



Sub-Vendor:	Vendor:	Contractor:		Owner/Purchaser:
		Painting procedure for control valves		
	Arya Mabna Payesh company	Vendors Doc. No.:	Rev.:	

Index

Page

Contents

1-SCOPE	2
2-GENERAL	2
2.1. Non-Painted Surface	2
2.2. Machined Surface	2
2.3. Friction Surface	2
3- SURFACE PREPARATION	2
3.1. Preparation Before Blast Cleaning	2
3.2. Required Cleanliness	3
3.3. Required Roughness	3
3.4. Precautions	3
3.5. Stainless Steel	3
4- STORAGE, MIXING AND THINNING OF PROCEDURE	4
4.1. Storage Condition	4
4.2. Mixing	4
4.3. Tinning	4
5- APPLICATION OF PAINT	4
5.2. Application	6
5.3. Drying Painted Surfaces	7
6-REPAIR OF DAMAGED PAINT AREAS	8
7- INSPECTION	8
7.1. Previous Approval	8
7.2. Inspection Results	8
8- CODES AND STANDARDS	9

Sub-Vendor:	Vendor:			Contractor:	Owner/Purchaser:
		Painting procedure for control valves			
	Arya Mabna Payesh company	Vendors Doc. No.:	Rev.:		

1-SCOPE

This specification covers the minimum requirements for the protection by painting of control valve.

2-GENERAL

2.1. Non-Painted Surface

Painting of the following surfaces is not required:

2.1.1 - Non-ferrous materials (90-10 and 70-30 Copper-Nickel, Monel, Aluminum bronze), high grade stainless steels. **HOWEVER, LOW GRADE STAINLESS STEELS SUCH AS AISI 302, 321, 347, 317, 317 L SHALL BE PAINTED.**

2.1.2 - Plastic materials or materials coated with ultra violet ray resistant plastic.

2.2. Machined Surface

Machined and threaded surfaces shall be protected with temporary rust preventive paint.

2.3. Friction Surface

Friction surfaces of assemblies using friction shall be protected by suitable means against corrosion.

3- SURFACE PREPARATION

3.1. Preparation Before Blast Cleaning

3.1.1 - All rough-edged cuts and, indentations, all surfaces and protrusions **must be ground to smooth out the contour before the surface is prepared for painting. Any grinding performed after blast cleaning, must be re-blasted to required roughness.**

3.1.2 - All bolt holes shall be drilled and blunted before blasting.


3.1.3 - 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.

NOTE: if sand blasting is not applicable for any reason to be agreed by Company, zinc silicate primer shall not be used for repairs. Zinc rich 2 components epoxy primer or an approved epoxy primer formulated for application on hand on mechanically brushed surfaces should be used instead.

3.1.4- Abrasive material for blasting:

1) The abrasive used in installations as wheel abrators or manual blast cubicles in which the abrasive is recovered and re-used shall be mixture of chilled iron or steel grit and steel shot able to produce the required surface profile. The abrasive mixture shall be replenished using new and worn abrasive, so as to produce a consistent profile height and standard of surface cleanliness. The abrasive mixture shall be kept free of dust (including metallic particles) and debris. Abrasive cleaning employing sand shall not be permitted.

2) 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.

Sub-Vendor:	Vendor:			Contractor:	Owner/Purchaser:
		Painting procedure for control valves			
	Arya Mabna Payesh company	Vendors Doc. No.:	Rev.:		

- 3) Expendable abrasive used for blast-cleaning shall be free of contaminants such as chlorides and other soluble salts and shall not contain metallic copper or more than 2% by weights of copper oxide. Expendable abrasives shall not be recycled. Sand shall not be used for blast-cleaning.
- 4) Copper slag or coal slag shall not be used for preparation of surfaces located in submerged or splash zones, or for surface preparation of stainless steel and other noble materials or internal surfaces.
- 5) Sand or other non-metallic abrasives with free silica shall not be used.

3.2. Required Cleanliness

All surfaces prepared for coatings shall satisfy:
 - SA 2.5 of the Swedish standard SIS 05 5900.

3.3. Required Roughness

3.3.1 - All surfaces shall be blast cleaned to obtain a total angular roughness Rt included:

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

3.3.2 - Only dry blasting techniques are allowed. Compressed air for abrasive blasting shall not contain any trace of oil or water. Blasting nozzle pressure shall not be less than 6.2 bar (90 psi).

3.4. Precautions

3.4.1 - Surface preparation by dry blasting techniques shall not be performed if:

- The surface is likely to be humid after surface preparation and before painting,
- The surface temperature is less than 3°C above the surrounding air's dew point,
- The air's 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.

