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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.

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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 Yield: 8-10 m² / L
PolyStrip (removal of FP Cure)	Pack size: 5L / 25L / 200L Yield: 8-10 m² / L
CureSeal **or** ResinCure	Pack size: 5L / 25L / 200L Yield: 8-10 m² / L
Stripper A (removal of CureSeal **or** ResinCure)	Pack size: 5L / 25L / 200L 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 Yield: 50m² per 20kg Water: 40% by mass = 8L / 20kg
FairingCoat	Pack size: 20 kg Yield: 2kg/mm/m² (5m² per 20kg) Water: 25% by mass = 5L / 20kg
FairingTop (dependent on requirement)	Pack size: 20kg Yield: 8kg/m²@5mm (2.5m² per 20kg) Water: 20% by mass = 4L / 20kg
DecorTex	Pack size: 20kg Yield: ± 4m² / L Water: 40% by mass = 8L / 20kg

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 Yield: Dependent on site requirements
SFCF Grout	Pack size: 20kg Yield: 1L per 3kg = 2L slurry Water: 30-35% by mass = 6-7L / 20kg Applied by Caulking gun

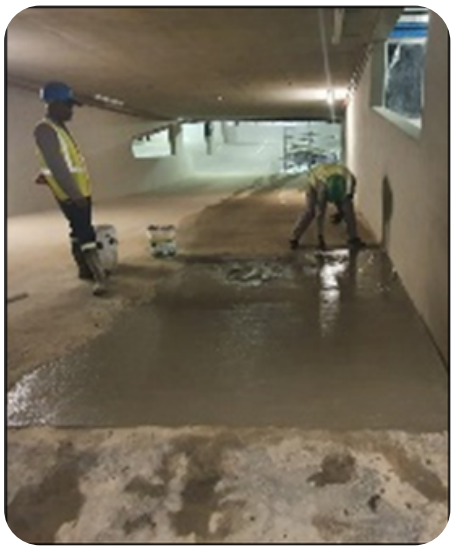
Mortars for the repair of damaged concrete

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 Yield: 1kg/mm/m² Water: 30% by mass = 6L / 20kg
CorroBlock	Pack size: 25kg Yield: 2kg/mm/m² (12L / 25kg) Water: 15% by mass = 3.75L / 25kg
PatchMortar or PatchMortar P FastPatch FlexiPatch	Pack size: 25kg Yield: 2kg/mm/m² (12L / 25kg) 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 Yield: 1kg/mm/m² Water: 30% by mass = 6L / 20kg
PatchMortar	Pack size: 25kg Yield: 2kg/mm/m² (12L / 25kg) Water: 15% by mass = 3.75L / 25kg
MicroConcrete (depending on depth)	Pack size: 25kg Yield: 12.5L per bag or ± 80 bags / m³ Water: 12% by mass = 3L / 25kg
RampSkim	Pack size: 25kg Yield: 2m²/25kg @ 5mm Water: 14% by mass = 3.5L / 25kg
EcoScreed SL (underlayment)	Pack size: 20kg Yield: 3-4m²/20kg @ 2-3mm thick Water: 18% by mass = 3.5L / 20kg

Stopping leaks in concrete

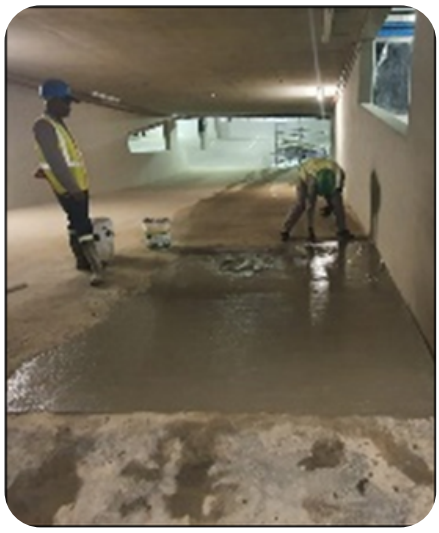
(Reservoirs, tanks and exposed parking decks etc.)

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 Yield: 1kg/mm/m² Water: 30% by mass = 6L /20kg
Siloxane Solution	Pack size: 5L / 25L / 200L Yield: 8-10m² / L
CrystalSkim WR	Pack size: 25kg Yield: 2kg/mm/m² (12L / 25kg) Water: 16% by mass = 4L / 25kg
HydraHalt X	Pack size: 20kg 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.

