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OVER 50 YEARS OF CONCRETE EXCELLENCE



# SITE GUIDE

The obvious choice for excellence

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# Understanding Polymers

## The history of polymers in construction

Sour milk mixed with zinc powder produced an early version of today's water soluble polymer paints. The word "latex" comes from the Latin for milk. Modern day polymer solutions used for mortar modification or as bonding agents are emulsions of acrylics or poly vinyl acetates (PVA) and have the appearance of milk. Technologies have developed and the benefits of polymers in cement based products are now well known and utilized on most construction sites. However, a lack of understanding of the practical use of polymers has led to site failures.

## The do's and don'ts of using polymers in construction

Viewed under a powerful microscope it can be seen that polymers added to cementitious mortars produce a clear film like "shrink wrap" around each developing crystal as the cement hydrates. If kept wet the film does not form and the polymers are ineffective and this is why you should never water cure polymer modified cementitious products.
Polymers act as slight retarders of the set of cement. If polymer modified products are used in dry, windy conditions a film will form on the outside whilst the mortar underneath is still plastic. Always protect polymer modified mortars against evaporative surface set.
Wetting a trowel with a dilute polymer solution will help prevent trowel drag. The application of a dry trowel onto this surface will produce dragging cracks in the product.
Technology has led to the development of a wide range of polymers with different effects. Mild acid resistance and water-proofing can be induced into floors and cement based slurries by the use of polymers.
For further technical guidance consult Samson for selecting of the appropriate polymer.

# Contact us




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## Curing compounds & cleaning of floors

Concrete is best cured by ponding or full emersion in water. However, these traditional methods are impractical and often abused on site. For example, damp curing by spray or wet hessian often leads to cycles of wetting and drying and this causes micro cracking on the surface. A high performance membrane-forming curing compound is the best practice adopted internationally. A minimum requirement would be a non-specification film forming spray-on liquid.

Samson offers **CureSeal** or **ResinCure** for specification compliance ASTM C309 and **FP Cure** for general spray on use. The timing of application of curing compounds is critical, and should be as soon after final set as practical. Initial set is often too early and leads to either floatation or dilution of the membrane. Samson has methods of chemical removal of these curing compounds once they have served their purpose. For detailed technical data sheets and installation processes request Samson method statements for site instruction.



| Solution | Product information |
|---|---|
| FP Cure | Pack size: 5L / 25L / 200L<br>Yield: 8-10 m² / L |
| PolyStrip<br>(removal of FP Cure) | Pack size: 5L / 25L / 200L<br>Yield: 8-10 m² / L |
| CureSeal **or** ResinCure | Pack size: 5L / 25L / 200L<br>Yield: 8-10 m² / L |
| Stripper A<br>(removal of CureSeal **or** ResinCure) | Pack size: 5L / 25L / 200L<br>Yield: 8-10 m² / L |

## How to repair unsightly concrete

Samson offers a few products for the treatment for unsightly concrete finishes.
**FairingWash** for very thin applications by sponge, brush or roller (200 – 500 micron thickness);
**FairingCoat** where corrective process requires a trowelled-on thin coat up to 2mm thick;
**FairingTop** for applications requiring a 2 to 5mm trowelled-on mortar covering;
**DecorTex** for a brush or roller applied cement based paint coat where an even colour is all that is required (100 to 200 micron thick per coat).
Product selection depends on the severity of the defects and the final results required. These products are available in a variety of colours to suit particular aesthetic requirements. For detailed technical data and installation processes request Samson method statements for site instructions.



| Solution | Product information |
|---|---|
| FairingWash | Pack size: 20kg<br>Yield: 50m² per 20kg<br>Water: 40% by mass = 8L / 20kg |
| FairingCoat | Pack size: 20 kg<br>Yield: 2kg/mm/m² (5m² per 20kg)<br>Water: 25% by mass = 5L / 20kg |
| FairingTop<br>(dependent on requirement) | Pack size: 20kg<br>Yield: 8kg/m²@5mm (2.5m² per 20kg)<br>Water: 20% by mass = 4L / 20kg |
| DecorTex | Pack size: 20kg<br>Yield: ± 4m² / L<br>Water: 40% by mass = 8L / 20kg |

