MATERIAL AND EQUIPMENT STANDARD

FOR

CHLORINATED RUBBER PAINT

FOR INTERMEDIATE COAT

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1. SCOPE

This Standard Specification which is generated from SSPC-Paint No. 18 covers the minimum requirements for the composition, analysis, properties storage life and packaging, inspection and labeling of chlorinated rubber intermediate coat paint.

2. REFERENCES

Throughout this Standard the following standards and codes are referred to. The editions of these Standards and Codes that are in effect at the time of publication of this Standard shall, to the extent specified herein, form a part of this Standard . The applicability of changes in standards and codes that occur after the date of this Standard shall be mutually agreed upon by the Company and the Vendor.

SSPC(STEEL STRUCTURES PAINTING COUNCIL) VOL. 2

SSPC-Paint 18	"Chlorinated Rubber Intermediate Coat Paint"
SSPC-PA Guide 3	"A Guide to Safety in Paint Application"

ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)

(Specifications for Ingredients)

D13	"Spirits of Turpentine"
D364	"Industrial Grade Xylene"
D476	"Titanium Dioxide Pigments"
D605	"Magnesium Silicate Pigments"
D607	"Wet Ground Mica Pigment"

(Specifications for Packaging)

D3951	"Standard Practice for Commercial Packaging"

(Test Methods for Properties)

D185	"Coarse Particles in Pigment, pastes and Paints"
D445	"Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)"
D562	"Consistency of Paints Using the Stormer Viscometer"
D1208	"Common Properties of Certain Pigments"
D1210	"Fineness of Dispersion of Pigment"
D1296	"Odors of Volatile Solvents and Diluents"
D1475	"Density of Paint, Varnish, Lacquer and Related Products"
D1542	"Quantitative Test for Rosin in Varnishes"
D3278	"Flash point of Liquids by Setaflash Closed Tester"

UFS (US FEDERAL STANDARDS)

(Standard Specifications for Ingredients)

MIL-C-429	"Chlorinated Paraffin, Technical"

(US Federal Test Method Standard No. 141)

Method 2011	"Preparation of Steel Panels"
Method 3011	"Condition in Container"
Method 4021	"Pigment Content (Centrifuge)"
Method 4053	"Nonvolatile Vehicle Content"
Method 4061	"Drying Time"
Method 4081	"Water Content (Reflux Method)"
Method 4203	"Reducibility and Dilution Stability"
Method 4321	"Brushing Properties"
Method 4331	"Spraying Properties"
Method 4541	"Working Properties and Appearance of Dried Film"

ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE)

ANSI Z129.1	"Precautionary Labeling of Hazardous Industrial Chemicals"

IPS (IRANIAN PETROLEUM STANDARDS)

IPS-E-TP-100	"Paints"

3. UNITS

International System of Units (SI) in accordance with IPS-E-GN-100 shall be used.

4. COMPOSITION

4.1 Ingredient and Proportions

Ingredients and proportions shall be as specified in Table 1.

The paint based on the specified ingredients shall be uniform, stable in storage, and free from grit and coarse particles. No rosin or rosin derivatives may be used.

Beneficial additives such as anti-skinning, suspending agents, or wetting aids may be added.

4.2 Percentage

This paint shall contain approximately 35% by volume of nonvolatile film forming solids.

TABLE 1 - COMPOSITION

INGREDIENTS	TYPICAL COMPOSITION Wt. %	Vol. %	INGREDIENT ASTM	STANDARDS US FEDERAL
PIGMENT (23 ±7 Wt. %)				
TITANIUM DIOXIDE	4.0	1.3	D476 TYPE IV	---
TINTING PIGMENTS'	0.4	0.3	---	---
EXTENDER PIGMENTS				
MAGNESIUM SILICATE	15.6	7.3	D606	---
MICA	6.4	2.9	D607	
VEHICLE (77±7 Wt. %)				
CHLORINATED RUBBER[2]	20.1	15.5	---	---
CHLORINATED HARD RESINS	5.0	4.0	---	MIL-C-429, TYPE II
CHLORINATED PLASTICIZERS	10.0	11.0		MIL-C-429, TYPE I
PLASTICIZER[3]	---	---	---	---
SOLVENTS[4]	37.0	56.2	---	---
VEHICLE STABILIZER[5]	0.6	0.7	---	---
VAPOR PHASE STABILIZERS[6]	0.2	0.3	---	---
SUSPENDING AIDS[7]	0.7	1.5	---	---
TOTALS	100.0	100..0	---	---

1) Lampblack or lightfast and compatible, chemically resistant colored pigments shall be used to provide a tint or color when desire.

