Painting Procedure for Air Coolers (2)

P.O. No.:	3944-SZP-ME-000-POR-0025-A00
MR. No.:	3944-SZP-ME-000-MRQ-0025
Item No. (Equipment No.):	general
Vendor Job No.:	3944-VD-0025-AAC-ME-000-PRC-0031

RESULT CODE : ☐AP ☐AN ☐CO ☐RE
NEXT STATUS : ☐ IFI ☐ IFA ☐ AFC ☐ ASB or FIN
RESUBMISSION DATE :
Approval or review hereunder shall not be considered to relieve Vendor/ Subcontractor of his responsibilities and liability under the Contract.

Rev.	Date	Purpose of Issue	Prepared	Checked	Approved	AC Code
02	06-Sep-2022	Issued for Approval	M. Rahmani Nasab	M. Abbaszadeh	P. Karimizadeh	
01	31-July-2022	Issued for Approval	M. Rahmani Nasab	M. Abbaszadeh	P. Karimizadeh	CO
00	06-July-2022	Issued for Approval	M. Rahmani Nasab	M. Abbaszadeh	P. Karimizadeh	CO

Tabulation of Revised Pages

Page	Revision								Page	Revision								Page	Revision							
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1	X	X	X																							
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1. Scope

The following procedure covers the minimum requirements for surface preparation and paint application for air cooled heat exchanger of “300 KT Polyethylene Plant Arya Sasol Polymer Company (ASPC)” in accordance with project paint specification (3944-SZP-PI-000-SPC-0002-05).

All conflicts between the requirements of this specification, referenced specifications, drawings, paint manufacturer’s recommendations, the requisition, or the governing contract shall be referred to the Purchaser for clarification before proceeding with the actual work.

2. Definitions

Project Title: 300 KT NEW POLYETHYLENE PLANT
PLANT: Means an integrated New Polyethylene Plant with Design Capacity of Product consisting of Process Unit/Units, Utilities and Offsite Facilities and interconnections.
PROJECT: Means the performance of all work for implementation of the PLANT inclusive of all WORK.
OWNER: Arya Sasol Polymer Company (ASPC)
CONTRACT: Agreement Between OWNER and its Contractor MANAGING CONTRACTING
(MC): NAMVARAN Consulting Engineers; Managers (NCE)
CONTRACTOR: Consortium of SAZEH Consultants and SAZEHPAD TEHRAN (SZP)
VENDOR: Aban Air Cooler

3. Paint Manufacturers Obligations

• Paint manufacturer(s) shall submit technical data sheets and test and analysis certificates of purchased paints to the CONTRACTOR.
• The paint manufacturer shall specify shelf life of all paints and protective coatings and shall provide recommendations for storage conditions. All product containers shall be marked with their batch number and initial manufacturing date and shelf life time.
• The vendor shall be responsible for ensuring that he is in possession of the latest available issue of the paint data sheets and product safety data sheets printed by the paint manufacturer for the particular batch of paint to be applied. Such data shall include specific recommendations and instructions concerning shelf life, pot life, thinners, directions and ratio of thinning and mixing, drying time, curing time, recommended application method and equipment, safety equipment cleaning solvent and any other provisions for application of primer, inner coat and finish coats. Product data sheets shall include information concerning general composition, physical data, hazards and precautions during and after application, toxicity / first aid, storage, spillage and waste disposal. These recommendations shall be considered as an inherent part of this specification and followed accordingly.

4. Reference

• Paint Spec: 3944-SZP-PI-000-SPC-0002-05

- ISO 8501-1: 1988 (Swedish Standard: SIS 055900) Preparation of steel substrates
- before application of paints and related products. Visual assessment of surfaces
- cleanliness. (2007)
- SSPC: Steel Structures Painting Council.

♦ Manual volume 1: Good painting practice (2016)
♦ Manual volume 2: Systems and specifications (2008)

- ISO 8503-1-2-3-4: Roughness characteristics of blast-cleaned steel substrate. (2012)
- ISO 4624: Paints and varnish pull off test for adhesion (2016)
- RAL-K1 / BS 381C: Standards for colors (Shades) (1996)
- ISO 3864: Safety colors and safety signs (2016)
- ASTM D3359: Standard test method for rating adhesion by tape test (2017)
- ASTM D3951: Standard practice for commercial packaging (2018)
- ASTM D4541: Standard test method for pull-off strength of coating using portable adhesion testers (2017)
- ANSI Z129.1: Standard for hazardous industrial chemical precautionary labeling (2006)
- Federal Test Standard No. 141, Method 3011: Condition in Container (2001)
- Manufacturer's Standards/Specifications/Procedures
- ASTM D3276: Standard Guide for Painting Inspectors (2015)
- ASTM D4752: Standard Test Method for Measuring MEK

5. Requirement

5.1) Coating for the protection of air cooler shall be designed and applied; for the application over the specified minimum surface preparation standards detailed in this procedure.
5.2) The paint system shall generally be based on the operating temperature of the equipment and reference specification.

