DRACOGEL GT2

NON-TOXIC, THREE-COMPONENT ACRYLIC INJECTION GEL FOR WATERPROOFING AND BLOCKING WATER INGRESS ON STRUCTURES AND LAND

DRACO

WATERPROOFING
LINE

ACRYLIC PRODUCTS FOR WATERPROOFING AND REINFORCEMENT INJECTIONS

DRACOGEL GT2 is a water-based acrylic resin that polymerises to form a swelling elastic gel with adjustable gel time. Given that the product is monophasic and that its permeation is water-borne it penetrates extremely well; these features combine with low surface tension and very low viscosity to consolidate even loamy soils with a particle diameter as small as 0.01 mm. The voids and holes are filled with the **DRACOGEL GT2** solution which solidifies to form a strong gel that prevents the passage or leaching of water coming from the environment.

BENEFITS

The specific characteristics of the product are:

✓ **Totally non-toxic and eco-friendly and suitable for contact with drinking water.**

✓ **Ultra fluid acrylic resin** with high permeation in its liquid state even into compact materials, microcavities and gravel.

✓ **As a gel DRACOGEL is breathable to water vapour.**

✓ **High bonding to sealed surfaces.**

✓ **High range of temperatures and conditions for use. The product can be used between +5 ° and +40° C.**

✓ **Flexible and self-healing gel, also suitable for joints and structures that undergo buckling and movement.**

✓ **The progress of the injection can be easily managed:** you can obtain variable gel times (from a few seconds to up to 1 hour and over) by adjusting the dosage of components “b” and “c”.

✓ **Hydro-expansive gel for superior consolidation that expands in the presence of water to seal voids, thereby reducing the porosity of the permeate.**

✓ **Totally non-corrosive on metal reinforcements.**

✓ **Non-flammable and fire-resistant.**

USES

DRACOGEL GT2 is particularly suitable for:

✓ Hydro-expansive sealing injections to impede water ingress even in compact and microporous structures.

✓ Rapid blocking of medium and high flow-rate water infiltration on concrete, masonry, stone, tuff and loamy soils.

✓ Sealing and waterproofing repair of shafts, dams, tunnels and underground pipelines.

✓ Waterproof sealing of joints and structures subjected to movement.

✓ Control and containment of water during underground operations.

✓ Structures in contact with drinking water.

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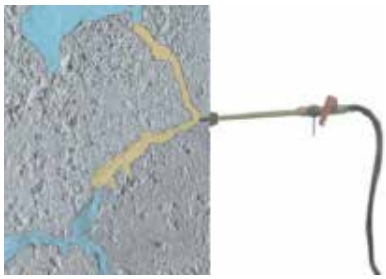
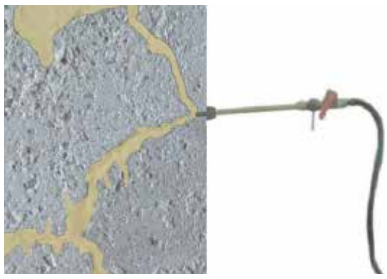
TECHNOLOGY: HOW IT WORK

STEP 1 INJECTION AND GELLING

DRACOGEL GT2 begins to spread through the cracks and microcavities of the material while still in a liquid state thanks to its low viscosity and the fact that it spreads by using the water present in the permeate itself as a carrier.

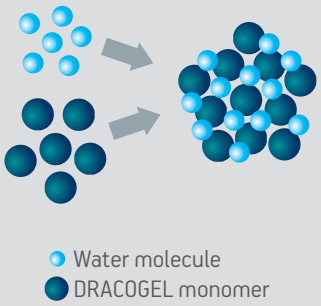


When the polymerization starts, the viscosity gradually rises (with a speed according to the gel time chosen) to create a dense, flexible and waterproof foam which gels and blocks the water within its molecular lattice.

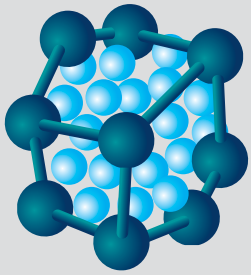


CHEMICAL REACTION

The liquid monomer solution activated in the aqueous phase begins to flow thanks to the high fluidity and Newtonian flow behaviour. **DRACOGEL GT2** continues to spread in the voids by acquiring any water present from infiltrations.



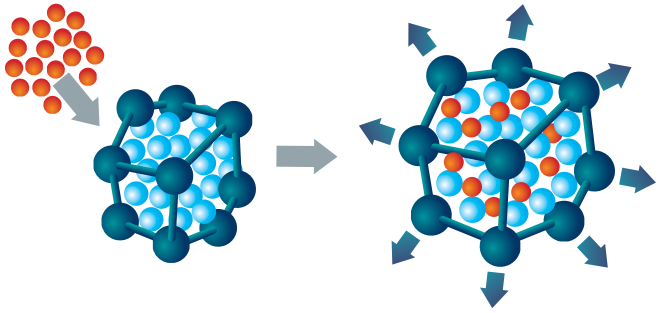
At the pre-set gel time the monomer solution gels, thus creating a polymer lattice that incorporates the molecules of infiltration water and also triggers a water-repelling action against water present.



