

**METAL VESSEL FABRICATION
REQUIREMENTS FOR
FLUOROPOLYMER COATINGS**

Rev. 5-2002
Issued by B. Pascali

Fisher|Moore

North Salt Lake, Utah 84054

I General

1. Scope

This guideline provides direction for the fabrication and surface finish of vessels and metal components to be electrostatically coated with Graefluor™ ECTFE and ETFE 1020™ and Kynar® fluoropolymer high build linings by **Fisher|Moore**, North Salt Lake, Utah.

2. Definitions

- A. Linings – a surface barrier usually greater than 40 mils in thickness applied as either a coating or lining for protection of a less corrosion resistant substrate or for protecting a process or volume of water, or chemicals from contamination from a metal substrate.
- B. Surface Smoothness – the degree of smoothness of a surface produced by the removal of sharp edges and appropriate surface preparation of welds and other rough areas. Surface smoothness includes selection of quality domestic steel and metals that are free of inclusions, porosity, and embedded contaminants.
- C. GRAEFLUOR™ and ETFE 1020™ are the trademark names of a propriety process and modifications to fluoropolymer resins in the electrostatic deposition of high build coatings and linings. These linings are without weld joint or seam and have been and are the thickest fluoropolymer linings currently being applied anywhere in the world. Phenomenal adhesion to all types of metal substrates has been achieved to date equaling the tensile strength of the specific fluoropolymer resin.

II Design Requirements

1. Accessibility

- A. All surfaces of a vessel interior shall be readily accessible for surface preparation and coating application
- B. All vessels will have either a top dead centered manway or a removable top cover to allow for rotation about the major axis for powder deposition during the coating process

2. Connections

- A. All connections to a vessel shall be flanged
- B. Special provision can be made for threaded connections. Approval for such must be obtained before fabrication.
- C. Nozzle connections to be lined should be without elbow connections. Minimum diameters can be as small as 1/4" depending on the length of the nozzle. Please consult with us for minimum diameter and length.
- D. The use of internal flanged connection, stiffening rings, reinforcement pads, angles and channels should be avoided. If such items must be installed internally, they must be welded 100% and have all sharp edges removed and radiused to 1/8" wherever possible.

III Fabrication and Surface Finish Requirements

- 1. All Welding will be continuous. Intermittent or spot welding is not allowed.
- 2. Stick welding is not preferred because of stops and starts and the potential of porosity, slag inclusion and undercut.

3. Sharp edges and fillets shall be ground to a radius of at least 1/8".
4. Tank surfaces following welding shall be ground smooth, but not necessarily flush, and shall be grit blasted to observe any pits, pinholes, undercuts or cracks.
5. Tank surfaces to be coated shall contain no wax, grease, pencil marks, gouges, handling marks, deep scratches, metal stamp marks, silvered steel or other surface flaws. Flaws shall be repaired by blasting, solvent cleaning, welding or grinding as appropriate.
5. All rough welds shall be ground to remove sharp edges, undercuts, porosity, pinholes and other irregularities.
6. Weld splatter must be entirely removed.
7. Weld splatter removal aids such as silicone oil or any other chemical not easily removed by abrasive blast shall be prohibited.
8. All joints are continuous full penetration welds, with no porosity, holes, high spots, lumps or pockets. Grinding and rewelding may be required to eliminate porosity. See page with examples of poor welding.
9. All flame cut parts must be dressed or machined to remove irregularities such as gouges.
10. All steel components shall be of good quality and preferable domestic origin.

IV Responsibilities

1. Joint responsibility

- A. The purchaser, designer, fabricator and coating applicator (**Fisher|Moore**) will review and agree to the requirements involved before contracts are signed.
- B. The purchaser in agreement with the fabricator and the coating applicator (**Fisher|Moore**) should assign responsibility for inspection of fabrication, surface finish, and coating application for all contracts.

2. Responsibility of the purchaser

- A. The purchaser should be responsible for specifying and/or approving the detail for design, fabrication and surface finish to all parties concerned.
- B. The purchaser shall provide sufficient design drawings, specifications and details in writing for the vessel or part to be fabricated and lined including service requirements.
- C. The purchaser should advise the designer, fabricator, coating applicator (**Fisher|Moore**) and all inspectors of the detailed requirements, including time schedules, inspection and acceptable requirements, in writing.

3. Responsibility of the designer

The designer is responsible for including the required fabrication and surface finish details on all sketches and drawings related to the vessel of fabricated item to be coated.

4. Responsibility of the fabricator
 - A. The fabricator is responsible for adhering to the fabrication and surface finish details shown on the working drawings and described in the vessel specifications and this **Fisher|Moore** document.
 - B. Responsibility for additional welding, grinding or surface preparation that may become apparent by the coating applicator in the process of abrasive blasting or preparing for coating in the responsibility of the purchaser. **Fisher|Moore** will return such vessels or equipment for rework to the fabricator or will be issued a purchase order by the purchaser to complete the remedial action required. Subsequent reblasting that may be required will be invoiced to the purchaser as part of the contract.
5. Responsibilities of the coating applicator
Fisher|Moore shall provide the best lining available in the industry by working with the end user, customer and fabricator.

End of Document