EK 37. YÜZEY HAZIRLAMA VE BOYA UYGULAMA PLANI (METHOD STATEMENT FOR SURFACE PREPARATION AND PAINTING) ÖRNEĞİ

METHOD STATEMENT
for
SURFACE PREPARATION and PAINTING

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1.0 SCOPE

This procedure defines the minimum requirements for protective coating of metallic surfaces, including structural steel and piping activities.
It addresses the materials to be used, the minimum requirements for surface preparation, qualification and application of coating materials and inspection and testing of both shop and site applied coatings.
The scope of the procedure excludes the following elements which shall not be coated unless otherwise instructed by the Client or required for identification or hazard warning purposes:

- Uninsulated duplex stainless steel operating below 90°C
- Uninsulated austenitic steel operating below 60°C
- Super duplex and super austenitic stainless steels, cupper-nickel and other non-ferrous substrates
- Machined surfaces
- Flange sealing faces or other sealing faces
- Fiber Reinforced Plastic (FRP) items
- Galvanized items

All work carried out by the Contractor, shall be in accordance with this Method Statement, relevant specifications and the latest editions of the Industry Codes and Standards.

2.0 GENERAL REQUIREMENTS

- All work shall be performed in compliance with the Approved HSE Plan. Material Safety Data Sheet (MSDS) of all painting materials shall be provided prior to start of work.
- Materials to be used in the execution of coating work shall be obtained from reputable manufacturers, well established in the field of heavy duty coating materials for the oil, gas and petrochemical industries.
- All coating material shall be inspected on receipt, in accordance with the approved procedures.
- FINGER PRINTING: All proposed coating materials shall be supplied with Manufacturer Certificates, defining the infrared fingerprinting and ash content of all their components as

determined by testing in accordance with a recognized international standards test procedure. The Certification shall be issued by an internationally recognized and independent testing laboratory and shall be submitted to Client for approval.

- Materials held in stock shall be routinely inspected, to ensure paint storage conditions are proper. Materials which have exceeded their specified shelf life will be identified and shall not be used.

3.0 REQUIREMENTS for WORKSHOP and FACILITIES

- Surface preparation and coating shall be applied preferably in the closed workshop. It can only be performed in the open area, if sufficient precautions are taken for proper work. If the wind velocity is higher than 10 m/sec or humidity is high, blasting or painting work cannot be done.
- Blasting and painting workshops shall be separated from each other. Workshops shall have sufficient ventilation to avoid any hazard.
- Relative ambient humidity shall be less than 85 % during blasting and/or painting operations.
- Surface Preparation, Blasting and Coating shall not be applied in rain, wind, snow, fog or mist or when the steel surface temperature is less than 3^{o} C above the dew point.
- Paint shall not be applied when the ambient air temperature is below 5^{o} C and above 40^{o} C. If, special curing agents are approved by Client, these temperature limits may be changed.
- Ambient temperature, humidity and dew point of the workshop shall be recorded to the Painting Register Form. This is also valid for site, open area works.

4.0 REQUIREMENTS FOR PERSONNEL

- All personnel employed in blasting and coating shall be trained and experienced.
- Paint and blast operators shall have full knowledge of health and safety hazard, use of protection equipment, coating and blasting materials, paint and thinner pot-life, surface requirements, etc.
- Personnel carrying out inspection and supervising shall be certified and shall have as minimum 2 years experience in this work.

