

CANZAC® IGROUP

Improving the performance of concrete worldwide®



E5 INTERNAL CURE



NANO SILICA TECHNOLOGY
THE ULTIMATE CURE FOR
CONCRETE



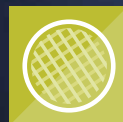
Cure



Flatness



Shrinkage



Density



Hardness



Durability

E5[®] NANO SILICA CONCRETE SYSTEMS

The only patented concrete system to internally cure concrete.

What is E5 concrete technology?

E5[®] technology is the first integral concrete finishing system that delivers targeted solutions to leading industry challenges. E5[®] is the only patent-pending system in the world to chemically bind nano silica in concrete at the initial reaction point. This revolutionary system internally cures concrete and creates stronger, more durable concrete that resists chemical and physical attack. E5[®] nano silica alters the backbone of concrete through internal curing and increases resiliency through pozzolanic reaction and particle packing.

How does proper curing improve concrete?

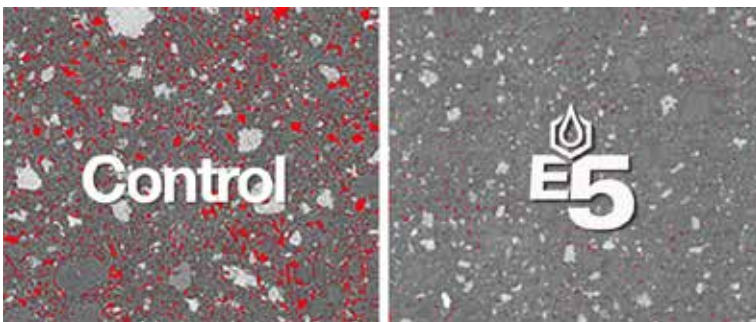
E5[®] technology helps concrete realize its maximum potential with an efficient, economical and sustainable process. It improves hydration, reduces early cracking, reduces chloride ingress, reduces curling and improves durability, all of which extend the concrete's service life. From a broader perspective, poor field curing, along with concrete's inability to fully cure, has robbed the industry of concrete's maximum potential. Internal curing provides something that conventional curing cannot retain: water. E5[®] technology controls water loss and creates up to 30% greater cement hydration efficiency.

How will E5 benefit the construction process?

E5[®] systems eliminate the need for traditional curing methods. Contractors gain immediate access for construction, saving up to 7 days over wet curing requirements. Costly and time-consuming removal of topically applied membranes is eliminated, maintaining warranty compliance for flooring. Concrete workability is improved, facilitating greater production capacity and improved finished quality.

What is the scope of current E5 applications?

E5[®] products have been used in over millions of yards of concrete in a variety of medical, retail, industrial, civil, institutional and DOT applications. The technology has also been validated by multiple engineering firms, independent laboratories and DOTs across the country.



Highlighted areas in red indicate voids throughout the concrete matrix.

Backscattered Electron Image Analysis

As seen in the reference images above, E5[®] Internal Cure added to the mix hydrates an increased amount of cement, significantly reducing porosity and voids within the concrete matrix.



Cure

Internally Cures

- Hydrates increased cementitious material
- Chemically binds water to cement
- Reduces bleed channels
- Eliminates wet curing & curing compounds



Flatness

Consistent FF/FL

- Slumps are retained
- Surface remains workable longer
- Eliminates wet curing
- Eliminates sealers & hardeners



Shrinkage

Reduced Volume Loss

- Retains water of transport in the mix
- Reduces early shrinkage
- Reduces evaporation at the joints
- Reduces curling at the joints



Density

Reduced Porosity

- Increased hydration reduces voids
- Creates silica gel within the slab matrix
- Particle packaging at the surface



Hardness

Increased Abrasion Resistance

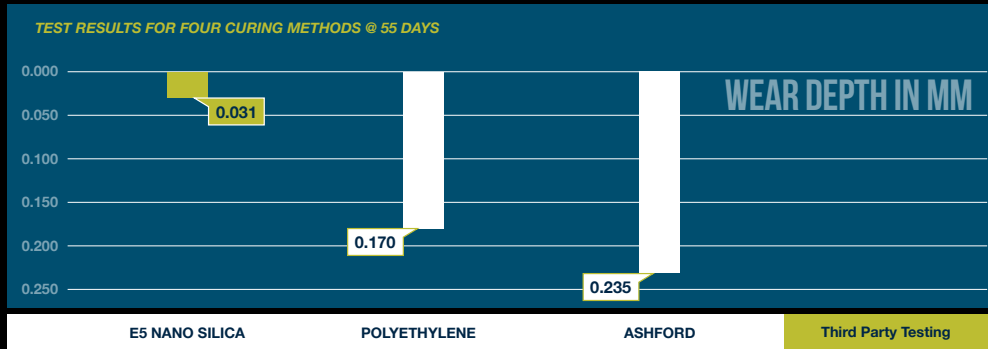
- Harder than traditional topical systems
- Grind or polish 7 days after placement
- Improves surface longevity
- Reduces control joint issues



