

AP SOILGEL 200

ULTRA LOW VISCOSITY ACRYLIC INJECTION RESIN MAINLY APPLIED FOR SOIL CONDITIONING AND SCREEN INJECTIONS



DESCRIPTION

AP SOILGEL 200 is a resin, based on Acrylic monomers. After injection, the resin gels in a few seconds to a few minutes based on the amount of activator/initiator added just before use. The final injected product is a soft and slightly sticky crosslinked gel which becomes more jelly the more water is added to the base acryl resin.

BENEFITS

- Non-toxic for the environment
- Not flammable
- No acrylamide
- Very low viscosity
- Durable in wet and dry conditions

FIELD OF APPLICATION

- Soil conditioning, -stabilisation, -coagulation.
- Screen injections behind existing structures.
- Filling hollow spaces and gaps behind structures. (If the soil around the gap is too loose, product flows into the soil)

APPLICATION

Note: the following are a few typical application descriptions. In case of other jobsite parameters, please contact our technical department.

PRELIMINARY ANALYSES

Check the level of the groundwater table if possible and check if the site allows the gel to be kept moist at all times. Below grade injections are recommended. Make sure the movement of the water table over time is not too big.

Check whether the soil or the area to be injected is porous enough. This, to be sure if the resin will penetrate sufficiently into the substrate. Clay soil types can not be injected.

Consider all existing structural elements in the area and the possible consequences that may be caused by the injection works. If necessary, consult a geotechnical and / or structural stability engineer. Locate all existing utilities in the area and / or in the soil before the start of the application.

REQUIRED TOOLS

2 Component stainless steel pump. The injection head needs to have a water flush option in order to rinse the mixing chamber between injection runs.
Stainless steel mixer, plastic or wooden rod.

PREPARATION OF THE SUBSTRATE

Depending on the application, drill holes with the correct diameter according to the type of injection needle, injection tube or packer or install the injection tubes in the correct position, according to the correct distance, length and the correct injection pattern (to be determined by the project engineer).

For soil injections, install the correct type of injection tubes; these can be Tube-à-Manchettes (TAM) or strainer pipes.

For expansion joint injections, if possible, make sure that the surfaces of the expansion joint are clean and free from oil.

For injecting cracks and joints, clean the surface and remove all alien debris. Drill the necessary injection holes and install appropriate packers. For screen injections, a matrix grid of appropriate size has to be observed (typically 50 by 50 cm).

For crack or joint injections drill into the crack or joint under a 45 degree angle.



PREPARATION OF THE PRODUCT

The injection grout needs to be prepared immediately before the injection.

Depending on the type of application, set the appropriate reaction time by mixing the correct amounts of AP TEA and AP SP into the respective A and B components.

Add the required quantity of AP TEA catalyst to the AP SOILGEL 200 resin and mix thoroughly.

Add the required quantity of AP SP to the B vessel which is filled with 20 kg of water and mix thoroughly.

Depending on the concentrations of AP TEA catalyst and AP SP initiator in their respective blends, varying gel times can be obtained. Consult the mixing tables to achieve the required gel times.

Mix the AP SOILGEL 200 comp A + AP TEA and comp B + AP SP resin with a stainless steel mixer, plastic or wooden rod.

Once the A and B sides of the resins have been mixed, it is recommended to perform a so called "cup test". Take an equal amount of A and B mixture in a small plastic cup and mix them by continuously pouring them from one cup into the other. Measure the time when gelling starts to occur. The reaction time should be close to the times mentioned in the reaction table. If the gelling time deviates too much from the values in the reaction times table, change the concentration of AP SP and AP TEA in the A and B side respectively in order to adjust the reaction time.

PREPARATION OF THE EQUIPMENT

Use a 2 component injection pump with a 1:1 volume ratio.

Check the pump.

Adjust the correct 1 to 1 mixing ratio.

Check the injection head and the flushing system.

INJECTION

For Soil injection

Start the injection at the first injection pipe on the grid.

Inject the necessary quantity of AP SOILGEL 200 into the TAM or Strainer pipe. The necessary quantity depends on the depth of the injection, soil parameters, type of injection tube, size of the injection matrix and should be determined by the site engineer.

Inject at low pressures. The recommended pressure is that pressure where the material starts to flow into the soil.

Move to the next injection tube when the required quantity of AP SOILGEL 200 has been injected.

For Screen Injection

Start the injection at the first injection packer at one of the corners.
For a matrix grid of 50 X 50 cm inject 20 litre of AP SOILGEL 200 per injection hole.

Inject at low pressures. The recommended pressure is that pressure at which the material starts to flow into the soil.

