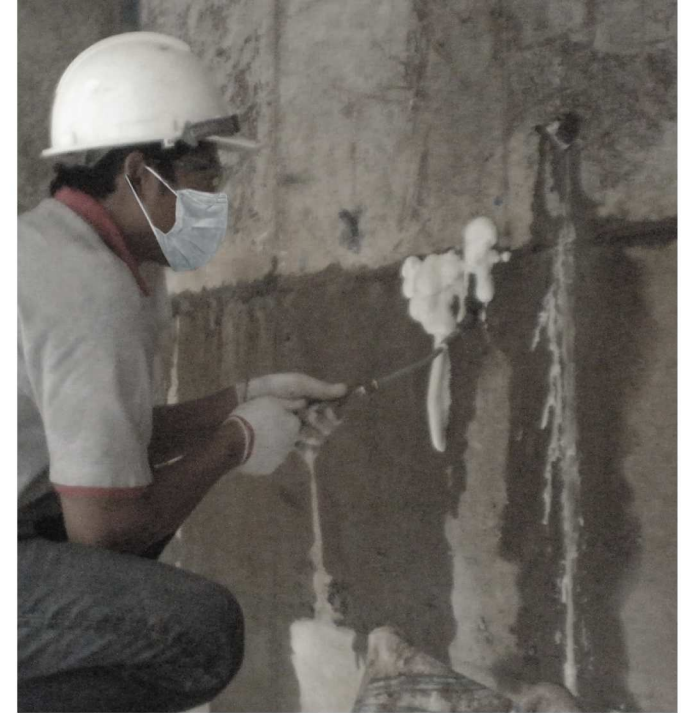


CONCRETE REPAIR MANUAL



PRODUCTS

The selection of the injection material is determined by the objectives and conditions. The injection products should have certain properties:

- Right viscosity for the crack
- Long enough pot life to work in a wide temperature range
- Good adhesion to concrete
- Non corrosive to concrete or reinforcement
- Compatibility with materials it is in contact with

Cormix products are solvent free with low viscosity the products are formulated to be able to penetrate cracks greater than .1mm.

Very high adhesive strengths mean they reinstate durability and the load bearing capability of the element.

STRUCTURAL INJECTION PRODUCTS TYPE F

TECHNICAL PARAMETERS	CONTITE PUE 300/301	CONDUR SC	CONDUR SCC
Mixing Ratio	1 : 1.15 by Weight	4 : 1 by Weight	4.25 : 1 by Weight
	1.02 : 1 by Volume	3 : 1 by Volume	3.32 : 1 by Volume
Viscosity of Mixture (25°C)	200 -300 Cps	200 -300 Cps	≤ 100 Cps
Pot Life (25°C)	40 - 60 min	50 - 70 min	50 - 70 min
Application temperature	>5°C	>8°C	>5°C
Properties and used	<ul style="list-style-type: none"> • Low viscosity • 100% Solid - Solvent Free • Suitable for structural crack sealing in concrete structures such as basements, tunnels, precast concrete segments 	<ul style="list-style-type: none"> • Low viscosity • 100% Solid - Solvent Free • Suitable for structural crack sealing in concrete structures such as basements, tunnels, precast concrete segments 	<ul style="list-style-type: none"> • Very low viscosity • 100% Solid - Solvent Free • Suitable for structural crack sealing in concrete structures such as basements, tunnels, precast concrete segments
Performance characteristics as per EN1504 - Part 5	U(D1)W(1)(1)(5/30)(1)	U(F1)W(1)(1)(8/30)(0)	U(F1)W(1)(1)(5/30)(0)

FLEXIBLE CRACK FILLING RESINS TYPE D

TECHNICAL PARAMETERS	CONTITE PUE 200/201	CONTITE PUE 300/301	CONTITE PUE 400/E401
Mixing Ratio	5 : 3 by Weight	1 : 1.15 by Weight	1:1 by weight
	2 : 1 by Volume	1.02 : 1 by Volume	1.1 : 1 by volume
Viscosity of Mixture (25°C)	100 - 200 Cps	200 -300 Cps	≤ 100 Cps
Pot Life (25°C)	60 - 70 min	40 - 60 min	15 - 20 min
Application temperature	>5°C	>8°C	>5°C
Properties and used	<ul style="list-style-type: none"> • Low viscosity • 100% Solid - Solvent free • Suitable for elastic sealing of cracks in concrete structures such as basements, tunnels etc. • The sealing of cracks and joints and leaks in other structures. 	<ul style="list-style-type: none"> • Low viscosity • 100% Solid - Solvent free • Suitable for structural crack sealing in concrete structures such as basements, tunnels, precast concrete segments etc 	<ul style="list-style-type: none"> • Low viscosity • 100% Solid - Solvent free. • Suitable for injection to dry & wet cracks. • Stopping water seepage. • Sealing leaking cracks & voids. • Injection in leaking diaphragm walls. • Sealing leaks in tunnels, basements, subways, pipe lines, manholes, dams, reservoirs, pools, water tanks etc.
Performance characteristics as per EN1504 - Part 5	U(D2)W(1)(1)(5/30)(1)	U(D1)W(1)(1)(5/30)(1)	U(D2)W(1)(1/2/3)(5/30)(1)

