



PAINTING PROCEDURE

External Surface

Application of paint system APCS 26T

EL.BE s.r.l



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1 Scope

This document governs the application of coating as below detailed.

This Coating procedure Specification (CPS) provides the requirements during the receive control, cleaning, surface preparation, blasting, coating, packing and Quality Control Inspection for protective systems applied.

This Specification provides requirements for the selection, supply, preparation, application, inspection and testing of coating and painting systems in according to Reference Document **SAES-H-001** and Purchase Specification **09-SAMSS-101** for Application of Paint System **APCS 26T**.

This liquid coating procedure is for the external of carbon steel valves according to **SAES-H-001, SAES-H-002, or SAES-H-004**. The following are the conditions wherein this coating procedure shall be used.

- a) Type of Exposure/Service: Above ground, onshore (per **SAES-H-001**), offshore (per **SAES-H-004**), buried/below ground (per **SAES-H-002**)
- b) Maximum service temperature: As per maximum exposure/service temperature involved with valve requirement

SAPMT or valve end-user shall provide below details that are involved with their concerned valves Purchase Order (P.O.) in the Valve Information Sheet for Coating and Procedure Selection for proper coating selection

- a) Specific type of exposure/service (onshore or offshore, above ground or buried in dry ground or in subkha, immersion)
- b) Above ground exposure environment (mild atmosphere or corrosive industrial atmosphere)
- c) Insulated or non-insulated
- d) Maximum exposure/service temperature (deg. C.)

This coating procedure shall only be used when External Liquid Coating application is required.

Saudi Aramco Inspection Department (**SAID**) or Saudi Aramco Vendor Inspection Division (**SAVID**) representative shall review and approve the applicability of this coating procedure and the suitability of the selected coating system and materials to be used in this procedure based on the above information provided in the Valve Information Sheet prior to the start of coating application by the vendor.

The corresponding Valve Information Sheet shall be attached with this coating procedure when submitted to the **SAID** or **SAVID** representative prior to the review and approval of this coating procedure.

Provide the following General Requirements in accordance with **SAES-H-101V** and **SAES-H-102**.

- a. Handling, storage, and preparation of materials
- b. Abrasive materials acceptable quality
- c. Acceptable ambient/climatic/weather conditions for surface preparation and coating application
- d. General requirements of the vendor or manufacturer that are not covered by Saudi Aramco's coating standards.

2 Normative References General

2.1 Saudi Aramco Engineering Standards (SAES)

- SAES-B-067** Safety Identification and Safety Colors
- SAES-H-002V** Approved Saudi Aramco Data Sheets for the Pipeline and Piping Coatings
- SAES-H-101V** Approved Saudi Aramco Data Sheets – Paints and Coatings
- SAES-H-102** Safety Requirements for Coating Applications
- SAES-L-133** Corrosion Protection Requirements for Pipelines, Piping and Process Equipment

2.2 Saudi Aramco Materials System Specifications (SAMSS)

- 09-SAMSS-021** Qualification Requirements for Alkyd Enamel Coating System (APCS-6)
- 09-SAMSS-035** Qualification Requirements for Aluminum-Pigmented Alkyd Coating System (APCS-4)
- 09-SAMSS-060** Packaging Requirements for Coatings
- 09-SAMSS-067** Epoxy Coatings for Immersion Service
- 09-SAMSS-069** Epoxy Coatings for Atmospheric Service (with and without Polyurethane Topcoat)
- 09-SAMSS-071** Inorganic Zinc Primer (APCS-17A and APCS-17B)
- 09-SAMSS-087** Epoxy Coatings for Application on Damp Steel Surface
- 09-SAMSS-101** Epoxy Mastic Coating (Self-Priming, with and without Polyurethane Topcoat)
- 09-SAMSS-103** Qualification Requirements for High Temperature External Coatings in Atmospheric Services (APCS-11A and APCS-11B)

09-SAMSS-107 Qualification Requirements and Application of Composite Fluoropolymer/Ceramic Coatings to Fasteners

12-SAMSS-007 Fabrication of Structural and Miscellaneous Steel

2.3 Saudi Aramco Inspection Requirement

175-091900 Safety Requirements for Abrasive Blast Cleaning

2.4 Saudi Aramco General Instruction

GI-0006.021 Safety Requirements for Abrasive Blast Cleaning

2.5 International Organisation for Standardisation (ISO)

ISO 9001 Quality management systems - Requirements

ISO 14001 Environmental management systems - Requirements

ISO 2063 Thermal spraying - Metallic and other inorganic coatings - Zinc, aluminum and their alloys

ISO 2178 Non-magnetic coating on magnetic substrates – Measurement of coating thickness – Magnetic method

ISO 2409 Paints and varnishes – Cross-cut test

ISO 2808 Determination of film thickness

ISO 4624 Paints and varnishes - Pull-off test for adhesion

ISO 4628 Paint and varnishes - Evaluation of degradation of paint coatings **Part 2-3-4-5**: Designation of degree of blistering, rusting, cracking, flaking

-
- ISO 4677-1** Atmospheres for conditioning and testing – Determination of relative humidity – **Part 1:** Aspirated Psychrometer method
- 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 8501-2** Preparation of steel substrates before application of paints and related products - Visual assessment of surface cleanliness - **Part 2:** Preparation grades of previously coated steel substrates after localized removal of previous coatings
- ISO 8501-3** Preparation of steel substrates before application of paints and related products. Visual assessment of surface cleanliness. **Part 3:** Preparation grades of welds, cut, edges and other areas with surface imperfections
- ISO 8501-4** Preparation of steel substrates before application of paints and related products. Visual assessment of surface cleanliness -- **Part 4:** Initial surface conditions, preparation grades and flash rust grades in connection with high-pressure water jetting
- ISO 8502-3** Preparation of steel substrates before application of paints and related products. **Part 3:** Tests for the assessment of surface cleanliness 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 - Tests for the assessment of surface cleanliness - **Part 4:** Guidance on the estimation of the probability of condensation prior to paint application
- ISO 8502-6** Preparation of steel substrates before application of paints and related products - Tests for the assessment of surface cleanliness - **Part 6:** 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 **Part 9:** Field method for the determination of metric conduct water-soluble salts

ISO 8503	Preparation of steel substrates before application of paints and related products. Surface roughness characteristics of blast-cleaned steel substrates
ISO 8504-2	Preparation of steel substrates before application of paints and related products - Surface preparation methods - Part 2: Abrasive blast cleaning
ISO 11126	Preparation of steel substrates before application of paints and related products – Specification for non-metallic blast cleaning abrasives
ISO 11127	Preparation of steel substrates before application of paints and related products – Test methods for non-metallic blast cleaning abrasives
ISO 12944	Paints and varnishes - Corrosion protection of steel structures by protective paint systems.
ISO 14918	Thermal spraying - Approval testing of thermal sprayers
ISO 14919	Thermal spraying - Wires, rods, and cords for flame and arc spraying - Classification - Technical supply conditions
ISO 19840	Paint and varnishes - Corrosion protection of steel structures by protective paint system - Measurement of and acceptance criteria for the thickness of dry film films on rough surfaces
ISO 20340	Paints and Coatings - Performance requirements for protective paint systems for offshore and related structures

2.6 American Society for Testing and Materials (ASTM)

ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coating on Iron and Steel Products
ASTM A385	Standard Practice for Providing High-Quality Zinc Coatings (Hot-Dip)
ASTM D516	Standard Test Method for Sulfate Ion in Water
ASTM D3359	Standard Test Methods for Measuring Adhesion by Tape Test

-
- ASTM D4138** Standard Test Methods for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive Means
- ASTM D4227** Standard practice for qualification of coating applicators for application of coatings to concrete surfaces
- ASTM D4228** Standard practice for qualification of coating applicators for application of coatings to steel surfaces
- ASTM D4285** Test Method for Indicating Oil or Water in Compressed Air Blotter test
- ASTM D4414** Test Method for Measurement of Wet Film Thickness
- ASTM D4417** Test Method for Field Measurement of Surface Profile of Blast Cleaned Steel
- ASTM D4541** Test Method for "Pull-off Strength" of Coatings Using Portable Adhesion Testers
- ASTM D4752** Tests Method for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub
- ASTM D4940** Test method for Analysis of Water Soluble Ionic Contamination of Blasting Abrasives
- ASTM D5162** Standard practice for Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates
- ASTM D7127** Measurement of Surface Roughness of Abrasive Blast Cleaned Metal Surfaces Using a Portable Stylus Instrument

2.7 National Association of Corrosion Engineers (NACE)

NACE NO. 1 White Metal Blast Cleaning

NACE NO. 2 Near White Metal b.c.

NACE NO. 3 Commercial Blast Cleaning

NACE NO. 4 Brush-Off Blast Cleaning

NACE NO. 12 Specification for the application of thermal spray coatings (metallizing) of Aluminum, Zinc, and their Alloys and composites for the corrosion protection of steel

NACE RP 0287 Field Measurement of Surface Profile of Abrasive Blast - Cleaned Steel Surfaces Using a Replica Tape

NACE RP 0188 Discontinuity (Holiday) testing of protective coatings

NACE SP 0178 Design, Fabrication and Surface Finish Practices or Tanks and Vessels to be Lined for Immersion Service

NACE SP 0198 Control of Corrosion under Thermal Insulation and Fireproofing Materials

2.8 The Society for Protective Coatings (SSPC)

SSPC-PA2 Measurement of Dry Coating Thickness with Magnetic Gages

SSPC-VIS 1 Visual Standard for Abrasive Blast Cleaned Steel

SSPC-SP 1 Solvent Cleaning

SSPC-SP 2 Hand Tool Cleaning

SSPC-SP 3 Power Tool Cleaning

SSPC-SP 5 White Metal Blast Cleaning

SSPC-SP 6 Commercial Blast Cleaning

SSPC-SP 7 Brush-off Blast Cleaning



SSPC-SP 10	Near White Blast Cleaning
SSPC-SP 12	Water Jetting
SSPC-SP 16	Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals
SSPC-WJ-1	Waterjet Cleaning of Metals-Clean to Bare Substrate
SSPC-WJ-2	Waterjet Cleaning of Metals-Very Thorough Cleaning
SSPC-AB 2	Cleanliness of Recycled Ferrous Metallic Abrasive

3 Responsibilities

3.1 Involved Parties:

Supplier	ROSS COLOR srl
Paint Manufacturer	HEMPEL
Customer	EL.BE srl
Client	SAUDI ARAMCO
Paint System	APCS 26T
Purchase Specification	09-SAMSS-101
Reference Document	SAES-H-001

3.1.1 Responsibility of the Supplier:

- a) Quality Control (Q.C);
- b) Quality Assurance (Q.A.);
- c) Control Receive of goods;
- d) Check of steel preparation in according to ISO 8501-3;
- e) Make sure that all the Company prescriptions are respected and fully understood;
- f) Carry out intermediate and final checks with verification of the finished works acceptability;
- g) Write daily reports of the work carried out (as in the attached daily-log); to be transmitted to the Company representative;
- h) Have suitable equipment to perform the specified checks, with calibration certification issued by the manufacturer or a recognize body, and a thorough knowledge of its use and reference standards;
- i) Monitoring of the use of paints according to approved project specification;
- j) Grant Company/Contractor's Coating Inspector free access and assistance to inspect all work performed;
- k) Uses only operators employed in abrasive blast cleaning and coating qualified to tradesman level as Blaster or Painter.

