

# Tank Lining Company

16787 Beach Blvd. #263

Huntington Beach, CA. 92647

Ph: 888-892-2960 Cell 714-566-4278

[www.tankliningcompany.com](http://www.tankliningcompany.com)



## ALKRETE Tank Lining Material

Autogenous Healing? What's that?

Occasionally cracks in linings may occur after lining installation, particularly where the pipe-lining is left dry for a considerable time. Many years' experience with cement-lined pipe and fittings has verified that this condition is not detrimental to the performance and effectiveness of the lining.

When a cement-lined pipe or tank is placed in service and filled with water, two reactions begin immediately. The first is a gradual elimination of the temperature differential between pipe (tank) and lining, thus eliminating any stresses in the lining due to this condition.

Secondly, the lining begins to absorb water. Water is absorbed into the pores of the cement and into the capillary channels of the calcium silicate gel. The water absorption causes the lining to swell, restoring it to intimate contact with the tank wall and virtually closing any cracks present in the lining. This swelling process is relatively slow, taking up to several weeks for the lining to be restored to its maximum volume. This process has been demonstrated on a number of occasions to the satisfaction of customers, contractors, and engineers by immersing a pipe or fitting in water for one or two weeks.

After a period of exposure to water, not only does the lining tighten against the tank wall and the cracks close, but finally the surfaces of the cracks actually re-bond. This occurs by a process called autogenous healing. This phenomenon, long recognized by the cement industry, has been documented by laboratory tests to occur in cement-lined ductile pipe. In one test, a 48" ductile iron pipe with severely cracked cement lining was held half full of water for several months. At the end of that period, the lining both above and below the water surface was found to be tight, with all cracks either healed completely or sealed by the formation of calcium carbonate.

Field inspections of tanks that have been lined with ALKRETE and been in service for many

years have verified the laboratory results; cement linings do tighten and heal in service and provide the corrosion protection to the tank and the hot water for which they were designed.

I have seen it many time over after opening a tank that has been lined with Alkrete. The cracks look like little white lines as they are now all filled with calcium deposits and most cracks have just disappeared.

Best regards

*Eric Poquette*

*Tank Lining Company*

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