5.0 SURFACE PREPARATION

- The surfaces to be painted shall be prepared as Sa3 White Metal Blast cleaned.
- Prior to commencement of any surface preparation activities, ID (identification) number of the pipe or steel structure part shall be recorded.
- Before blast cleaning, visible deposits of oil, grease or other contaminants on the working surface shall be removed by solvent cleaning. For solvent cleaning, at first heavy oil and grease shall be removed by scraper. Then remaining oil and grease shall be removed by spraying or brushing the surface with solvent and wiping the surface with a clean cloth.
- Before blast cleaning, surface imperfections such as sharp fins, sharp edges, weld spatter, or burning slag shall be removed from the surface. Sharp edges, fillets, corners and welds shall be rounded or smoothed by grinding.
- After blast cleaning and before priming, intended weld areas shall be masked to a distance of 50 mm to either side of the weld area.
- Surfaces that shall be excluded from surface preparation operations such as gages, sight glasses, instruments and instrument cases, control valve stems, flange faces, machined surfaces, insulation weather barriers, electrical cable and materials other than carbon steel, shall be protected from damage by masking tapes or similar, during surface preparation operations.
- Mixture of martensitic steel rollers and grits or any other approved abrasive materials shall be used for surface preparation.
- Blasting abrasives shall be sharp angular grit, dry, clean and free from contaminants that will be detrimental to the performance of the coating. Abrasives shall be selected that are

capable of producing the required surface profile and that have a minimal health impact. The Contractor shall submit details of proposed abrasives to the Client. Expendable grit, such as iron silicate or aluminum silicate produced from mineral slag, sand or garnet material may be used. Expendable grit shall be of grain sizes between 0.5mm and 2.5mm.

- Size of abrasive particles for blast cleaning shall be such that the prepared surface profile height (anchor pattern profile) is in accordance with the requirements for the applicable coating system.
- Only aluminum oxide or stainless steel type abrasives shall be used for stainless steel and other noble metallic surfaces, if painting is required. Abrasives containing soluble chlorides shall not be used.
- The type, particle size distribution and hardness of grit employed, shall ensure that the required surface amplitude/profile, as specified in relevant specification is achieved for successful paint application.
- Blast cleaning shall not be performed in areas close to coating operations or wet coated surfaces in order to prevent dust or grit contamination.
- After blast cleaning, remaining surface imperfections (e.g. sharp fins, sharp edges, weld spatter, burning slag, scabs, slivers etc.) shall be removed.
- Abrasive mixtures may be recycled providing that the required surface quality and surface profile is achievable. If the abrasives shall be recycled, they shall be collected and separated from any other contamination.
- Blasting abrasives used on open sites or in facilities not specifically controlled to preserve the cleanliness of used abrasive shall not be recycled.
- At the end of each shift, blasting workshop floor shall be carefully cleaned.

6.0 PAINT REPAIRS

- Paint repairs will be executed as per Paint repair Procedure.
- Surface preparation of paint repairs and weld joints shall be performed by power tools or hand type blasting equipment.
- Prior to power tool cleaning, at the section to be repaired, visible oil, grease and dirt shall be removed by solvent cleaning.
- Power wire brushes shall be used to remove all loose mill scales, loose rust, loose paint and other loose detrimental foreign material. Adherent weld slags, spatters, mill scales and rusts which can not be removed by power brushing shall be removed by power grinding.
- Sharp edged surface imperfections detrimental to paint performance (e.g. weld spatter, protrusions, delaminating) shall be repaired/removed during surface preparation operations.
- At the interface between areas being painted and areas of existing paint, the existing paint shall be smoothed during surface preparation operations. Existing paint out of the repair area shall not be damaged.

7.0 COATING APPLICATION

- The specified primer coating shall be applied to the prepared metal surface, as soon as practicable after completion of blast or power tool cleaning of that area. In no case, shall the coating be applied to cleaned surfaces showing evidence of fresh rusting, condensation or contamination. Blast cleaned surfaces shall be coated within a maximum of 4 hours after blast cleaning.
- To avoid confusion risk during application, subsequent coats shall be of different color, unless otherwise approved by Client.
- The dust and residues shall be removed from the prepared surfaces by brushing, blowing off with the clean dry air and wiping with a clean dry cloth. Visible deposits of oil, grease or other contaminants shall be removed by solvent cleaning.
- Prior to commencement of painting, cleanliness of the surfaces shall be verified. This verification shall be performed by pressing sticky side of a piece of transparent self-adhesive film (similar to Scotch tape) and it will be examined.

