



## Application Report Cement Plant Precaliner

A repair was made at a cement plant in Southern California using the Thermbond® Formula Six-P. Thermbond® was chosen primarily because of its unique bonding, curing, and heat-up characteristics.

The repair was made in the outlet area of the # 4 cyclone, in the four-stage precaliner. The original high duty firebrick, which had been in service since 1981, had become worn and uneven. The porous and uneven brick surface had always allowed a hard material to build up several inches thick which, if left in place after an outage, could and did fall into the cone with a vessel plug occurring. This build-up had to be removed on each outage for safe entry into the vessel and to avoid plugging problems on start up of the kiln. The build-up was difficult to remove due to bonding to the brick and the limited access, even after additional doors were installed. Removal of the build-up required 12-ft. fiberglass pry bars and/or the use of an 8-gauge boiler gun.

Several possible solutions had been proposed but none seemed very promising. The brick were not worn out to the point where they needed to be replaced, but their rough surface needed to be eliminated. Tearing out and replacing the brick was an expensive and undesirable option. If the brick were not replaced, the major problem was then how to apply a material that would permanently bond to the brick surface without the use of any type of anchor. Until Thermbond® was proposed this option had not been considered viable either.

It was decided that Thermbond® Formula Six-P would be the best material for the application. Formula Six-P is a cast or trowleable, dense, fine-grained mullite based refractory. Like all the Thermbond® materials it incorporates the unique two-part Stellar Binder System, which provides fast setting, fast curing and tenacious bonding features. The Formula Six-P was also the best choice due to its excellent resistance to alkali attack and reducing atmospheres.

The areas to be repaired were first sand blasted to clean the surface of any build-up. Next a light application of activator was brushed on to the area to remove any fine dust which might be left on the surface. The entire area was allowed to air dry for about 30 minutes before placing any material.

The Thermbond® Formula Six-P was mixed one unit at a time in a Hobart mixer. After mixing the material it was divided and placed into pails. The pails were passed into the unit and given to the men who would apply the material over the brick. Trowels were used to apply the material over the brick in a fashion similar to stuccoing. During the application the trowels were dipped into a bucket of Formula Activator to keep them clean and to facilitate a smooth finish. The thickness of the Formula Six-P installation ranged from ¼ to ½ inch and bonded to the brick lining very well. Because the Thermbond® Six-P is a fine grained material it finished off with a very smooth surface. Over all the application went very quickly and smoothly. All the remaining work was done and the plant was brought back on line with no problems.

In September of 2001 the plant came down which gave everyone an opportunity for the # 4 cyclone outlet to be inspected. The customer indicated that the Formula Six-P had indeed bonded very well to the brick because all the material was still in place. It also had provided a non-sticking surface since there was no buildup on the Formula Six-P. The customer further added that you could clearly see where the Formula Six-P had been installed because it was the only material that did not have build-up.

The customer was extremely pleased with the results and indicated that if the Thermbond Formula Six-P continues to perform this well that during the next major shut down all the cyclone outlet areas would be repaired with Thermbond® Formula Six-P.