3.1.2 Responsibility of the Paint Manufacturer:

- a) Supply the paint pre-qualified according to the painting system;
- b) Supply all paint required in unopened containers clearly marked with the following details: name of manufacturer, material identification, color reference number, batch number. Other details to be supplied shall include: date of manufacture, quantity, shelf life, safety and technical data sheet;
- c) Supply the paint before the expiry date.

3.1.3 Responsibility of Vendor:

- a) Deliver the material only after the pressure tests have been performed with satisfactory results.
It's responsibility of the Client to inform the Painting Supplier about the execution of the test.
The Painter Supplier is not liable if the material were delivered without executing the test or if the test's results was not satisfactory;
- b) Deliver material only after the steel preparation has been performed in according to ISO 8501-3 (*Steel Preparation*).

4 Health, safety and environment (HSE)

4.1 Introduction

Provide the requirements for health and safety in using this coating procedure according to Country / Government, Industry, and/or Company regulations, SAES-H-001 or SAES-H-004, and SAES-H-102. Ross Color's aim is to have zero impact on the environment.

Ross Color's is certified for the quality management system ISO 9001:2015

Ross Color's is certified for the environmental management system ISO 14001:2015

4.2 Key environmental principles include:

- a) Acting according to the precautionary principle;
- b) Minimizing negative impact on the environment;
- c) Complying with applicable legislations and regulations;
- d) Setting specific targets and improvement measures based on relevant knowledge of the affected;
- e) Working actively to limit the effects on climate change by addressing energy efficiency, emissions trading, etc., seeking to minimize the generation of waste.

4.3 General rules for safe access in the company

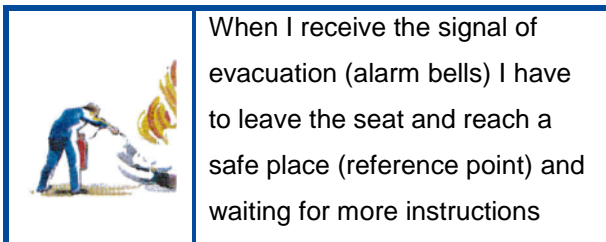
- a) Obligatory registration in a special guest list and waiting attendant, delivery of risk information and, if necessary, DPI delivery. You will receive an identification card to wear for the entire safety stay in the company, to be returned at the exit, signing the register. Access to floors and business areas is allowed only with an attendant;
- b) Access to restricted areas must be expressly authorized. It is forbidden to touch everything in the company without the necessary authorization;
- c) When approaching plants, machinery and/or equipment is authorized, don't wear swirling clothing and keep your tie inside the shirt, to avoid being caught in moving parts;
- d) Observe and follow internal signage;
- e) Smoking ban in all departments. Prohibition of photo and/or video without the necessary authorization;
- f) Pay attention to the requirement of use of personal protective equipment in the different areas;
- g) In case of fire or evacuation follow the directions of the displacement guide and risk information given at the entrance.

4.4 Summary of main risk:

- a) Investment/collision by forklift trucks – pay attention to suspended load;
- b) Investment by loads/materials fallen or slipped during handling;
- c) Exposure to noise levels above the threshold, during using noisy equipment;
- d) Risk of fall and slide.

4.5 EMERGENCY MANAGEMENT

4.5.1 Operative instructions in case of fire:



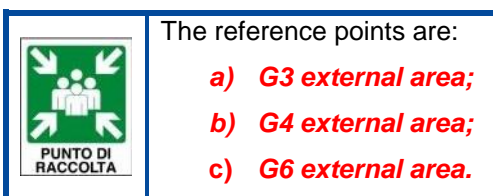
4.5.1.1 How to evacuate the place:

- a) Use safety ways and the emergency exit;
- b) Follow the instructions of the emergency team and reach the reference point;
- c) Don't care for your personal objects.

4.5.1.2 In case of evacuation of the place full of smoke:

I have to crawl on all fours, if it's possible with a wet handkerchief on your mouth, avoiding to breathe the smoke doing short and spaced breaths.

4.5.2 Reference point:



4.5.3 Operative instructions in case of medical emergency:

Whoever into the place sees an injured person or a person sized by an illness immediately has to inform the company responsible, directly or through a worker

4.5.4 Operative instructions in case of black out:

The factory is provided, where is necessary, of emergency lights that lighted the safety ways. Whoever sees anomalies (smoke, fire, noise...) on electrical panels immediately has to inform the company responsible

4.5.5 Operative instructions in case of gas-escape:

Anyone into the factory who smells gas has to immediately inform the company manager and leave the area.

5 Personal protective equipment (PPE)

Personal protective equipment (PPE) refers to:

- a) Protective clothing;
- b) Helmets;
- c) Hearing protection;
- d) Mask;
- e) Gloves;
- f) Glasses;
- g) Other equipment designed to protect the wearer's body from injury.



PPE is needed when there are hazards present.

Protective clothing for abrasive blasting operation shall be in accordance to ISO 14877.

The hazards addressed by protective equipment include physical, electrical, heat, chemicals, and airborne particulate matter.

Compressors and any associated pressure vessels shall be protected against overpressure.

Remember that PPE does not eliminate the hazard at source.

Before and during use of the painting material, the painter must observe all safety labels on packaging and paint containers, consult the Material Safety Data Sheets and follow all local or national safety regulations.

Avoid inhalation, avoid contact with skin and eyes, and do not swallow.

Take precautions against possible risks of fire or explosions as well as protection of the environment.

Apply only in well ventilated areas.

Material Safety Data Sheets (MSDS) shall be available for review at shops where coating is applied.

Used solvents, paint, waste materials and cleaning materials shall be handled in strict accordance with MSDS requirements and applicable local and national disposal procedures.

6 Classification of environments

6.1 ISO 12944 - 2

Corrosivity Category	Mass Loss g/m ²	Thick. Loss μ	Exterior	Interior
C1 – Very Low	≤ 10	≤ 1.3	-	Heated buildings with clean atmospheres, e.g. offices, shops, schools, hotels
C2 - Low	> 10 to 200	> 1.3 to 25	Atmosphere with low level of pollution: mostly rural areas	Unheated buildings where condensation can occur, e.g. depots, sports halls
C3 – Medium	> 200 to 400	> 25 to 50	Urban and industrial atmospheres, moderate sulfur dioxide pollution; coastal areas with low salinity	Production rooms with high humidity and some air pollution, e.g. food-processing plants, laundries, breweries, dairies
C4 – High	> 400 to 650	> 50 to 80	Industrial areas and coastal areas with moderate salinity	Chemical plants, swimming pools, coastal ship and boatyards
C5 – Very High (<i>ex C5 I – C5 M</i>)	> 650 to 1500	> 80 to 200	Industrial areas with high humidity and aggressive atmosphere and coastal areas with high salinity	Buildings or areas with almost permanent condensation and with high pollution
CX – Extreme (<i>New</i>)	> 1500 to 5500	> 200 to 700	Offshore areas with high salinity and industrial areas with extreme humidity and aggressive atmosphere and subtropical and tropical atmospheres	Industrial areas with extreme humidity and aggressive atmosphere

Category	Environment	Examples of environments and structures
Im 1	Fresh water	River installation, hydro-electric power plants
Im 2	Sea or brackish water	Immersed structures without cathodic protection (e.g. harbour areas with structures like sluice gates, locks or jetties)
Im 3	Soil	Buried tanks, steel piles, steel pipes
Im 4 – (New)	Sea or brackish water	Immersed structures with cathodic protection (e.g. offshore structures)

6.1.1 Correlation between preparation grades and corrosivity categories

Preparation Grade	Corrosivity Category
P1	C1 and C2
P2	C3 and C4
P3	C5 and CX

7 Logistic Establishments

Ross Color total surface is over 15000 square feet between Gorla Minore (Varese) plants and Marnate (Varese) plants, all under controlled temperature.



Ross Color is divided into **7 plants**:

- Plant G1:** Material check-in and job preparation area;
- Plant G2:** Stainless steel and alloy working area;
- Plant G3:** Under 10 Ton carbon steel working area;
- Plant G4:** Over 10 Ton carbon steel working area (Max 50 Ton);
- Plant G5:** Packing and shipping;
- Plant G6:** Carbon steel and stainless steel working area (Piping/Tank/Vessel Division);
- Plant G7:** Sawmill and cases building area;

8 Ross Color's Approach to Lean Manufacturing

8.1 Our Lean Transformation process

- In January 2018, we began our process of Lean Transformation which needs flow and working process analysis, using:



Value stream as is



Spaghetti chart



Swim lane job management



BMC

- The analysis output is:



Value stream to be



Cantieri

Process	Material	Time	Cost	Quality	Environment
1
2
3
4
5

Quality Focus

Quality Focus

- Staff training based on resources
- Daily audits on respect for standard process – document – 5S
- Weekly meeting, based on sharing of the quality data, between managers and operating team


Quality Focus

- The Kaizen paper for improving management
- Internal certification of thickness data

(Daily log)

Paints Kanban

- Zero missing
- Easy management






Kanban

PROCE
GESTIO
KANBA

5S

- 5S: master station in all painting cabs – standardisation of painting process + warning
- 5S: tidy and clean cabs standard



STANDARD CABINA 1

95 DI 11* PITTURE
VERNICI DI SCARTO

SOLO LATTE
VUOTE

AREA MIXING
E MISTO ARIA

SCHEDE DI
LAVORO

TORNITTE
GANCIE

SOLO LATTE
APERTE IN USO

9 Incoming material checks

After the receipt of goods, it's necessary the Visual Control.

