RZT- 61
Pot life	5 hrs at 25°C

Revised  
FEB 2014