

11 PAINTING

11.1 Material

11.1.1 All paints shall be approved by the Consultant for colour, quality and type. All painting work shall be carried out in accordance with the paint manufacturer's specifications unless otherwise directed by the Consultant.

11.1.2 All paints and finishes used for the project shall be manufactured by or under license from one of the following manufacturers;

(a) Nippon Paint

(b) Sigma Paint

11.1.3 Paint shall be ready mixed and all paints, varnishes, enamels, lacquer stains, paste fillers and similar materials shall be delivered to the site in the original containers with the seals unbroken and labels intact. Each container shall give the manufacturer's name, type of paint, colour of paint and instructions for reducing. Thinning shall be done only in accordance with the manufacturer's directions.

11.1.4 Use of product by the same manufacturer shall be a general rule in each stage of work in this Specification.

11.1.5 Colour, lustre, colour scheme, finish shall be decided by the Consultant after checking sample paint test.

11.1.6 The painting shall be performed by experienced and competent painter.

11.1.7 Where the walls are specified to be painted, all columns, arches, groove, rough surfaces, reveals, soffits and returns, etc. shall be included. No extra shall be payable.

11.2 Definition of Terminology

Surface Sealing

Surface to be painted shall be sealed to have uniform suction and prevent lye from oozing out.

Spot Puttying

All cracks and depressions shall be filled flush with putty.

Puttying

All surfaces to be painted shall be puttied uniformly flat surface.

Spot painting

Spot puttied area shall be touched up by paint

Touch-up

Any damaged area after the prime coat has been applied shall be touched up

Drying hour

The drying time of double-coated paint shall be measured at the temperature of 20°C and humidity of 70%.

Amount of paint

The amount shall be standard amount of paint itself not including thinner. It shall increase or decrease depending on shape and surface condition in the process of painting.

11.3 Paint Finish Symbols

OP	Synthetic resin mix paint finish
VP	Solvent-polyvinyl chloride resin paint finish
EP	Polyvinyl acetate resin emulsion paint finish
AEP	Synthetic resin emulsion paint finish
CL	Clear lacquer finish
EXP	Epoxy resin paint finish
Stipple (OP)	Stippled finish (oil mix paint finish)
Stipple (EP)	Stippled finish (polyvinyl acetate resin emulsion paint finish)

11.4 Painting in General

11.4.1 Preparation of Paint

11.4.2 Mixing: Paint content with pigment shall be thoroughly stirred to make a uniform consistency.

11.4.3 Thinning: Portable water shall be used for thinning of emulsion paint and water-soluble paint. Proper thinner, product of the same manufacturer as paint, as a rule, shall be used for other types of painting. Percentage of thinning and viscosity shall be conducted with direction of manufacturer or catalogue as they vary with the method of paint, temperature, type of material to be painted.

11.4.4 Allowable period of Use: Paint mixed with more than 2 types shall be used with direction of a manufacturer or catalogue as allowable period of use, mixing ratio and mixing method vary. The paint which has passed allowable period of use shall not be used.

11.4.5 Conditions of Painting

11.4.6 Work shall not be executed in the following situations

11.4.6.1 When humidity is above 85%

11.4.6.2 When raining or it is forecast

11.4.6.3 When dusts are present

11.4.6.4 When temperature of surface is high under hot weather and bubbles are likely to develop on the painted surface.

11.4.6.5 Conditions of Surface to be painted: Work shall not be executed or proper means shall be taken in the following situations.

11.4.6.6 When surface is damp and wet

11.4.6.7 When condensation (is likely to) develop on the surface.

11.4.7 All nail holes on veneer, board, etc., shall be covered with proper rust-proof paint before the subsequent painting is applied in accordance with this specification.

11.4.8 Performance

11.4.8.1 Paint shall be evenly and uniformly applied on the surface. Areas of difficult application such as pointed part, internal angle, welded part, etc. shall be thoroughly painted and double coated as necessary to deep uniform coating thickness.

11.4.8.2 Painting shall be properly done by carefully selecting the painting method by the shape of surface and types of paint.

