



## **CERAMIC TILE INSTITUTE OF AMERICA, INC.**

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# **CTI FIELD REPORT 66-2-5 (R-85)**

## **SUBJECT: WATERPROOF MEMBRANES FOR SHOWER FLOORS**

### **A. INTRODUCTION**

1. It is somewhat bewildering to understand why deep concern and adequate preparation is made to keep rain from entering a building but little attention is paid to the shower area which handles a thousand times as much water.
2. For years the shower, with membrane installed, has been the place to deposit rubbish, grounds off of the medicine cabinet complete with nails and anything else in the structure that is no longer wanted.
3. Why this abuse of the insurance policy that you have to prevent water from entering the structure, with full knowledge that if it leaks it will cause damage and structural deterioration?
4. The Ceramic Tile Institute has worked with building

officials to work out the requirements for good waterproof membranes.

B. EXCERPTS ON UNIFORM PLUMBING CODE REQUIREMENTS(See Uniform Plumbing Code for Full Details).

1. All lining materials must be pitched 1/4 inch per foot to weep holes in the sub-drain by means of a smooth solidly formed sloping sub-base.
2. The membrane must extend upward on the side walls and rough jambs of the shower, to a point not less than 3 inches above the top of the finished dam or threshold.
3. The membrane must extend outward over the top of the rough threshold and be turned over and fastened on the outside face of both the rough threshold and the jambs.
4. Non-metallic shower sub-pans or linings shall be built up on the job site and consist of not less than 3 layers of standard grade 15 lb. asphalt impregnated roofing felt. After the first layer each succeeding layer must be thoroughly hot mopped to that below, on the basis of 20 lb. of asphalt per layer per square. All corners must be carefully fitted and made strong and water tight by folding or lapping, and each corner reinforced with a suitable woven glass fiber webbing hot mopped into place.
5. Linings shall be properly recessed and fastened to approved backings so as not to occupy the space required for the wall covering and shall not be nailed or perforated at any point .which will be less than 1 inch above the finished dam or threshold.
6. The Code allows the use of lead and copper membranes and also has wording to allow the use

of other non-metallic membranes. However, many municipalities will not allow their use.

7. All linings are required to be tested for water tightness by being filled to the top of the rough threshold for a period of time sufficient to establish their water tightness, usually 24 hours.

The test plug is required to be placed so that both the upper and undersides of the lining are subjected to the water test at its point of contact with the sub-drain.

8. A ring of absorbent material must be placed around the weep holes to keep them open when the finished materials are installed.
9. A reinforcing wire is required in the approximate center the mortar bed and approved waterproofing additive is required in the setting bed.

#### C. HOT MOPPED MEMBRANES

1. Because of extensive tests run by the Ceramic Tile Institute our recommendation is the use of the 3 layers of 15 lb. felt for the waterproofing membrane.
2. There is no kinder place we can put the hot mopped membrane than in a dark, cool shower. Field experience has proven that they are practically endless in life expectancy if installed as above noted.

#### D. OTHER MEMBRANE

1. Prefabricated multiple layer membranes that are folded in place have shortcomings. When the weather is exceptionally cold or exceptionally hot, these materials are definitely affected and difficult

to install. In addition, jamb guards are required for waterproofing the very vulnerable spot where the top of the curb and the jamb of the shower intersect.

2. One-ply membranes have some of the same difficulties noted above and in addition extreme care must be taken not to puncture the one-ply.

#### E. PREVENTING DAMAGE

1. One municipality has prevented damage to the waterproof membrane by requiring that no plaster be installed on the walls of the shower and that the membrane not be installed until after all other plastering is completed in the house. The membrane is then installed and the shower turned over to the tile men. It is then their responsibility in the event the shower leaks.
2. Precautions should always be taken to prevent damage to the waterproof membrane during the tile installation.

#### F. CONCLUSION

1. Before your men install the tile, be sure the membrane complies with the Uniform Plumbing Code. Basically, this means an adequate membrane over a pre-sloped floor.
2. Protect the waterproof membrane from damage.
3. Be sure the setting bed is reinforced with wire placed in the approximate center.
4. Use an approved additive for waterproofing the setting bed.