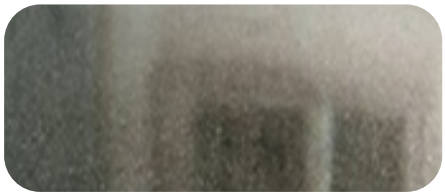


Solution	Product information
Bonding Agents: P3 Primer	Pack size: 10kg /20kg Yield: 1kg/mm/m² Water: 30% by mass = 6L / 20kg
Bond Coats Slurries Polymer Solution 1:1 Patch Mortars Thin Repairs PlasterGrasp 1:3 Patch Mortars Thick Repairs PlasterBond 1:5	Pack size: 5L / 25L / 200L Yield: Refer to TDS 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 (filling pin holes)	Pack size: 10kg / 20kg Yield: Dependent on site requirements Water: 30% by mass = 6L / 20kg
HC Densifier	Pack size: 5L / 25L / 200L Yield: 8-10m² / L depending on porosity of substrate
MM Sealer Combo or MM Sealer Siloxane	Pack size: 5L / 25L / 200L Yield: 8-10m² / L depending on porosity of substrate

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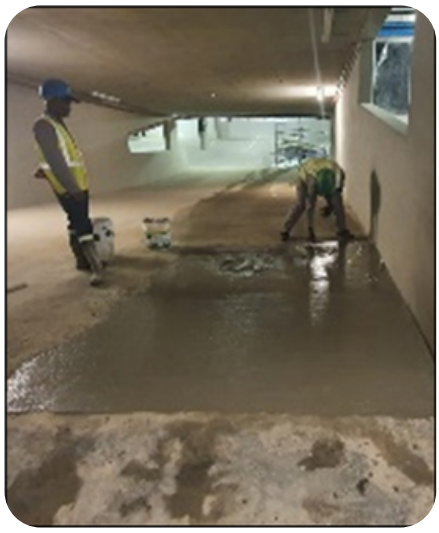
Honeycomb repairs

(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 Yield: 1kg/mm/m² Water: 30% by mass = 6L / 20kg
PatchMortar or PatchMortar P	Pack size: 25kg Yield: 2kg/mm/m² (12L / 25kg) Water: 15% by mass = 3.75L / 25kg
CrystalSkim	Pack size: 25kg Yield: 2kg/mm/m² Water: 16% by mass = 4L / 25kg
SDP Grout	Pack size: 25kg Yield: ± 80 bags/m³ (12L / 20kg) Water: 14% by mass = 3.5L / 25kg
MicroConcrete or	Pack size: 25kg Yield: ± 80 bags / m³ (12.5L / 25kg) Water: 12% by mass = 3L / 25kg
HS60 Grout or MS40 Grout	Pack size: 25kg Yield: ± 80 bags / m³ (12.5L / 25kg) 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 Yield: 5-8m² / L
FloorCoat	Pack size: 20kg Yield: ± 40m² / 20kg Water: 35% by mass = 7L /20kg
Floorfill SL	Pack size: 25kg Yield: ± 5m² / 25kg 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 SDS (Standard Dry-shake) or MBFT P (for acid resistance)	Pack size: 25kg Application: 4-7kg/m²
HC Densifier	Pack size: 5L / 25L / 200L 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 Yield: 1kg/mm/m² Water: 30% by mass = 6L / 20kg
PatchMortar or PatchMortar P	Pack size: 25kg Yield: 2kg/mm/m² (12L / 25kg) Water: 15% by mass = 3.75L / 25kg
P3 Primer X	Pack size: 10kg / 20kg Yield: 1kg/mm/m² Water: 30% by mass = 6L /20kg
CrystalSkim	Pack size: 25kg Yield: 2kg/mm/m² 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 Yield: 1kg/mm/m² Water: 30% by mass = 6L / 20kg
PatchMortar or PatchMortar P	Pack size: 25kg Yield: 2kg/mm/m² (12L / 25kg) Water: 15% by mass = 3.75L / 25kg
MicroConcrete	Pack size: 25kg Yield: ± 80 bags / m³ (12.5L / 25kg) 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 Yield: ± 80 bags / m³ (12.5L / 25kg) Water: 18% by mass = 4.5L /25kg
MS40 Grout	Pack size: 25kg Yield: ± 80 bags / m³ (12.5L / 25kg) Water: 18% by mass = 4.5L / 25kg
MicroConcrete (depending on depth)	Pack size: 25kg Yield: ± 80 bags / m³ (12.5L / 25kg) Water: 12% by mass = 3L / 25kg
SDP Grout	Pack size: 25kg Yield: ± 80 bags / m³ (12L / 25kg) 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