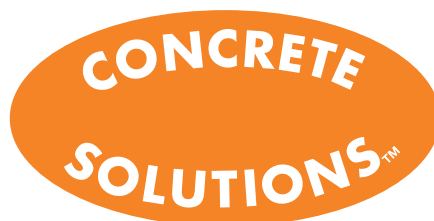




NEW ZEALAND

MC-Injection Technology

A comprehensive overview of durable and reliable injection systems



Let Our Experience Be Your Success

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MC-Duromer Epoxy Resin

Structural epoxy resin injection can be challenging. Serious consideration must be given to maintain that the structural integrity of a structure is met.

Of consideration are the crack's width and depth as well as the concrete's strength and environmental conditions. Therefore it is important that the viscosity of the injection material used is able to penetrate the crack's width and full depth. Equally if the concrete is of a low compressive strength then only low pressure injection with high flowability products can be tolerated.

To overcome all of these challenges **Concrete Solutions™** uses the latest generation Duromer reactive epoxy resins from MC-Bauchemie, Germany. MC-Injekt 1264 compact and TF with their unique properties is able to penetrate the finest crack width and fill any crack depth.

Advantages

- Can be injected into both dry and damp cracks
- Hardening under dynamic loads
- Low viscosity epoxy Duromer resin
- High penetration activity
- High compressive and tensile strengths
- Changeable viscosity to suit crack size
- REACH assessed including application and water contact



Injection by Low Pressure

The unique properties of MC-Injekt 1264 TF ensure horizontal filling of cracks even when using only gravity pressure. This, due to the products released surface tension, allows for far deeper penetration than that achieved by epoxy resins of much lower viscosities.

Penetration depths of over 200mm even into the finest of crack widths can be achieved. The injection by low pressure technique fulfils the requirements of ZTV-ING Part 3 Solid Construction, Chapter 5 The filling of cracks and cavities in concrete components.



MC-Cement Suspension

The structural injection of Unreinforced Masonry (URM) has provided specifiers with a dilemma of which product to choose. On one hand most conventional injection reactive resins or grouts have too much compressive strength providing little or no movement, restricting the host material from movement. On the other hand low strength repair materials are generally very porous allowing contaminants and also freeze thaw cycles into the substrate causing erosion.

Concrete Solutions™ approach to this situation is to inject such cracks and voids with a special cement based material from MC-Bauchemie called Centricrete MS which is uniquely suited to masonry strengthening.

It is important when selecting an injection material for masonry structures that consideration is made to the E-modulus rather than the compressive strength.

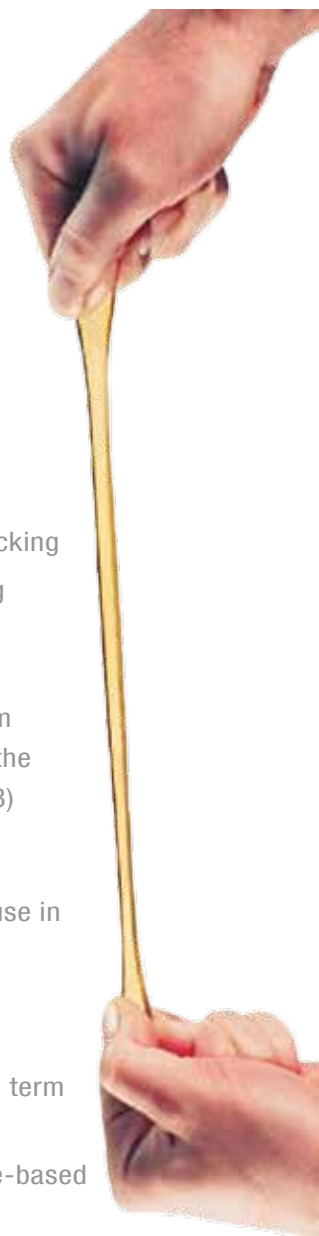
The low E-modulus of Centricrete MS guarantees that the material will behave soft enough under loads, ensuring that no local stress concentrations will occur so that slight movements can be absorbed by the joints rather than by the much more rigid brick or stone.