6. General

6.1) Vendor shall provide and maintain in good condition all plant, equipment and tools necessary to carry out the work in and tools necessary to carry out the work in an efficient manner.
6.2) Vendor shall provide, unless otherwise instructed, all paints and thinners necessary to carry out the work. Vendor/paint contractor shall purchase such paint from approved manufacturers.
6.3) Vendor shall provide skilled and experienced personnel to carry out the work together with competent and qualified supervision.
6.4) Vendor shall comply fully with this specification unless otherwise approved by the contractor. Additionally, the work will be subject to continuous inspection by the inspector who will be at liberty to check at every stage that the work is being carried out in accordance with all aspects of this specification.
6.5) Prior to the commencement of work, Vendor shall submit for the approval of Contractor, fully detailed procedure as to how he intends to carry out the work within the frame work of this specification & Document.

6.6) The equipment listed below shall be shielded to prevent: damage during surface preparation and painting operations. All opening, including those which are flanged or threaded. Shall be sealed to prevent entry of sand, dust, or coating materials

- Name plates and notices
- Packing glands
- Packing seal
- Pressure gauges
- Gauges glasses
- Instrument dials

6.7) All equipment which should be heat treated, shall be painted after heat treatment. Machined and threaded surfaces shall be protected with temporary rust preventative paint.

6.8) The following surfaces and materials shall require painting:

- All unburied surfaces of steel structures, sheds, pipe racks, steel supports, ladders, stairs, handrails, platforms, walkways, monorails, cranes and all other steel members,unless specified otherwise.
- All carbon, stainless and low alloy steel piping, fittings and valves.
- All equipment like columns, vessel, drums, storage tanks, heat exchangers, coolers, pumps, compressors, filters, loading arms, etc.

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6.9) The following surfaces and materials shall not require painting:

a) Copper, brass, aluminum or glass surfaces, plastic or plastic-coated materials.

b) Galvanized surfaces are not to be painted except in acid areas and for the purpose of safety.

c) Finished machine parts of machinery and gasket surfaces.

d) Concrete, cast iron, PVC and vitrified clay underground piping.

e) Valve stem

7. Surface preparation

7.1) Paint life depends primarily on surface preparation. surface preparation should remove foreign bodies to allow the type of priming paint used to wet the surface thoroughly and develop adequate adhesion.

7.2) All rough-edged cuts & welds, weld spatters, indentations, all surfaces & protrusion must be ground to smooth out the contour before the surface is prepared for painting. Any grinding performed after blast cleaning, must be re-blast to required roughness.

7.3) All bolt holes shall be drilled and blunted before blasting.

7.4) Prior to surface preparation, the surface shall be inspected for spotting oil and grease deposits or pollution on the surface. If any, the deposits of oil or grease shall be removed from the surface by solvent cleaning prior to further surface preparation.

7.5) Required Cleanliness

All surfaces prepared for coatings shall satisfy:

- SA 2 1/2 for temperature up to 120 and SA 3 for above 120 °C according to Swedish Standard SIS 05 5900 or,

- NACE No. 2/SSPC-SP 10- Near White Metal Blast Cleaning.

7.6) Required Roughness

7.6.1) - All surfaces shall be blast cleaned to obtain a total angular roughness included:

- between 30 and 50 microns when total thickness of the coats of paint applied is less than 400 microns,
- between 50 and 75 microns when total thickness of the coats of the paint applied is greater than 400 microns.

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7.6.2) The prepared surfaces should be cleaned using dry air or clean brush.

7.7) Surface preparation shall not take place in the following conditions:

a- At temperature below 5 °C

b- When the relative humidity is greater than 85%

If the air's relative humidity exceeds 80 %, the Applicator must obtain permission from the Company to proceed with or continue with surface preparation. The applicator must provide a hygrometer to measure the air's relative humidity.

c- When the metal surface temperature is less than 3 °C above the ambient dew point or in excess of 38 °C.

d- Paint material shall not be applied in rain, snow, fog or mist, nor to wet damp surfaces or to frosted or ice coated surfaces.

