

How does Cement Work??

What is cement made of?

The key ingredients of cement are, coming from Crushed Limestone and Chalk, Gypsum, and a Silica Alumina Iron mix usually made up of clay Bauxite and Iron Ore. The ingredients are crushed, fired at up to 1500°C, crushed again, blended, milled, de-watered and bagged.

What happens when water is added?

When water is added to cement a process called "hydration" occurs. The water causes each finely ground cement particle to start to grow tiny crystals "fuzz ball" with the crystals filling the space in and around each other. The crystalline structures form around sand and aggregates and lock into the backs of tiles, bricks and other surfaces.

After about 3 days the crystal growth stage is largely over, by which time, everything involved in the mix has become inextricably entwined. Cement, therefore, goes through an "initial set" in one or two hours, a "final set" in 6 to 12 hours and finally a curing or hardening process (which can go on for months). Anything that interferes with the formation of the Ettringite needles (crystals) can dramatically weaken the cement mix. The crystals need time to grow. For most tiling purposes, one day curing is enough but 3 days is better. If the mortar dries out too quickly, the Ettringite crystals simply stop forming. Therefore, less interlocking takes place and the mix is weakened. This is why so much effort goes into "curing" concrete properly. It is hosed down to keep it moist and waxes, hessian and "curing compounds" are applied after screeding to reduce moisture loss. However, while cement is mostly used in concrete many people use cement in largely "non structural" ways, and they often take no steps to try and promote a slow, moist cure for their mortars. Rapid drying of the cement mix can reduce mortar strength by up to 30%. Complete drying of the mix could happen, for instance for hot weather exterior tiling, within hours. Sometimes the grout goes hard and white in less than an hour. This is a disaster for grout strength. Another way in which crystal growth is damaged is if the mix is re-tempered.

Re-tempering simply means more water is added and the material is re-mixed after it has had its initial set. Re-mixing will break off many of the crystals and any new crystal growth will be short and incomplete. A weakened mortar is the result. **Too much water is the enemy of good mortar.**

Builders, engineers and concreting professionals know that when extra water is added to a mix, it becomes easier to place in position, but its strength will drop. The crystals don't become as tightly packed when the mix is like soup. They just can't fill all the spaces, the cement paste is too thin for adequate strength formation. According to the *Cement and Concrete Association of Australia*, the addition of 30 litres of water (2 household buckets) to a 300 kg batch of concrete would reduce its final strength by a whopping 30%* (To be continued)

Morgan's
Tilefast
Powdered
Mastic



Have you tried it?

Tile over
Primed
Gyprock

Tile over
primed
fibre cement
sheet
(Walls)

Over
concrete &
Screed

Over
Morgan's
Waterproof
Membranes

This product
has high
build and
NON slump
properties

All tiles.
Except
glass
Mosaics

Always ensure you choose the correct
product for your application

Tiling over White Set "Plaster"

For as long as I have been in the tiling industry this scenario has been around. Some tilers will use a tomahawk and chip away at bits and pieces of the white set exposing the render or brick work, rather than using a white set rake to remove the entire float. However in today's market I see more and more direct stick to white set with a regular or polymer modified cement base adhesive.

Is this practice OK or NOT? I will explain. The reason why most adhesive manufacturers say remove at least 80% of the white set is. If you use a cement based adhesive over white set, a chemical reaction known as "Ettringite" could possibly occur.

The issue is a chemical crystallisation between the cement and white set occurs causing expansion within the adhesive matrix causing loss of adhesion the tiles go drummy, hence failure of the tiling system.

There are also beliefs that the white set float can not support the weight of the tiles I have not come across this issue, Another common practice is tilers will prime the white set with Morgan's Plastinex at the normal ratio, then use Morgan's Promastic as the adhesive.

As you know Promastic is a tub adhesive containing no cement and can be used on wet area walls, no cement, no reaction! I am from the old school, so I recommend you remove it from your tiling application. Prime the substrate after the removal and you are good to go!

Geoff's Spiel

Dear VIP Tilers

I put a notice out in last months VIP Tiler in regards to running and Epoxy Grout Course in conjunction with Polytechnic West. The response has been quite poor!! I can not believe the amount of phone calls I receive in regards to this topic and as the conversation progresses the request arises to please run a training course!! At this stage we will not be able to run this course.

If you are reading this and have not registered please do so by emailing the office sales@morganadhesives.com.au "Epoxy Grout Course"

Thankyou to all the tilers that have registered so far.

Thankyou to all the tilers for your feedback over the last few months regarding the VIP mail out. I am glad that it is benefiting you and your business.

The World Skills Golf Day at Araluen was a massive success. 1st Place Matt Bain 2nd Gary Tucker 3rd Chris Lister. Thankyou to Ron Simeon for organising the day. Enough money was raised to purchase a new Wet Saw and bit left over to fund the trip to Brazil. We wish Daniel from South Australia all the best representing Australia at Worldskills. We look forward to hearing all about it.

Congratulations Garry Dunk this months VIP winner, Garry was the very first VIP tiler member and is a 1st time well deserved winner .

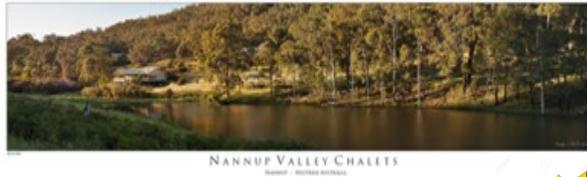
Until Next Time
Stay Safe
Cheers Geoff.



Congratulations
Garry Dunk



Winning the Maximo Commodore Grout Clean up System courtesy of B.A.T Trims



WOW!

WOW!

Nannup Valley Chalets

This is a prize to be won..

Next Months winner will win a Weekend Getaway at the Nannup Valley Chalets

You get to choose a Two Bedroom Chalet, Spa Studio or a Luxury Spa Studio

This prize has generously been donated by Graeme & Di Ness and the team at Tile Library/Mosaic Magic in Osborne Park

thank you!
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V.I.P Tiler

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**MORGAN**
CERAMIC TILE ADHESIVES

24 Hanwell Way Bassendean WA 6054

Ph: 08 9279 8911 Fx: 08 6278 1152

Technical Help Line: 08 9441 6677

Geoff Hoddy 0417 144 860

info@morganadhesives.com.au

www.morganadhesives.com.au



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