

Note to: Regional Engineering Heads- North, East, West & South, DGM- Major Projects

Subject: Painting System at Depots / Installations / LPG Plants / Aviation Fuelling Stations

Further to our circular ref E&P.Std. Mech.03 dated 31.07.2014, we have revised the existing painting specifications of the Fire Water Pipeline in line with OISD-244 (Draft V) as under;

Type of Painting	Facilities	Existing Specifications	Revised Specifications
New Construction Painting /	Fire water pipelines, Hydrant & Monitor stand posts	<u>Surface Preparation</u> Blast clean Sa 2.5 <u>Primer Coat</u> One coat of Inorganic Zinc Silicate at 65 microns <u>Intermediate Coat</u> One coat of tie epoxy coat 75 microns <u>Top / Finish Coat</u> One coat of acrylic aliphatic polyurethane at 40 microns (PO red shades can be selected) Total DFT (min) -180 microns	<u>Surface Preparation</u> Blast clean Sa 2.5 <u>Primer Coat</u> One coat of Inorganic Zinc Silicate at 65 microns <u>Intermediate Coat</u> One coat of tie epoxy coat 75 microns <u>Top / Finish Coat</u> Two coats of acrylic aliphatic polyurethane at 30 microns per coat (Fire Red shade as per IS:5) Total DFT (min)- 200 microns
New Construction Painting /	Hose boxes, Water Cum Foam Monitors and Hydrant Outlets	New Item	<u>Surface Preparation</u> Blast clean Sa 2.5 <u>Primer Coat</u> One coat of Inorganic Zinc Silicate at 65microns <u>Intermediate Coat</u> One coat of tie epoxy coat 75 microns <u>Top / Finish Coat</u> Two coats of acrylic aliphatic polyurethane at 30 microns per coat (Luminous Yellow shade as per IS:5) Total DFT (min)- 200 microns
Maintenance Painting	Fire water pipelines, Hydrant & Monitor stand posts	<u>Surface Preparation</u> Manual clean SSPC SP2 or St.3 <u>Primer Coat</u> Two coats of surface tolerant epoxy at 125 microns per coat	<u>Surface Preparation</u> Manual clean SSPC SP2 or St.3 <u>Primer Coat</u> Two coats of surface tolerant epoxy at 125 microns per coat

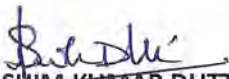
		<u>Intermediate Coat</u> Nil <u>Top / Finish Coat</u> Two coats PU aluminium paint at 30 microns per coat Total DFT (min)-310 microns	<u>Intermediate Coat</u> Nil <u>Top / Finish Coat</u> Two coats acrylic aliphatic PU paint at 30 microns per coat (Fire Red shade as per IS:5) Total DFT (min)- 310 microns
Maintenance Painting	Hose boxes, Water Cum Foam Monitors and Hydrant Outlets	New Item	<u>Surface Preparation</u> Manual clean SSPC SP2 or St.3 <u>Primer Coat</u> Two coats of surface tolerant epoxy at 125 microns per coat <u>Intermediate Coat</u> Nil <u>Top / Finish Coat</u> Two coats acrylic aliphatic PU paint at 30 microns per coat (Luminous Yellow shade as per IS:5) Total DFT (min)-310 microns

The revised painting scheme incorporating the above changes is enclosed herewith;

1. Annexure-8II Rev02 (New / Construction Painting) dated 05.09.2014
2. Annexure-8III Rev03 (Maintenance Painting) dated 05.09.2014

All other stipulations of “Guidelines for Painting System at Depots / Installations / LPG Plants / Aviation Fuelling Stations” and clarifications provided in our circular ref E&P/SI/CON-2(1)/2014 dated 19.02.2014 and circular ref E&P.Std. Mech.03 dated 31.07.2014 shall remain same.

Please be guided accordingly.