7.8) All abrasives shall be free of dust, dirt, salt contamination and other foreign matter. They shall be of a reusable type and to be kept dry at all times.

02

Abrasive shall be supplied per the general guidelines as laid down on page 21 of SSPC painting manual: “selection of abrasives”.

Expendable grit (from copper slag only) 16-80 mesh; B.S. sieve series shall be used. Grits shall not be recycled.

Abrasive material for blast cleaning, consisting solely of steel shot shall not be used. A mixture consisting of steel shot and at least 25% by weight steel grit is acceptable.

7.9) Chipping, scraping and steel wire brushing using manual or power-driven tools shall only be used where blast cleaning is impractical, with the approval of owner authorized inspector.

8. Storage, mixing and thinning of products

8.1) STORAGE CONDITION

8.1.1)-All paints and thinner containers shall be kept closed before use and stored under shelter.

8.1.2)-The settlement of heavy paints shall be lessened by rolling the drums in which they are stored every six weeks. Turning the drums on their ends is not allowed. The normal finishing paints & drum paints do not require rolling during the storage period.

8.1.3)-Any paint for which the shelf life is expired shall not be used. The maximum storage time for paints shall be in accordance with manufacturer's recommendations. paints shall not be stored in open containers, even for a short time.

8.1.4)-Paint shall be stored in a well-ventilated room, free from excessive heat or direct rays of the sun & maintained at a temperature of between 4 °C and 27 °C. Open air storage shall be avoided particularly of heavy paints such as primers and undercoats.

8.2) Mixing

8.2.1) Before opening the can, the paint should be checked if it complies with the specification.

8.2.2) Material inspection should be conducted on real paint, and when the contractor opens the can for the first time, the client's inspector should witness it as a rule. Client will inspect the batch.

8.2.3) Paint-can should be opened just before using as a rule: the paint-can once opened, should be securely closed for storage, and better finished early.

8.2.4) Any paint skin, which has formed in the container, shall be cut and removed, if the skin is thicker than 2 mm the paint shall not be used.

8.2.5) The paint in opened can should be stirred sufficiently until it becomes uniform. Up to 5 liters of paint should be stirred manually, and over 5 liters use a machine. No stirring is allowed with compressed air.

8.2.6) Special paints, such as “epoxy resin paint” and “zinc rich paint”, which are supplied as two or more components in separate containers shall be mixed together immediately before their use. The mixed paints shall be applied within their pot life.

8.2.7) When thinner is necessary, unspecified thinner should not be used. Also, the amount should not be exceeded.

8.2.8) For color, it is necessary to use paints mixed to the specified color at the production plant.

8.3) Thinning

8.3.1) No thinners are to be added unless necessary for proper application, thinning must never exceed manufacture recommendations.

8.3.2) Thinners used must be those suggested by the manufacturer.

8.3.3) When use of thinner is authorized by the manufacture, it shall be added during mixing. Thinners must be added under the guidance of the specialist who is thoroughly familiar with the quantity and type of added thinner.

9. Priming

9.1) Prepared surface should be primed generally within four hours or before visible re-rusting occurs. Cleaned surface shall never be left overnight prior to coating, in such case re-blasting or re-cleaning is necessary.

9.2) In order to minimize contamination between successive coat of paint, over coating of the preceding coat shall be done as soon as it is permitted by the particular specification, and not delayed beyond the period specified.

9.3) The primer to finishing coat paint shall be from the same manufacturer for each system to ensure compatibility.

10. Painting application

10.1) Procurement and storage

The quantities of paint and thinners required to perform the entire job shall be procured before the work the quantities of paint and thinners required to perform the entire job shall be procured

before the work commences, except in cases where the shelf life of the product is less than the anticipated duration of the work.

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

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

10.2) Application

10.2.1) General

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

In the following cases, no painting work should be done as a rule.

