Sandvik Inject GELE

Acrylate gels

SANDVIK

Battle against water with Sandvik acrylic gels

Water is essential for life – but in underground structures, it becomes a constant and aggressive adversary. Groundwater pressure, fine cracks, joints, and porous concrete allow moisture to migrate unseen, gradually compromising durability, functionality, and value. All structures in contact with the ground – such as basements, tunnels, shafts, and underground car parks – are particularly exposed. Once water paths are established, simple surface repairs are no longer sufficient. What is required is a solution that follows the water's route and seals it permanently. Traditional external waterproofing often relies on excavation, which is costly or simply impossible in existing built environments. This is where the Sandvik acrylic gels offer a crucial advantage.

The Sandvik acrylate gels are designed to penetrate even the finest pores and fissures in concrete and surrounding soil. Through curtain injection and surface injection, they form a highly flexible, continuous waterproofing barrier behind the structure. Their very low initial viscosity enables deep soil penetration, while their permanent elasticity allows them to accommodate movement, settlement, and crack dynamics without loss of sealing performance. The result is a durable, pressure-resistant waterproofing system that stops water at its source – installed from the inside without excavation. Sandvik acrylate gel technology delivers long-term protection, safety and reliability for critical underground structures, even under permanent water pressure.

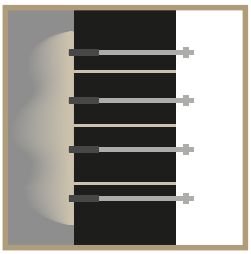
Damage pattern

Type of damage	Damage pattern	Typical cause
Damp patches	Wet spots, often up to 1 m high	Rising damp
Surface damage	Peeling paint, crumbling plaster	Moisture ingress/ingress of water
Efflorescence	White, crystalline deposits	Mineral transport via water
Structural defects	Cracks, leaking joints, honeycombing	Localized water entry
Indoor climate impact	High humidity (> 60 %), musty odor	Permanent saturation
Localized dampness	Moisture on earth-touching walls	Lateral damp or water penetration

Execution of curtain, surface, and contact injection

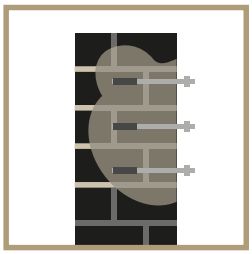
Curtain and surface injection is a waterproofing method used to create a continuous sealing layer behind or in the existing structures by injecting acrylic gel into the soil or the construction. Following full surface preparation, boreholes are drilled through or in the structure in a staggered grid with typical spacing of 25-50 cm, ensuring uniform coverage of the injection area. Injection packers are installed, and the acrylic gel is injected using a 2-component pump with flushing pump under controlled pressure adapted to the substrate permeability or the type of construction in case of the surface injection. The gel penetrates the soil behind the structure or the structure, reacts in a controlled manner, and forms a durable, watertight curtain. Execution requires suitable, water-saturated soil or structure conditions, detailed planning of the drilling pattern, experienced applicators, and implementation in compliance with existing execution regulations. Typical gel consumption is 25-35 l/m² at working pressures of 5-30 bar, depending on structural or ground conditions.
Contact injection with acrylate gel starts with cleaning the substrate to defined a clean surface. Inclined drill holes are executed at approx. 30-45° toward the contact zone, typically with a diameter of 10-14 mm and a spacing of about 20-30 cm. The injection packers are installed, and a low-viscosity acrylate gel is injected at controlled low pressure to ensure uniform distribution along the structural interface. Injection is continued until predefined material take-up or refusal is reached, followed by controlled geling to form a durable, flexible and watertight barrier.

Curtain injection



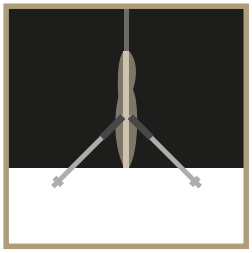
Curtain injection is a remedial waterproofing method designed to create a protective barrier (a ”curtain”) on the exterior surface of a structure in contact with the ground, without the need for excavation.
It is primarily utilized in scenarios where conventional external waterproofing is technically or economically unfeasible due to overbuilding, dense urban environments, or underground infrastructure.

Surface injection



Surface injection using acrylate gel serves as a post-construction cross-sectional sealing for concrete or masonry structures against lateral moisture penetration. While curtain injection creates a sealing layer on the exterior of the component within the soil, area injection focuses on the complete penetration and saturation of the building parts itself to create water tightness.

Contact injection



The contact injection is used to seal the interface between a structural element and the ground or between two structural components. For this purpose, a low-viscosity acrylate gel is injected into the ground or into the contact zone between the structural elements and or the ground. The acrylic gel spreads along the interface and fills gaps, pores, and defects. After curing it formed a durable, flexible, and watertight barrier.

Acrylate gels

Acrylate gels are multi-component injection materials based on acrylate or methacrylate that, after mixing, typically react to form an elastic, water-containing gel, such as DSI Inject GELE E, F, and V. However, the products DSI Inject GELE SR50 and SR80 react to form a product with very low elasticity and are predominantly used in the field of ground injection. All products have a very low viscosity, allowing them to penetrate fine pores, cracks, and joints, and after curing they form a flexible and sealing or consolidating polymer network.

Product portfolio

Enhance safety, health, and environmental protection with certified materials, CE-marked, and tested according to DIN EN 1504-5.

