

TL-0004 — Blistering and Pinholing of Fluid Applied Membranes Technical Letter (US Version)

Whenever liquid applied coatings are used over cementitious or other porous substrates, the possibility of blisters and/or pinholes exists. This phenomenon is caused by the expansion of moisture vapor and air that is trapped in the substrate (out-gassing). Blisters and/or pinholes are most likely to be generated on hot, sunny days when the initial temperature of the substrate is relatively low, but increases rapidly due to heat generated from direct sunlight on the membrane. The rapid increase in temperature converts the moisture in the substrate to the vapor phase and creates a vapor drive towards the source of the heat. Any air trapped in the substrate will also expand as it heats up.

There are many factors that influence the amount of moisture transmission and air expansion including temperature during coating application, change in temperature following application, humidity, moisture content of the concrete, concrete formulation, concrete age and surface porosity.

With PERM-A-BARRIER®Liquid there are a number of techniques that can be used to reduce the level of blistering and pinholing experienced on-site. One effective technique is to adjust the application time to avoid conditions outlined above, i.e., applying the membrane later in the day or avoiding areas that are in direct sunlight.

Some applicators have found it useful to apply a thin application or “scratch coat” of PERM-A-BARRIER®Liquid (0.010 in. to 0.015 in.) to fill the surface irregularities and raise the surface temperature before application of the full membrane.

PROCOR®Concrete Sealer has been found to be the most effective and flexible way to minimize the possibility of blisters and pinholes. This is a specially formulated, water-based coating that is applied to the substrate by roller or spray prior to the full membrane application. For a product use guide and full details of application procedures consult the PROCOR®Concrete Sealer product Data Sheet.

Care must be taken with all fluid applied membranes when the substrate contains moisture or if there are voids in the substrate. However, the combination of the unique characteristics of PERM-A-BARRIER®Liquid membrane coupled with an understanding of the mechanisms that create blisters and pinholes will allow projects to progress quickly with quality results.

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