Control	Acceptance Criteria	Consequence
<i>Steel Preparation</i>	<i>Grade P3 as per ISO 8501-3</i>	<i>Rounded or smoothed by grinding to grade required (Edges shall be ground to a radius of > 2mm)</i>
<i>Hard surface Layers</i>	<i>No Hard surface layers</i>	<i>Remove by grinding prior to blast cleaning</i>
<i>Cracks</i>	<i>No Cracks</i>	<i>Remove by grinding prior to blast cleaning</i>
<i>Welds</i>	<i>No Welds cracks</i>	<i>Remove by grinding prior to blast cleaning</i>
<i>Crevices</i>	<i>No crevices</i>	<i>Remove by grinding prior to blast cleaning</i>
<i>Joint Overlap</i>	<i>No Joint Overlap</i>	<i>Remove by grinding prior to blast cleaning</i>
<i>Protrusions</i>	<i>No Protrusions</i>	<i>Remove by grinding prior to blast cleaning</i>

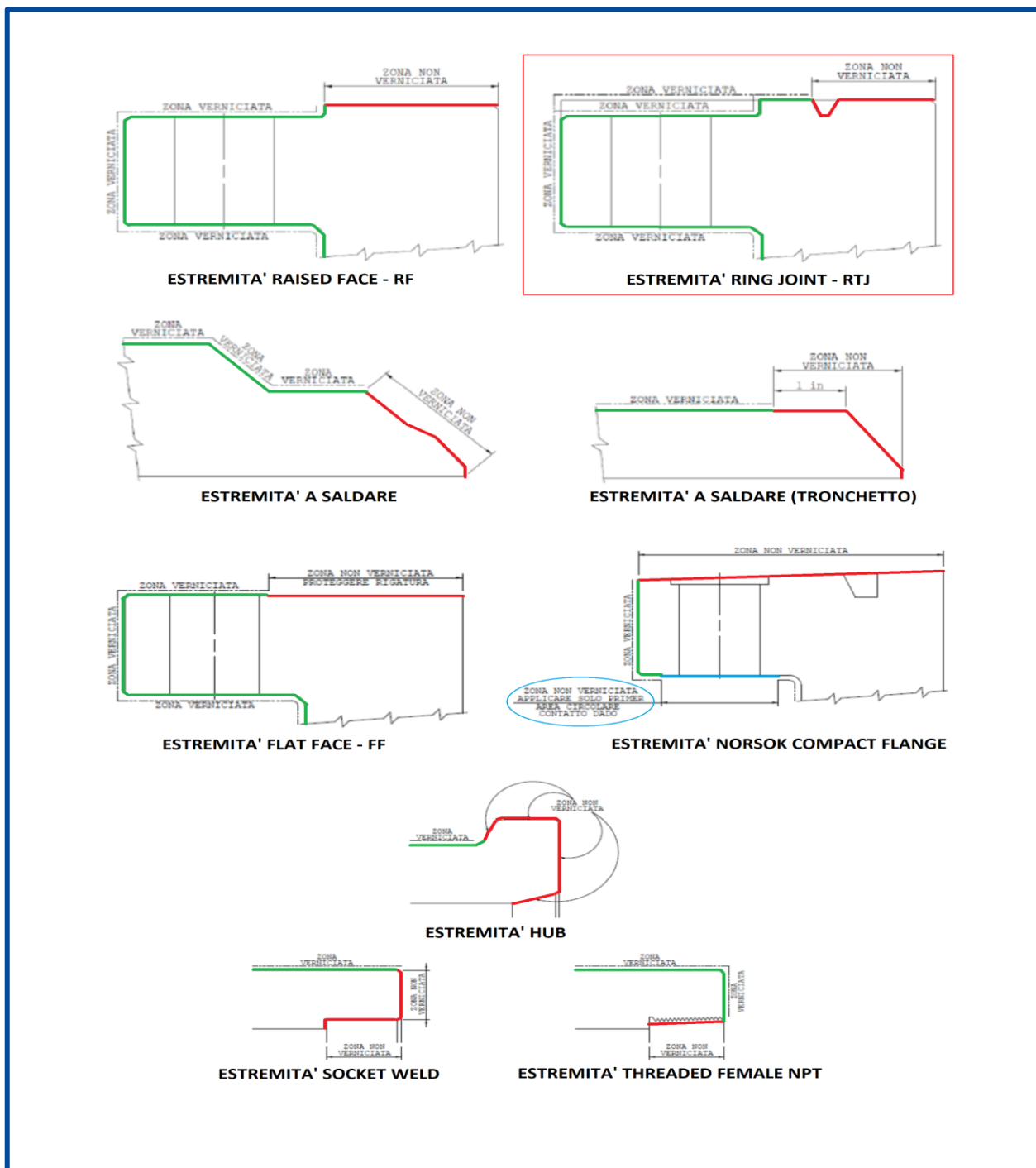
10 Masking

Before abrasive blast cleaning and painting, all equipment which could be damaged by blast, dust or particulate matter shall be suitably protected by wrapping, taping, rubber, plastic caps or other means to prevent damage.

This equipment shall include, but not necessarily be limited to, the following:

- a) RTJ Flanges;
- b) Sealing face of the flanges;
- c) Compact flanges;
- d) Bearings;
- e) Control panels;
- f) Control valves;
- g) Instrument dials;
- h) Nameplates/Code stampings;
- i) Valve stems and position indicators;
- j) Exposed moving parts;
- k) Push buttons.

The following drawings show which areas are going to be painted:



11 Ambient condition

No final blast cleaning or coating application shall be done if:

- a) *The relative humidity is more than 85%, (Refer. To ISO 4677);*
- b) *Steel temperature is less than 3°C related to the dew point;*
- c) *When ambient and steel temperatures is below 10°C or above 35°C.*

All surface preparation and protective coating work shall be performed in indoors facilities with climate control ensuring that the conditions are in compliance with the specified requirements.

The application of painting should begin within 4 hours after the blasting end, and before visible rusting, and not more than 4 hours from its start without interruption until completing the protection of the prepared surfaces without substrate oxidation having occurred.

All surface preparation and protective coating work shall be performed in indoors facilities with climate control ensuring that the conditions are in compliance with the specified requirements.

12 Pre-Blasting preparations

The surface shall be free from all surface contaminants such as oil, grease, residue, slivers, dirt etc., in accordance with ISO 12944-4. Prior to blasting operations, bolt holes shall be solvent cleaned using a suitable solvent, oil emulsifier, alkaline degreaser or other appropriate product in accordance to SSPC-SP1.

All degreasers shall be proven to be biologically degradable.

All surface should be washed with clean fresh water and completed dry prior to blast cleaning.

Stainless steel surface shall not be treated with carbon steel cleaning tools or any tools previously used on carbon steel and should be treated **only in the G2 plant**.

Control	Acceptance Criteria	Consequence
<i>Environmental condition</i>	<i>Ambient and steel temperature. Relative humidity. Dew Point (see point 11)</i>	<i>No Blasting</i>
<i>Oil and grease and other contaminations</i>	<i>Remove of all surface contaminants prior to blasting operation (UV Test with Black light)</i>	<i>Remove of all surface contaminants prior to blasting operation</i>
<i>Cleaning of surface</i>	<i>ISO 8501-1 or SSPC VIS1</i>	<i>Cleaning with fresh potable water and solvent prior to blast in accordance to SSPC-SP1</i>
<i>Surface totally dry</i>	<i>Totally Dry</i>	<i>Re-Dry</i>
<i>Steel Preparation</i>	<i>ISO 8501-3 (Preparation Grade P3) and NACE SP 0178</i>	<i>Remove of all surface imperfection prior to blasting operation</i>
<i>Blotter Test</i>	<i>ASTM D4285 (Every 4 Hours)</i>	<i>Check plants for the production of compressed air</i>
<i>Conductivity of abrasives</i>	<i>ASTM D4940 ≤ 1000 Microsiemens</i>	<i>Changed of abrasive and retesting</i>

13 Blast Cleaning

Cleaning of surfaces shall be done by dry blast cleaning as outlined in ISO 8504-2.

Steel subject to surface preparation shall as a minimum requirement be in accordance with rust grade B according to ISO 8501-1.

Size of abrasive particles for blast cleaning shall be such that the prepared surface anchor profile, is in accordance to the requirements.

Handling of degreased and blast cleaned surfaces, shall be done with clean gloves and with lifting equipment that does not contaminants the surfaces.

The surface profile shall be graded in accordance with ISO 8503 / NACE RP 0287

Note: Blast cleaned steel surface shall not be touched by bare hands.

No acid washes, cleaning solvents or other chemical treatments shall be used on metal surfaces after they have been dry blast cleaned.

Prior to initiation of blast cleaning, the applicator shall confirm that all environmental and safety requirements relating to blast cleaning have been met.

13.1 Surface Cleanliness grades

Grade of Surface Cleanliness	ISO 8501	SSPC
White metal	Sa 3	SP-5
Near-white metal	Sa 2 ½	SP-10
Sweep blast cleaning	-	SP-7
Solvent cleaning	-	SP-1
Power tool cleaning	St 3	SP-3
Power tool cleaning to bare metal	-	SP-11
Water jetting (ISO 8501-4)	Wa 2 ½	SP-12
Wet abrasive blasting	-	VIS 5

14 Abrasive

Abrasives used for blast cleaning shall be free from oil, grease, moisture, chloride contamination etc., and supplied with certification documentation traceable to batches of material.

Abrasives for use in blast cleaning steels shall be in accordance with ISO 8504-2

The properties of abrasives used shall meet the requirements of the relevant parts of ISO 11124 and ISO 11126 respectively. Test methods shall be in accordance with the tests specified in ISO 11127.

Each batch of abrasive shall be tested to check that the abrasive meets the requirements as specified in the relevant ISO standard. The conductivity of abrasives for stainless steels shall be a maximum of 150 $\mu\text{S}/\text{cm}$. The Principal shall approve the use of alternative abrasive materials.

14.1 Abrasive type:

- a) Steel Grits for carbon steel;
- b) Inox Grits for stainless steel;
- c) Garnet;
- d) White Corundum.

14.2 Abrasive specification:

Type	Generic Name	Characteristics	Standard
Metallic	Iron grit	> 1,7% carbon	ISO 11124-2
	Steel grit	0,8% to 1,2 % carbon	ISO 11124-3
Natural Mineral	Staurolite	Iron / aluminum silicate	ISO 11126-9
	Specular haematite	Crystalline Fe_2O_3	
	Garnet	Calcium iron silicate	ISO 11126-10
Synthetic mineral	Coal slag	Aluminum silicate	ISO 11126-4
	Aluminum oxide	Crystalline corundum	ISO 11126-7



15 Final surface condition

The surface to be coated shall be clean, dry, free from oil/grease, and have the specified roughness and cleanliness until the first coat is applied.

Dust, blast abrasive etc. shall be removed from the surface after blasting cleaning such that the particle quantity and particle size do not exceed rating 2 of ISO 8502-3.

The test panels supplied by Ross Color for each production batch shall receive the same surface preparation of the items.

Control	Acceptance Criteria	Consequence
Surface completely Clean	ISO 8501-1 / SSPC VIS1 (also UV Test with Black light)	Remove of all surface contaminants prior to blasting Operation
Roughness	ISO 8503 / NACE RP 0287	Reblast and retest the surface profile
Dust Test	ISO 8502-3 – Rating Max 2	Recleaning and retetsing until acceptable
Salt test on Before Blasted surface	ISO 8502-6 / ISO 8502-9 (See table given below)	Repeat washing with potable water and retesting until acceptable
Blotter Test	ASTM D4285 - (Every 4 Hours)	Cleaning compressed air

Blast cleaned surfaces shall be paint as shortly as possible, but in no case may exceed intervals given below:

- Immediately if condensation is likely to take place due to weather change or if weather conditions are likely to worsen;
- 2 hours if weather is changing;
- 4 hours if weather is stable.

15.1 Maximum chloride content on substrate

Coating category	New construction	Maintenance
External Coatings	< 40 mg/m ² (4 µg/cm ²)	N/A
Internal Coatings	< 20 mg/m ² (2 µg/cm ²)	N/A

16 Control prior to paint application

Verify that storage, mixing, thinning, and application of primer and the others coat, is in accordance to the application data sheet.