Move to the next injection packer if:

- 20 liters of AP SOILGEL 200 has been injected into the injection packer.
 - Resin starts flowing out from one of the adjacent injection packers.
- Build up the screen gradually per row of packers.
After one row of packers, go back to the first packer and inject, if possible, 1 to 5 litres more AP SOILGEL 200 at low pressure.

FINISHING

Allow the resin to harden well before removing the packer. After removing the injection packer, the injection hole can be filled with a hydraulic mortar CERMIREP R4 or a fast cement CERMIPLUG.

APPLICATION CONDITIONS

The gelling time is slower at low temperatures, but is still fast even below 0°C.

Air, material and environmental temperatures, pH and the nature of the injecting substrate will influence the gel times.

CLEANING AND MAINTENANCE

Clean all used materials that have been in contact with the AP SOILGEL 200 resin with water immediately after finishing the injection work.

COMPLEMENTARY PRODUCTS

- AP TEA
- AP SP
- SPETEC® PACKERS & ACCESSORIES
- CERMIREP R4
- CERMIPLUG

ADVICE / FOCAL POINTS

The viscosity of the AP SOILGEL 200 injection solution depends on dilution and temperature. This viscosity will remain almost constant up to the setting point.

Resin dilution extends the setting time for constant AP TEA and AP SP concentrations.

In acid conditions the reaction is slowed down, while under alkaline conditions the reaction is speeded up. The presence of minerals and metals (especially iron and copper) may increase or decrease the rate of setting, depending on their concentration.

DIMENSIONAL CHANGES OF THE GELS

When immersed in water, the unconfined gel can absorb up to 2 times its own weight of water in a few weeks without cracking. Under humid conditions, the volume of the gel remains approximately constant. In the absence of water, the gel shrinks slowly. These dimensional changes are reversible and do not alter the gel.

TECHNICAL DATA

AP SOILGEL 200 consists of 3 separate products

AP SOILGEL 200 acrylic resin (A1)

AP TEA, a liquid catalyst for standard setting times between 10 sec. and 30 min. (A2)

AP SP, a powder initiator to be dissolved in water (B1)

The products are mixed into a 2 component injection system as follows:

A side: AP SOILGEL 200 resin (A1) + AP TEA (A2)

B side: water + AP SP Initiator (B1)

APPEARANCE

Product	AP SOILGEL 200	AP TEA	AP SP
Appearance	Amber coloured liquid	Colourless	White powder
Active content	42%	29%	> 99%
pH	6,5-7,0	10-12	-
Density	1,2 g/ml	1,05-1,10	-
Viscosity at 20°C	20-30 cP	< 300 cP	-

REACTION TIMES

PART A: AP SOILGEL 200 + AP TEA. (from 2 to 8%)

PART B: AP SP diluted in water. (between 2% and 5%)

Temp. (°C)	AP SOILGEL 200 (kg)	AP TEA (kg =%)	Water (kg)	AP SP (kg =%)	Gelling Time
20	24	0,48 kg = 2%	20	0,5 = 2,5%	2'
20	24	0,96 kg = 4%	20	0,5 = 2,5%	58"
20	24	1,44 kg = 6%	20	0,5 = 2,5%	36"
20	24	1,92 kg = 8%	20	0,5 = 2,5%	27"
20	24	0,48 kg = 2%	20	1 = 5%	01'10"
20	24	0,96 kg = 4%	20	1 = 5%	31"
20	24	1,44 kg = 6%	20	1 = 5%	20"
20	24	1,92 kg = 8%	20	1 = 5%	15"

CONSUMPTION

Consumption has to be assessed on site and is influenced by the amount of water leaking, thickness of the concrete slab or wall, presence of voids in and around the concrete etc.

REFERENCE DOCUMENTS**PACKAGING**

AP SOILGEL 200	24 kg (=20 Liter)	Plastic jerry cans	24 cans/pallet
	220 kg	Plastic drums	4 drums/pallet
AP TEA	1 kg	Plastic bottles	6 bottles/box 64 boxes/pallet
	25 kg	Plastic jerry cans	24 pails/pallet
AP SP	0,5 kg	Plastic cans	12 pots/box 40 boxes/pallet
	25 kg	Pails	24 pails/pallet

STORAGE AND SHELF LIFE

AP SOILGEL 200 can be kept for 12 months in the intact original package if stored and transported away from light or sunlight and at a temperature between +0°C and +30°C.

AP TEA can be kept for 12 months in the intact original package if stored away from light or sunlight and at a temperature between 0°C and 30°C.

AP SP has no shelf life if stored dry in the intact original package.

SAFETY PRECAUTIONS

Avoid contact with eyes and skin, always use personal protective equipment in compliance with local regulations.

Read the relevant Material Safety Data Sheet before use. Material Safety Data Sheets are available on www.spetec.com

When in doubt contact SPETEC® Technical Service.

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