3.4.2 - Surface preparation operations shall be terminated early enough during the day to permit application of the adopted primer on the prepared surface before the sun sets and rust sets in.


If, exceptionally, surface preparation is authorized at night, the prepared surfaces shall be wiped the next morning. They shall be freshened with light sand blasting before the primer is applied.

3.4.3 - During surface preparation, care shall be taken not to damage or alter identification plates, machined surfaces and parts coated in the factory. These parts shall be properly protected.

3.4.4 - Any oil, grease, dust or foreign body present on the surface after surface preparation operations shall be removed before painting. If rust reappears on the surface, the surface shall be re blasted as per paragraphs 5.2 and 5.3.

3.5. Stainless Steel

Before painting, stainless steel surfaces shall be cleaned degreased and blast cleaned with a non-metallic abrasive. Total roughness shall be in the 25-micron range.

Sub-Vendor:	Vendor:			Contractor:	Owner/Purchaser:
		Painting procedure for control valves			
	Arya Mabna Payesh company	Vendors Doc. No.:	Rev.:		

4- STORAGE, MIXING AND THINNING OF PROCEDURE

4.1. Storage Condition

4.1.1 - All paint and thinner containers shall be kept closed before use and stored under shelter.

4.1.2 - Any paint which has gelled or settled during storage shall not be used.

4.1.3 - Any paint for which the shelf life is expired shall not be used.

4.2. Mixing

4.2.1 - All the ingredients in each container shall be thoroughly mixed and homogenized.

Mechanical mixing shall be such that all pigments or other agents are held in solution during application. Manual mixers are not authorized.

4.2.2 - Paint mixed in the original container shall not be transferred until all settled particles have been remixed with the medium. This does not imply temporary removal of part of the medium to facilitate mixing.

4.2.3 - Paint shall not be mixed or held in solution with air bubbles.

4.2.4 - If a skin has formed in the container, it shall be cut and removed. If the skin is thicker than 1 mm, the paint shall not be used.

4.2.5 - All pigmented products shall be strained after mixing unless applicator equipment is provided with adequate strainers.

Strainers must allow all pigments to pass through, but not any skin.

4.2.6 - Products with unlimited pot life or which do not alter on standing may be mixed at any time ; however, if they have set, they must be mixed immediately before use. Paint shall not be kept in the spray equipment pots overnight, but shall be put back into a closed container and remixed before re-use. Containers must be marked with the involved paint's pot-life.

4.3. Tinning

4.3.1 - No thinners are to be added unless necessary for proper application. Thinning must never exceed Manufacturer recommendations.

4.3.2 - Thinners used must be those suggested by the Manufacturer.

4.3.3 - When use of thinner is authorized by the Manufacturer, it shall be added during mixing.

Applicators shall not add thinner after the paint has been thinned to the proper consistency.

Thinners must be added under the guidance of a specialist who is thoroughly familiar with the quantity and type of the added thinner.


5- APPLICATION OF PAINT

5.1.1 Unless otherwise specified, after final testing, all valves shall be internally and externally dried,

and internally coated with grease or sealant.

5.1.2 Unless otherwise specified by purchaser, bronze and stainless-steel valve shall not be painted or coated.

5.1.3 Particular attention shall be given to protection of Austenitic stainless-steel valves from Chloride attack in salt contaminated atmospheres.


Sub-Vendor:	Vendor:	Painting procedure for control valves	Contractor:	Owner/Purchaser:
	 Arya Mabna Payesh company			
	Vendors Doc. No.:	Rev.:		

5.1.4 Standard coatings for AMP Control Valves parts are as below:

AMP-PS	Wet spray coating
General Description	Wet spray solvent or water borne primer and top coat are applied
Surface Condition	Parts must be clean and free of previously applied coatings. Iron phosphates may be applied.
Total Thickness	50-80 micron
Temperature Limit	120c
AMP-PS	Powder Coating
General Description	Heat cured powder coating
Surface Condition	Clean- Iron phosphate- final seal coat
Total Thickness	100 microns
Temperature Limit	120c
AMP-PS	Epoxy Primer and Top coat
General Description	Polyamide epoxy coating
Surface Condition	Commercial blast clean
Total Thickness	200 – 400 microns
Temperature Limit	120c
AMP-PS	Two coat phenolic epoxy
General Description	Phenolic epoxy coating
Surface Condition	Commercial blast clean – near white metal blast cleaning
Total Thickness	100-200 microns
Temperature Limit	220c
AMP-PS	Zinc Primer
General Description	Inorganic zinc rich coating
Surface Condition	near white metal blast cleaning
Total Thickness	50-150 microns
Temperature Limit	400c
AMP-PS	High temperature and Corrosive Application
General Description	Zinc rich primer with silicone modified top coats
Surface Condition	near white metal blast cleaning
Total Thickness	100-300 microns
Temperature Limit	540c
AMP-PS	High temperature and Corrosive Application (Stainless steel)
General Description	Siloxane or Acrylic resin modified with silicone modified top coats
Surface Condition	near white metal blast cleaning
Total Thickness	200-400 microns
Temperature Limit	600c