(1) Humidity: 85% or higher

(2) Rainy weather

(3) Temperature: below 5°C

(4) Strong wind and severe sand dust

(5) Painted surface temperature: 50°C or higher

Vendor/paint contractor shall keep a daily record of the dew point, relative humidity, ambient atmosphere and substrate temperatures (all measured before the work commences and twice per shift and when ambient conditions are obviously changing) to ensure that conditions are acceptable. These records shall be kept and made available to Contractor. Application shall be by airless spray

11.Galvanizing

11.1) Hot -dip galvanizing shall be in accordance with ASTM A123 on products fabricated from rolled, pressed and forged steel snaps, plates, bars and strips except that pipes for hand railing shall meet ASTM A-153.

12.Inspection

12.1) Vendor shall advise the owner inspector before commencing specific paint applications.

12.2) Inspector shall have the right to inspect the paint work at all stages and to reject any and all tools, instruments, material, staging or equipment of work which do not conform to the specification.

12.3) Each coat paint shall be free from defects and damage. Finished paint shall have the correct shade, degree of gloss and evens and be tree from tackiness after drying/curing and from cracks, holidays, runs, sags, wrinkles, patchiness brush or roller marks or any defects that may be deleterious to the quality of the coating.

12.4) Prior to final acceptance of completed work, a joint inspection shall be made by Vendor and owner inspector and an agreed inspection report to be signed by both parties.

12.5) Inspection by the paint manufacture or an independent inspection service shall not relieve the Vendor of responsibility for ensuring that the work is carried out in accordance with the specification.
12.6) Before commencement of shop preparation and painting, a meeting between the coating manufacturer, Vendor and Contractor representative shall be convened, to establish and agree, when necessary, visible blast standard, blast profile, satisfactory application the coating and agreement and calibration of inspection equipment.
12.7) Each coat shall be inspected prior to application of the next coat, Areas found to contain runs, over spray, roughness, cracks or other signs of improper application shall be repaired or recoated in accordance with the authorized inspector recommendation.

13.Quality control and testing

13.1) Vendor shall submit his proposed quality control and testing procedures covering all phases of surface preparation and paint application to company for approval.
13.2) Manufacturers of all materials shall supply test certificates of all tests performed and certificate of compliance stating that the material meets the requirements of the applicable specification.
13.3) Before paint application the prepared surface shall be inspected visually by Quality Control Inspector and if the result is satisfactory the parts can be released for painting.
13.4) After paint application following test shall be performed by Quality Control Departments:
- Visual check
- Thickness check
- Adhesion test

13.5) Visual Check
Coating film should be inspected visually after each application, before application and before application of the next coat in order to verify that the whole surface is free of defect as:
- Mud cracking
- Inclusion and cleanliness
- Holidays
- Bubble
- Mechanical damage
- Runs/Sags
- Over spray

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13.6) Humidity Check
The relative humidity of the air shall be measured with a Psychrometer (according to ASTM E 337). Surface preparation and/or paint applications operations shall not commence until relative humidity is less than 85%. Relative humidity shall be measured and recorded a minimum of six times a day whence two times before commencement of work. Moisture on the surface being prepared or painted shall be measured every day with a surface moisture indicator before beginning surface preparation operations or applying a coat of paint.

13.7) Roughness Check

Total angular roughness of the surface shall be measured and recorded after surface preparation. A minimum of two measurements or impression shall be made per square meter of prepared surface.

All surfaces shall be blast cleaned to obtain a total angular roughness as below:

- Between 30 and 50 microns when total thickness of the coat of paint applied is less than 400 microns.
- Between 50 and 80 microns when total thickness of the coat of paint applied is greater than 400 microns.

♦ Note: relevant test method is ASTM D 4417.

13.8) Thickness Check

02

Dry film thickness measuring procedure:

(1) Checking equipment:

Micro tester

Electromagnetic film thickness gauge

(2) Checking procedure:

For paint coat accepted in dry–state test, thickness of specified number of coats should be measured in specified places separately. For measuring, the electromagnetic film thickness gauge should be used where applicable. When it is, however, difficult to measure in specific measurement conditions or installation conditions, a micro tester may be used. In any case, the same measuring instrument should be used in the whole process as a rule.

(3) Checking process and period

The paint coat should be measured when the coating film is in dry-hard state after completion of the undercoating and the final coating.

(4) Judgment method

It should be judged whether the measured film thickness is same to specified film thickness.

(5) Criterion

The average specified film thickness should be obtained.

- On each spot, make 5 measurements by moving the probe a short distance for each new gage reading. Take the average of the five gages reading as the spot measurement. Each coat thickness and total thickness shall be checked. Make five separate spot measurements spaced evenly over each section of the structure 10 m2 in area.