- Surfaces that shall be excluded from painting, such as gages, sight glasses, instruments and instrument cases, control valve stems, flange faces, machined surfaces, insulation weather barriers, electrical cable and materials other than carbon steel, shall be protected from damage during painting operations.
- Around 100 mm bands in both ends of the parts to be painted shall be excluded from painting. These section shall be protected from painting by covering with adhesive papers.
- Each container of paint shall be clearly marked or labeled to show paint identification, date of manufacture and batch number.
- All containers of paint shall remain unopened until their use. Those containers which have been previously opened shall be used first.
- Paint which have gelled or deteriorated during storage shall not be used.
- Paint of which their shelf life is expired shall not be used. Paint containers will be stored in the warehouse by applying first come first go system. Early delivered containers should be used before the late comers.
- Mixed and thinned paints shall be finished within their pot life as per related Manufacturer's Instruction.
- Wet applied coatings shall be applied by airless spray unless otherwise specified. Paint stripes shall be done by brushes.
- All edges, corners, slots, bolts, welds and sharp edges shall be stripe painted by brush. Stripe painting shall be applied after applying primer coat using the same products specified in the related specification.
- No coating shall be applied within a minimum of 100 mm of edges/areas prepared for welding.
- Coatings shall be applied in a uniform manner, to the specified film thickness, without runoff, sags or stains. Intervals between coats shall be kept to the minimum complying with the manufacturer's recommendations at the prevailing temperature, in order to avoid contamination between coats. Any contamination between coats should be removed.
- The coating systems shall be applied according to Manufacturer recommendations and the nominal dry film thickness (DFT) is given for each coat.
- Next coat shall not be applied unless the existing coat is hardened and minimum time interval given in the manufacturer's instruction has passed.
- During drying and curing period, applied coatings shall be adequately protected, the temperature and humidity are controlled in accordance with the coating manufacturer's recommendations.
- Inspection and Testing of prepared surface shall be done as per approved ITP.
- Repair of defective areas shall be accomplished by using wire brushing to clean the surface and then touch – up at site.

8.0 INSPECTION and TESTING

- All testing and inspection equipment shall be kept accurately calibrated at all times and shall be covered by current calibration certificates issued by the equipment manufacturer or a specialist approved test laboratory.
- All blast cleaned or otherwise prepared surfaces shall be visually inspected for conformance to the specified standard of cleanliness and surface roughness, immediately prior to application of the first coat.
- Surface profile of the prepared surfaces shall be examined by surface profile comparator or by surface profile gage. Anchor profile of the surface shall be as per specifications, such as min. 75 microns and maximum 100 microns.
- All coated surfaces shall be visually examined after application of each coat, for harmful defects or contamination. All such defects shall be repaired.
- Wet film thickness measurements shall be made throughout the course of application of each coat, in order to ascertain the adequacy and uniformity of thickness, and shall be used as a guide to predicting the dry film thickness.
- Each completed coat of the painting shall be examined by the Painting Inspector. Examination shall include the visual examination (e.g. color, appearance and uniformity of the coatings) and dry film thickness measurement.
- Extent and method of dry film thickness measurement is as follows :

a) For structures not exceeding 30 m^2 in area, at each 10 m^2, 5 separate spot measurements shall be taken

b) For structures not exceeding 100 m^2 in area, 5 separate spot measurements shall be taken in randomly selected three 10 m^2 areas,

c) For structures exceeding 100 m^2 in area , first 100 m^2 as stated in par. b) above and for each additional 100 m^2 of area and increment thereof, 5 separate spot measurements shall be taken on one 10 m^2 ,

d) Three gage readings shall be made for each spot measurement. For each new gage reading, probe shall be moved to a new location within the 4 cm diameter circle defining the spot. Any unusually high or low gage reading that can not be repeated consistently shall be discarded. The average of the three acceptable readings shall be recorded as the thickness value of that spot.

9.0 RECORDS

- Results of inspection and tests conducted, shall be recorded in the coating inspection record form, in accordance with the requirements of the product specifications and approved Inspection and Test Plan.