5.1.5 Technical specification for Powder Coating is as below:

Technical Specification for Powder Coating	
Surface preparation	Clean- Apply conversion coating and seal coat
Coating Thickness	100-150 micron
Standard acceptance Test	500 hours in salt spray conducted on products of ASTM B117
Color Specification	RAL 1001 (Beige)

Sub-Vendor:	Vendor:	Contractor:	Owner/Purchaser:
 Arya Mabna Payesh company	Painting procedure for control valves		
	Vendors Doc. No.:	Rev.:	

5.1.6 Common applications of some special coating are mentioned in the following table. Other types of coatings, which aforementioned shall be applied according to related standards.

Coating	Common Application	Comments
Powder Coating	Used anywhere a durable, long lasting, cost effective coating is required.	Will withstand a continues temperature exposure of 121°C without detrimental effects.
Two coat phenolic epoxy	Not recommended. Does not exceed the powder coating results in any of these tests and is inferior in many aspects	Will withstand a continues temperature exposure of 121°C without detrimental effects. Chalks and discolors when exposed to sunlight. Will not pass salt spray test Will not pass bend test. Will not pass impact test.
Zinc Primer	Used where the application is corrosive and the body is subjected to temperatures up to 399°C continuously	Will not pass salt spray test Will not pass bend test. Will not pass impact test.
High temperature and Corrosive Application	Used where the application is corrosive and the body is subjected to temperatures up to 399°C continuously	Will not pass cross hatch adhesion test

5.2. Application

5.2.1 - Paint shall not be applied to surfaces:

- During rain, snow, fog or when dust is in suspension in the air, when wind velocity exceeds 7 m/s.
- In areas where harmful particles are in suspension,
- When surface temperature is less than 3°C above the surrounding air's dew point,
- When relative humidity is greater than 85 % (95 % when applying inorganic zinc silicate),
- When temperature is below 5°C.

5.2.2 - Blast cleaned surfaces shall be primed as quickly as possible and at the latest during the day they shall be blast cleaned. The primer coat shall end 5 cm from a surface to be prepared on the same panel.

5.2.3 - As far as possible, each coat of paint shall be applied in a continuous, even coat free of holiday. Any area which has not been properly coated or missed shall be repainted.


5.2.4 - Each coat must cure or dry properly before application of the next coat. The applicator shall follow Manufacturer's instructions.

5.2.5 - When several coats of the same type of paint have been specified, alternate coats of paint shall be tinted as much as possible to make sure that the surface is completely covered. If a colorant is added, it shall be compatible with the paint and not alter its service life.

5.2.6 - Brush Application

When paint is Applied with a brush, the following shall be satisfied:

- a) Brush type and quality shall enable proper application of paint. Round or oval brushes are best suited for rivets, bolts, irregular or rough surfaces or pitted steel. Flat and wide brushes are suitable for large flat surfaces, but must not exceed 125 mm. Long handle brushes shall not be authorized.
- b) Brush applied coats shall be as smooth and uniform as possible.
- c) Paint shall penetrate angles.
- d) Protruding parts shall be pre coated.
- e) All paint drips shall be removed with the brush.
- f) A minimum of brush strokes shall be visible.
- g) Surfaces that are not accessible to brush shall be sprayed or painted with a sheep skin.

Sub-Vendor:	Vendor:			Contractor:	Owner/Purchaser:
		Painting procedure for control valves			
	Arya Mabna Payesh company	Vendors Doc. No.:	Rev.:		

5.2.7 - Application by Pneumatic Spray Gun

Application by pneumatic spray gun must satisfy the following conditions:

