

Advanced  
Construction  
Technologies

# Soil Stabilization



## AP SOILGEL 200

Three-Component, Water-Swelling Acrylate Hydrogel

### Product Identifier

*Product Name*

AP SOILGEL 200

*AP SoilGel 200 is a three-component, water-swelling hydrogel based on acrylic monomers that cures to an elastic product.*

*Supplier Details*

Alchatek  
4508 Bibb Blvd  
Tucker, GA 30084  
T: (404) 618-0438

*Emergency Phone Numbers*

Call CHEMTREC  
Day or Night

1-800-424-9300  
+1 703-527-3887

### Description

AP SoilGel 200 is a three-component, water-swelling hydrogel based on acrylic monomers that cures to an elastic product.

### Uses

- Consolidate soil and prevent erosion around floors, walls, etc.
- Curtain grouting and soil stabilization.
- Crack injection.
- Below grade expansion joints.

### Advantages

- Very low shrinkage.
- 5-7 cps (0.005-0.007 Pa·s) mixed viscosity.
- Adjustable set time with varied quantities of SP B-component.
- Non-flammable.
- Durable in wet and dry conditions.

### Application

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

#### PRELIMINARY ANALYSIS

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.

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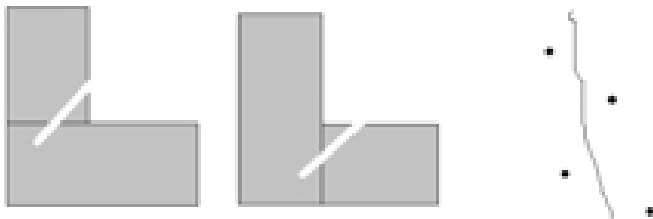
THREE-COMPONENT, WATER-SWELLING  
ACRYLATE HYDROGEL

## PREPARATION OF THE SUBSTRATE

Clean the surface and remove all alien debris. For expansion joint injections – if possible – make sure that the surfaces of the expansion joint are clean and free from oil.

Drill the necessary injection holes and install appropriate packers. For curtain grouting, a matrix grid of appropriate size has to be observed, typically 18 by 18 in (45.72 x 45.72 cm).

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



For soil injections, install the correct type of injection ports; these can be strainer pipes.

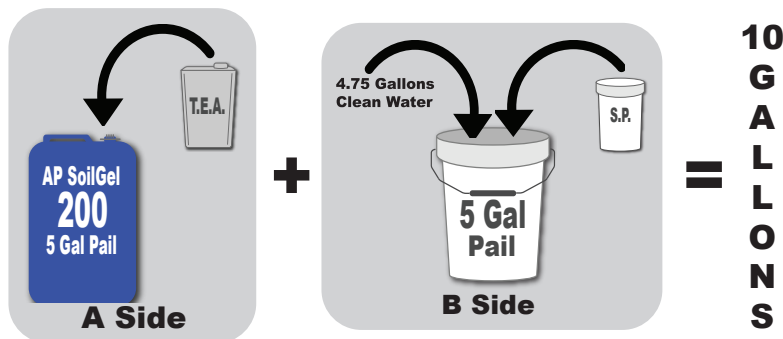
## PREPARATION OF THE PRODUCT

### Mixing

The A2 (TEA) container is emptied completely into the A1 (AP SoilGel 200) container and mixed for approx. 3 minutes.

The B-component (SP) is poured into a clean 5 gallon (18.93 liter) pail with 4.75 gallons (17.98 liters) of clean water. Mix for 3 minutes.

Different pot-lives can be achieved depending on the amount of SP and the temperature.



Use two-component positive displacement pump. All wetted parts must be stainless steel or plastic.