NOTE: Average of spot measurements >= specified DFT, Average of spot measurements <= 120% specified DFT

02

All individual measurements >= 90% of specified DFT

13.9) Adherence Check

Paint adherence shall be checked as per ASTM D3359. Method A (X cut) shall be used for paint film thicker than 125 microns and method B (lattice pattern) shall be used for paint films up to 125 microns.

Acceptable rating is 5A (No peeling or removal) or 4A (trace peeling or removal along incisions or at their intersections) for method A. Acceptable results in method B are rate 5B (The edges of

the cuts are completely smooth, none of the squares of the lattice is detached) or 4B (Small flakes of the coating are detached at intersections less that 5% of the area is affected).
If the test is unsatisfactory, the entire surface shall be blast cleaned and repainted. Recoating after this destructive test is at the applicator's expense.

• Note: ASTM D3359 is not applicable for Inorganic Zinc Silicate Primer. For determination of degree of hardening and adhesion test, aid of solvent (e.g. methyl ethyl-ketone) is necessary. When a piece of cloth saturated with solvent is rubbed over the coating, the coating not softens and discolors. (As defined in ASTM D 4752).

13.10) Inspection Results

All quality control results shall be written up into reports.

All reports shall be submitted to the authorized inspector for approval.

02

Repair of Defects or Damage

Touch up work on damaged surfaces:

Surface is damaged as substrate material is seen:

After surface preparation according to standard ST2, primer layer is applied and after considering required interval for recoating, top coat will be executed.

(2) Surface is scratched:

At first, all oil and grease shall be removed from the surface then top coat will be applied.

(3) Damaged surface touching up could be done with paint brush for small surfaces and spray for large surfaces (in this case, surrounding of damaged surfaces shall be covered to prevent from contacting with intact surfaces).

Where touching up prior to top coating of zinc-based primers is involved, this shall be preceded by thorough cleaning with solvent or an emulsion type cleaner or remove all oil and grease. This shall be followed by thoroughly hosing down with clean potable water which in the case of surfaces that have not been tie coated shall be carried out in conjunction with manual scrubbing with stiff brushes in order to remove all surface dirt and other contaminants, zinc corrosion products (with rust) etc.

14.Paint system

See Attachment 1

15.Painting reports

See Attachment 2.

Attachment 1

Paint System Determination

Item No.	Part	Material	Insulation	Fireproofed	Operating Temperature (°C)	Paint System
44E-60001	Header Box	Carbon Steel	No	No	100	1
	Side frames	Carbon Steel	No	No	Ambient	HDG*
	Plenum and Fan ring, Louver	Carbon Steel	No	No	Ambient	1
	Steel Structures and Platform	Carbon Steel	No	No	Ambient	1
	Grating	Carbon Steel	No	No	Ambient	HDG

* Hot - dip galvanized

Paint system 1:

Item: Steel Structures	Operating Temperature:		Up to 120˚C
Minimum surface preparation			Sa 2 1/2
Paint and DFT (microns)	Primer	Zinc Rich Epoxy	75
	Intermediate	High Build Mid Coat Epoxy	170
	Finishing	Acrylic Polyurethane	50
Total DFT (microns)			295
Finishing RAL	Header Box, Piping supports		RAL 7038
	Main Steel Structures, Plenum and Fan ring, Louver		RAL 7000
	Handrail (excluding toe plate and midrail), Stairway (excluding toe plate and midrail), Upper ladders and round platforms and top rails		RAL 9005
	Handrail (toe plate and midrail), Stairway (toe plate and midrail), Safety gates, Platforms lower edges and toe plates, midrails and safety platforms		RAL 2003

Attachment 2

	Quality Control	Report No.:
	Painting Report	Date Of Exam. :

PROCEDURE No. :
DOCUMENT NO . :
SAND BLAST : *TOTAL*
PRIMER **:** **THK :**
INTERMEDIATE : **THK :**
FINISHING **:** **THK :**
FINISH COLOR **:**
Temperature : **Humidity :** **Dew point temp :**

ITEM NO:

SR. No.	Description	THK(mic)	Result	Date	TIME	Curing & adhesion
1	Sand Blast					
2	Primer					
3	Intermediate					
4	Finish					

Note:

Inspector	A.A.C Inspector	Purchaser	TPI Inspector
NAME & SIGNATURE			
Qualification			
DATE			

Attachment 2

Paint manufacturer shall be in accordance with approved Sub Vendor List: 3944-VD-0025-AAC-ME-000-LST-0042. RanaChem datasheet has been listed below but any other manufacturer that is listed in Sub vendor list is acceptable.