- Equipment used shall be capable of spraying the paint properly. It shall be fitted with pressure indicators and regulators adapted to service. Nozzles and needles shall be those recommended by the equipment manufacturer for the paint being used. Equipment shall be maintained in good working order.
- Traps or separators shall be installed to trap oil or water condensed in the air. Traps or separators shall be of adequate capacity and drained regularly. Air from the spray gun impinging against the surface shall not deposit any oil or condensed water.
- Continuous mechanical agitation shall keep paint mixture in spray pots or containers at proper consistency.
- Pressure on the product in the spray pot and air in the gun shall be adjusted to obtain optimum atomization. Pressure on the product in the pot shall be set, if necessary, to accommodate gun height with respect to the can height. Air pressure in the gun shall be high enough to atomize paint without forming excessive mist or causing excessive evaporation of solvent.
- Spray equipment shall be kept clean so that dust, dry paint or other foreign matter are not deposited in the coat of paint. Any solvent left in the spray equipment shall be completely removed before applying the paint to the surface.
- Paint shall be applied in uniform coats with total spray pattern coverage. Spray patterns shall be such that paint is evenly applied.
- Drips or excess thickness shall be removed with a brush or the surface cleaned and repainted.
- Surfaces inaccessible by spray gun shall be brush painted. If they are inaccessible by brush, a sheep skin shall be used. Brushes shall be used to work paint into cracks, crevices or other areas not properly coated by spraying.
- Special precautions shall be taken when inorganic zinc is applied. These are given in the Manufacturer's instructions.

5.2.8 - All identification plates, machined surfaces, instrument glass, bearing surfaces of flange, control valve shafts and other similar material shall be masked. If paint gets on these surfaces they shall be cleaned and returned to their original condition.

5.2.9 - Structural steel section edges and irregular surfaces shall be coated first and an additional coat shall be applied at a later stage.

5.2.10 - All equipment and component contact surfaces (skid bases, equipment bottoms, etc...) shall be painted.


5.2.11 - Fresh paint shall be protected against dust and other foreign matter.

5.3. Drying Painted Surfaces

5.3.1 - An additional coat of paint shall not be applied until the previous coat is dry and may be painted. Read Manufacturer's instructions for drying times with respect to ambient temperature and humidity.

5.3.2 - Paint shall not be dried under conditions that may cause wrinkling, blistering, pore formation or other injurious defects.

5.3.3 - No drier shall be added to paint.

Sub-Vendor:	Vendor:			Contractor:	Owner/Purchaser:
		Painting procedure for control valves			
	Arya Mabna Payesh company	Vendors Doc. No.:	Rev.:		

5.3.4 - Paint shall be protected from rain, condensation, snow or freezing until it is completely dry (refer to Manufacturer's technical data sheet).

6-REPAIR OF DAMAGED PAINT AREAS

When factory painted or painted surfaces have been marked in handling, the damaged paint and non-adherent paint shall be removed and the surface thoroughly cleaned in accordance to paragraph 5. The edges of the damaged area shall be smoothed. Surface preparation shall extend approximately 5 cm into the sound coat.

NOTE: if sand blasting is not applicable for any reason to be agreed upon by Company or Inspector, zinc silicate primer shall not be used for touch up repairs.

Zinc rich 2 components epoxy primer or an approved epoxy primer formulated for application on hand or mechanically brushed surfaces should be used instead.

The touch up primer shall be compatible with the paint system.

7- INSPECTION

Painting works achieved in accordance with this specification, shall be inspected by a Company representative in according of standard's.

7.1. Previous Approval

Approval shall be obtained for each stage, indicated below, before going on to the next stage.

7.1.1 - Location of the painting work, products and painted equipment storage conditions.

7.1.2 - Equipment


7.1.3 - Surface preparation

7.1.4 - Primer or prime coat

7.1.5 - After each coat of paint

7.2. Inspection Results

All quality control results shall be written up into reports. All reports shall be submitted to the Company during provisional acceptance of the paint.

Sub-Vendor:	Vendor:	Painting procedure for control valves	Contractor:	Owner/Purchaser:
	 Arya Mabna Payesh company			
	Vendors Doc. No.:	Rev.:		

8- CODES AND STANDARDS

This procedure according to following standards, referenced used.

A 123	Specification for Zinc (Hot Galvanized) Coatings on Iron and Steel products	—
A 153	Specification for Zinc Coating (Hot Dipped) on iron and steel hardware	—
ASTM A385	Standard Practice for Providing High-quality Zinc Coating (Hot-Dip)	—
ASTM D 520	Standard Specification for Zinc Dust Pigment	—
ASTM D4285-83	Test Method for Indicating Oil or Water in Compressed Air	—
ASTM D 4417-93	Test Method for Field Measurement of Surface Profile of Blast Cleaned Steel Blast Cleaned Steel	—
ASTM E 337-84	Tests for Relative Humidity by Wet-and-Dry-Bulb Psychrometer	—
ASTM D3359	Standard test method for measuring adhesion by tape test	—
ASTM D3951	Standard practice for commercial packaging	—
ASTM D4752	Standard Test Method for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub	—