All coating materials and solvents shall be stored in the original container bearing the manufacturer's label and instructions.

Each product shall have a batch number showing year and month of manufacturer and giving full traceability of production. **(Ross Color Warehouse Traceability)**

Shelf life shall be included in the technical data sheet.

No paint shall be used whose shelf life has expired.

Verify that pigmented and catalyzed materials shall be thoroughly mixed using power mixers before and during the application.

In the case of two-component products, the two components should be mixed by weight in compliance with the proportions given in the data sheets.

Only thinners as per the specified MDS shall be used. These shall only be used at the rate recommended by the paint manufacturer for the specific application.

Retardants and accelerates are not permitted unless written authority is received from the paint manufacturer.

Continuous agitation type spray pots shall be used when applying metal pigmented coatings such as zinc.

Adhesion qualification test plates shall be prepared and coated at the same time and under the same conditions as the production coating work.

17 Application

Provide the specific requirements based on the concerned APCS of SAES-H-001 or SAES-H-004 including manufacturer's recommendation.

Painting, including storage, mixing, thinning, pot life, application method, drying/curing period, and recoating period, shall conform to the coating manufacturer's published data sheets.

Ross Color provides to operators: brush (for spot repair, stripe coating or other irregular surfaces not suitable for spray application), Airless or conventional spray gun. The Method of application shall be as per recommendation of Coating Manufacturer.

For each coat, a stripe coat shall be applied by brush to all welds, corners, behind angles, edges of beams etc. and areas not fully reachable by spray in order to obtain the specified coverage and thickness.

17.1 Paint mixing

- a) The condition of the paint shall be checked before preparation begins and any unsatisfactory materials shall be discarded;
- b) Hand mixing may be used for containers up to 5 liters (1 gal). Mechanical agitators shall be used for containers larger than 5 liters (1 gal). If pigment separation readily occurs, e.g. zinc silicate primers, continuous mixing shall be carried out during application.

17.2 Two pack paints - mixing and pot life

- a) Coating manufacturer's mixing instructions and maximum pot life of two pack paints shall be strictly adhered to;
- b) Material shall be discarded once the pot life has expired regardless of apparent condition;
- c) If stated in the application data sheet, materials shall be allowed to stand for the specified induction period subsequent to mixing but before application;
- d) If two pack materials are being used, new material or solvent shall not be added to any old material left in the pot.

17.3 Priming

- a) Prepared surfaces shall be primed before 4 hours (2 hours for TSA);
- b) To minimize the time between abrasive blasting and priming, stripe coating of primer coats may be carried out following spray application of the full primer coat;
- c) Prepared surface shall show no sign of deterioration before paint application and it shall:
 - o Be applied to grit blasted surfaces only;

- Be sealed with a tie coat as soon as practicable after complete curing has taken place;
- Tie coat shall achieve sound adhesion to the zinc silicate primer and be compatible with the subsequent coat;
- The inorganic zinc shall be subject to the control of polymerization according to ASTM D4752 with the following results: Level 4 Min (Mek Test only if applicable).

17.4 Application of paint

- a) Paint shall be applied in a uniform over the entire surface without any runs, sags, or other blemishes;
- b) Skips, runs, pinholes, blisters, holidays, sags and drops shall be avoided;
- c) If two or more coats of the same paint are specified, they shall be of contrasting colours;
- d) Crevices created by two surfaces in close contact, which cannot be protected by painting, shall be mastic sealed on both sides;
- e) Brush application shall involve:
 - Utilisation in areas that cannot be properly spray coated;
 - Working paint into all crevices and corners;
 - Application without runs and sags;
 - The application of an additional stripe coating of primer or intermediate coat to sharp edges, corners, and welds before application of the final coat regardless of the method of coating application. This is in addition to the number of coats stated in the painting schedules.
- f) Spray application shall conform to the following:
 - Compressed air supply shall have the capacity to meet the work requirement and shall be free from oil and water contamination;
 - Lines and pots shall be cleaned before addition of new materials;
 - Spray shall overlap the previous pass by 50%;
 - Large surfaces shall be painted with passes in two directions at right angles;
 - Over coating intervals shall conform to coating manufacturer's recommendations and shall be kept to a minimum to prevent contamination between coats. If contamination does occur, it shall be removed by washing with a proprietary detergent solution, rinsed with clean fresh potable water, and allowed to dry fully before the application of further coats;
 - Prior to over coating, coatings shall be dried and cured in accordance with the paint manufacturer's recommendations
- g) Paint thickness:
 - The generic paint systems shall be applied to the recommended thicknesses;



- Operators shall perform Ross Color internal calculation procedure (Theoretical WFT, Practical WFT and DFT) for each coat, using the equipment provided from Ross Color on "Ross Color **Master Station**", which are available in each painting cabin.

All work shall be carried out only by operators employed in abrasive blast cleaning and coating qualified to Tradesman level as blaster or painter.

Control	Acceptance Criteria	Consequence
Environmental condition	Ambient and steel temperature. Relative humidity. Dew point see point 11	No Coating Application
Stripe Coating	Shall applied in accordance to the thickness required on each item (is mandatory)	Reapplied
Uniformly	Uniformly over entire surface	Reblast and reapplied
MEK TEST Curing test only for Zinc Silicate <i>(IF REQUIRED AND NOT APPLICABLE FOR STAINLESS STEEL)</i>	Not Applicable	Allow to cure
Visual examination of coating	Visual to determine curing, contamination, solvent retention, pinholes/popping, sagging and surface defects. In accordance with specified requirements	Repair of defects
Wet Film	In accordance to MDS e DFT required – ISO 2808 Method 1A – Comb gauge	Re-applied
Film Thickness Measurement	SSPC-PA2	Repair, additional coats or recoating as appropriate
Adhesion Test **	ASTM D4541 (Min 2,57 Mpa)	Coating to be rejected

** Testing shall be done on fully cured systems only, usually after 15 days from the application of the last coat; Adhesion test shall be as per par. 9.3.5.d of SAES-H-001 and applicable SAMSS requirement.

SSPC-PA2

Minimum Thickness: The average of the spot measurements shall not be less than the specified minimum thickness. Although no single spot measurement shall be less than 80% of the specified minimum thickness, it is possible for any single gage reading to under-run by a greater amount.

Maximum Thickness: The average of the spot measurements shall not be more than the specified maximum thickness. Although no single spot measurement shall be more than 120% of the specified maximum thickness, it is possible for any single gage reading to over-run by a greater amount.

Definition: Spot Measurement: The average of at least three gage readings made within a 4 cm (1.5 inch) diameter circle. Gage Reading: A single reading at one point.

ROSS COLOR SRL

G1 – G2 – G3: Via Redipuglia, 25 – Gorla Minore (VA), Italy

G4: Via A. Colombo, 130 – Gorla Minore (VA), Italy

G5: Via Redipuglia, 180 – Gorla Minore (VA), Italy

G6 – G7: Viale Kennedy, 149 – Marnate (VA), Italy

www.rosscolor.it

Phone: +39 0331 603423

Email: edoardo@rosscolor.it

VAT No: IT 02788590129

REA: VA288554 – Reg. Imp.: 02788590129

17.5 Remedial Work

17.5.1 General repair

Repair procedure of coatings shall be issued in accordance with the surface preparation and application requirements stated in the applicable APCS, SAES-H-101V, and SAES-H-002V.

Cover areas adjacent to defects with heavy duty textile or fabric adhesive tape before commencing repair or patch up.

Clean defective area by solvent or detergent wash.

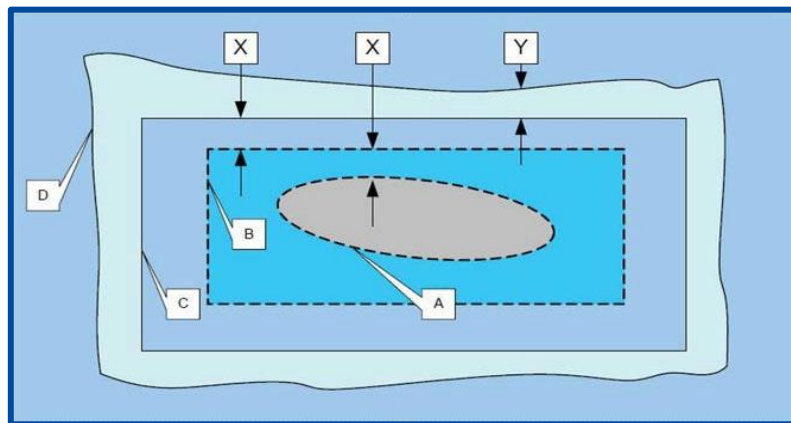
For areas less than 0.1 m², grind to a rough metal surface using at least an 80 grit disc sander. Alternatively spot blast or power tool cleaning to bare steel. Feather edge of coating at least 25 mm beyond bare metal.

For areas greater than 0.1 m², blast clean to obtain the metal surface pre-treatment originally specified. Feather edge the coating at least 50 mm beyond bare metal.

Remove dust and debris by brush or vacuum.

Apply coating by brush for areas less than 0.1 m² and by spray for areas greater than 0.1 m² to the original specification except that the first coat of a multi-coat system shall be thinned.

The full coat of the repair internal/immersed coatings shall be holiday tested when cured.



Repair Sketch

Legend:

- A. Boundary of typical holiday or damage spot with feathered edges of existing coating system
- B. Limit of first masking (1st coat of 2-coat system or 1st and 2nd coat of 3- or 4-coat system)
- C. Limit of second masking (subsequent coat(s) of 2, 3, and 4 coat systems)
- D. Visible boundary of abraded surface of existing coating
- X. = 15 mm minimum, 25 mm maximum distance between boundaries
- Y. = 5 mm minimum, 15 mm maximum distance between boundaries

18 Paint System

18.1 Paint System: **APCS 26T**

<p>Type of Coating: Epoxy Mastic/Polyurethane Coating</p> <p>Service Condition Limitations: Maximum Service Temperature 80°C</p> <p>Level of Surface Preparation: (Galvanized Steel) Sweep Blast to lightly roughen the surface. On new galvanizing, solvent clean prior to Sweep Blasting.</p> <p>Roughness Profile: N/A</p>						
Coat	Type of Paint	Brand	Product	Min. DFT	Max. DFT	Colour
<u>1st</u> <u>Coat</u>	Epoxy Mastic	HEMPEL	Hempadur Mastic 45880	150 µ	200 µ	MS*
<u>2st</u> <u>Coat</u>	Epoxy Mastic	HEMPEL	Hempadur Mastic 45880	150 µ	200 µ	MS*
<u>3st</u> <u>Coat</u>	Polyurethane	HEMPEL	Hempathane Topcoat 55210	40 µ	60 µ	Ral 9006
				340 µ	460 µ	

* Manufacturer Standard

- All inspection results shall be recorded. Documentation requirements shall comply with par. 10.2 of SAES-H-001