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GM, Engg- E&P-HQ

Cc: ED, E&P

Cc: GM, Operations, RHQ

Cc: Regional Operation Heads - North, East, West & South

PAINTING SYSTEM FOR STEEL STRUCTURES, TANKS, PIPELINES FOR TERMINALS, DEPOTS, LPG PLANTS AND AFS

New / Construction Painting

Sr No	Facilities	Area of Application	Surface Preparation	Primer Coat	Intermediate Coat	Top/ Finish coat	Total DFT (min)
1	Vertical Above ground Tanks (Fixed & Floating roof)- Product & Fire water tank Horizontal Above Ground Product Tanks	External surface of Tank Shell, Roof (Fixed Roof), Tank appurtenances etc. exposed to atmosphere	Blast clean Sa 2.5	One coat of Inorganic Zinc Silicate at 65 microns & one tie coat epoxy coating of 30 microns	One coat of epoxy high build micaceous Iron oxide at 125 microns	Two coats of acrylic aliphatic polyurethane at 30 microns (All shades can be selected)	280 microns
2	Vertical Above ground Tanks (Product) - Floating Roof	Internal surface of Shell, Bottom plate, Roof deck bottom surface, Tank appurtenances like nozzles, Emergency Drain, Roof Legs, roof drain pipes	Blast clean Sa 2.5	One coat of epoxy Zinc Phosphate primer at 40 microns per coat	Nil	Two coats of Solvent free Epoxy tank lining at 250 microns per coat	540 microns
		External surface of Tank Deck Roof, Tank appurtenances like roof nozzles, Emergency Drain, Auto Bleeder Vents, Roof Legs, Pontoon Manhole, Foam Dam exposed to atmosphere.	Blast clean Sa 2.5	One coat of inorganic zinc silicate primer at 65 microns per coat	Nil	Two coats of amine cured Epoxy tank lining at 125 microns per coat	315 microns
		Internal surface of Pontoon area	Manual Clean SSPC SP 2	One coat surface tolerant epoxy mastic coating at 100 microns	Nil	Nil	100 microns
3	Vertical Above ground Product Tank - Fixed Roof Tank	Internal surface of Shell 1M from bottom plate & 1M from top curb angle, Roof truss & underside of roof plate, Bottom Plates	Blast clean Sa 2.5	One coat of epoxy Zinc Phosphate primer at 40 microns per coat	Nil	Two coats of Solvent free Epoxy tank lining at 250 microns per coat	540 microns
4	Vertical A/G Product Tanks (Fixed & floating Roof tank) & Horizontal Tanks	External surface of tank structural support, handrails, rolling ladders, landing platform, 300 mm tank shell from bottom annular plate	Blast clean Sa 2.5	Two coats of epoxy zinc phosphate primer at 25 microns per coat	Nil	Two coats of high build coal tar epoxy at 125 microns per coat	275 microns
5	Vertical A/G tanks (Products & Fire Water)	Underside of Bottom plate	Blast clean Sa 2.5	One coat of weldable Zinc silicate primer at 25 microns	Nil	Two coats of high build coal tar epoxy at 125 microns per coat	275 microns
6	Fire water Tanks	Internal surface of Tank shell, Roof structurals, underside of roof plate, bottom plate	Blast clean Sa 2.5	One coat of Inorganic Zinc Silicate at 65 microns	Nil	Two coats of high build coal tar epoxy at 125 microns per coat	315 microns

7	Fire water Tanks	External surface of tank structural support, handrails, rolling ladders, landing platform, 300 mm tank shell from bottom annular plate	Blast clean Sa 2.5	Two coats of epoxy zinc phosphate primer at 25 microns per coat	Nil	Two coats of high build coal tar epoxy at 125 microns per coat	275 microns
8	A/G product pipelines	External surfaces of pipes, fittings, flanges, valves	Blast clean Sa 2.5	One coat of Inorganic Zinc Silicate at 65 microns	One coat of tie epoxy coat 75 microns	One coat of acrylic aliphatic polyurethane at 40 microns (Al shades can be selected)	180 microns
9A	Fire water pipelines, Hydrant & Monitor stand posts	External surfaces of pipes, fittings, flanges, Hydrant & Monitor Stand Posts	Blast clean Sa 2.5	One coat of Inorganic Zinc Silicate at 65 microns	One coat of tie epoxy coat 75 microns	Two coats of acrylic aliphatic polyurethane at 30 microns per coat (Fire Red shade as per IS:5)	200 microns
		1.0m from either side of hydrant point on the fire hydrant where dripping of water is envisaged	Blast clean Sa 2.5	One coat of high performance glass flaked reinforced epoxy surface tolerant coating at 200 microns	Nil	Two coats of high build coal tar epoxy at 125 microns per coat	450 microns
9B	Hose boxes, Water Cum Foam Monitors and Hydrant Outlets	External surfaces of Hose boxes, Water Cum Foam Monitors and Hydrant Outlets	Blast clean Sa 2.5	One coat of Inorganic Zinc Silicate at 65 microns	One coat of tie epoxy coat 75 microns	Two coats of acrylic aliphatic polyurethane at 30 microns per coat (Luminous Yellow shade as per IS:5)	200 microns
10	Fire water GI Pipes	External surface of pipes & fittings	Manual clean St-2 / St-3	One coat of wash primer at 10 microns	One coat of epoxy zinc phosphate primer at 40 microns per coat	Two coats of enamel paint at 25 microns per coat (Fire Red shade as per IS:5)	100 microns
11	LPG Pipelines	External surface of pipes & fittings	Blast clean Sa 2.5	One coat of Inorganic Zinc Silicate at 65 microns	One coat of tie epoxy coat 75 microns	Two coats of acrylic aliphatic polyurethane at 30 microns per coat (golden yellow shades can be selected)	200 microns
12	LPG - Air & water pipelines	External surface of pipes & fittings, flanges, valves	Manual clean St-2 / St-3	Two coats of epoxy zinc phosphate primer at 35 microns per coat	Nil	Two coats of enamel paint at 25 microns per coat	120 microns