2) The chlorinated rubber shall contain approximately 66% by weight chlorine. The viscosity (based on solution of 20% by weight concentration in toluene at 20°C) shall fall in the range of 9 to 14 centipoise, when measured according to ASTM Standard D445. Up to 50% by weight of the amount of chlorinated rubber could be of the viscosity range of 17 to 25 centipoises, but spray application is more difficult.

3) Alternative plasticizers can be used, provided they are compatible, high quality, and chemically resistant.

4) The solvent shall consist of aromatic or a blend of aromatic and aliphatic hydrocarbons, with the aliphatic portion limited to 25% by weight, and shall have a minimum kauri butanol value of 75. Up to 10% by weight of turpentine (ASTM Standard D13) or other high boiling aromatic type solvents may be added to improve application properties.

5) The vehicle stabilizer shall be a mixture of four parts zinc oxide and one part pentaerythritol. Other suitable chloride acceptors, such as an epoxidized vegetable oil, may be used.

6) A vapor-phase stabilizer, such as propylene oxide, can also be used. It must be a high-grade commercial material suitable for the intended purpose.

7) The suspending aid shall be hydrogenated castor oil or montmorillonite mineral.

5. ANALYSIS

The paint shall conform to the composition (analysis) requirements of Table 2.

TABLE 2 - ANALYSIS

CHARACTERISTICS	REQUIREMENTS Min. Wt. %	Max. Wt. %	ASTM METHOD	US FEDERAL STD. No. 141
PIGMENT AND EXTENDER	16.0	30.0	D1208	4021
VOLATILES	---	54.6	D1208	---
NONVOLATILE VEHICLE 22.0	---	---	4053	
UNCOMBINED WATER	---	0.25	D1208	4081
COARSE PARTICLES AND SKINS, AS RETAINED ON 0.044 mm SIEVE OPENING (STANDARD 325 MESH SCREEN)	---	0.05	D185	---
ROSIN OR ROSIN DERIVATIVES	---	0	D1542	---

6. PROPERTIES

6.1 The paint shall meet the requirements of Table 3 and Sections 6.2 through 6.5.

6.2 Odor

The odor shall be normal for the materials permitted (ASTM Standard D1296).

6.3 Color

The color, or contrasting shade, shall be obtained by using compatible, chemically resistant tinting pigments.

6.4 Compatibility

There shall be no evidence of incompatibility of any of the ingredients of the paint when one volume of paint is slowly mixed with one volume of xylene (US Federal Standard No. 141, Method 4203) Solvent blends shall be checked in an unpigmented film deposited on glass.

The dried film must be clear and bright. The flexibility and permeability of the trial film shall also be compared with that obtained from the "typical formulation" Paint.

6.5 Working Properties

The paint shall be easily applied by all three methods (Brush, Spray, Roller) when tested in accordance with US Federal Standard No. 141, Methods 4321, 4331, and 4541. The paint shall show no streaking, running, or sagging after drying.

TABLE 3 - PROPERTIES

CHARACTERISTICS.	REQUIREMENTS Min.	Max.	ASTM METHOD	US FEDERAL STD. No. 141
PAINT CONSISTENCY				
VISCOSITY SHEAR				
RATE 200 rpm				
GRAMS	165	350		
KREB UNITS	75	100	D562	
DENSITY Kg/Li	1.2	1.3	D1475	
FINENESS OF GRING, MICRONS	40	---	D1210	-
" " HEGMAN UNITS	5			
DRYING TIME:				
SET TO TOUCH, MINUTES	15	---	---	4061
DRY HARD HOURS	1	---	---	4061
FLASH POINT °C	26.7	---	D3278	---

*** Viscosity 48 hours or more after manufacture.**

7. STORAGE LIFE AND PACKAGING

7.1 Condition in Container

The paint shall show no thickening, curdling, gelling, or hard caking when tested as specified in Federal Standard No. 141, Method 3011, after storage for 24 months from the date of delivery, in a full, tightly covered container.

7.2 Packaging

The packaging shall meet the relevant requirement of ASTM D3951-88.

8. INSPECTION

8.1 All materials supplied under this specification shall be subject to timely inspection by the purchaser or his authorized representative. The purchaser shall have the right to reject any material(s) supplied which is (are) found to be defective under this specification. In case of dispute, the arbitration or settlement procedure, established in the procurement documents shall be followed.

8.2 Samples of any or all ingredients used in the manufacture of this paint may be requested by the purchaser and shall be supplied upon request, along with the supplier's name and identification for the material.

8.3 Unless otherwise specified, the methods of sampling and testing should be in accordance with US Federal Test Method Standard No. 141, or applicable methods of the American Society for Testing and Materials (ASTM).