19 Daily log report (example)

	PLANT []	CABIN []	ROSSCOLOR JOB # []	FORM EMISSION DATE []
SCHEDA Nr []		del []		
CLIENTE		XXXXXXX	CLIENT	
PREPARATION DEPT.	Difetti presenti ad arrivo Materiale: <input type="checkbox"/> Assenti <input type="checkbox"/> Presenti Note: _____			
	Quantità rispetto a descrizione: _____ Firma: _____			
	Presenza all'interno di Tracciabilità : <input type="checkbox"/> SI <input type="checkbox"/> NO (RC CODE)			
	Conformità delle protezioni per Sabbiatura: <input type="checkbox"/> SI <input type="checkbox"/> N/A <input type="checkbox"/> NO Firma: _____			
	Motivazione: _____			
	Targhette/Componenti smontati : <input type="checkbox"/> NO <input type="checkbox"/> SI Firma: _____			
Se SI cosa?: _____				
Preparazione: _____ Firma: _____				
Note: _____				
Peso Manufatto cad.: Kg: _____ Movimentazione: _____				
TECHNICAL DEPT.	Attrezzatura: <input type="checkbox"/> Pistola tazza <input type="checkbox"/> Misto Aria <input type="checkbox"/> Airless Posizionamento: <input type="checkbox"/> Verticale <input type="checkbox"/> Orizzontale			
	Stripe Coating: <input type="checkbox"/> SI <input type="checkbox"/> NO Tempo: _____ Nr. Misurazioni: 25			
N.B. LA SCHEDA SEGUE SEMPRE IL PRIMO "PEZZO" IN LAVORAZIONE				
CERTIFICATION DEPT.	Cod. art.	Descrizione	1. PRODUCT DESCRIPTION	
			Q.tà	
		PANNELLO DIM 1000X1000 - SPC. SNAM SA 2 1/2 (.50/100 Micr Rz) + 1500 Micr IAMSUB AIRLESS	1	2. SANDBLASTING ACCORDING TO THE SPECIFICATION 3. PAINTING CYCLE ACCORDING TO THE SPECIFICATION 4. REQUIRED TESTS ACCORDING TO THE SPECIFICATION
QUALITY CONTROL DEPT.	Controllo QCI - TDFT		Colore Finale Ok?	Firma e Data QC:
	100%		_____	_____
Pag. 1		Codice M SVE I 21/01/2019 15:57:21		



$$WFT = \frac{DFT \times 100}{SV}$$

DAILY REPORT
M DLR A

$$WFT = \frac{DFT \times (100\% + \text{Diluyente } \%)}{SV}$$

SCHEDA NR.: _____ QTA' TOT PEZZI SABBATI: _____

SABBIATURA: STEP 1

DATA: _____ ORA INIZIO: _____
OPERATORE: _____ ORA FINE: _____

MATERIALE:	CORINDONE BIANCO	GARNET	GRANIGLIA SS	GRANIGLIA CS
TEMPO MANUALE:	QTY AUTOMATICA:			

CONTROLLO SABBIATURA: STEP 1A

PULIZIA: _____ RUGOSITA' _____ μm
POLVERI: _____ μm
SALI _____ mg/m^2

BLOTTER TEST OK UV OK ASSENZA GRANIGLIA/POLVERI OK

VERNICITURA: STEP 2

N.B: ATTESA MASSIMA TRA STEP 1-1A E STEP 2 : MAX 4 ORE
INIZIARE LA 1° MANO ENTRO LE _____

1° MANO: DATA: _____ ORA INIZIO/FINE: _____ / _____
OPERATORE: _____
PARTE A: _____ SCAD: _____
PARTE B: _____ SCAD: _____

TA: _____ °C TS: _____ °C DP: _____ °C RH: _____ %

TWFT: _____ PWFT: _____ DFT: _____ LITRI: _____

2° MANO: DATA: _____ ORA INIZIO/FINE: _____ / _____
OPERATORE: _____
PARTE A: _____ SCAD: _____
PARTE B: _____ SCAD: _____

TA: _____ °C TS: _____ °C DP: _____ °C RH: _____ %

TWFT: _____ PWFT: _____ DFT: _____ LITRI: _____

3° MANO: DATA: _____ ORA INIZIO/FINE: _____ / _____
OPERATORE: _____
PARTE A: _____ SCAD: _____
PARTE B: _____ SCAD: _____

TA: _____ °C TS: _____ °C DP: _____ °C RH: _____ %

TWFT: _____ PWFT: _____ DFT: _____ LITRI: _____

4° MANO: DATA: _____ ORA INIZIO/FINE: _____ / _____
OPERATORE: _____
PARTE A: _____ SCAD: _____
PARTE B: _____ SCAD: _____

TA: _____ °C TS: _____ °C DP: _____ °C RH: _____ %

TWFT: _____ PWFT: _____ DFT: _____ LITRI: _____

SANDBLASTING DEPT.

QUALITY CONTROL DEPT.

PAINTING DEPT.

WAREHOUSE DEPT.

20 Painting report (example)

ROSS COLOR SRL		Data Date	Nr N°
Via Italia, 21 - Marnate (VARESE)			
CLIENTE / Client	Nr. ORDINE / Purchase Order N°	DOCUMENTO DI RIF. / Document Ref. N°	
	P.O.	DDT NR	
CICLO DI VERNICIATURA / Painting Cycle			
<input checked="" type="checkbox"/> SA 2 1/2			BATCH A/B
<input checked="" type="checkbox"/> FIRST COAT	µm		A: B:
<input checked="" type="checkbox"/> SECOND COAT	µm		A: B:
<input checked="" type="checkbox"/> THIRD COAT	µm		A: B:
<input checked="" type="checkbox"/> FOURTH COAT	µm		A: B:
SPESSORE TOTALE RICHIESTO / TDF		0 µm	
1. PULITURA / Cleaning			
METODO / Method: SOLVENT CLEANING AS PER SSPC SP1		MATERIALE / Material: SKY NET	
2. PREPARAZIONE SUPERFICIALE / Blasting			
<input checked="" type="checkbox"/> ROUGHNESS PROFILE	µm	Equipment: REPLICA TAPE FTG 2000 ISO 8503-5 - SN 290320	
<input checked="" type="checkbox"/> CLEANING CHECK	ISO 8501-1	SA 2 1/2	Results: SATISFACTORY
<input checked="" type="checkbox"/> COMPRESSED AIR	ASTM D4285	Equipment: WHITE ABSORBENT PAPER	Results: SATISFACTORY
<input checked="" type="checkbox"/> DUST CHECK	ISO 8502-3	Required: Level 2 MAX	Results: Level 1 - SATISFACTORY
<input checked="" type="checkbox"/> SURFACE PREPARATION BEFORE BLASTING	ISO 8501-3	Required: Level P3	Results: Level P3 - SATISFACTORY
<input checked="" type="checkbox"/> SALT TEST	<20 mg/m2	ISO 8502-6	Equipment: BRESLE KIT - SN 2251265
<input checked="" type="checkbox"/> MASKING			Results: WELL DONE
<input checked="" type="checkbox"/> ENVIROMENT CONDITION		Equipment: THERMOYGROMETER - SN 61268399	
3. VERNICIATURA PRIMA MANO / First Coat			
NOME PRODOTTO / Name of product: FIRST COAT			
<input checked="" type="checkbox"/> PENNELLO / With paint brush		<input checked="" type="checkbox"/> PISTOLA A SPRUZZO / Spray gun	
SPESSORE RILEVATO / Thickness Detected		Min	Max Ave WFT
Air Temp. C°	Steel Temp. C°	Dew Point	Humidity
4. VERNICIATURA SECONDA MANO / Second Coat			
NOME PRODOTTO / Name of product: SECOND COAT			
<input checked="" type="checkbox"/> PENNELLO / With paint brush		<input checked="" type="checkbox"/> PISTOLA A SPRUZZO / Spray gun	
SPESSORE RILEVATO / Thickness Detected		Min	Max Ave WFT
Air Temp. C°	Steel Temp. C°	Dew Point	Humidity
5. VERNICIATURA TERZA MANO / Third Coat			
NOME PRODOTTO / Name of product: THIRD COAT			
<input checked="" type="checkbox"/> PENNELLO / With paint brush		<input checked="" type="checkbox"/> PISTOLA A SPRUZZO / Spray gun	
SPESSORE RILEVATO / Thickness Detected		Min	Max Ave WFT
Air Temp. C°	Steel Temp. C°	Dew Point	Humidity
6. VERNICIATURA QUARTA MANO / Fourth Coat			
NOME PRODOTTO / Name of product: FOURTH COAT			
<input checked="" type="checkbox"/> PENNELLO / With paint brush		<input checked="" type="checkbox"/> PISTOLA A SPRUZZO / Spray gun	
SPESSORE RILEVATO / Thickness Detected		Min	Max Ave WFT
Air Temp. C°	Steel Temp. C°	Dew Point	Humidity
7. TEST RICHIESTI / Required tests			
<input checked="" type="checkbox"/> TDF	ISO 19840	Equipment: MICROMETER SN 288924	Results: SATISFACTORY
<input checked="" type="checkbox"/> VISUAL INSPECTION	ISO 4628 1 - 6	ON 100% OF COATED SURFACE	Results: SATISFACTORY
<input checked="" type="checkbox"/> ADHESION	ISO 4624	Equipment: POSITESTER SN AT10583	Results: Min 5 Mpa*
*THE ADHESION TEST WILL BE DONE			
LISTA MATERIALE IN ALLEGATO / Attached Material's List			
FIRMA FORNITORE Supplier Signature	DATA Date	ISPETTORE CLIENTE Customer Inspector	TERZA PARTE ISPETTORE Third Part Inspector
ROSS COLOR SRL Edoardo Parotti FROSIO Inspector Level II N° 9580			
Warranty 24 months from the date of the certificate. Remarks: All mechanical damages due the transport and assembling and in the particular for damages due to disassembling or tightening of nuts and bolts are excluded from the guarantee. This document is property of ROSS COLOR S.R.L. who will safeguard its right according to civil and penal provisions of the law.			
Via Ambrogio Colombo 130 - 21055 Gorla Minore (VA) - Cancelli: Via Redipuglia 25 - 21055 Gorla Minore (VA) - Tel. 0331/603423 - email: info@rosscolor.it - Web: www.rosscolor.it			

21 Inspector

Ross Color has Internal Inspector, Mr. Edoardo Parotti Frosio Inspector Level II No 9580



Spettabile
Parotti Edoardo
Ross color SRL
Via redipuglia25
21055 Gorla Minore (VA)



Muggiò (MB), Italy, May 19th 2016

Hello FROSIO certified Inspector!

Enclosed you will find your NS 476 certificate no. 9580, level II (green card) and we wish to be the first to say

CONGRATULATIONS!!!

We hope you will be proud of your FROSIO certificate, which is symbol of a high and professional level as inspector within corrosion protection and paints. We do hope it will be of great value in your work and that you will try to maintain the high standard associated with FROSIO and NS 476 inspectors.

