GENERAL PAINTING WORKS SPECIFICATION:

SURFACE PREPARATION –

IMPORTANCE
Surface preparation is the most important part of a coating system and it affects the performance of a coating more than any other variable. Even if a proper coating system has been selected, and if the surface preparation is bad, coating performance is usually going to be poor. It creates foundation in two important ways

- Mechanically by providing an anchor for the coating;
- and chemically, by allowing intimate contact of coating molecules with the steel

DEGREE OF SURFACE PREPARATION
The service environment of the coating system is the most important, and normally is the first consideration when determining the degree of surface preparation required. Severe service environments include immersion in liquids, exposure to aggressive chemicals or environments, and high temperatures & high pressures, or different combinations of these conditions. Some of the surface preparation methods for Steel are as follows:

METHOD OF SURFACE PREPARATION SELECTED FOR THIS JOB:

1. COOPER SLAG BLASTING
Surface preparation by copper slag blasting to SA 2.5 finish of Swedish standard SIS 05 5900 (internal / external surface of tank shell / bottom / roof/Pipe Line/Structure and internal surface as specified) including all labour; scaffolding; equipments etc. complete.

PAINT APPLICATION:
Proper application of protective Paint is to be used for obtaining the required life from the paint system.

APPLICATION METHODS TO BE USED

1. BRUSH APPLICATION

It is used in areas where use of spray method increases the loss factor. However, it is difficult to achieve a high build in one brush coat application. Also, the process is relatively slow and may result in a poor finish. Hence as far as possible this
method is to be applied where ever spray painting is not possible or there will be heavy loss of paint due to spray painting.

2. **AIRLESS SPRAY**

This painting method is fast and versatile because it enables application at variable thicknesses. An electric (Flame Proof) or air driven motor and high pressure fluid pump to compress the coating to extreme pressures to be utilized. Similarly different slot angles produce spray fans of different widths selected on the basis of shape and size of the structure to be painted. The choice of fan width is also dependent on Orifice size. For the same Orifice size the paint applied per unit area will be less wider the spray fan. The following Orifice sizes are recommended:

<table>
<thead>
<tr>
<th>Wet Film Thickness Orifice size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upto 50 µ 0.02-0.03</td>
</tr>
<tr>
<td>100-200µ 0.03-0.04</td>
</tr>
<tr>
<td>&gt; 200µ 0.04-0.07</td>
</tr>
<tr>
<td>Mastics 0.10-0.15</td>
</tr>
</tbody>
</table>

**MATURATION TIME**

A very important criterion for two pack products where curing takes place through chemical reaction when the components are mixed before application. The mixed paint is normally matured for 30-40 minutes to initiate the reaction process which ensures thickness buildup and proper drying of the paint film. Maturation time however depends on pot life and ambient temperature. Products having short life should be allowed less maturation time. Similarly, at high ambient temperatures a low maturation time will provide the adequate effect during film formation.

**QUALITY ASSURANCE PLAN**

Contractor shall carry out painting work as per the specification of best quality paints of approved / recommended manufacturer, the paint manufacturers instructions supplemented by the Engineer in-charge’ direction if any will be followed at all times, particular attention shall be paid to the following,

a) Proper storage to avoid exposure & extreme temperatures
b) Surface preparation prior to painting
c) Proper mixing & thinning as per manufacturers recommendations
d) Application of paint and the recommended limit on time intervals between consecutive coats.

Painting shall not be carried out in frost or foggy weather, or when humidity is such as to cause condensation on the surfaces.
Primer coat shall be applied by the brush / Air less spray over the prepared surfaces in a manner so as to ensure a continuous and uniform film / DFT throughout the surfaces is achieved. Special care for surfaces which are inaccessible shall be taken to cover all the crevices, corners, edges, etc.

Final coats is applied after the primer is hard dry, the surfaces shall be dusted off final coat of PU as specified in the tender shall be applied with brush / Airless spray so that a film is free of from holidaying is obtained. The color shade of first coat shall be slightly lighter than the second coat in order to identify the each coat application.

The quantity of paint supplied as the site will be verified as per the actual billing quantity and paint Data sheet.

FIELD INSPECTION FOR SURFACE CLEANING

a) All the paint materials including primers & thinners supplied at site by the contractor for application shall be procured from the recommended / approved manufacture as per the list and shall be accompanied by manufacturer’s test certificate. Paint formulation without certificate shall not be accepted.

b) The entire painting works shall be subject to inspection by engineer in-charge at all times. The particular, the stage inspection will be performed by the contractor shall offer the work for inspection and approval at every stage before proceeding with the next stage. The record of inspection shall be maintained. The inspection stages as follows:

   I. Surface Preparation
   II. Primer Application - on each coat
   III. Final Coat - on each coat

Vendor/Contractor to provide equipments such as ELCO meter, profile meter, surface preparation comparison charts etc to BPCL as and when the officer demands for checking the painting/surface preparation. The contractor has to provide the calibration certificates of all the equipments produced for inspection and has to submit detailed certified reports for inspection carried out by contractor himself for surface preparation & paint DFT after each coat.

Contractor to provide spark tester to the BPCL Engineer if asked for to check the effectiveness/voids of each coat.

a) Details of Coating / Painting materials to be provided to BPCL as below,

   I. Batch No. Manufacturing date & Expiry date of paints/thinner/hardner.
   II. Physical condition of material & printed containers.
   III. Pot life or mixture mentioned in material data sheet.
   IV. Covering capacity of & hiding power at a specific.
DFT shall be checked and recorded after application of each coat. The thickness shall be measured at as many locations as decided by Engineer in-charge. The contractor shall provide standard thickness measuring instrument such ELKO meter at his own cost.

Any defect noticed during the various stages of inspection shall be rectified by the contractor to the entire satisfaction of the Engineer In-charge before proceeding further.

Contractor shall be responsible for making good any defects found during final inspection / guarantee period/defect liability period as defined in the special terms & condition.