11.4.9 Protection

11.4.9.1 Dangerous material such as paint, thinner, etc., excluding emulsion paint and water-soluble paint shall be kept in accordance with regulations concerned.

11.5 Procedure of Painting

11.5.1 Exterior - Surface of Mortar, Plaster and Concrete

AEP- Synthetic resin emulsion paint.

Coating Process	No. of Coats	Type of Paint	Drying hour	Amount (kg/m ²)
1. Surface preparation		Dry, clean and free from impurities		
2. Surface sealing	1	Sealer for emulsion paint	longer than 4 hours	
3. Puttying		Putty for emulsion paint		
4. Grinding		Grind with proper grinding tool		
5. Spot painting		Synthetic resin emulsion paint		
6. Second coating	1	Synthetic resin emulsion paint	longer than 4 hours	0.10-0.13
7. Finish coating	2	Synthetic resin emulsion paint	longer than 4 hours	0.10-0.13

Notes:

Degree of dryness on the surface to be painted shall be kept under 6% in water content and below pH 9.5

Puttying and sanding process shall allow omitting depending on the conditions of the surface.

Drying time of putty shall be long enough for sanding to proceed.

Amount of sealer for surface sealing shall be adjusted with direction of the Consultant as it varies with the surface conditions.

11.5.2 Exterior - Iron Products in General

OP - Synthetic resin mix paint

Coating Process	No. of Coats	Type of Paint	Drying hour	Amount (kg/m ²)
1. Surface preparation		Completely remove rust, moisture, oil and other impurities by sander, cleaner and surface.		
2. First Coating 24 hours	1	Rust proof oil paint	longer than 24 hours	0.13-0.15
3. Touch-up		Touch-up rustproof oil paint		
4. First Coating	1	Rustproof oil paint	longer than 24 hrs	0.13-0.15
5. Second coating	1	Synthetic resin mix paint	longer than 15 hrs	0.11-0.15
6. Finish coating	1	Synthetic resin mix paint	longer than	0.11-0.15

			15 hrs	
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Note:

Paint for touch-up painting shall be the same as used for first coat in process No. 2

11.5.3 Exterior - Wood

OP - Synthetic resin mix paint finish

Coating Process	No. of Coats	Type of Paint	Drying hour	Amount (kg/m ²)
1. Surface preparation		Clean and sand to plane surface		
2. Knot treatment	1-2	Lacquer varnish	longer than 24 hours	
3. First coating	1	First coat paint of oil mix paint	longer than 24 hrs	0.13-0.15
4. Second Coating	1	Oil mix paint	24 hrs	0.11-0.13
5. Finish coating	1	Oil mix paint	longer than 24 hrs	0.11-0.13

Note:

11.6 Puttying and sanding shall be done after process No.2 when there are cracks, etc. on the surface putty shall be oil-putty, but drying time shall vary depending on conditions.

11.6.1 Interior - Mortar, board, etc.

Stipple (EP) - Polyvinyl acetate resin emulsion paint finish

Coating Process	No. of Coats	Type of Paint	Drying hour	Amount (kg/m ²)
1. Surface preparation		Dry, clean and free from impurities		
2. Surface sealing	1	Sealer for emulsion paint	longer than 4 hours	
3. Puttying		Putty for emulsion paint		
4. Grinding		Grind with proper grinding tool		
5. Spot painting		Second coating paint of polyvinyl acetate resin emulsion paint		
6. Second Coating	2	Polyvinyl acetate resin emulsion paint	longer than 4 hrs	1.11-0.13
7. Finish Coating	1	Polyvinyl acetate resin emulsion paint for stipple-finish	longer than 4 hrs	0.25-0.35

Notes:

Degree of dryness on the surface to be painted shall be kept under 6% in water content and below PH 9.5

Puttying and sanding process shall allow omitting depending on the conditions of the surface.

Drying time of putty shall be long enough for sanding to proceed.

Amount of sealer for surface sealing shall be adjusted with direction of the Consultant as it varies with the surface conditions.