13	LPG - Horton Spheres / bullets	External surface Vessel, legs	Blast clean Sa 2.5	One coat of Inorganic Zinc Silcate at 65microns & one tie coat epoxy coating of 30 microns	One coat of epoxy high build micaceous Iron oxide at 125 microns	Two coats of acrylic aliphatic polyurethane at 30 microns (Off-White shade)	280 microns
14	Structural Sheds	External surface of Structural members, gratings	Blast clean Sa 2.5 prior to welding	One coat of Inorganic Zinc Silcate at 65microns	One coat of epoxy high build micaceous Iron oxide at 100 microns	Two coats of acrylic aliphatic polyurethane at 30 microns per coat (shade as per requirement)	225 microns
15	Structural sheds / Pipe racks, walk ways	External surface of structural members , gratings	Blast clean Sa 2.5 prior to welding	Two coats of epoxy zinc phosphate primer at 25 microns per coat	Nil	Two coats of high build coal tar epoxy at 125 microns per coat	275 microns

Note :-

1.For ATF tanks please refer the detailed technical specifications as given in Clause No. 10.2

2. Please refer the details of paint materials (generic) covered in the Section 6.0 for Type, Chemical Composition and Min Volume Solids for each type of Primer, Intermediate & Top/ Finish Coat.

PAINTING SYSTEM FOR STEEL STRUCTURES, TANKS, PIPELINES FOR TERMINALS, DEPOTS, LPG PLANTS AND AFS

Maintenance Painting

Sr No	Facilities	Area of Application	Surface Preparation	Primer Coat	Intermediate Coat	Top/ Finish coat	Total DFT (min)
1	Vertical Above ground Tanks (Fixed & Floating roof)- Product & Fire water tank Horizontal Above Ground Product Tanks	External surface of Tank Shell,Roof (Fixed Roof), Tank appurtenances etc. exposed to atmosphere	Manual clean SSPC SP2 or St.3	Two coats of surface tolerant epoxy at 125 microns per coat	Nil	Two coats of acrylic aliphatic polyurethane at 30 microns (All shades can be selected) or two coats epoxy aluminum paint at 30 microns per coat	310 microns
2	Vertical Above ground Tanks (Product) - Floating Roof	Internal surface of Shell,Bottom plate, Roof deck bottom surface, Tank appurtenances like nozzles, Emergency Drain, Roof Legs, roof drain pipes	Manual clean SSPC SP2 or St.3	One coat of epoxy Zinc Phosphate primer at 40 microns per coat	Nil	Two coats of Solvent free Epoxy tank lining at 250 microns per coat	540 microns
		External surface of Tank Deck Roof, Tank appurtenances like roof nozzles, Emergency Drain, Auto Bleeder Vents, Roof Legs, Pontoon Manhole , Foam Dam exposed to atmosphere.	Manual clean SSPC SP2 or St.3	One coat of in organic zinc silicate primer at 65 microns per coat	Nil	Two coats of amine cured Epoxy tank lining at 125 microns per coat	315 microns
		Internal surface of Pontoon area	Manual Clean SSPC SP 2	One coat surface tolerant epoxy mastic coating at 100 microns	Nil	Nil	100 microns
3	Vertical Above ground Product Tank - Fixed Roof Tank	Internal surface of Shell 1M from bottom plate & 1M from top curb angle, Roof truss & underside of roof plate, Bottom Plates	Manual clean SSPC SP2 or St.3	One coat of epoxy Zinc Phosphate primer at 40 microns per coat	Nil	Two coats of Solvent free Epoxy tank lining at 250 microns per coat	540 microns
4	Vertical A/G Product Tanks (Fixed & floating Roof tank) & Horizontal Tanks	External surface of tank structural support,handrails, rolling ladders,landing platform,300 mm tank shell from bottom annular plate	Manual clean SSPC SP2 or St.3	Nil	Nil	Two coats of high build coal tar epoxy at 125 microns per coat	250 microns
5	Fire water Tanks	Internal surface of Tank shell,Roof structurals, underside of roof plate, bottom plate	Manual clean SSPC SP2 or St.3	One coat of Inorganic Zinc Silicate at 65microns	Nil	Two coats of high build coal tar epoxy at 125 microns per coat	315 microns