Remember; - It is not an inspector's first duty to stop the work, but to secure that the defined quality is achieved. You should always try to be objective, creative and diplomatic in your work.

Certificate level II (green card) is valid for 5 years from the date of issue. It is your responsibility to upgrade when NS 476 condition are met or renew it in due time (ref. NS 476). Please send the Gruppo IspAC secretary (e-mail segreteria@gruppoispac.org) documentation that the requirements in NS 476 are met; A minimum of two years experience as inspector during the 5 years certificate period.

If you pass the date of expiry without renewing your certificate, you have to go through and pass a new examination.

The approval may be withdrawn should Gruppo IspAC or FROSIO receive documented proof of negligence by an inspector

Gruppo IspAC provide also for your personal Frosio-Gruppo IspAC stamp to be used every time you need. The correct card , green, will follow shortly instead of the white one here transmitted

Roberto Baldocchi
Secretary Gruppo IspAC Ispettori Anticorrosione



Gruppo IspAC
Ispettori Anticorrosione
Via G. Saragat, 1
20835 MUGGIO (MB-Italy)
C.F./Part. IVA 0253788016

Gruppo Ispac c/o Studio Merati - Via G. Saragat, 1 - 20853 MUGGIO' (MB)
Telefono +39-366-1542695 - Fax +39-039-794122
C.F. e P.IVA 02567880162







22 Documentation - ANNEX A: ISO CERTIFICATES

THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and its partner
CISQ/CERTIQUALITY S.r.l.

ROSS COLOR SRL

IT - 21055 MARNATE (VA) - VIA ITALIA 121
has implemented and maintains a
Quality Management System
which fulfills the requirements of the following standard
ISO 9001:2015
for the following activities Code **IAF 17**
Sandblasting, painting, metallization and packaging of handmade metal items.

in the following operative units
IT - 21055 GORLA MINORE (VA) - VIA RE DI PUGLIA 178/180

Issued on: **2017-03-23**
Certified since: **2014-03-25**
Expire on: **2020-03-22**
Registration number: **IT-78348**

Michael Drechsel
President of IQNET

Ing. Claudio Provetti
President of CISQ

IQNet Partners:**
AFNOR Spain AFNOR Certification France Vincotte Belgium APCER Portugal CCC Cyprus
CISQ Italy CQC China CQM China CQS Czech Republic Cvc Cert Croatia DQS Holding GmbH Germany
FCAV Brazil FONDONORMA Venezuela ICONTEC Colombia IMNC Mexico Inspecta Certification Finland INTECO Costa Rica
IRAM Argentina JQA Japan KFQ Korea MIRTEC Greece MSZT Hungary Nemko AS Norway NSAI Ireland PCBC Poland
Quality Austria RR Russia SIGE Mexico SH Israel SIQ Slovenia SIRIM QAS International Malaysia
SQS Switzerland SRAC Romania TEST St Petersburg Russia TSE Turkey VDSQ Serbia
IQNet is represented in the USA by: AFNOR Certification, CISQ, DQS Holding GmbH and NSAI Inc.

* This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document
** The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

CERTIFICATO n. **20611**
CERTIFICATE No

SI CERTIFICA CHE L'ORGANIZZAZIONE
WE HEREBY CERTIFY THAT THE ORGANIZATION

ROSS COLOR SRL

IT - 21055 MARNATE (VA) - VIA ITALIA 121

NELLE SEGUENTI UNITA OPERATIVE / IN THE FOLLOWING OPERATIVE UNITS
IT - 21055 GORLA MINORE (VA) - VIA RE DI PUGLIA 178/180

HA ATTUATO E MANTIENE UN SISTEMA DI GESTIONE QUALITA' CHE E' CONFORME ALLA NORMA
HAS IMPLEMENTED AND MAINTAINS A QUALITY MANAGEMENT SYSTEM WHICH CONFORMS WITH THE FOLLOWING STANDARD

UNI EN ISO 9001:2015

PER LE SEGUENTI ATTIVITA' / FOR THE FOLLOWING ACTIVITIES SETTORE **IAF 17**

Sabbatura, verniciatura, metallizzazione e imballaggio di manufatti metallici e caricamento container.
Sandblasting, painting, metallization and packaging of handmade metal items.

REFERIRSI AL MANUALE DI GESTIONE QUALITA' PER L'APPLICABILITA' DEI REQUISITI DELLA NORMA
REFER TO MANAGEMENT SYSTEM MANUAL FOR DETAILS OF APPLICATION TO STANDARD REQUIREMENTS

IL PRESENTE CERTIFICATO E' SOGGETTO AL RISPETTO DEL REGOLAMENTO PER LA CERTIFICAZIONE DEI SISTEMI DI GESTIONE
THE USE AND THE VALIDITY OF THE CERTIFICATE SHALL SATISFY THE REQUIREMENTS OF THE RULES FOR THE CERTIFICATION OF MANAGEMENT SYSTEMS

PRIMA EMISSIONE **25/03/2014**
FIRST ISSUE
EMISSIONE CORRENTE **23/03/2017**
CURRENT ISSUE
DATA SCADENZA **22/03/2020**
EXPIRY DATE

Enrico...
CERTIQUALITY S.r.l. IL PRESIDENTE
Via G. Garibaldi - 20123 Milano (MI) - ITALIA

ROSS COLOR SRL

G1 – G2 – G3: Via Redipuglia, 25 – Gorla Minore (VA), Italy

G4: Via A. Colombo, 130 – Gorla Minore (VA), Italy

G5: Via Redipuglia, 180 – Gorla Minore (VA), Italy

G6 – G7: Viale Kennedy, 149 – Marnate (VA), Italy

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Phone: +39 0331 603423

Email: edoardo@rosscolor.it

VAT No: IT 02788590129

REA: VA288554 – Reg. Imp.: 02788590129




CERTIFICATO N. **22162**
CERTIFICATE No

SI CERTIFICA CHE L'ORGANIZZAZIONE
WE HEREBY CERTIFY THAT THE ORGANIZATION

ROSS COLOR SRL

IT - 21055 MARNATE (VA) - VIA ITALIA 121

NEI SEGUENTI SITI / IN THE FOLLOWING SITES
IT - 21055 GORLA MINORE (VA) - VIA AMBROGIO COLOMBO 130
IT - 21055 GORLA MINORE (VA) - VIA RE DI PUGLIA 178/180

HA ATTUATO E MANTIENE UN SISTEMA DI GESTIONE AMBIENTE CHE E' CONFORME ALLA NORMA
HAS IMPLEMENTED AND MAINTAINS A ENVIRONMENTAL MANAGEMENT SYSTEM WHICH COMPLES WITH THE FOLLOWING STANDARD

UNI EN ISO 14001:2015

PER LE SEGUENTI ATTIVITA' / FOR THE FOLLOWING ACTIVITIES SETTORE / CODE **IAF 17**

Sabbatura, verniciatura (di tipo: epossidica, inorganica, poliuretana, acrilica, siliconica e fenolica),
metallizzazione ed impalaggio di manufatti metallici.

Blasting, painting (types: epoxy paint, inorganic paint, polyurethane paint, acrylic paint, silicone and phenolic paint), thermal spray application and packing of metallic supports.

Certificazione rilasciata in conformità al Regolamento Tecnico ACCREDIA RT 09
IL PRESENTE CERTIFICATO E' SOGGETTO AL RISPETTO DEL REGOLAMENTO PER LA CERTIFICAZIONE DEI SISTEMI DI GESTIONE
THE USE AND THE VALIDITY OF THE CERTIFICATE SHALL SATISFY THE REQUIREMENTS OF THE RULES FOR THE CERTIFICATION OF MANAGEMENT SYSTEMS

PRIMA EMISSIONE FIRST ISSUE	12/05/2015
DATA DEL VERBA DECISION DATE	08/05/2018
DATA SCADENZA EXPIRY DATE	10/05/2021
EMISSIONE CORRENTE ISSUE DATE	08/05/2018

CERTIQUALITY S.r.l. - IL PRESIDENTE
10-05-2018




www.cisq.com

CISQ è la Federazione Italiana di Organismi di
Certificazione dei sistemi di gestione aziendali.
CISQ is the Italian Federation of management
system Certification Bodies.



THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

CISQ/CERTIQUALITY S.r.l.
has issued an IQNet recognised certificate that the organization:

ROSS COLOR SRL

IT - 21055 MARNATE (VA) - VIA ITALIA 121
for the following scope

Blasting, painting (types: epoxy paint, inorganic paint, polyurethane paint, acrylic paint, silicone and phenolic paint),
thermal spray application and packing of metallic supports.

has implemented and maintains a
Environmental Management System
which fulfills the requirements of the following standard
ISO 14001:2015

Issued on: **2018-05-08**
First issued on: **2015-05-12**
Expires on: **2021-05-10**

This attestation is directly linked to the IQNet Partner's original certificate and shall not be used as a stand-alone document
Registration number: **IT-99774**



Alex Stoichituiu
President of IQNET



Ing. Claudio Provetti
President of CISQ

IQNet Partners*:
AENOR Spain AFNOR Certification France APCER Portugal CCC Cyprus CISQ Italy
CQC China CQM China CQS Czech Republic CQCert Croatia DQS Holding GmbH Germany FCAV Brazil
FONDONORMA Venezuela ICONTEC Colombia Inspira Certifications Oy Finland INTECO Costa Rica
IRAM Argentina JQA Japan KFQ Korea MIRTEC Greece MSZT Hungary Nemko AS Norway NSAI Ireland
NYCE-SIGE Mexico PCBC Poland Quality Austria Austria RR Russia SH Israel SIQ Slovenia
SIRM QAS International Malaysia SQS Switzerland SRAC Romania TEST St. Petersburg Russia TSE Turkey YUQS Serbia
IQNet is represented in the USA by: AFNOR Certification, CISQ, DQS Holding GmbH and NSAI Inc.


* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com



23 ANNEX B: OPERATOR'S QUALIFICATION

<p>EVALUATION</p> <p>This is to certify that Mr. Angelo Lorusso</p> <p>Has been evaluated according to N.A.C.E. "Guide to qualification of tradesmen industrial maintenance painters"</p> <p>Blaster</p> <p>Tester: NACE inspector: Mr. Giacomo Mazzoleni NACE certified coating inspector Level III. No. 18715</p> <p>Place: Ross Color facilities located in Gorla Minore (VA) Italy Date: 07 Jan 2019</p> <p>Tester Signature: _____ Ross Color QA Manager Signature</p>	<p>EVALUATION</p> <p>This is to certify that Mr. Idrissu Bura</p> <p>Has been evaluated according to N.A.C.E. "Guide to qualification of tradesmen industrial maintenance painters"</p> <p>Blaster</p> <p>Tester: NACE inspector: Mr. Giacomo Mazzoleni NACE certified coating inspector Level III. No. 18715</p> <p>Place: Ross Color facilities located in Gorla Minore (VA) Italy Date: 07 Jan 2019</p> <p>Tester Signature: _____ Ross Color QA Manager Signature</p>	<p>EVALUATION</p> <p>This is to certify that Mr. Moussa Zoumbare</p> <p>Has been evaluated according to N.A.C.E. "Guide to qualification of tradesmen industrial maintenance painters"</p> <p>Blaster</p> <p>Tester: NACE inspector: Mr. Giacomo Mazzoleni NACE certified coating inspector Level III. No. 18715</p> <p>Place: Ross Color facilities located in Gorla Minore (VA) Italy Date: 07 Jan 2019</p> <p>Tester Signature: _____ Ross Color QA Manager Signature</p>
<p>EVALUATION</p> <p>This is to certify that Mr. Giacomo Vilardo</p> <p>Has been evaluated according to N.A.C.E. "Guide to qualification of tradesmen industrial maintenance painters"</p> <p>Painter</p> <p>Tester: NACE inspector: Mr. Giacomo Mazzoleni NACE certified coating inspector Level III. No. 18715</p> <p>Place: Ross Color facilities located in Gorla Minore (VA) Italy Date: 07 Jan 2019</p> <p>Tester Signature: _____ Ross Color QA Manager Signature</p>	<p>EVALUATION</p> <p>This is to certify that Mr. Sergiu Cebotari</p> <p>Has been evaluated according to N.A.C.E. "Guide to qualification of tradesmen industrial maintenance painters"</p> <p>Painter</p> <p>Tester: NACE inspector: Mr. Giacomo Mazzoleni NACE certified coating inspector Level III. No. 18715</p> <p>Place: Ross Color facilities located in Gorla Minore (VA) Italy Date: 07 Jan 2019</p> <p>Tester Signature: _____ Ross Color QA Manager Signature</p>	<p>EVALUATION</p> <p>This is to certify that Mr. Muhammad Cebotari</p> <p>Has been evaluated according to N.A.C.E. "Guide to qualification of tradesmen industrial maintenance painters"</p> <p>Painter</p> <p>Tester: NACE inspector: Mr. Giacomo Mazzoleni NACE certified coating inspector Level III. No. 18715</p> <p>Place: Ross Color facilities located in Gorla Minore (VA) Italy Date: 07 Jan 2019</p> <p>Tester Signature: _____ Ross Color QA Manager Signature</p>
<p>EVALUATION</p> <p>This is to certify that Mr. Junior Jaesbe Candido Da Silva</p> <p>Has been evaluated according to N.A.C.E. "Guide to qualification of tradesmen industrial maintenance painters"</p> <p>Painter</p> <p>Tester: NACE inspector: Mr. Giacomo Mazzoleni NACE certified coating inspector Level III. No. 18715</p> <p>Place: Ross Color facilities located in Gorla Minore (VA) Italy Date: 07 Jan 2019</p> <p>Tester Signature: _____ Ross Color QA Manager Signature</p>	<p>EVALUATION</p> <p>This is to certify that Mr. Francesco Terame</p> <p>Has been evaluated according to ISO 14998 as</p> <p>Metallizer (TSA applicator)</p> <p>Tester: NACE inspector: Mr. Giacomo Mazzoleni NACE certified coating inspector Level III. No. 18715</p> <p>Place: Ross Color facilities located in Gorla Minore (VA) Italy Date: 07 January 2019</p> <p>Tester Signature: _____ Ross Color QA Manager Signature</p>	<p>EVALUATION</p> <p>This is to certify that Mr. Giacomo Vilardo</p> <p>Has been evaluated according to ISO 14998 as</p> <p>Metallizer (TSA applicator)</p> <p>Tester: NACE inspector: Mr. Giacomo Mazzoleni NACE certified coating inspector Level III. No. 18715</p> <p>Place: Ross Color facilities located in Gorla Minore (VA) Italy Date: 07 January 2019</p> <p>Tester Signature: _____ Ross Color QA Manager Signature</p>

24 ANNEX C: MATERIAL DATA SHEET


W Abrasives®
SCHEDA TECNICA PRODOTTO
Ref : GP018

Versione : 6 Data : 6/11/2015 Pagina : 1

PRODOTTO : W GP018

FORMA GENERALE : GRIT

SETACCI			
SETACCI SPECIFICAZIONI No	Apuerta (mm)	SPECIFICAZIONI % rifiuto accumulato	
		Min	Max
12	1,700		TP
14	1,400		30
16	1,180		
18	1,000	85	
20	0,850	97	
25	0,710		
30	0,600		
35	0,500		

COMPOSIZIONE CHIMICA		
ELEMENTO	TENORE (%)	
	Min	Max
C	0,800	1,200
Si	0,400	1,200
Mn	0,600	1,200
S		0,050
P		0,040

DUREZZA		
UNITA	HV1	HRC
Min	480,0	47,7
Max	550,0	52,4
DEVIAZIONE		

DENSITA (g/cm3)		
	Min	Max
SPECIFICAZIONI	7,60	-
BULK		

COEFFICIENTE DI FORMA	
METODO	N/A not Applied
% MIN buona forma	

MICROSTRUTTURA	
MARTENSITE FINE AND HOMOGENEOUS	

Accertato da : RQ
PHILIPPE SERT - WA

Approvato da : CV
SERGIO RUEDA

Product Data

HEMPADUR MASTIC 45880



45880: BASE 45889: CURING AGENT 95880

Description:	HEMPADUR MASTIC 45880 is a two-component polyamide adduct cured, high solids, high build epoxy paint. It forms a hard and tough coating, has good wetting properties and low temperature curing.
Recommended use:	As a selfprimed, surface tolerant paint system or as an intermediate or finishing coat in heavy duty paint systems where low VOC and high film build are required. For immersed areas HEMPADUR MASTIC 45880 is only recommended for minor repairs as primer, and full applications as intermediate or topcoat. Can be specified where extended recoating properties for polyurethane topcoats are requested (typically travel coating). May be used directly on cured zinc silicate (GALVOSIL products) or spray-metallized surfaces to minimize popping. Shade 18600 can be used in paint systems complying with European ATEX Regulation EN 13463-1: 2001, please consult Hempel for specification advice. Please also note that Shade 18600 will have a lower gloss than usual for other shades.
Service temperature:	Maximum, dry exposure only: 120°C/248°F.
Certificates/Approvals:	In accordance with Aramco's specification APCS 1, APCS 12, APCS 26 and 26T. Tested according to section 175.300 of the Code of Federal Regulations Title 21 - Dry Foodstuff. Consult Hempel for details. Complies with European Fire Standard EN 13501-1; classification B-s1, d0. Tested for non-contamination of grain cargo at the Newcastle Occupational Health & Hygiene, Great Britain. Approved as a low flame spread material when used as part of a predefined paint system. Please refer to "Declaration of Conformity" on www.Hempel.com for further details. Complies with EU Directive 2004/42/EC: subcategory j. Part of Group Assortment. Local availability subject to confirmation.
Availability:	
PHYSICAL CONSTANTS:	
Shade nos/Colours:	12170* / Grey. (see REMARKS overleaf)
Finish:	Semi-gloss
Volume solids, %:	80 ± 1
Theoretical spreading rate:	6.4 m ² /l [256.6 sq.ft./US gallon] - 125 micron/5 mils
Flash point:	25 °C [77 °F]
Specific gravity:	1.5 kg/litre [12.1 lbs/US gallon]
Dry to touch:	3 hour(s) 20°C/68°F
Fully cured:	14 day(s) 10°C/50°F
VOC content:	216 g/l [1.8 lbs/US gallon]
Shelf life:	3 years for BASE and 3 years (25°C/77°F) for CURING AGENT from time of production. <i>*Wide range of colours available via Hempel's MULTI-TINT system.</i> <i>The physical constants stated are nominal data according to the HEMPEL Group's approved formulas.</i>
APPLICATION DETAILS:	
Version, mixed product:	45880
Mixing ratio:	BASE 45889: CURING AGENT 95880 3 : 1 by volume
Application method:	Airless spray / Brush
Thinner (max.vol.):	< 5% HEMPEL'S THINNER 08450, depending on purpose (see REMARKS overleaf)
Pot life (Airless spray):	1 hour 20°C/68°F
Pot life (Brush):	2 hour(s) 20°C/68°F
Nozzle orifice:	0.017 - 0.023 " (According to separate APPLICATION INSTRUCTIONS)
Nozzle pressure:	250 bar [3625 psi]
Cleaning of tools:	HEMPEL'S TOOL CLEANER 99610
Indicated film thickness, dry:	125 micron [5 mils] (see REMARKS overleaf)
Indicated film thickness, wet:	150 micron [6 mils]
Overcoat interval, min:	see REMARKS overleaf
Overcoat interval, max:	see REMARKS overleaf
Safety:	Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Safety Data Sheets and follow all local or national safety regulations.

Product Data

HEMPADUR MASTIC 45880



SURFACE PREPARATION: **New steel:** Abrasive blasting to minimum Sa 2½ (ISO 8501-1:2007) with a surface profile corresponding to Rugotest No. 3, N9a to N10, preferably BN9a to BN10, Keane-Tator Comparator, 2.0 G/S or ISO Comparator, Medium (G).
Zinc silicate painted or spray-metallized surfaces: Remove oil and grease, etc. with suitable detergent. Remove salt and other contaminants by (high pressure) fresh water cleaning. Zinc salts (white rust) must be removed by high pressure hosing combined with rubbing with a stiff nylon brush if necessary. It is recommended to recoat spray-metallized surfaces as soon as possible to avoid possible contamination.
Concrete: Remove slip agent and other possible contaminants by emulsion washing followed by high pressure hosing with fresh water. Remove scum layer and loose matter to a hard, rough and uniform surface, preferably by abrasive blasting, possibly by other mechanical treatment or acid etching. Seal surface with suitable sealer, as per relevant painting specification.
Repair and maintenance: Remove oil and grease etc. thoroughly with suitable detergent. Remove salts and other contaminants by high pressure fresh water cleaning. Clean damaged areas thoroughly by power tool cleaning to minimum St 2 (spot-repairs) or by abrasive blasting to min. Sa 2, preferably to Sa 2½ (ISO 8501-1:1988). Improved surface preparation will improve the performance of the product. As an alternative to dry cleaning, water jetting to sound, well adhering coat and/or to steel. Intact coat must appear with roughened surface after the water jetting. By water jetting to steel, cleanliness shall be: Wa 2 -Wa 2½ (atmospheric exposure) / minimum Wa 2½ (immersion) (ISO 8501-4:2006). Acceptable flash-rust degree before application: maximum M (atmospheric exposure) / M, preferably L (immersion) (ISO 8501-4:2006). Feather edges to sound and intact areas. Dust off residues. Touch up to full film thickness. On pit-corroded surfaces, excessive amounts of salt residues may call for high pressure water jetting, wet abrasive blasting or, alternatively, dry abrasive blasting, high pressure fresh water hosing, drying, and finally dry abrasive blasting again.

APPLICATION CONDITIONS: Apply only on a dry and clean surface with a temperature above the dew point to avoid condensation. Use only where application and curing can proceed at temperatures above: - 5°/23°F, preferably above 0°C/32°F. The temperature of paint itself should be 15°C/59°F or above. In confined spaces provide adequate ventilation during application and drying.