Datasheets

RANACHEM
رانا کیمیا فام (سهامی خاص)

ZINC RICH EPOXY PRIMER

RANA 802 P & 802 P1

Product information

1-Good anticorrosive properties.

2-Good adhesion on cold rolled steel.

3-Easily applied by airless or conventional spray.

4-Can be used with a wide range of topcoats.

5-Tough and adherent primer providing excellent resistance to corrosion.

6-Outstanding resistance to water, weather.

7-Superior performance on marine, hulls, decks and superstructure.

8-Combine epoxy's toughness with zinc's superior protection.

Physical data

Colour:	grey
Finish:	Flat
Flash point:	
resin:	34°c
cure:	36°c
solvent:	28 °c
Volume solids:	802P:60 ±2%
D.F.T:	50-70microns
Specific gravity(mixed):	802P: 2.00 ± 0.05gr/cm^3
Theoretical coverage:	12m^2 /lit (at 50 µ D.F.T)
Drying time at 25°c:	
touch dry:	3 hrs
dry to handle :	6-8 hrs
full cure:	7 days
Component:	2
Pot life:	8 hrs at 25 °c
Mixing ratio(by volume):	
resin(a):	refer to can label
cure(b):	refer to can label

802P1:Vs 65 ±2% (according with SSPC –PAINT 20 & IPS-M-TP-205)

802 P1: 2.85± 0.05gr/cm^3 ZINC DUST 85% IN DRY FILM PAINT

Application methods:	conventional spray or brush or airless spray or roller

Recoat intervals* :	10°c	25°c	40°c
Min:	25 hrs	12 hrs	5 hrs
**Max:	NONE	NONE	NONE

**Maximum Recoat: Unlimited. Must have a clean, dry surface for top coating."Loose" chalk or salts must be removed in accordance with good painting practice. Drying time is temperature, humidity, and fi lm thickness dependent

Recommended thinner:	RANA THINN 80
Recommended cleaner:	RANA CLEAN 80
Shelf life:	12 months when stored indoors in unopened original containers at 5 to 40 °c (cool and dry place).
Curing mechanism:	by solvent release and reaction by curing agent and resin
Substrate:	steel

*: *For recoating the surface should be free of dust ,grease and contamination .*

RANACHEM
رانا کیمیا فام (سهامی خاص)

ZINC RICH EPOXY PRIMER

RANA 802 P & 802 P1

Typical uses

RANA CHEM zinc rich epoxy primer is a fast drying polyamide cured that used on abrasive blast,cleaned Steel.

Other uses are:

Decks,hulls,barges and workboats,machinery, pipes and tank exteriors ,oil refineries,Power plants,chemical process and waste treatment plants.

Application equipment

The following equipment is listed as a guide and suitable equipment from other manufactures may be used:

1-Airless spray:

2-Conventional spray

3 -Mixer: mixer must be powered by an air motor or an explosion proof electric motor.

4-Brush or roller.

Application procedures

1-Flush equipment with cleaner before use.

2-Stir resin to an even consistency with a power mixer.

3-Add cure to resin and continue stirring for 5 minutes.

Note: since the pot life is limited and shortened by high temperatures ,do not mix more material than will be used in 8 hours at 25 $^{\circ}c$.

4- Thinning with RANA THINN 80 for necessary

5-Stir during application to maintain uniformity of material and apply a wet coat in even parallel passes after 20 minutes.

6-Clean all equipment with cleaner immediately after use.

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RANACHEM
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ZINC RICH EPOXY PRIMER

RANA 802 P & 802 P1

Environmental condition

Environmental temperature must be 10-40°c.

Surface temperature must be at least 3°c above dew point to prevent condensation. At freezing temperature surface must be free of ice and relative humidity below 80 %.

Surface preparation

Sand blasting to a standard
Sa 2.5 – Sa3 , SIS 05 5900 , ISO 8501-1.

RANACHEM
رانا کیمیا فام (سهامی خاص)

EPOXY INTERMEDIATE COAT (HB)
RANA 823 I HB

Product information

1-Can be applied over suitably prepared concrete.

2-Excellent oil resistance

3-Salt and fresh water resistant.

4-Excellent chemical resistance against weak acids and alkalies.