11.6.2 Interior - Mortar, plaster, concrete, etc.

VP Solvent - Polyvinyl chloride resin paint finish

Coating Process	No. of Coats	Type of Paint	Drying hour	Amount (kg/m ²)
1. Surface preparation		Dry, clean and free from impurities		
2. Surface sealing	1	Sealer for emulsion paint	longer than 2 hours	
3. Puttying		Putty for polyvinyl chloride resin paint		
4. Grinding		Grind with proper grinding tool		
5. Spot painting		Solvent-polyvinyl chloride resin enamel emulsion paint		
6. Second Coating	1	Solvent-polyvinyl chloride resin enamel emulsion paint	longer than 4 hrs	0.11-0.14
7. Finish Coating	2	Solvent-polyvinyl chloride resin enamel emulsion paint	longer than 4 hrs	0.11-0.14

Notes:

Degree of dryness on the surface to be painted shall be kept under 6% in water content and below PH 9.5

Puttying and sanding process shall allowed to omit depending on the conditions of the surface.

Drying time of putty shall be long enough for sanding to proceed.

Amount of sealer for surface sealing shall be adjusted with direction of the Consultant as it varies with the surface conditions.

11.6.3 Interior - Mortar, plaster, concrete, etc.

EP Polyvinyl acetate resin emulsion paint finish

Coating Process	No. of Coats	Type of Paint	Drying hour	Amount (kg/m ²)
1. Surface preparation		Completely remove rust, moisture, oil and other impurities by sander, cleaner and surface		
2. First Coating	1	Synthetic resin rust-proof. Red lead-type, lead compound-type	longer than 24 hrs	0.18-0.22 0.13-0.15
3. Touch-up		Touch-up rust proof paint		
4. First Coating	1	Synthetic resin rust-proof paint. Red lead-type, Lead compound-type	Longer than 24 hrs	0.18-0.22 0.13-0.15
5. Second Coating	1	Synthetic resin mix paint	longer than 15 hrs	0.11-0.13
6. Finish Coating	1	Synthetic resin mix paint	longer than 15 hrs	0.11-0.13

Coating Process	No. of Coats	Type of Paint	Drying hour	Amount (kg/m ²)
1. Surface preparation		Dry, clean and free from impurities		
2. Surface sealing	1	Sealer for emulsion paint	longer than 4 hrs	
3. Puttying		Putty for emulsion paint		

4. Grinding		Grind with proper grinding tool		
5. Spot painting		Polyvinyl acetate resin emulsion paint		
6. Second Coating	1	Polyvinyl acetate resin emulsion paint	longer than 4 hrs	0.11-0.13
7. Finish Coating	1	Polyvinyl acetate resin emulsion paint	longer than 4 hrs	0.11-0.13

Notes:

Degree of dryness on the surface to be painted shall be kept under 6% in water content and below PH 9.5

Puttying and sanding process shall allow omitting depending on the conditions of the surface.

Drying time of putty shall be long enough for sanding to proceed.

Amount of sealer for surface sealing shall be adjusted with direction of the Consultant as it varies with the surface conditions.

11.6.4 Interior - Iron products, steel.

OP - Synthetic resin mix paint

Notes:

Paint for touch-up painting shall be the same as used for first coat in process No.2

When oil rust-proof paint is used instead of synthetic resin rust proof, its specification shall conform to No. 5 and No.6.

11.6.5 Floor - Concrete and Mortar

EXP - Epoxy resin paint finish

Coating Process	No. of Coats	Type of Paint	Drying hour	Amount (kg/m ²)
1. Surface treatment		Dry, clean and free from impurities		
2. First coating	1	First coating paint for epoxy	Longer than 24 hrs	
3. Finish Coating	2	Epoxy resin paint	Longer than 24 hrs	

Notes:

Degree of dryness on the surface to be painted shall be kept under 6% in water content and below PH 9.5.

Amount of paint and number of paint shall be as directed by the Consultant as they vary with the conditions of surface and required thickness of coating.

Painted surface shall be kept out of use for more than 7 days after application of final coat.