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## Crack repairs and underpinning of curling

Where crack repairs are required, the cause, extent and width of the cracks should be established in order to provide information for the selection of appropriate materials and methods.
Fine map-cracking which is not structural, and usually shows when wet may be treated with **MM Sealer Siloxane** to improve aesthetics and prevent water ingress. Cracks in horizontal slabs may be repaired with **LVE Repair** (low viscosity or gel epoxy) or **SFCF Grout** (SuperFineCrackFiller) as dictated by the width of the crack. **SFCF Grout** is a cementitious polymer modified pumpable and injectable slurry with unique crack filling capability. It is suitable for filling cracks greater the 2mm.
For technical data sheets and installation processes request Samson method statements for site instruction.



| Solution | Product information |
|---|---|
| LVE Repair or Graviject T | Pack size: 1L kit<br>Yield: Dependent on site requirements |
| SFCF Grout | Pack size: 20kg<br>Yield: 1L per 3kg = 2L slurry<br>Water: 30-35% by mass = 6-7L / 20kg<br>Applied by Caulking gun |

## Mortars for the repair of damaged concrete

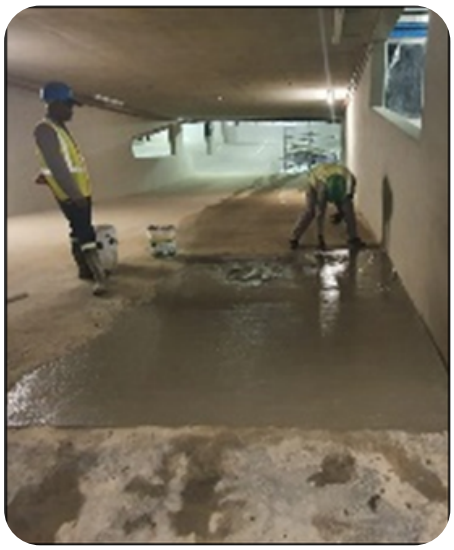
**PatchMortar** is a powder product to produce an easily trowelable mortar by the addition of water only. **PatchMortar** is suitable for 5 – 20mm applications. If a thicker repair is required, **PatchMortar** can be built up with a scratch-coat in between layers.
Where less than 10mm thickness is required you should request **PatchMortar P** (which is the polymer modified version). **CorroBlock** is used where corrosion protection of exposed reinforcing steel is required.
**FastPatch** is a quick setting mortar required for early return to service of repaired concrete.
**FlexiPatch** is specially designed where reinforcement has too little cover and a level of movement must be accommodated by the hardened patch. Samson recommends that each of the above mortars be used in conjunction with **P3 Primer** in order to ensure exceptional bond. Detailed technical data sheets and selection advice are available on request.



| Solution | Product information |
|---|---|
| P3 Primer | Pack size: 10kg / 20kg<br>Yield: 1kg/mm/m²<br>Water: 30% by mass = 6L / 20kg |
| CorroBlock | Pack size: 25kg<br>Yield: 2kg/mm/m² (12L / 25kg)<br>Water: 15% by mass = 3.75L / 25kg |
| PatchMortar or PatchMortar P<br>FastPatch<br>FlexiPatch | Pack size: 25kg<br>Yield: 2kg/mm/m² (12L / 25kg )<br>Water: 15% by mass = 3.75L / 25kg |

## Repairs to concrete floors

If more significant repairs than dusting (covered above) and cracks (covered below) are required, contact Samson for more technical information.
For more significant repairs, chip out and the use **PatchMortar** or **MicroConcrete** (recommended for repairs over 10mm thick) bonded with **P3 Primer**.
**RampSkim** is a unique product suitable for 4 – 8mm concrete resurfacing, (e.g. where rain damaged slabs are to be skim repaired). **RampSkim** is bonded using **P3 Primer**. Dependent on requirements, **RampSkim** need not be smooth trowelled and will naturally provide a satisfactory surface suitable for parking decks and many other applications. For technical data sheets and installation processes request Samson method statements for site instruction.