Centricrete CS or ultrafine Centricrete UF are available with higher compressive and flexural strengths. They allow for filling of fine cracks and do not change in volume once mixed.

Advantages

- Low viscosity cement suspension
- No change in volume during setting
- Restores alkalinity





MC-Elastomer Flexible Polyurethane

In 1994 **Concrete Solutions™** was commissioned by the National Library of New Zealand in Wellington to seal water bearing cracks allowing ingress into basement areas.

Other waterproofing products had proven themselves incapable of either sealing against hydrostatic pressure or dynamic cracking. After considerable research into the problem we finally contacted MC-Bauchemie in Germany who since the 1960's has been a recognised world leader in injection technology. Their polyurethane injection system MC-Injekt 2033 and MC-Injekt 2300 was used to provide a flexible and permanent seal to the separating cracks within the structure. To this day, nearly two decades later, the same cracks remain sealed.

Since 1994 **Concrete Solutions™** has successfully sealed hundreds of domestic and commercial projects using the same system throughout New Zealand.

Flexible, MC-Injekt 2300 range

- Flexible sealing of dynamic cracking
- Permanent water seal providing durability for both cracks and construction joints.
- Substrate conditions range from dry to pressurised water (with the pre-injection of MC-Injekt 2033)

Advantages

- Fulfils AS/NZS 4020:2002 for use in contact with drinking water
- Adjustable setting times to suit individual applications
- REACH assessed including long term water contact
- Very low viscosity polyurethane-based elastomer resin





MC-Duromer Rigid Polyurethane

The structural filling of voids within or behind a structure can be carried out successfully by using MC-Injekt 2700. The properties of MC-Injekt 2700 allow for accurate setting times which can be adjusted to suit an assortment of applications from the stabilisation of unstable ground, to the fast setting needed to stop high pressure water ingress into civil structures.

The ability to be able to carry out such applications has opened a vast array of civil applications to solve difficult and complex situations.

Rigid, MC-Injekt 2700 range

- Stabilisation of ground materials
- Sealing against high pressure water ingress in civil structures such as tunnels, foundation pits and dams
- Stabilisation and waterproofing of construction elements
- Filling cracks and cavities to restore load bearing capacity in structural elements such as columns, beams and slabs
- Stabilising of “rocking” slabs

Advantages

- Fulfils AS/NZS 4020:2002 for use in contact with drinking water
- Adjustable setting times to suit individual applications
- REACh assessed including long term water contact
- Low viscosity polyurethane-based duromer resin



MC-Hydro structure gel for stabilising of fine media

Structures built on subgrade material that have been subjected to movement by ground settlement, especially those structures constructed on unstable fine media, pose an engineering challenge for their stabilisation.

Our solution is that most materials traditionally used for ground stabilisation have a molecular structure which restricts their penetration into fine media. MC-Injekt TS-07 has been developed using similar hydro structure technology as MC-Injekt GL-95 which has had proven success for over 20 years. The result has been a material with a water like viscosity, that is able to penetrate into voids between fine grains with a tailor made set time.

The products compressive strength fulfils most geotechnical engineering requirements.

Objective

- Stabilisation of fine media to provide load bearing capabilities

Advantages

- Viscosity 5 mPa's
- 5-7 MPa (injected into ground)
- Reaction time of 1 to 15 minutes at 20°C
- Ground water compatible according to German DIBt and REACh assessed.
- Installation requires minimal small equipment

MC-Hydro structure gel for flexible sealing

MC flexible hydro structure gels have proven to be an unequalled asset to resolve waterproofing problems from flowing water ingress to saturated substrates due to ruptured or nonexistent waterproof membranes.