6	Fire water Tanks	External surface of tank structural support, handrails, rolling ladders, landing platform, 300 mm tank shell from bottom annular plate	Manual clean SSPC SP2 or St.3	Two coats of surface tolerant epoxy at 125 microns per coat	Nil	Two coats of acrylic aliphatic polyurethane at 30 microns (Al shades can be selected) or two coats epoxy aluminum paint at 30 microns per coat	310 microns
7	A/G product pipelines	External surfaces of pipes, fittings, flanges, valves	Manual clean SSPC SP2 or St.3	Two coats of surface tolerant epoxy at 125 microns per coat	Nil	Two coats PU aluminium paint at 30 microns per coat	310 microns
8A	Fire water pipelines, Hydrant & Monitor stand posts	External surfaces of pipes, fittings, flanges, Hydrant & Monitor stand posts	Manual clean SSPC SP2 or St.3	Two coats of surface tolerant epoxy at 125 microns per coat	Nil	Two coats acrylic aliphatic PU paint at 30 microns per coat (Fire Red shade as per IS:5)	310 microns
		1.0m from either side of hydrant point on the fire hydrant where dripping of water is envisaged	Manual clean to St-2/ St-3	One coat of high performance glass flaked reinforced epoxy surface tolerant coating at 200 microns	Nil	Two coats of high build coal tar epoxy at 125 microns per coat	450 microns
8B	Hose boxes, Water Cum Foam Monitors and Hydrant Outlets	External surfaces of Hose boxes, Water Cum Foam Monitors and Hydrant Outlets	Manual clean SSPC SP2 or St.3	Two coats of surface tolerant epoxy at 125 microns per coat	Nil	Two coats acrylic aliphatic PU paint at 30 microns per coat (Luminous Yellow shade as per IS:5)	310 microns
9	Fire water GI Pipes	External surface of pipes & fittings	Manual clean SSPC SP2 or St.3	One coat of wash primer at 10 microns	One coat of epoxy zinc phosphate primer at 40 microns per coat	Two coats of enamel paint at 25 microns per coat	100 microns
10	LPG Pipelines	External surface of pipes & fittings	Manual clean SSPC SP2 or St.3	Two coats of surface tolerant epoxy at 125 microns per coat	Nil	Two coats PU paint at 30 microns per coat (Fire Red shade as per IS:5)	310 microns
11	LPG - Air & water pipelines	External surface of pipes & fittings, flanges, valves	Manual clean SSPC SP2 or St.3	Two coats of epoxy zinc phosphate primer at 35 microns per coat	Nil	Two coats of enamel paint at 25 microns per coat	120 microns

12	LPG - Horton Spheres / bullets	External surface Vessel, legs	Manual clean SSPC SP2 or St.3	Two coats of surface tolerant epoxy at 125 microns per coat	Nil	Two coats of acrylic aliphatic polyurethane at 30 microns (off white shades can be selected)	310 microns
13	Structural Sheds	External surface of Structural members, gratings	Manual clean SSPC SP2 or St.3	Two coats of surface tolerant epoxy at 125 microns per coat	Nil	Two coats of high build coal tar epoxy at 125 microns per coat	375 microns

Note :-

1. Maintenance painting scheme shall be followed only for patch / minor works when the facility is in service and cannot be taken for outage. Wherever larger area painting is involved , it is preferred to adopt new painting scheme after evaluating the techno-commercial aspects.
2. Please note that when tank is not in service & in Gas free state, painting scheme applicable for new tanks (as per Annexure-8(II) Rev01 to be adopted.
3. Please refer the details of paint materials (generic) covered in the Section 6.0 for Type, Chemical Composition and Min Volume Solids for each type of Primer, Intermediate & Top/ Finish Coat.