Product	Product characteristic	CE mark	Application	Viscosity after mixing	Open time at 20 °C
DSI Inject GELE E	— Rubber-like 3C acrylic resin — Semi-elastic — Very low starting viscosity — Moderate adhesion — Low shrinkage	2+	— Sand, soil injection — Injection hoses — Soil strengthening	6 mPa·s	2-10/~60 min
DSI Inject GELE V	— Rubber-like 3C acrylic resin — Elastic — Very high adhesion — Low starting viscosity — High shrinkage	4	— Sand, soil injection — Contact grouting — Injection hoses	40 mPa·s	2-8 min
DSI Inject GELE F	— Rubber-like 4C acrylic resin — Elastic — Very high adhesion — Low starting viscosity — Fast reaction	4	— Water stopping — Contact grouting — Injection hoses	40 mPa·s	15-45 sec
DSI Inject GELE SR50	— 3C system — Rigid — High strength — Moderate strength — Very low starting viscosity	4	— Sand, soil injection — Soil strengthening	10 mPa·s	3-7 min
DSI Inject GELE SR80	— 4C system — Rigid — Very high strength — Very low starting viscosity — Low shrinkage — High reaction exotherm	4	— Sand, soil injection — Soil strengthening	10 mPa·s	1-10 min
Additive: DSI Inject GELE Polymer	— Structural enhancer: the polymer forms more cohesive gel and solid structure. — Enhanced durability: the polymer is making the cured resin more durable over time. — Reduced shrinkage: a polymer solution minimizes shrinkage, maintaining structural integrity.				
Additive: DSI Inject GELE Retarder	— Extended gel time for precision: adjusts gel time to 10-82 minutes; allows a penetration in all areas. — Improved penetration: slow curing low-viscosity resin fill pores deeply, maximizing stabilization. — Maintained mechanical properties: retarder delays curing while maintaining full strength and durability.				

Method of application

Product	Crack injection sealing	Curtain injection	Masonry injection	Horizontal barrier	Joint injection	Injection of grouting hoses	Soil stabilization	Stabilization of masonry	Subsoil consolidation
DSI Inject GELE E		✓	✓	✓	✓	✓	✓	✓	✓
DSI Inject GELE V		✓			✓				✓
DSI Inject GELE F	✓	✓			✓				✓
DSI Inject GELE SR50			✓				✓		✓
DSI Inject GELE SR80			✓				✓		✓

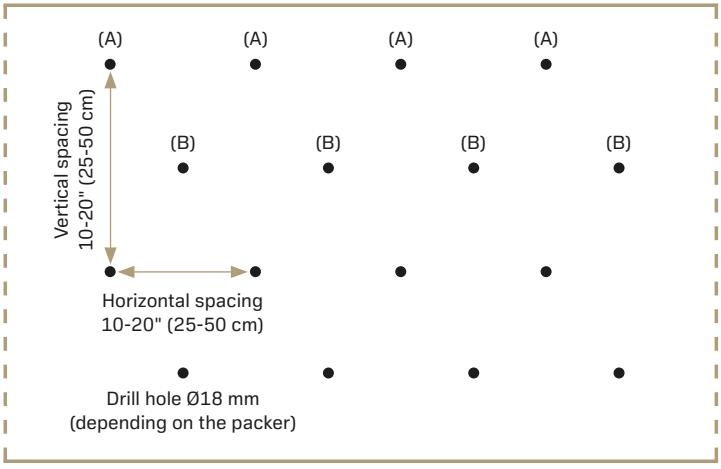
Before execution

Category	Requirements	Details and objectives
1. Ground and structure	Soil conditions	Geotechnical report to ensure soil can hold the gel ”curtain” without leakage – wet conditions are required.
	Wall integrity	Analyze material (masonry/concrete) to set drilling patterns.
	Moisture source	Confirm lateral penetration; capillary rise requires an additional horizontal barrier injection.
2. Standards	WTA leaflet 4-10	Adhere to this recognized technical rule.
	Expertise	Application requires a 2C pump with flushing pump and experienced staff in the application of acrylics.
3. Preparation	Wall clearance	Strip plaster and salt deposits; remove all obstructions for drilling and packers.
4. Financials	Budgeting	Estimated costs range from € 250 to € 600 per m².

Execution

Phase	Step	Details
1. Preparation	Wall preparation	Remove plaster, coatings, and loose debris. The wall must be fully accessible for the drilling grid.
2. Drilling	Drilling	Create boreholes in a staggered grid (25x25 to 50x50 cm). Holes must fully penetrate the structure to reach the soil.
3. Installation	Setting packers	Insert and tighten injection packers (filling valves) into the holes to withstand the injection pressure NOT high injection pressure.
4. Injection	Gelling process	Inject acrylate gel using a 2-component pump with flushing pump. The gel spreads behind the wall and mixes with the soil to form a waterproof layer or creates a barrier in the wall.
5. Monitoring	Pressure control	Monitor material flow via pressure gauges (manometers) to ensure even distribution of the sealing curtain.
6. Completion	Finishing	After curing, remove the packers and seal the boreholes with mortar.

External view/staggered grid pattern



Contact

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All dimensions, weights, quantities, and specifications are those applicable at the time of this publication and may be amended from time to time. Please contact your local representative for final confirmation of any key specifications.

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