| Solution | Product information |
|---|---|
| P3 Primer | Pack size: 10kg / 20kg<br>Yield: 1kg/mm/m²<br>Water: 30% by mass = 6L / 20kg |
| PatchMortar | Pack size: 25kg<br>Yield: 2kg/mm/m² (12L / 25kg)<br>Water: 15% by mass = 3.75L / 25kg |
| MicroConcrete<br>(depending on depth) | Pack size: 25kg<br>Yield: 12.5L per bag or ± 80 bags / m³<br>Water: 12% by mass = 3L / 25kg |
| RampSkim | Pack size: 25kg<br>Yield: 2m²/25kg @ 5mm<br>Water: 14% by mass = 3.5L / 25kg |
| EcoScreed SL<br>(underlayment) | Pack size: 20kg<br>Yield: 3-4m²/20kg @ 2-3mm thick<br>Water: 18% by mass = 3.5L / 20kg |

## Stopping leaks in concrete

(Reservoirs, tanks and exposed parking decks etc.)

Mix designs intended to produce water tight concrete are not always effective. Samson offers products for correcting concrete which has not performed as required.
Where there is leakage through cracks in suspended slabs (e.g. parking decks) **LVE Repair** (low viscosity epoxy or gel epoxy) will fill cracks and re-establish slab integrity.
**Siloxane Solution** prevents leakage of water through cracks below 400 micron and induces hydrophobic properties to a concrete surface without changing its appearance. By penetration of the Siloxane into cracks in walls, any ingress of water into the concrete is prevented.
**P3 Primer X** and/or **CrystalSkim WR** which contain micro-crystalline water proofing additives are highly suitable for internal and external coating and repair of concrete. For technical data sheets and installation advice request Samson method statements for site instruction.



| Solution | Product information |
|---|---|
| P3 Primer X | Pack size: 10kg / 20kg<br>Yield: 1kg/mm/m²<br>Water: 30% by mass = 6L /20kg |
| Siloxane Solution | Pack size: 5L / 25L / 200L<br>Yield: 8-10m² / L |
| CrystalSkim WR | Pack size: 25kg<br>Yield: 2kg/mm/m² (12L / 25kg)<br>Water: 16% by mass = 4L / 25kg |
| HydraHalt X | Pack size: 20kg<br>Yield: 1kg/m² ( Mixed to rammable mortar) |

## Bonding Agents

Samson supplies liquid and pre-polymered powered bonding agents.
**P3 Primer** is the most useful of these products since it can be used with only the addition of clean water and not having to keep bottles of polymer solution.
However, where a liquid bonder is preferred Samson supplies a ready to use diluted 1:1 **Polymer Solution**, 1:3 **PlasterGrasp** or a ready to use 1:5 **PlasterBond**. P3 Primer is especially effective when "dry to dry" bonding is required. Liquid polymer solutions and **P3 Primer** may be successfully used for "wet to dry" concrete bonding. Selection of the best bonding agent option depends on specific applications.
For detailed technical data sheets and installation processes request Samson method statements for site installation.



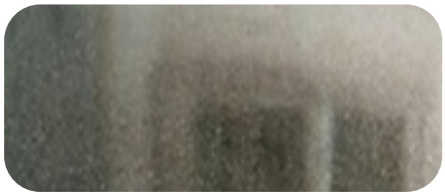

| Solution | Product information |
|---|---|
| Bonding Agents: P3 Primer | Pack size: 10kg /20kg<br>Yield: 1kg/mm/m²<br>Water: 30% by mass = 6L / 20kg |
| Bond Coats<br>Slurries<br>Polymer Solution 1:1<br>Patch Mortars<br>Thin Repairs<br>PlasterGrasp 1:3<br>Patch Mortars<br>Thick Repairs<br>PlasterBond 1:5 | Pack size: 5L / 25L / 200L<br>Yield: Refer to TDS for typical mixes |

