Reservoir Sealant for Continuous Immersion: PSI-270/RC 270

Success is in the details

PSI-270/RC 270 Reservoir Sealant has a long history of successful use in continuous, total-immersion applications in reservoirs, swimming pools and sewage treatment plants. Improper application can be the cause of joint failure after immersion. This data sheet provides detailed installation instructions and discusses some potential hazards present during installation that may cause premature failure. Based on application and maintenance variables, Polymeric Systems, Inc. cannot warrant PSI-270 in swimming-pool use (see “Exposure to Chemicals” below).

Preparing the surface

All surface preparation work in the facility must be completed before sealant installation. Frequently harsh chemicals such as muriatic (hydrochloric) acid and caustic solutions (sodium carbonate and trisodium phosphate) are used to scrub down concrete surfaces and decks. Contact of these materials with cured sealant can lead to degradation of the resin and early failure of the caulked joint. This surface cleaning must absolutely be finished and all joint surfaces water-washed and dry before sealant is installed. If the facility is constructed from newly poured concrete, the concrete must cure for at least 28 days before being caulked.

Preparing the joint

Joints must be primed before the sealant is applied to seal the concrete surface and prevent water from breaking the adhesion by seeping in between the sealant and the concrete. We recommend PSI’s Primer 67, a two-part epoxy system that dries quickly, seals the concrete, and provides a quick, strong bond to the sealant as it cures. It is best to wait 2 hours after applying primer to let it dry and begin to cure. However, it does not have to be totally hard to the touch. Sealant may be applied while the primer is still slightly tacky. In colder weather the primer cure slows down, and it is advisable to wait a little longer before caulking.

Preparing the sealant

Sealant should be mixed according to the directions on the label. Starting with the Base, add the Activator first and mix until the unit is uniform; then add the Color Pack and mix until uniform. Scrape the sides and paddle blades at least once during the mix. Be sure to transfer the entire contents of the activator and color packs into the sealant base, as failure to do so can cause the cure to slow down and the mix to cure incompletely. Once the kit is mixed, the cure begins and the sealant will thicken with time.

Applying the sealant

PSI-270 cures by chemical reaction, and the reaction begins as soon as all the components are mixed together. Worklife varies between products and may be as short as 3 hours or as long as 10 hours. Lower temperatures slow down the cure; higher temperatures speed it up. Mixed product should not be stored in extreme temperature areas. An overly hot kit may harden before it can be fully applied. If applied to cold substrates such as concrete outdoors in the late fall or winter, the cure will be exceedingly slow, enough so that it may appear that it is failing to cure at all. In extreme cold it may take several days to a week or more to completely cure. Use of a "kicker" is recommended to speed the cure in these conditions.

It is important that the sealant be fully cured and that the strength of the adhesive joint develop to its fullest before the system is immersed in water. At normal temperatures of 65°F (18°C) and higher,

the sealant should cure 7 to 10 days before being immersed. At lower temperatures, longer times are required.

Exposure to chemicals

PSI-270 is resistant to low concentrations of many chemicals, particularly chlorine. They have been used successfully in swimming pools all over the country, but the chlorine concentration must be limited long term to no more than 5 ppm. The normal level in swimming pools is 1.5 to 2 ppm.

Frequently pools are "shocked" by an initial addition of high chlorine levels to kill any fungus or mildew present before it gets a chance to grow. The exposure time and concentration of shocking chlorine must be limited to prevent the chlorine from degrading the surface of the sealant. Such degradation can lead to material sloughing off the surface, creating silvery flakes in the water and collecting into greasy deposits on the bottom of the pool. Standard procedure for shocking a pool is for the chlorine concentration to not exceed 10 ppm for more than 24 hours. In long-term resistance tests, samples exposed to 500 ppm chlorine for 2 months at 120°F (49°C) suffered a 5 mil thick surface degradation but the underlying sealant was unaffected. However, a degraded surface is an aesthetic problem many pool owners would find unacceptable.

Urethane sealants are sensitive to the pH or acidity/alkalinity of the water in which they are immersed. Excursions to very high (alkaline) or very low (acidic) pH can also cause degradation of urethane resins. Chlorine treatment of water frequently influences its pH, and pH control is as essential as chlorine control. The acceptable continuous range for pH is 7.0 to 7.5.

PSI-270/RC 270 has shown outstanding resistance to the exposure found in sewage treatment facilities. A one-year immersion in a treatment plant processing industrial waste and human excrement containing a high concentration of hydrogen sulfide showed no deterioration of either the sealant or the adhesive bond.

Additional information

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