WATER STOPPING PU FOAMS AND GELS

TECHNICAL PARAMETERS	CONTITE PU 100/101	CONTITE PU 100(1K)	CONTITE G600	CONTITE PUE500/501
Type			1K Polyurethane Injection Grout	2K Polyurethane Injection Grout
Mixing Ratio	10 : 1 by Weight	N.A (1K Product)	N.A (1K Product)	Part A : Part B = 1 : 1 by Volume
Viscosity of Mixture (25°C)	50 - 150 Cps	250 - 450 Cps	350 - 650 Cps	100 - 200 Cps
Pot Life (25°C)	4 - 8 hours when protected from Moisture	N.A (1K Product)	N.A (1K Product)	5 Minutes
Reaction Time with Water			1 : 1 by weight 15 - 10 Seconds (Foam) 1 : 5 by weight 20 - 25 Seconds (Gel)	20 - 30 Seconds
Application temperature	>5°C	>5°C	>5°C	>5°C
Properties and uses	Very Low viscosity	Low viscosity	Low viscosity	Low viscosity
	100% Solid - Solvent Free	100% Solid - Solvent Free	100% Solid - Solvent free, Hydrophillic Flexible Elastomeric Gel.	100% Solid - Solvent free Rigid PU Foam.
	Stopping water seepage.	Stopping water seepage.	Shutting off Heavy Water Leakage Pemanently.	Compressive Strength with Fine sand > 40 Mpa (7)
	Sealing leaking cracks & voids.	Sealing leaking cracks & voids.	Shutting off water seepage, forming a positive side waterproof membrane with below grade structures injected from the negative side, for reinjectable hoses & soil stabilization	Shutting off Heavy Water Leakage Pemanently
	Injection in leaking diaphragm walls.	Injection in leaking diaphragm walls.	Prevention of water leakage in sewerage and drain pipes, ground stabilization	Soil and rock consolidation with increase in Load Bearing capacity by filling of large voids, cracks and crevices in Soil.
	Sealing leaks in tunnels, basements, subways, pipe lines, manholes, dams, reservoirs, pools, water tanks etc.	Sealing leaks in tunnels, basements, subways, pipe lines, manholes, dams, reservoirs, pools, water tanks etc.	Prevention of water leaks through expansion or construction joints, etc.	Pre injection for waterproofing and con-solidation in front of TBM and drill and blast
Performance characteristics as per EN1504-Part 5	U(D2)W(1)(3/4)(5/30)(0)	U(D2)W(1)(3/4)(5/30)(0)		

EQUIPMENT

SINGLE COMPONENT PUMP

When applying injection resins using single component pumps both components are mixed together first and put into the pump hopper, some products such as foams may not be suitable for single component pumps

Brand: GRACO

Model: Ultra Max II 595 PC PRO

Pressure range: 0-3300 PSI

We recommend for injection around 1-2 bar



2 COMPONENT PUMP

When using 2 component pumps both components are introduced to a mixing head separately mixed there and injected , This type of pump is usually used with fast reacting products with large volumes of materials

Brand: Desoi

Model: DESOI FlowControl II – A

Pressure range: 5-120 bar

We recommend for injection around 10-12 bar

INJECTION PACKERS

These may be surface applied or be mechanical or hammer in packers.

Injection packers are the connection between the structural element and the pump

Surface packers: Surface packers are glued directly on to the crack and the surface between packers sealed with epoxy adhesive Condur EA1 No drilling is required



Drilled hole packers:

Drilled hole packers may be mechanical packers that are anchored into the drilled hole by screwing whilst hammer-in packers are installed by hammer



Mechanical Packer



Hammer-In Packer

APPLICATION

Good preparation will help to ensure successful injection that includes selection of the correct injection material

Surface preparation:

Holes are normally drilled on either side of the crack alternatively at 45 degrees angle to the crack.

The distance between packers is determined by the crack width, element depth, pot lives and viscosities.

The drill holes are cleaned out by brush, vacuum or compressed air Mechanical packers are placed into the drill hole and tightened in the element

If it is not possible to drill holes surface packers may be installed on the surface by gluing and are encapsulated with surface seal epoxy adhesive.

Condur EA1 is used to seal the cracks surfaces and install surface packers.

The surface seal is there to ensure good filling of the cracks and good structural strength achieved.

The packers are spaced at a distance equal to the elements thickness. To prevent blockage of the crack where injection material will be injected a nail is inserted into the crack to which the packer is fitted this is removed prior to injection.

Condur EA1 is applied to a minimum of 10cm wide and 3 mm thick along the crack. At the highest point of the crack an air vent should be left. After fixing the packers they are checked for connection by compressed air

Injection:

The cracks are injected from bottom to top, once material emerges from the next adjacent packer injection is moved, a secondary injection may be required to completely fill the cracks Injection pressures vary maximum pressure is normally calculated as below:

$$\text{Max. Pressure} = \frac{\text{Concrete Strength (Cube,MPa)} \times 10 \text{ bar}}{3}$$

Surface sealing of cracks:

Horizontal surface cracks can be sealed by gravity feed without pressure using products with good wetting capabilities and viscosity.



Application of Cormix Injection Contite G600:



Drilling hole>> Removing dust and dirt



Tightening and fixing packers



Injection>> Removing packers>> Closing packer holes