



PRESSURE GROUTING BRICK LINED STEEL SHELLS

1. SCOPE

- 1.1 This procedure has been used for externally pressure grouting voids between brick linings and the outer shells of strong sulfuric acid towers, gas inlets, and tanks.
- 1.2 It should only be undertaken using the components and ratio noted below to insure a mortar set. The required ratio of the hardener in the powder must be matched to the reactivity of a specified silicate solution to insure a set when used at such a fluid pumpable consistency.
- 1.3 This procedure is meant as a temporary solution only to stabilize brickwork. It's use means the contractor will be penetrating the membrane under the brick which will compromise the function of the membrane.

2. PROCEDURE

- 2.1 Drill nominal $\frac{3}{4}$ "-1" (19-25 mm) diameter holes in the steel shell and tap and thread with threaded nipples into the openings. These holes should be located on approximately 2' (600 mm) centers on the vessel side wall. Use tighter spacing for smaller diameter gas inlets. Smaller diameter holes ($\frac{1}{2}$ " 13 mm) have also been used, but higher pressure is required to effectively grout the compound.
- 2.2 Attach a gate valve plus a "T" connection to the nipples.
- 2.3 Attach a pressure gauge on one side of the "T" connection.
- 2.4 Attach a Moyno (peristaltic) type grout pump to the other side of the "T" connection.
- 2.5 Blow any dirt out of the holes, using an air lance attached to the "T" connection.
- 2.6 Inspect the inside of the tower inlet or tank to ensure any open gaps in the brickwork are filled. Use suitable material to seal any voids to keep the grout from escaping as it is pumped in behind the lining.
- 2.7 The potassium silicate grout shall be pumped until a back pressure of approximately 80 psi (0.5 MPa) is shown on the pressure gauge.
- 2.8 Close the "T" valve and allow the grout to set.
- 2.9 After the grout has set, remove the assembly and insert a pipe cap onto the couplings and tighten securely.
- 2.10 If a void is known to exist, place the connections no greater than 3" (75 mm) from the known location of the void.
- 2.11 Use a mixture of Armor HB™ Powder and CORLOK™ Solution for the potassium silicate grout material. Mix at a ratio of 1.75 parts powder (by weight) with 1 part solution (by weight). This ratio may be varied slightly. However, it is desirable to incorporate as much of the powder into the mix as possible and still be able to adequately pump the grout into position. The more powder that can be incorporated into the pumpable mix the

faster the initial set and curing of the installed grout will be.

- 2.12 The grout operation should begin along the bottom row of attached couplings, and as it fills the void, it will reach the next level of pipe nipples. Leaving the gate valves in an open position above the level where the pressure grouting is being undertaken will allow the installer to readily know when the grout has reached this level. When this is observed, close the valve and move the hose to the next horizontal coupling and continue. The procedure will continue until the job is completed.
- 2.13 Please refer to technical data sheets CE-281, Corlok™ B Mortar, and CE-207, HB™ Mortar for further information. A pictorial guide also exists, contact Armor.

3. SAFETY PRECAUTIONS DISCLAIMER CONTACT INFORMATION

- 3.1 Consult current Safety Data Sheets before commencement of work.
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- 3.3 Please contact Armor for further information at +1-877-98ARMOR (982-7667) or customerservice@armor-inc.com.

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