Durability

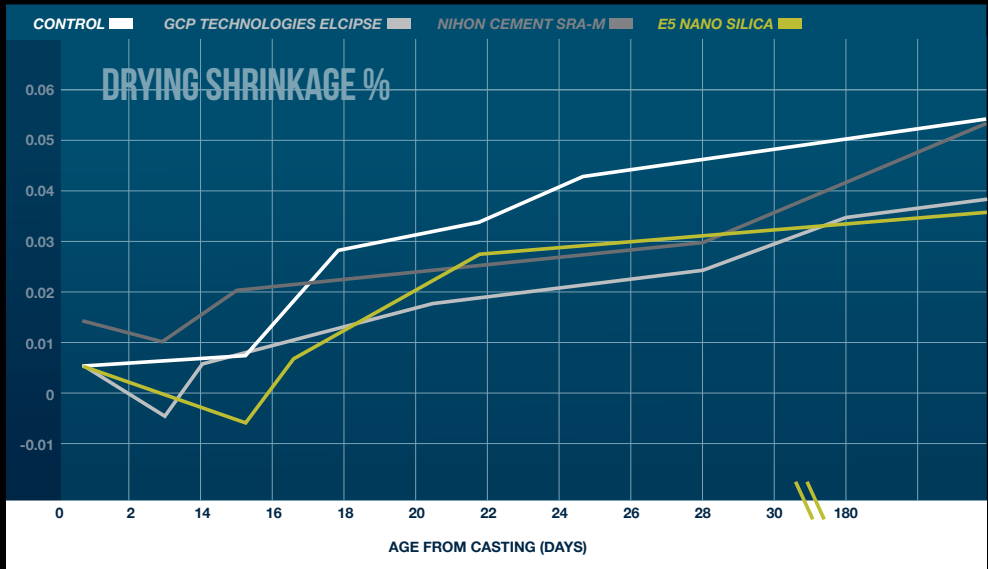
Extends life cycle

- Significantly reduces expansive cracking
- Protects against premature degradation
- Significantly reduces water penetration
- Reduces salts & brine penetration



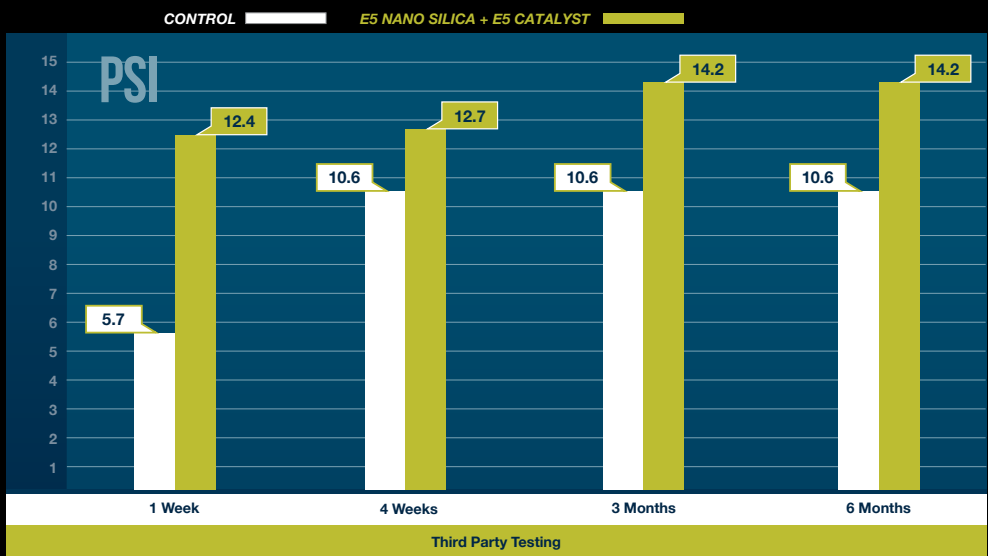
ABRASION RESISTANCE

The slab completed with E5 Internal Cure outperformed all other topical applications. The overall mean wear depth of 0.031 places the surface in the highest wear class called Special (Chaplin Abrasion).



DRYING SHRINKAGE

E5 Internal Cure reduces the percentage of drying shrinkage, as shown in the table above. The specimens cured with E5 Internal Cure experienced a significant reduction of drying shrinkage in comparison to the other admixtures which were wet cured. E5 continues to perform at the optimal levels without the moisture retention cover as most other products require. The E5 nano silica reduces drying shrinkage by incorporating molecular water throughout the concrete matrix, which extends curing and the cement hydration period.



RESILIENT FLOORING PULL STRENGTHS

Concrete containing E5 Internal Cure + E5 Catalyst meet the minimum flooring pull strengths at only one week. Incorporating E5 Internal Cure + E5 Catalyst into a concrete mixture allows installations to be completed three weeks sooner than with the traditional concrete.



The Ultimate Cure for Concrete.

Recommended E5® Dosage Amounts

Successful use of the E5® Nano Silica Admixtures depend on the use of appropriate methods of batching and concreting. E5® Nano Silica Admixtures are supplied in ready-to-use liquid form and are added to the concrete at the plant or at the jobsite.

E5 Internal Cure is added at 260ml per 100kg of cementitious material.

E5 Liquid Fly Ash is added at 260-780ml per 100kg of cementitious material.

E5 Shot Cure is added at 520-1300ml per 100kg of cementitious material.

- E5® Nano Silica Admixtures have a 18 month shelf life. It must be discarded after that time.
- Dose Rate is based on cementious content of the mix design.
- hompatible with all admixtures.
- Will not affect slump or air content

Batch Plant Dosing

E5® Nano Silica Admixtures MUST be added to the ready mix truck at the end, after all materials are wetted and then mix for 15 minutes.

- Add all E5® Nano Silica Admixtures with the flush water at the plant
- MUST be thoroughly mixed
- 70 revolutions at MIXING speed or 5 minutes at MIXING speed
- Mixing speed is typically 15 RPM
- Automatic dispensers should be calibrated on a regular basis



E5® Nano Silica

Employs patented, silicate free nano technology to transform Portland Cement Concrete (PCC) and improve performance, function and longevity.