

CONCRETE SURFACE TREATMENTS FOR RUBBER LINING

SURFACE PREPARATION

1. Prepare the concrete surface to be lined with abrasive blasting to remove laitance and other debris.
2. Etch the surface with a 1:1 or 2:1(v/v) solution of commercial muriatic (hydrochloric) acid and water.
3. Inspect the surface to ensure that it is free of laitance, curing compounds, oils, release agents, air or water pockets, pitting and sharp changes in surface elevation and that scrubbing with a stiff bristle brush produces no dusting of dislodged cement or sand. At this point the grain of the surface should not be rougher than that of 10 mesh sand to the touch.
4. Any remaining pits, pockets or rough areas should be filled with epoxy to provide a smooth flat surface for rubber application.

RUBBER LINING CONCRETE TANKS

There are numerous problems inherent in concrete which makes the application of rubber more difficult than lining steel vessels. Some of these are as follows:

1. Concrete is a non-homogeneous material which actually can change with every pour on a large structure - with the weather at time of casting, with any additives to the mix, with the surface against which it is cast, and with the degree of vibration used during placement. Larger surface variations are evident when different casting and finishing methods are used, such as pouring against forms, troweling, and centrifugal casting. All these factors create different surface conditions, each of which influence the application and effectiveness of a lining.
2. All concrete surfaces are alkaline and, where moist, can develop conditions of high pH; sufficiently high so that any cements must be strongly alkali resistant and must remain for good lining performance.
3. Air and water pockets: Well placed and compacted poured concrete is filled with these imperfections even though many methods have been tried to eliminate them.
4. Concrete laitance is a problem which is overlooked many times when a lining is to be applied to concrete. Laitance is a very fine, light powder which is floated to the surface when concrete is cast. The bottom of tanks, which are float finished, often show large quantities; however, all finished concrete surfaces will have it to a lesser degree. Because the laitance has no strength and is non-adherent, any lining applied over it will have poor adhesion.
5. Form oil and concrete curing agents. Many times form oils containing large amounts of wax or soaps are used because they strip easily. These compounds remain on the concrete surface and are difficult to remove. Wherever concrete is to be coated for corrosion protection, forms should be coated with lacquer or other similar material which will remain on the form when it is stripped.

RUBBER LINING APPLICATION

1. After surface preparation is complete, apply CIM 61TN Epoxy Primer according to “CIM 61TN epoxy primer application procedures”.
2. If one intends to apply uncured lining with subsequent vulcanizing, the LORD Chemlok 289-290-286 adhesive system is applied next. The lining is then applied and cured per the instructions on the appropriate Blair Rubber specification. Primarily due to interference by moisture, exhaust steam cured rubber lining is not recommended.
3. If one intends to apply pre-cured lining, LORD Chemlok 205 is applied next, followed by Normac 900E Ultra according to the instructions on the specification sheet. Alternatives include Detec True Ground Conductive Primer if a conductive test foundation is required. LORD Chemlok CB can be used as a bonding agent. These primers and adhesives can be interchanged if desired. The selected pre-cured lining is then applied. No further treatment is necessary. The vessel may be put into service as soon as the Normac has developed sufficient rubber to concrete adhesion.

ADHESIVES SYSTEMS

1. Chemical Cured Chlorobutyl (C623BC) and Natural (C511BN, C922BN, etc.) linings.
 - a. Prime concrete as recommended.
 - b. Apply LORD Chemlok 289-290-286.
 - c. After the lining has been installed, apply at least 2 coats of Chemcure™ to activate and crosslink the chemical cure lining. Reference Sections 15 and 3. Chemical Curing for more instructions.
2. Cured chlorobutyl lining CU76BC or cured neoprene lining CU80BNE
 - a. Prime concrete as recommended for concrete.
 - b. Apply LORD Chemlok 205.
 - c. Use Normac™ 900E Ultra and Activator for adhering cured sheet. Reference Normac™ specification.
 - d. Cured sheet must be buffed prior to applying the cement to the rubber to provide best adhesion. Reference CU76BC and BLX80 specifications.