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Set time depending on quantity of SP and temperature:

|             | 3.53oz<br>(104.39 ml) | 7.05oz<br>(208.49 ml) | 17.64oz<br>(521.68 ml) | 28.22oz<br>(834.57 ml) | 35.27oz<br>(1043.06 ml) |
|-------------|-----------------------|-----------------------|------------------------|------------------------|-------------------------|
| Temp        |                       |                       |                        |                        |                         |
| 77°F (25°C) | 0:47                  | 0:27                  | 0:17                   | 0:12                   | 0:10                    |
| 68°F (20°C) | 0:56                  | 0:33                  | 0:21                   | 0:17                   | 0:15                    |
| 59°F (15°C) | 1:10                  | 0:48                  | 0:27                   | 0:20                   | 0:17                    |
| 50°F (10°C) | 1:56                  | 1:07                  | 0:37                   | 0:30                   | 0:23                    |
| 41°F (5°C)  | 3:11                  | 1:12                  | 0:40                   | 0:33                   | 0:26                    |

(Amounts based on 44.09lbs [20kg] A1- and 2.20lbs [1kg] A2-component)

Use the AP SoilGel 200 retarder for longer reaction times. Pour all the retarder (2.20lbs [1kg] bottle) into the B side 5 gallon (18.93 liter) pail with the water and S.P. mixture.

When using AP SoilGel 200 retarder, the quantities of all other ingredients must remain as described above. The mixing time remains 3 minutes.

Pot-life with AP SoilGel 200 retarder, depending on quantity of SP and temperature:

|             | 3.53oz<br>(104.39 ml) | 7.05oz<br>(208.49 ml) | 17.64oz<br>(521.68 ml) | 28.22oz<br>(834.57 ml) | 35.27oz<br>(1043.06 ml) |
|-------------|-----------------------|-----------------------|------------------------|------------------------|-------------------------|
| Temp        |                       |                       |                        |                        |                         |
| 77°F (25°C) | 28:48                 | 10:12                 | 6:44                   | 4:48                   | 3:30                    |
| 68°F (20°C) | 40:30                 | 15:10                 | 10:20                  | 7:00                   | 5:40                    |
| 59°F (15°C) | 61:40                 | 24:48                 | 13:24                  | 9:23                   | 7:24                    |
| 50°F (10°C) | 102:42                | 40:20                 | 21:36                  | 12:44                  | 11:28                   |
| 41°F (5°C)  | 157:44                | 60:16                 | 34:16                  | 24:04                  | 19:28                   |

(Amounts based on 44.09lbs [20kg] A1-component , 2.20lbs [1kg] A2-component and 2.20lbs [1kg] retarder)

When performing a curtain grouting or soil stabilization procedure, aim for a reaction time of 2 to 4 minutes for optimal saturation. Extensive testing has proven faster reaction times ineffective due to inadequate soil saturation.

## PREPARATION OF THE EQUIPMENT

AP SoilGel 200 has to be injected with a two-component stainless steel pump. The injection head needs to have a water flushing option in order to rinse the mixing chamber between injection runs.

Make sure the pump functions perfectly before starting the injection.

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## APPLICATION

### For Curtain Grouting

- Start the injection at the first injection port at one of the corners.
- For a matrix grid of 18 by 18 in (45.72 x 45.72 cm) inject 5 gallons (18.93 liters) 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 port if:

- 5 gallons (18.93 liters) of AP SoilGel 200 has been injected into the injection port
- Resin starts flowing out from one of the adjacent injection ports
- Build up the screen gradually per row of packers.

After one row of packers, go back to the first packer and inject – if possible 34 oz to 1.3 gallons (1 to 5 litres) more AP SoilGel 200 at low pressure.

### For Soil injection

- Start the injection at the first injection port on the grid.
- Injected the necessary quantity of AP SoilGel 200 into the T&M or Strainer pipe. The necessary quantity depends on the depth of the injection, soil parameters, type of injection port, size of the injection matrix and should be determined by the site engineer.
- 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 port when the required quantity of AP SoilGel 200 has been injected.

## REQUIRED TOOLS

AP SoilGel 200 requires a two-component stainless steel pump. The pump head must have a water flushing option for rinsing the mix chamber between injections. Contact Alchatek for pump recommendations.

## CLEANING AND MAINTENANCE

After the injection, clean the pump with AP Flush 121. If the pump will not be used for several days, flush the AP Flush 121 out of the pump with lightweight motor oil or hydraulic fluid and leave it there until the next usage. Never rinse the pump with water. After injection, remove the packers from the concrete and fill the holes with a fast setting cement or any other appropriate filler material.