## Concrete Floor Treatments

Densifiers, void fillers and protective sealers for concrete floors, including diamond polished
*Diamond polishing:* The grinding process on concrete floors reveals underlying aggregates as well as entrapped air cavities, and pin holes. Removal of the surface crust exposes weaker and dusty matrix.
**HC Densifier** corrects this typical defect and produces a hard wearing, less porous surface by conversion of hydroxides to hard silicates and chemically blocking pores.
**P3 Primer** polymer modified powder mixed with water provides a strong, durable and well bonded filler for cavities (aggregate pull out or bug holes). After completion of the grinding, polishing and densifying process, a final coat of **MM Sealer Combo** or **Siloxane** is recommended for shine and slip and stain resistance.

Protecting concrete floors: Elimination of dusting of concrete may be achieved by the use of **HC Densifier**, followed by regular washing and buffing with a rotary polisher to get a natural shine.
If additional slip and stain resistance is required, use **MM Sealer Combo or Siloxane** as recommended in the case of diamond polished floors below. **MM Sealer Combo or Siloxane** increases resistance to oil penetration and hydrophobic properties provide the same slip resistance as dry concrete. For detailed technical data sheet and installation processes request Samson method statements for site instruction.





| Solution | Product information |
|---|---|
| P3 Primer<br>(filling pin holes) | Pack size: 10kg / 20kg<br>Yield: Dependent on site requirements<br>Water: 30% by mass = 6L / 20kg |
| HC Densifier | Pack size: 5L / 25L / 200L<br>Yield: 8-10m² / L<br>depending on porosity of substrate |
| MM Sealer Combo<br>or<br>MM Sealer Siloxane | Pack size: 5L / 25L / 200L<br>Yield: 8-10m² / L<br>depending on porosity of substrate |

## Honeycomb repairs

(Columns, beams & pre-cast elements etc.)

Samson offers a selection of products for the repair of honeycombing depending on the severity of the repair.
**P3 Primer** is used in each case for security of bond. Where soffit or overhead repairs are undertaken **PatchMortar**, **PatchMortar P** or **CrystalSkim** may be used when mixed with water to a non-slump consistency without the fresh mortar falling out of the area being repaired.
Severely honeycombed columns with exposed reinforcement should be repaired using **Structural Grouts** or **MicroConcrete** suitable for shutter and pour repair. These products may be installed by the "letter-box" method or by tremie. **SDP Grout** can be rammed/rodded into cavities for a cost effective repair.
For detailed technical data sheets and installation processes request Samson method statements for site instruction.



| Solution | Product information |
|---|---|
| P3 Primer | Pack size: 10kg /20kg<br>Yield: 1kg/mm/m²<br>Water: 30% by mass = 6L / 20kg |
| PatchMortar or<br>PatchMortar P | Pack size: 25kg<br>Yield: 2kg/mm/m² (12L / 25kg)<br>Water: 15% by mass = 3.75L / 25kg |
| CrystalSkim | Pack size: 25kg<br>Yield: 2kg/mm/m²<br>Water: 16% by mass = 4L / 25kg |
| SDP Grout | Pack size: 25kg<br>Yield: ± 80 bags/m³ (12L / 20kg)<br>Water: 14% by mass = 3.5L / 25kg |
| MicroConcrete or | Pack size: 25kg<br>Yield: ± 80 bags / m³ (12.5L / 25kg)<br>Water: 12% by mass = 3L / 25kg |
| HS60 Grout<br>or<br>MS40 Grout | Pack size: 25kg<br>Yield: ± 80 bags / m³ (12.5L / 25kg)<br>Water: 18% by mass = 4.5L / 25kg |