Concrete Solutions™ has been able to successfully waterproof numerous leaking structures by injecting behind a structure MC hydro structure gel technology including;

- Historic brick foundations
- Basement concrete walls and slabs
- Masonry basement walls
- Polystyrene basement walls
- Basement and tunnel construction joints

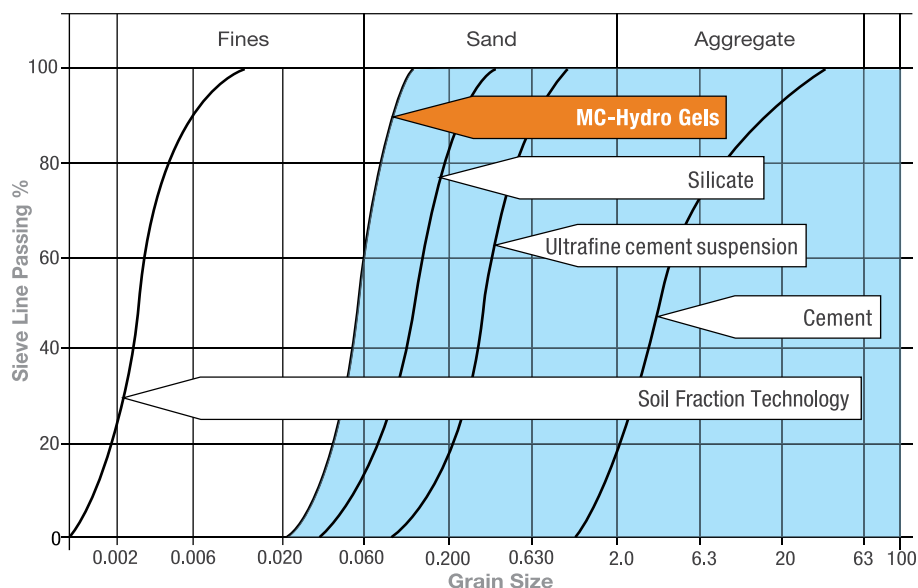
Objectives

- The supplementary exterior sealing of ground connected structures.

Advantages

- Extremely low viscosity of 5 mPa's
- Highly flexible
- Adjustable setting times to adjust for porous ground or high water flow conditions
- Fulfils AS/NZS 4020:2002 for use in contact with drinking water as well as other international standards. REACh assessed.
- MC-Injekt GL-95 TX used to seal flexible construction joints





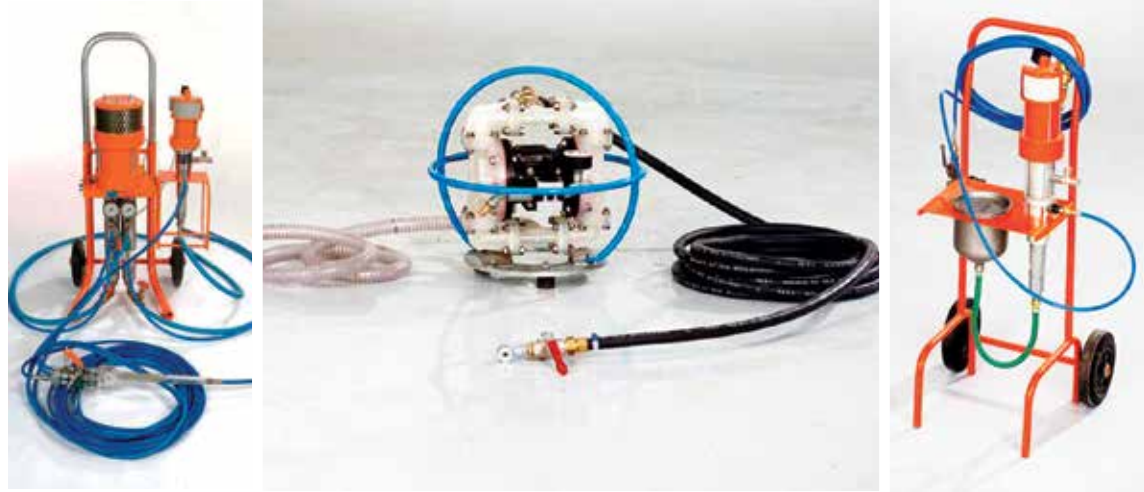
Penetration of both MC-Injekt TS-07 and MC-Injekt GL 95