5-Corrosion resistance in moderately to severely environment.

Physical data

Colour:	customer request
Finish:	Flat – semi flat
Flash point:	
Resin:	34 °c
Cure:	36 °c
Solvent:	28 °c
Volume solids:	57±2%
D.F.T:	100-125 microns
Specific gravity (mixed):	1.7± 0.05gr/cm^3
Theoretical coverage:	5.7 m^2 /lit (at 100 µ D.F.T)
Drying time at 25 °c:	
Touch dry:	3 hrs
Dry to handle:	6-8 hrs
Full cure:	7days
Component:	2
Pot life:	8 hrs at 25 °c:
Mixing ratio(by volume):	
Resin:	refer to can label
Cure:	refer to can label
Application methods:	conventional spray or brush or Airless spray or roller

Recoat intervals*:	10 °c	25 °c	40 °c
(mild condition) : Min:	25 hrs	12 hrs	5 hrs
**Max:	NONE	NONE	NONE

**Maximum Recoat: Unlimited. Must have a clean, dry surface for top coating."Loose" chalk or salts must be removed in accordance with good painting practice. Drying time is temperature, humidity, and fi lm thickness dependent

Recommended thinner:	RANA THINN 80
Recommended cleaner:	RANA CLEAN 80
Shelf life:	12 months when stored indoors in unopened Original containers at 5 to 40 °c (cool and dry Place).
Curing mechanism:	by solvent release and reaction by Curing agent and resin
Substrate:	primed steel

*: *For recoating the surface should be free of dust ,grease and contamination .*

RANACHEM
رانا کیمیا فام (سهامی خاص)

EPOXY INTERMEDIATE COAT (HB)
RANA 823 I HB

Typical uses

1-As a maintenance and repair primer, intermediate or finishing coat in moderate to severely corrosive environment. as a finishing coat where a cosmetic appearance is of less importance.
2-As a high performance coating for marine and industrial facilities,ballast and potable water tanks, bilges, and draining pipes,above and bellow water hulls.

Application information

This RANA CHEM's product is a high build polyamide epoxy for industrial and marine use.
To obtain the maximum performance for which this product is formulated,strict adherence to all application,instructions, precautions,conditions and limitations is necessary.

Application equipment

The following equipment is listed as a guide and suitable equipment from other manufactures may be used. adjustments of pressure and change of tip size may be needed to obtain the proper spray characteristics.
1-Airless spray:standard airless spray equipment having a 28:1 or higher pump ratio and a fluid tip with a 0.381 to 0.533 mm orifice.
2-Conventional spray:industrial equipment with suitable aircap having a fluid tip with a 1.6-1.8mm orifice .
3- Mixer
4-Brush

RANACHEM
رانا کیمیا فام (سهامی خاص)

EPOXY INTERMEDIATE COAT (HB)
RANA 823 I HB

Caution

1-Handle with care.
2-Avoid inhalation of possible solvent vapours or
Paint mist, as well as paint contact with skin and eyes.
3-Apply only in well ventilated areas and ensure that
adequate forced ventilation exists when applying
paint in confined spaces or when the air is stagnant.
4-Always take precautions against the risks of fire
and explosions.
6-Harmful or fatal if swallowed, immediately seek medical
assistance.
7-Use fresh air masks and explosion proof equipment.

Application procedures

1-Flush equipment with cleaner before use.
2-Stir resin to an even consistency with a power mixer.
3-Add cure to resin and continue stirring for 5 minutes.
Note: since the pot life is limited and shortened by high
temperatures ,do not mix more material than will be used
in 8 hours at 25°c.
4- Thinning with RANA THINN 80 as needed for workability .
5-Stir during application to maintain uniformity of material
and apply a wet coat in even parallel passes after 20 minutes.
6-Clean all equipment with cleaner immediately after use.

Environmental condition

Environmental temperature must be 10-40°c.
Surface temperature must be at least 3°c above dew point
to prevent condensation. At freezing temperature surface
must be free of ice and relative humidity below 80 %.

RANACHEM
رانا کیمیا فام (سهامی خاص)

EPOXY INTERMEDIATE COAT (HB)
RANA 823 I HB

Surface preparation

The surface must be clean and dry .All dirt grease and other foreign materials should be removed .Old primed surface must be smoothly wire brushed.

RANACHEM
رانا کیمیا فام (سهامی خاص)

POLYURETHANE TOP COAT
RANA 533T

Product information

1-Provides excellent durability in industrial and marine environments.