PRECEDING COAT: None, or as per specification.

SUBSEQUENT COAT: None, or as per specification.

REMARKS:

VOC - EU Directive 2004/42/EC:

Product	As supplied	5 vol. % thinning	Limit phase II, 2010
4588012170	216 g/l	248 g/l	500 g/l

For VOC of other shades, please refer to Safety Data Sheet.

Weathering/service temperatures: The natural tendency of epoxy coatings to chalk in outdoor exposure and to become more sensitive to mechanical damage and chemical exposure at elevated temperatures is also reflected in this product.

Application(s): Application onto zinc silicate or spray-metallized surfaces (thinning): It is recommended to apply the paint by using a "mist-coat" procedure **provided** the paint temperature is approximately above: 20°C/68°F. A thin, undiluted coat is applied (the mist coat) and after a few minutes, a second coat is applied in the full specified film thickness if the paint temperature is below: 20°C/68°F, thinning (max 15%) may be required.

Film thicknesses/thinning: May be specified in another film thickness than indicated depending on purpose and area of use. This will alter spreading rate and may influence drying time and overcoating interval. Normal range dry is: 100-200 micron/4-8 mils. May be specified in lower film thickness for which purpose additional thinning is required, please see separate APPLICATION INSTRUCTIONS. **Avoid application of excessive film thicknesses.**

Shades: The product is also available in a Micaceous Iron Oxide (MIO) pigmented shade (Shade no. 12430 – reddish grey).

Overcoating: This product is available in several aluminium pigmented shades with different volume solids content. Overcoating intervals related to later conditions of exposure: If the maximum overcoating interval is exceeded, roughening of the surface is necessary to ensure intercoat adhesion. Before overcoating after exposure in contaminated environment, clean the surface thoroughly with high pressure fresh water hosing and allow drying.

A specification supersedes any guideline overcoat intervals indicated in the table.

Environment	Atmospheric, medium					
	0°C (32°F)		10°C (50°F)		20°C (68°F)	
	Min	Max	Min	Max	Min	Max
HEMPADUR	54 h	Ext.	18 h	Ext.	6 h	Ext.
HEMPATEX	54 h	4.5 d	18 h	36 h	6 h	12 h
HEMPATHANE	54 h	Ext.	18 h	Ext.	6 h	Ext.
Environment	Immersion					
HEMPADUR	4.5 d	90 d	36 h	90 d	12 h	30 d

NR = Not Recommended, Ext. = Extended, m = minute(s), h = hour(s), d = day(s)

Overcoating intervals: A specification supersedes any guideline overcoat intervals indicated in the table.

Date of issue: September 2018

Page: 2/3

Product Data

HEMPADUR MASTIC 45880



Note: HEMPADUR MASTIC 45880 For professional use only.
ISSUED BY: HEMPEL A/S 4588012170

This Product Data Sheet supersedes those previously issued.
For explanations, definitions and scope, see "Explanatory Notes" available on www.hempel.com. Data, specifications, directions and recommendations given in this data sheet represent only test results or experience obtained under controlled or specially defined circumstances. Their accuracy, completeness or appropriateness under the actual conditions of any intended use of the Products herein must be determined exclusively by the Buyer and/or User.
The Products are supplied and all technical assistance is given subject to HEMPEL's GENERAL CONDITIONS OF SALES, DELIVERY AND SERVICE, unless otherwise expressly agreed in writing. The Manufacturer and Seller disclaim, and Buyer and/or User waive all claims involving, any liability, including but not limited to negligence, except as expressed in said GENERAL CONDITIONS for all results, injury or direct or consequential losses or damages arising from the use of the Products as recommended above, on the overleaf or otherwise. Product data are subject to change without notice and become void five years from the date of issue.

Date of issue: September 2018

Page: 3/3

ROSS COLOR SRL

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G6 – G7: Viale Kennedy, 149 – Marnate (VA), Italy

www.rosscolor.it

Phone: +39 0331 603423

Email: edoardo@rosscolor.it

VAT No: IT 02788590129

REA: VA288554 – Reg. Imp.: 02788590129

Product Data

HEMPATHANE TOPCOAT 55210



55210: BASE 55219: CURING AGENT 95370

Description:	HEMPATHANE TOPCOAT 55210 is a two-component, glossy acrylic polyurethane coating, cured with aliphatic isocyanate, with good gloss and colour retention.
Recommended use:	As a finishing coat for protection of structural steel in severely corrosive atmospheric environment, where light-fastness and gloss retention are required. Minimum temperature for curing is -10°C/14°F.
Service temperature:	Maximum, dry exposure only: 120°C/248°F see REMARKS overleaf
Certificates/Approvals:	Complies with European Fire Standard EN 13501-1; classification B-s1, d0. Approved as a low flame spread material when used as part of a predefined paint system. Please refer to "Declaration of Conformity" on www.Hempel.com for further details. Complies with EU Directive 2004/42/EC: subcategory j.
Availability:	Part of Group Assortment. Local availability subject to confirmation.
PHYSICAL CONSTANTS:	
Shade nos/Colours:	10000*/ White.
Finish:	Glossy
Volume solids, %:	51 ± 1
Theoretical spreading rate:	10.2 m ² /l [409 sq.ft./US gallon] - 50 micron/2 mils
Flash point:	33 °C [91.4 °F]
Specific gravity:	1.2 kg/litre [10.1 lbs/US gallon]
Surface-dry:	1 hour 20°C/68°F
Through-dry:	8 hour(s) 20°C/68°F
Fully cured:	7 day(s) 20°C/68°F
VOC content:	442 g/l [3.7 lbs/US gallon]
Shelf life:	3 years for BASE and 2 years (25°C/77°F) for CURING AGENT from time of production. <i>*Wide range of colours available via Hempel's MULTI-TINT system.</i> <small>The physical constants stated are nominal data according to the HEMPEL Group's approved formulas.</small>
APPLICATION DETAILS:	
Version, mixed product:	55210
Mixing ratio:	BASE 55219: CURING AGENT 95370 7:1 by volume
Application method:	Airless spray / Brush/ Roller
Thinner (max.vol.):	see REMARKS overleaf / 08080 (5%)
Pot life:	4 hour(s) 20°C/68°F
Nozzle orifice:	0.017 - 0.019 "
Nozzle pressure:	150 bar [2175 psi] (Airless spray data are indicative and subject to adjustment)
Cleaning of tools:	HEMPEL'S THINNER 08080 or 08510
Indicated film thickness, dry:	50 micron [2 mils] see REMARKS overleaf
Indicated film thickness, wet:	100 micron [4 mils]
Overcoat interval, min:	see REMARKS overleaf
Overcoat interval, max:	see REMARKS overleaf
Safety:	Handle with care. Before and during use, observe all safety labels on packaging and paint containers, consult HEMPEL Safety Data Sheets and follow all local or national safety regulations.

Product Data

HEMPATHANE TOPCOAT 55210



SURFACE PREPARATION:	According to specification.																										
APPLICATION CONDITIONS:	Apply only on a dry and clean surface with a temperature above the dew point to avoid condensation. Minimum temperature for curing is: -10°C/14°F. At the freezing point and below be aware of the risk of ice on the surface, which will hinder adhesion. The film formation may be adversely affected by light rain, high humidity and/or condensation during application and the following interval after application: 10 hours, 20°C/68°F. In confined spaces provide adequate ventilation during application and drying.																										
PRECEDING COAT:	According to specification. Recommended systems are: HEMPADUR45141/45143, HEMPADUR MASTIC 45880/45881																										
SUBSEQUENT COAT:	None.																										
REMARKS:																											
VOC - EU Directive 2004/42/EC:	<table border="1"> <thead> <tr> <th>Product</th> <th>As supplied</th> <th>10 vol. % thinning</th> <th>Limit phase II, 2010</th> </tr> </thead> <tbody> <tr> <td>5521010000</td> <td>442 g/l</td> <td>483 g/l</td> <td>500 g/l</td> </tr> </tbody> </table> <p>For VOC of other shades, please refer to Safety Data Sheet.</p>	Product	As supplied	10 vol. % thinning	Limit phase II, 2010	5521010000	442 g/l	483 g/l	500 g/l																		
Product	As supplied	10 vol. % thinning	Limit phase II, 2010																								
5521010000	442 g/l	483 g/l	500 g/l																								
Colours/Colour stability:	Colour stability for some shades may be effected by exposure to harsh chemical atmospheres. This does not affect the performance of the coating. For certain colours extra coats may be necessary to obtain full opacity. For aluminium pigmented shades scratching actions or high humidity/water may cause discolouration/disturbances of the surface. This will have no influence on the performance. This phenomenon may be avoided by applying a clear varnish.																										
Weathering/service temperatures:	At service temperature above 100°C/212°F, slight discolouration may be expected.																										
Film thicknesses/thinning:	The type and amount of thinner depend on application conditions, application method, temperature, ventilation, and substrate. THINNER 08080 is recommended in general. Airless spray: 5-10% thinning is recommended. Under extreme conditions up to more than 20% may be necessary to obtain satisfactory film formation. Electrostatic spray: 10% thinning is recommended. Contact HEMPEL for more information. May be specified in another film thickness than indicated depending on purpose and area of use. This will alter spreading rate and may influence drying time and overcoating interval. Normal range dry is: 40-75 micron/1.6-3 mils.																										
Shades:	This product is available in several aluminium pigmented shades with different volume solids content. Contact HEMPEL for more information.																										
Curing agent:	CURING AGENT 95370: is sensitive to moisture. Even small traces of water in the mixed paint will reduce the pot life and result in film defects. Open curing agent cans with caution as overpressure might exist. Store in a dry place and keep the can tightly closed until use.																										
Overcoating:	Overcoating intervals related to later conditions of exposure: If the maximum overcoating interval is exceeded, roughening of the surface is necessary to ensure intercoat adhesion. Before overcoating after exposure in contaminated environment, clean the surface thoroughly with high pressure fresh water hosing and allow drying.																										
	A specification supersedes any guideline overcoat intervals indicated in the table.																										
	<table border="1"> <thead> <tr> <th rowspan="3">Environment</th> <th colspan="6">Atmospheric, medium</th> </tr> <tr> <th colspan="2">-10°C (14°F)</th> <th colspan="2">0°C (32°F)</th> <th colspan="2">20°C (68°F)</th> </tr> <tr> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>HEMPATHANE</td> <td>30 h</td> <td>None</td> <td>18 h</td> <td>None</td> <td>6 h</td> <td>None</td> </tr> </tbody> </table> <p>NR = Not Recommended, Ext. = Extended, m = minute(s), h = hour(s), d = day(s)</p>	Environment	Atmospheric, medium						-10°C (14°F)		0°C (32°F)		20°C (68°F)		Min	Max	Min	Max	Min	Max	HEMPATHANE	30 h	None	18 h	None	6 h	None
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Note:	HEMPATHANE TOPCOAT 55210 For professional use only.																										
ISSUED BY:	HEMPEL A/S 5521010000																										

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