

# RESIN INJECTION INTO CRACKS IN CONCRETE

## Technical Bulletin # 661E

Cracking of concrete slabs and substrates is a common occurrence. Excessive tensile and compressive forces, freeze-thaw cycles, and incorrect water to cement mix ratios are common causes. One practice to repair cracks is to pressure inject thermosetting resin into them.

The basic technique to repair a crack is to first drill a hole at each end of the crack. The holes should have a diameter that is wider than the crack. They will act as an injection point at one end and a vent point at the other. The holes will also relieve stress in the concrete and will help prevent the crack from spreading. Two additional holes (approximately ½ inch apart) should be drilled every 12 inches from an injection point. One hole will act as the previous injection point's vent and the second hole will become the next injection point. Of the two holes, the one closest to the previous injection point will be a vent hole. Grease fittings should be placed in the injection holes. The fittings can be secured with PHILLYBOND #6. The fittings should be threaded to allow a grease gun hose to screw onto the fitting.

Once the fill and vent points have been prepared, the exposed crack must be sealed. All contaminated concrete in and about the crack must be removed by "V" ing the crack with a hammer and chisel. Once this step is completed fill the exposed crack with PHILLYBOND #6 or REPAIR COMPOUND. Use PHILLYBOND #6 if pressure injecting into the crack that day. Once the material used to seal the exposed crack has cured, pressure injection of a thermosetting resin liquid into the crack can commence.

The resin system recommended by ITW Philadelphia Resins is PHILLYCLAD 1775/620 TS. It is supplied in a 1 gallon unit yielding approximately 230 cu in. of material. CHOCKFAST ORANGE can also be used, primarily for cracks greater than 1/8 inch in width.

Carefully mix PHILLYCLAD 1775/620 TS per manufacturers instructions. Pour the mixed material into a clean grease gun and begin pressure injecting. Continue to inject resin until it begins to come out of the vent hole. Once resin appears in the vent hole, plug it with a wood dowel. Continue this process the entire length of the crack. An airless pump can be used in lieu of a grease gun.

PHILLYCLAD 1775/620 TS cures through an exothermic reaction. The resin will begin to generate heat once the curing cycle begins. If the grease gun or airless pump begin to become warm, immediately clean the equipment with a suitable solvent such as PRT 59. Failing to do so may result in loss of equipment. When finished Impax IXT-59 can be used for general clean up.

Wood dowels can be removed from vent holes the next day. Fill these holes with PHILLYBOND #6 or REPAIR COMPOUND.

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