Injection guide and associated products

	SUBSTRATE	REQUIREMENT	CONDITION	CRACK SIZE	DEPTH	PRODUCT BASE	PRODUCT
STRUCTURAL	■ Concrete Slab	Structural high pressure injection	Dry to damp	0.1mm to 5.0mm	Full	Epoxy Resin	MC-Injekt 1264
	■ Concrete Walls	Structural low pressure injection	Dry to wet	>0.25mm	Full	Cement Suspension	Centricrete range
	■ Masonry Block	Structural chase filling	Dry	Any	As required	Epoxy Resin	MC-DUR Kleber 34
	■ Structural Elements						
	■ Concrete Slab	Structural injection by gravity penetration method for horizontal surfaces	Dry	0.1mm to 5.0mm	<200mm	Epoxy resin	MC-Injekt 1264 compact
	■ URM Brick and Stone Work	Structural low pressure injection Structural re-pointing	Dry to damp Dry to damp	>0.6mm Any	Full Any	Cement suspension Cement	Centricrete MS Oxal RF
WATERPROOFING	■ Ground Stabilisation	High strength stabilisation High strength stabilisation Stabilisation of fine media	Dry to damp Dry to flowing water Damp to flowing water	— — —	Any Any Any	Cement grout Polyurethane Acrylic Gel	Emcrete HP MC-Injekt 2700 MC-Injekt TS-07
	■ Concrete Slab ■ Concrete Walls ■ Masonry Block	Flexible injection for sealing waterproofing In flowing water conditions MC-Injekt 2033 to be injected prior	Dry to wet	>0.1mm	Full	Polyurethane Resin	MC-Injekt 2300
	■ Concrete Slab ■ Concrete Walls ■ Masonry Block ■ Poly Block	Flexible subterranean injection for sealing water ingress caused by a ruptured or nonexistent membrane behind a structure	Damp to flowing water	—	Any	Hydro Gel	MC-Injekt GL-95
	■ Construction Joints	Subterranean construction joints	Damp to flowing water	—	Any	Hydro Gel	MC-Injekt GL-95 TX
	■ Waterproofing Plaster	Internal and exterior surfaces	Vertical or horizontal surfaces	Can be used in conjunction with injection products			Oxal DS-HS
CONCRETE REPAIR	■ Cracks combined with concrete repair	Normally concrete repairs are carried out after injection work has taken place	<ul style="list-style-type: none">• Bond and corrosion coat• Standard concrete repair• Rapid setting repair• Self compacting concrete• Self levelling				Zentrifix KMH Nafufill KM 250 Emcrete RS Emcrete SCC Estrifan SN 10

Concrete Solutions™

uses only MC-Pumping Equipment specifically manufactured for the purpose of injecting MC-Injection products.



Concrete Solutions™ was formed in 1994 to carry out specialised applications for the structural repair, protection and retrofit sectors.

Over the years **Concrete Solutions™** has gained the respect of asset owners, engineering consultants and specifiers both nationally and internationally to provide innovative solutions to otherwise challenging problems.

Concrete Solutions™ is an IRP Master Applicator Qualified Company. IRP is a German Government Syllabus issued at the BZB institute in Germany.

IRP is the only such official training course in the world that gives certification for a company to carry out concrete Injection, Repair and Protection works.

It is an established fact that in the construction industry no two projects or conditions are the same. Therefore given the opportunity we would welcome your enquiry to address your injection requirements.

Manufacturer

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