When cured **DRACOGEL GT2** has the following characteristics: **high cohesion and adhesion, permeability to water vapour, high flexibility, totally waterproof, non-toxic**.

STEP 2 REACTIVATION

The gel is waterproof under contained conditions and suitable pressure. However, should the conditions change due to a shift in size caused by settlement or cracking and the gel comes into contact with water once again it will regain its hydrophilic properties.



The polymerisation will be reactivated and the ingress water will be absorbed. **DRACOGEL GT2** can swell **to up to 30% of its volume**, thus sealing cracks and recreating containment pressure to ensure waterproofing.

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PRODUCT PREPARATION

DRACOGEL GT2 is made up of three components:

A - solution of monomers in the aqueous phase (liquid)

B - initiator of polymerisation (liquid)

C - hardening accelerator (powder)

DRACOGEL GT2 solution: water = 1:1

step 1

Pour water into a plastic container in a quantity equal to a ratio with **component A** of 1:1, 1:2 or 1:3. For consolidation and reduction of the hydraulic permeability of soils this ratio can be raised to a value of 1:5.

step 2

Add **component C** which acts as the accelerator for the polymerisation reaction on which the gelling of **DRACOGEL** is based.

step 3

Pour **component "A"** into a separate container and gradually add **component "B"** which acts as a trigger for the polymerisation reaction and the formation of the gel. The air entrained in the solution during mixing slows down gelling. We advise you mix the solution manually or at low speed to avoid irregular gel times.

Pour component A into a separate container

Add component B

Mixing component C with hot water

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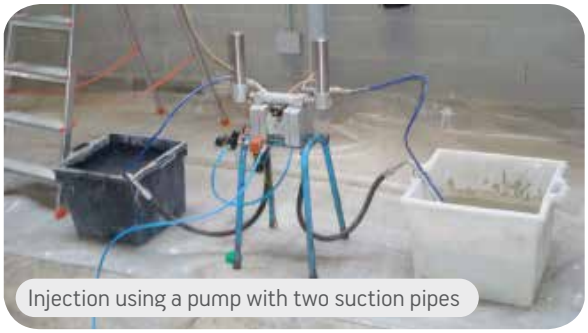
APPLICATION PROCEDURE

Inject the product using the specific pump with two suction pipes and two pistons that takes equal amounts of liquid (1:1 ratio) from the two containers prepared in advance and mixes them in the nozzle.

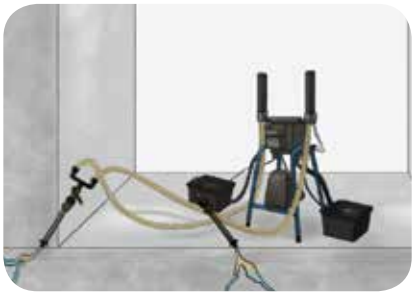


Injection using a pump with two suction pipes

SOME APPLICATIONS

WASHING OF BARRIERS AND ABUTMENT WALLS

LOCALISED INJECTIONS OF CASTINGS



WARNINGS

Factors that affect gel time:

Temperature

As shown in table (*), the temperature directly affects the gel time at a constant dosage of component b and c in the mix.

The pH of the mix may affect gel time. Low levels of pH (acidic) slow down gel time.

This should be taken into consideration where the water infiltration present in the permeate has a highly alkaline pH which may affect gel time.

Contact with metals

Prolonged contact of the solutions and mix with some metals (iron and copper), can trigger polymerisation. We therefore advise using either plastic or stainless steel materials when preparing the solutions.

Presence of mineral salts

Some soluble salts in the mix can accelerate or slow down gel time (sodium chloride, phosphates, nitrates, nitrites, sulphates, etc.).

PRECAUTIONS: the solutions of DRACOGEL GT2, as well as the drums and the mixer, must be kept away from sunlight.

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PACKAGING AND STORAGE

Package (A+B+C):
- 20 kg can (A) + 2 kg drum (B) + 2 kg drum (C) = 24 kg
- 200 kg drum (A) + 20 kg drum (B) + 20 kg drum (C) =240 kg

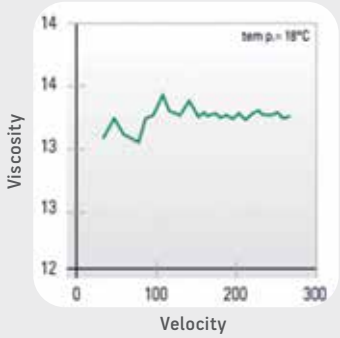
If kept in its original packaging and properly stored under cover in a dry place, the product maintains its characteristics for a year.