## COMPLIMENTARY PRODUCTS

TEA

SP

Gel Reinforcing Agent

Ap Soilgel 200 Retarder

Packers & Accessories

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## ADVICE / FOCAL POINTS

### Viscosity

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.

## Technical Data

### SUBSTANCE DATA OF COMPONENTS:

| Component | Consistency<br>Color<br>Odor      | Specific<br>Density<br>(68°F [20°C])                          | Dynamic<br>Viscosity<br>(68°F [20°C])   |
|-----------|-----------------------------------|---|---|
| Comp. A1  | liquid<br>amber<br>characteristic | approx. 71.79 lbs/ft <sup>3</sup> (1.15 kg/dm <sup>3</sup> )  | approx. 20cps (0.02 Pa·s)<br>ASTM D4878-98  |
| Comp. A2  | liquid<br>colorless<br>amine-like | approx. 69.92 lbs/ft <sup>3</sup> (1.12 kg/dm <sup>3</sup> )  | approx. 280cps (0.28 Pa·s)<br>ASTM D4878-98   |
| Comp. B   | solid<br>white<br>odorless        | approx. 161.69 lbs/ft <sup>3</sup> (2.59 kg/dm <sup>3</sup> ) | Bulk density (68°F) approx.<br>71.79 lbs/ft <sup>3</sup> (1.15 kg/dm <sup>3</sup> ) |

|                          |  |                           |
|--------------------------|--|---------------------------|
| Viscosity at 68°F (20°C) | Mix: SoilGel 200 + TEA + SP + H <sub>2</sub> O = | 5-7cps (0.005-0.007 Pa·s) |
|--------------------------|--|---------------------------|

### MIXTURE OF A- AND B-COMPONENT:

|                                       |                                      |                       |
|---------------------------------------|--------------------------------------|-----------------------|
| Processing temperature*               | 41 - 104°F (5 - 40°C)                | substrate temperature |
| Viscosity of mixture<br>(68°F [20°C]) | approx. 3-4cps<br>(0.003-0.004 Pa·s) | ASTM D4878-98         |

### REACTION DATA AT 68°F:

|                 |           |              |
|-----------------|-----------|--------------|
| Pot-life **     | 9s - 7min | DIN EN 14022 |
| Final curing ** | 2 - 20min |              |

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## PROPERTIES AFTER CURING:

|                     |                               |                  |
|---------------------|-------------------------------|------------------|
| Consistency         | soft-elastic                  |                  |
| Color               | amber                         |                  |
| E-modulus           | approx. 37.70psi (259.93 kPa) | DIN EN ISO 527-3 |
| Tensile strength    | approx. 5.80psi (39.99 kPa)   | DIN EN ISO 527-3 |
| Elongation at break | approx. 510%                  | DIN EN ISO 527-3 |
| Water absorption    | approx. 100-150%              | DIN EN ISO 62    |

\* The declared range of temperature complies with our recommendations. Generally, the product reacts even at very low temperatures (from experience down to approx. 5°F[-15°C]) or distinct higher values than +104°F (+40°C). Admittedly, problems might occur, which are not directly related to the properties of the product. At sharp frost the air line of the pump might freeze or even present ice inside the structural element to be sealed can cause difficulties. At temperatures above-average too short reaction times can arise, which prevent an entire and successful filling of the injection area. Beside that it might happen that the activated A-component at very high temperatures starts curing even without addition of the B-component, which results in a blockage of the injection pump.

\*\* The indicated times are reached through different quantities of B component and AP SoilGel 200 Retarder.

## Estimating Quantities

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.

## Packaging

AP SoilGel 200 is supplied in the following packages: A1-component 5 gallon (18.93 liter), A2-component 1 quart plastic bottle, B-component 1 quart plastic tub (2 lbs). Larger packaging on request.

## Storage and Shelf Life

AP SoilGel 200 can be kept for 6 months in the intact original package if stored away from light or sunlight and at a temperature between 32°F (0°C) and 86°F (30°C). Spetec TEA can be kept for 12 months in the intact original package if stored away from light or sunlight and at a temperature between 32°F (0°C) and 86°F (30°C). Spetec SP has an unlimited 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 Safety Data Sheet before use. Safety Data Sheets are available on [Alchatek.com](http://Alchatek.com). When in doubt contact Alchatek Technical Service.