## Aesthetic floor coatings

**AcrySeal** is an acrylic resin sealer that may be used as a topical coating over unsightly concrete floors to protect and give an aesthetically appealing finish. **AcrySeal** is a low maintenance and cost effective product that may easily be over coated at any time.
**FloorCoat** is a cementitious, paintable coating high in polymer for overcoating of blemished concrete to attain a uniform concrete finish. For technical data sheets and installation advice request Samson method statements for site instruction.



| Solution | Product information |
|---|---|
| AcrySeal | Pack size: 5L / 25L /200L<br>Yield: 5-8m² / L |
| FloorCoat | Pack size: 20kg<br>Yield: ± 40m² / 20kg<br>Water: 35% by mass = 7L /20kg |
| Floorfill SL | Pack size: 25kg<br>Yield: ± 5m² / 25kg<br>Water: 16% by mass = 4L /25kg |

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## Concrete floor hardeners

(Dry-shake, liquid hardeners and stain prevention sealers)

There is a common myth spread by construction product marketers that there is no difference between dry-shake and reactive chemical hardening of concrete. This is simply not true since liquid hardeners can only densify concrete without improving its design strength.
On the contrary, a correctly selected **MBFT** or **SDS Dry-shake** floor hardeners will create a 60MPa wearing surface onto a 30MPa design strength concrete. The use of dry-shake floor hardener are usually the choice of either the client or their engineering advisors. Samson products are often specified, but site management can recommend Samson where no brand name is selected.
For further information request a copy of the Samson explanatory brochure entitled **"Reflection on Concrete Floors".**



| Solution | Product information |
|---|---|
| MBFT (Moisture Barrier Floor Topping) or<br>SDS (Standard Dry-shake) or<br>MBFT P (for acid resistance) | Pack size: 25kg<br>Application: 4-7kg/m² |
| HC Densifier | Pack size: 5L / 25L / 200L<br>Yield: 8-10m² / L |

## SELECTION CHART :

| Description of floor : | 1 Dry-shake floor hardener | | | 2 | 3 Sealer | | |
|---|---|---|---|---|---|---|---|
| | SDS | MBFT | MBFT P | HC | MM Sealer Siloxane | MM Sealer Combo | Siloxane Solution |
| **Warehouse or Shopping Centre** | | 5 to 7kg/m² | | ✓ | | * or | * or |
| **Back of Store – colour not required / House** | 5kg/m² | 5kg/m² | 5kg/m² | ✓ | | * or | * or |
| **Abattoirs / Food processing / Chicken processing** | | | 7kg/m² | ✓ | | Yes | |
| **Dry pack granular screed – House/Lodge** | | 5kg/m² | | ✓ | Yes | | |

**Sealer optional dependent on performance requirements*

## Soffit repairs

Soffit repairs require an anti-slump repair mortar to ensure good adhesion to horizontal surface.
**P3 Primer** is a unique cementitious, polymer bonder ideal for vertical and horizontal repairs.
**PatchMortar** or **PatchMortar P** and **CrystalSkim** have thixotropic properties and are easy to work with on soffits as these do not slump off. **PatchMortar**, **PatchMortar P** and **CrystalSkim** are available in a variety of grey options to match to the in situ concrete to be repaired.
For detailed technical data sheet and installation processes request Samson method statements for site instruction.



| Solution | Product information |
|---|---|
| P3 Primer | Pack size: 10kg /20kg<br>Yield: 1kg/mm/m²<br>Water: 30% by mass = 6L / 20kg |
| PatchMortar or<br>PatchMortar P | Pack size: 25kg<br>Yield: 2kg/mm/m² (12L / 25kg)<br>Water: 15% by mass = 3.75L / 25kg |
| P3 Primer X | Pack size: 10kg / 20kg<br>Yield: 1kg/mm/m²<br>Water: 30% by mass = 6L /20kg |
| CrystalSkim | Pack size: 25kg<br>Yield: 2kg/mm/m²<br>Water: 16% by mass = 4L / 25kg |

