

## POZZOLANS Used in Concrete Floor/Casting Slab Mix Designs (Fly Ash, Blast Furnace Slag and Silica Fume)

In the tilt-up construction industry, pozzolan containing concrete mix designs are becoming more common. The following are the recommendations of Nox-Crete regarding the use of pozzolan containing concrete mixes when used in conjunction with Nox-Crete's Silcoseal bondbreakers.

1. Pozzolans are commonly used in casting slab concrete mixes, but are not generally used in wall panel concrete mix designs due to the resulting delay in strength development.
2. Concrete mixes containing pozzolans typically bleed less than conventional concrete mixes containing only Portland cement. With less or no bleed water available at the concrete surface to evaporate, the floor/casting slab is more susceptible to plastic shrinkage cracking, surface crusting, as well as increased slab surface porosity. To minimize these potential problems, as well as future problems relating to bondbreaker application and performance, the use of an evaporation reducer such as Nox-Crete's Monofilm is absolutely essential. Contact Nox-Crete for specific details on the use of Monofilm.
3. Contractors generally should plan on the need for more bondbreaker on casting slabs incorporating pozzolans. On any tilt-up casting slab, it is imperative that the bondbreaker be applied at a rate that is sufficient enough to result in a uniform film that is visibly and physically apparent across the entire casting slab surface. Since casting slabs that incorporate pozzolans tend to be more porous on the surface, the contractor may need to apply an extra 25%, or more, bondbreaker than is typical on a straight Portland cement based casting slab to obtain a uniform and adequate bondbreaker film on the slab surface and, ultimately, to ensure proper panel separation.
4. To further ensure proper panel separation from casting slabs containing pozzolans, it is strongly recommended that the casting slab area be thoroughly wetted with water immediately prior to panel concrete placement. This is especially important during warmer weather conditions.
5. The application of the cure on a casting slab containing pozzolans is perhaps the single most important step in the concrete placement process. Accordingly, it is extremely important that the cure is applied immediately upon completion of the final finishing and is done so in a manner that results in a uniform and adequate film across the entire slab surface. The successful use of Nox-Crete's Silcoseal bondbreakers requires the use of curing compounds that are compatible. Nox-Crete's Silcoseal bondbreakers have been formulated to work as both a curing compound as well as a bondbreaker and, therefore, should always be used as a system to ensure that the casting slab is properly cured and that good panel separation from the casting slab is obtained.
6. Pozzolan containing concrete mixes take longer to gain strength and to develop proper gel formation within the cementitious matrix. Therefore, it is recommended that the contractor wait a minimum of 21 days in warm weather conditions before placing concrete panels on a casting slab containing in excess of 15% pozzolans (total cement and pozzolans). During cooler temperatures, contractors should wait a minimum of 28 days.