2-Suitable for environmental conditions where other coatings can not be applied.

3-Excellent uv resistance

4-Resistant to water, impact and abrasion.

physical data

Colour:	Customer request
Finish:	Semi-Gloss/ Gloss
Flash point:	
resin:	32 °c
cure:	25 °c
Solvent:	24 °c
Volume solids:	50 ±2%
D.f.t:	50 - 60 microns
Specific gravity(mixed):	1.4.± 0.05gr/cm^3
Theoretical coverage:	10 m^2/lit (at 50 µ d.f.t)
Drying time at 25 °c:	
touch dry:	3 hrs
dry to handle :	6 hrs
full cure:	7 days
Component:	2
Pot life:	6-8 hrs at 25 °c:
Mixing ratio(by volume):	
resin:	Refer to can label
cure:	Refer to can label
Application methods:	Conventional spray or brush or airless spray or roller

Recoat intervals*:	10 °c	25 °c	40 °c
(mild condition) : Min:	16 hrs	8 hrs	4 hrs
**Max:	NONE	NONE	NONE

**Maximum Recoat: Unlimited. Must have a clean, dry surface for top coating."Loose" chalk or salts must be removed in accordance with good painting practice. Drying time is temperature, humidity, and fi lm thickness dependent

Recommended thinner:	RANA THINN 50
Recommended cleaner:	RANA CLEAN 50
Shelf life:	12 months when stored indoors in unopened Original containers at 5 to 40 °c (cool and dry place).
Curing mechanism:	By solvent release and reaction by curing agent and resin
Substrate:	Primed steel

*: For recoating the surface should be free of dust ,grease and contamination .

POLYURETHANE TOP COAT
RANA 533T

Typical uses

As a finishing coat for protection of structural steel
in severely corrosive environments where light-fastness
and gloss retention are required.
Other uses:
1-Steel structures in chemical and petrochemical industry,
power plants,tank farms,waste treatment plants.
2-Decks,boottops,top sides and superstructures of ships,
barges and work boats.
3-Piers,offshore platforms and related structures.
important:this product should not be stored above 30°c.

Application information

This RANA CHEM's product is a polyurethane top coat
providing excellent protection for steel structures in
marine and industrial environments.
To obtain the maximum performance for which this product
is formulated,strict adherence to all application,instructions,
precautions,conditions and limitations is necessary.

Application equipment

The following equipment is listed as a guide and suitable
equipment from other manufactures may be used.
Adjustments of pressure and change of tip size may be
Needed to obtain the proper spray characteristics.
1-Airless spray:standard airless spray equipment having
A 28:1 or higher pump ratio and a fluid tip with a 0.33 to 0.38 mm
orifice.
2-Conventional spray:industrial equipment
with suitable aircap having a fluid tip with A 1.4-1.6mm orifice .
3 -Mixer:mixer must be powered by an air motor or an explosion
proof electric motor.
4-Brush or roller.

POLYURETHANE TOP COAT
RANA 533T

Caution

1-Handle with care.
2-Avoid inhalation of possible solvent vapours or paint mist, as well as paint contact with skin and eyes.
3-Apply only in well ventilated areas and ensure that adequate forced ventilation exists when applying paint in confined spaces or when the air is stagnant.
4-Always take precautions against the risks of fire and explosions.
5-Harmful or fatal if swallowed, immediately seek medical assistance.

Application procedures

1-Flush equipment with cleaner before use.
2-Stir resin to an even consistency with a power mixer.
3-Add cure to resin and continue stirring for 5 minuts.
Note:since the pot life is limited and shortened by high temperatures ,do not mix more material than will be used in 8 hours at 25 $^{\circ c}$.
4- Thinning with RANA THINN 50 as needed for workability .
5-Stir during application to maintain uniformity of material and apply a wet coat in even parallel passes after 20 minutes.
6-Clean all equipment with cleaner immediately after use .

Environmental condition

Environmental temperature must be 10-40$^{\circ c}$
Surface temperature must be at least 3$^{\circ c}$ above dew point to prevent condensation. At freezing temperature surface must be free of ice and relative humidity below 80 %.

RANACHEM
رانا کیمیا فام (سهامی خاص)

POLYURETHANE TOP COAT
RANA 533T

Surface preparation

The surface must be clean and dry .all dirt, grease and other foreign materials should be removed .old primed surface must be smoothly wire brushed.