## Delamination or spalls of concrete floors

If the existing concrete surface is dusting, our **HC Densifier** may be applied. **HC Densifier** is a sodium silicate liquid hardener that penetrates in existing concrete to harden the silicates up to design strength.
**P3 Primer** is used as a bond coat between the existing surface and the new repair.
**PatchMortar**, **PatchMoartar P** or **MicroConcerete** can be applied as repair material (depending on thickness of the repair) while the P3 Primer is still wet.
For detailed technical data sheet and installation processes request Samson method statements for site instruction.



| Solution | Product information |
|---|---|
| P3 Primer | Pack size: 10kg /20kg<br>Yield: 1kg/mm/m²<br>Water: 30% by mass = 6L / 20kg |
| PatchMortar or<br>PatchMortar P | Pack size: 25kg<br>Yield: 2kg/mm/m² (12L / 25kg)<br>Water: 15% by mass = 3.75L / 25kg |
| MicroConcrete | Pack size: 25kg<br>Yield: ± 80 bags / m³ (12.5L / 25kg)<br>Water: 12% by mass = 3L / 25kg |

## The three “M’s” critical to concrete repair, “Matched Multiple Moduli”

Hardened repair material properties must be considered. Properties like compressive strength, and tensile stress resistance must all be considered. The modulus differences between the mother concrete and the repair material should not be too different but it is preferable that the hardened repair material is more durable and slightly stronger than that of the mother concrete at the time of repair.

## Structural Grouts

Grout must provide structural support under load. Load transfer from columns to bases, bases to foundations, foundations to stable earth cannot tolerate a “weak link” in the chain. Bearing capacity is the most critical requirement of a structural grout in its hardened state. The fresh state properties and placement techniques of a grout govern its ability to harden in place and provide the appropriate load bearing capacity.

For further information request a copy of the Samson explanatory brochure entitled **“Structural Grouts”**. This brochure contains information on each of the Samson Grouts available including technical data sheets, a **Grout selection chart** and two case studies.



| Solution | Product information |
|---|---|
| HS60 Grout | Pack size: 25kg<br>Yield: ± 80 bags / m³ (12.5L / 25kg)<br>Water: 18% by mass = 4.5L /25kg |
| MS40 Grout | Pack size: 25kg<br>Yield: ± 80 bags / m³ (12.5L / 25kg)<br>Water: 18% by mass = 4.5L / 25kg |
| MicroConcrete (depending on depth) | Pack size: 25kg<br>Yield: ± 80 bags / m³ (12.5L / 25kg)<br>Water: 12% by mass = 3L / 25kg |
| SDP Grout | Pack size: 25kg<br>Yield: ± 80 bags / m³ (12L / 25kg)<br>Yield: 14% by mass = 3.5L / 25kg |

## GROUT SELECTION CHART

| Application requirements | SuperFlow ™ ** | HS60 ** | MS40 ** | SDP | MicroConcrete |
|---|---|---|---|---|---|
| **Early return to service** | Yes | Yes | No | Yes | Yes |
| **Base Plates with bolt hole pockets** | Yes | Yes | Yes | No | No |
| **Small Base Plates with easy access and no shims to encapsulate** | No | No | No | Yes | Yes |
| **Base plates with shims** | Yes | Yes | Yes | No | No |
| **Continuous heavy duty rails** | No | No | No | Yes | Yes |
| **Easy Access no bolt hole thick sections (60mm up to 150mm depth)** | No | No | No | No | Yes |
| **Use of non-shrink grout for concrete repairs** | No | No | No | Yes | Yes |
| **Re-surfacing of industrial Floor with grout** | No | No | No | No | Yes |
| **Thick set repairs of concrete beams, etc** | No | No | No | No | Yes |
| **Polymer modification for thin set application** | No | No | No | Yes | Yes |
| **Skid mounted machinery** | No | No | No | Yes | Yes |

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## Ask for Samson by name! Here's why!

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**Warranty:** Samson warrants that its products will perform as declared in its literature and this warranty extends only to the replacement of any of its products that may be proven to be defective.