9. LABELING

9.1 Labeling Standard

Refer to ANSI Standard Z 129.1 Precautionary Labeling of Hazardous Industrial Chemicals.

9.2 Marking of Containers

Each container shall be legibly marked with the following information:

Name: Chlorinated Rubber Paint for Intermediate Coat
Specification: IPS-M-TP-140 .....
MESC No.: .....
No. of components: .....
Maximum temperature resistance: .....
Type of spray: .....
Kind and size of spray nozzletip: .....
Cleaning material: .....
Flash point °C: .....
Pot life (hours): .....
Drying time for overcoating: .....
Kind of thinner: .....
Color: .....
Lot Number: .....
Stock Number: .....
Date of Manufacture: .....
Quantity of Paint in Container: .....
Information and Warnings, if needed: .....
Manufacturer's Name and Address: .....
Design Guide: For guidance on the usage of this paint for various application / environments and temperature range, reference shall be made to IPS-E-TP-100 "Paints".

9.3 Directions for Use

The following directions for use shall be supplied with each container of paint:

Directions for Use of Chlorinated Rubber Intermediate Coat Paint

- This paint is intended for use as an intermediate coat or topcoat over rust inhibitive chlorinated rubber primer or other suitable primers on structural steel. Before applying, remove all moisture, oil grease, dirt, and loose or non-adhering paint. Sound old coatings that are compatible with this chlorinated rubber paint may remain but damaged areas or areas of poor adhesion must be spot cleaned and spot primed.

- Preferred primers are chlorinated rubber, modified chlorinated rubber, chemically cured epoxy, zinc-rich and others specifically recommended by the manufacturer where a zinc rich primer is used and the system is considered for water immersion service, a seal-coat between the primer and this intermediate or topcoat paint may be required to eliminate blistering . Contaminated prime coats shall be cleaned by appropriate methods before application of succeeding coats.

- Mix paint thoroughly before use. If simple stirring is inadequate pour off most of the liquid into a clean container. Thoroughly mix the pigment with the remaining liquid, taking care to scrape all the pigment off the bottom of the can. Gradually add the poured off liquid and mix thoroughly. Mixing may be made easier by transfer-

ring contents to a larger container or by pouring the paint to and from another container. Examine bottom of container for unmixed pigment. Screen paint before applying.

- Generally, thinners are not used for brush application. For spray application, the coating may be thinned with xylene up to 1.5 liter per 8 liters of unthinned paint. A by volume blend of 80% minimum of xylene and 20% maximum of an aliphatic solvent having an evaporation rate faster than that of xylene may be used instead of straight xylene.

- Apply by brush or spray to the specified film thickness or, if none is specified, to at least 75 microns dry or approximately 225 microns wet. When application is by spraying, the equipment and operator technique should be properly adjusted to prevent dry spray and to deposit a wet film of paint on the substrate. Clean the equipment with xylene or the reducing thinner both before and after use.

- The surface to be painted shall be dry and the surface temperature shall be at least 3C above the dew point.

- Do not paint outdoors if precipitation, dew, or condensation is expected before the paint dries.

- At temperatures of 15-27°C and relative humidities of 40% to 60% allow at least three hours drying time between coats. Allow at least 48 hours of drying time after the last coat is applied before placing in water immersion service. If the temperature is below 16°C or if the relative humidity is above 60%, allow 4 to 7 days before placing in water immersion service.

9.4 Directions for Safety

The following directions for safety shall be supplied with each container of paint:

- Paints are hazardous because of their flammability and potential toxicity. Proper safety precautions shall be observed to protect against these recognized hazards. Safe handling practices are required and should include, but not be limited to, the provisions of SSPC-PA Guide 3 "A Guide to Safety in Paint Application" and to the following:

- Keep paints away from heat, sparks, and open flame during storage, mixing, and application. Provide sufficient ventilation to maintain vapor concentration at less than 25% of the lower explosive limit.

- Avoid prolonged or repeated breathing of vapors or spray mists, and prevent contact of the paint with the eyes or skin.

- Clean hands thoroughly after handling paints and before eating or smoking.

- Provide sufficient ventilation to insure that vapor concentrations do not exceed the published permissible exposure limits. When necessary, supply appropriate personal protective equipment and enforce its use.

This paint may not comply with some air pollution regulations because of its hydrocarbon solvent content.

Ingredients in this paint, if so formulated, and which may pose a hazard include lead and chromate pigments, hydrocarbon solvent, and plasticizers. Applicable regulations governing safe handling practices shall apply to the use of this paint.