TECHNICAL CHARACTERISTICS

	COMPONENT A	COMPONENT B	COMPONENT C	DRACOGEL GT2
PHYSICAL STATE	Milky white liquid	Light yellow liquid	White powder	White solid
DENSITY (23°C)	-	-	-	approx. 1.10 kg/l
APPARENT DENSITY (23°C)	-	-	approx. 0.4 kg/l	approx. 1.10 kg/l
PH	6/7	Approx. 10	-	-
HAZARD CLASSIFICATION IN ACCORDANCE WITH EEC DIRECTIVE 88/739	Irritant	Irritant	-	None
Components (A+B+C) before polymerisation with Brookfield Rheometer DV III with UL Adapter (50 rpm)				
ECOLOGICAL DATA	as is		50% solution in water	
	25°C	18 °C	18 °C	
VISCOSITY (MPA)	85	100	13	
SHEAR STRESS (N/M2)	5.01	6.4	0.81	
SHEAR RATE (1/S)	61.2	2	61.2	

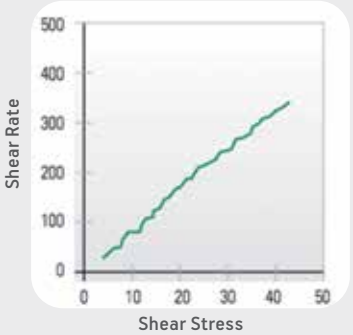
VISCOSITY OF DRACOGEL GT2 IN A WATER RATIO OF 1:1

As can be seen from the graph, DRACOGEL GT2 in a 50% water solution has Newtonian flow behaviour, such as water: its viscosity remains practically constant as the speed of mix blending increases.



SHEAR STRESS OF DRACOGEL GT2 IN A WATER RATIO OF 1:1

When DRACOGEL GT2 in a 50% water solution is subject to mechanical action it moves at a rate in direct proportion to the stress applied, which is again a characteristic specific to fluids with Newtonian behaviour. This property ensures that the speed of penetration of the fluid in soil, even with compact particles, is similar to that of water.



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The composition of DRACOGEL GT2 enables the gel time to be easily adjusted, with times that can range from a few seconds up to 1 hour

Temperature C	Container 1			Container 2			Gel time Sec.
	DRACOGEL COMP. A	DRACOGEL COMP. B	COMP. B PACKAGES	WATER	DRACOGEL COMP. C	COMP. C PACKAGES	
5°C	20 kg	2 kg	1	20 kg	2 kg	1	1' 30"
	20 kg	1.5 kg	0.75	20 kg	1.5 kg	0.75	2'
	20 kg	1 kg	0.5	20 kg	1 kg	0.5	3' 10"
10°C	20 kg	2 kg	1	20 kg	2 kg	1	50"
	20 kg	1.5 kg	0.75	20 kg	1.5 kg	0.75	1' 30"
	20 kg	1 kg	0.5	20 kg	1 kg	0.5	2' 20"
15°C	20 kg	2 kg	1	20 kg	2 kg	1	40"
	20 kg	1.5 kg	0.75	20 kg	1.5 kg	0.75	1' 20"
	20 kg	1 kg	0.5	20 kg	1 kg	0.5	2'
20°C	20 kg	2 kg	1	20 kg	2 kg	1	30"
	20 kg	1.5 kg	0.75	20 kg	1.5 kg	0.75	1'
	20 kg	1 kg	0.5	20 kg	1 kg	0.5	1' 30"
	20 kg	0.2 kg	0.1	20 kg	0.2 kg	0.1	70'

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RELATED PRODUCTS

STARJET PC

A product that is useful for use in critical areas such as casting and construction joints. It eases the injection of DRACOGEL where there is water infiltration by protecting against movement and cracking that could develop beyond control.

MAGISTAR FLEX TUBE

MAGISTAR FLEX TUBE is a preventive system for sealing concrete casting and construction joints which, with a simple injection of MAGISTAR into the terminal elements already set in the cast, ensures that waterproofing is restored quickly and at low cost.

TECHNICAL SPECIFICATIONS

DRACOGEL GT2, produced by Draco Italian SpA is suitable for the construction of a waterproof barrier in structures subject to water ingress through cracks and crevices such as shafts, dams , tunnels , underground pipelines as well as for consolidation of land that lacks cohesion, by the injection of a three-component, non-toxic acrylic gel.

Legal notice - SLCMP version dated 01.03.2017

In the technical specifications herein, Draco Italiana s.p.a. used the indicators therein specified, with the relevant standards.

Please check if this Sheet and the figures therein contained apply to the product batch you are interested in or if they have been overridden by any later release. If in doubt, check whether this Sheet matches the one applicable at the time of finalising the sales agreement, at **www.draco-edilizia.it**, and/or contact our Engineering Department.

No advice provided by our staff, either verbally or in writing at your request, about the potential applications of the Products shall be binding under the sales agreement or shall be considered an integral part of the agreement. Such advice is based on our experience and on the best available practical and/or scientific knowledge; as such, it shall not be binding or conditional on the buyer or user. Please try our products first to find out whether they are fit for your intended use or application; in any case, you shall be solely responsible for your choice.

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