

Mixing Guidelines: AV-100® Chemical Grout Granules (50 lb. bag) - Standard 12% Concentration

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When properly mixed, (1) 50 lb. bag of AV-100 Chemical Grout will make a 50-gallon (189.27 L) batch of ~12% injectable acrylamide grout. For best results, these grouts should be used at a solids concentration of 10% or greater. Concentrations of up to 20% are favored for higher strength gels and greater ability to lessen grout concentration dilution prior to gelation.

If a higher grout concentration is desired, refer Table 2 below for Concentrations based on Total Fill Volume for Tank A and Tank B. Most manufacturers of equipment used for mixing acrylic chemical grout have two standardized 30 gallon (113.56 L) chemical tanks, shown below as Tank A and Tank B.

Refer to Avanti's Safe Operating Practices Program (SOPP) for further safety, handling, and product use information or call your Avanti representative.

WHAT YOU WILL NEED:

- (1) 50 lb. bag AV-100 Chemical Grout (acrylamide) - Granules
- 4.5 lbs. (64 fl. oz.) AV-101 Catalyst T+ (triethanolamine (TEA))
- 4.5 lbs. AV-102 Catalyst AP (ammonium persulfate)
- Water (potable water or clean site water)
- Personal Protective Equipment (PPE) in accordance with Avanti's Safety Data Sheet (SDS)
- Optional but encouraged – tracer dye to mixture to track grout travel

MIXING TANK A (Grout Tank) - See Table 1

1. Wear the appropriate PPE in accordance with Avanti's Safety Data Sheets (SDS). Up to date SDS can be found online at avantigrout.com.
2. Fill Tank A (grout tank) with approximately 10-15 gal. (38-57 L) of water.
3. Open AV-100 bag carefully, unfold the inner plastic bag long neck and remove the plastic tie around the inner plastic bag neck.
4. Pour the contents of bag of AV-100 into Tank A by submerging the neck under water. Stir well.
5. Add AV-101 Catalyst T+ (4.5 lbs.; 64 fl. oz.). Stir well.
6. Add enough water to Tank A to reach the 25 gal. (94.64 L) mark. Stir well.
7. Optional but encouraged – tracer dye to mixture to track grout travel

MIXING TANK B (Catalyst Tank) – See Table 1

1. Fill Tank B (catalyst tank) with 10-15 gallons (38-57 L) of water.
2. Add AV-102 Catalyst AP (4.5 lbs.). Stir until material is completely dissolved.
3. Add enough water to Tank B to reach the 25 gal. (94.64 L) mark.
4. Optional but encouraged – tracer dye to mixture to track grout travel



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Stop leaks. Stabilize soil.
Control groundwater.
Permanently.



| TANK A | TANK B | |
|---|--|---------------------------------------|
| Water: 10-15 gal. (38-57 L) AV-100 Chemical Grout – (1) 50 lb. bag AV-101 Cat-T+: 4.5 lbs. (64 fl. oz.) Water: up to 25 gal. mark *Do not exceed 5% AV-101 Cat-T+ | Water: 10-15 gal. (38-57 L) AV-102 AP: 4.5 lbs. Water: up to 25 gal. mark *Do not exceed 5% AV-102 AP | ~12% AV-100 concentration in solution |
| 25 gal. (94.64 L) | 25 gal. (94.64 L) | 50 gal. (189.27 L) |

Table 1. Mix Component Steps by Tank

| Grout Concentration | Total Tank A Fill Volume (gal.) | Total Tank B Fill Volume (gal.) |
|---------------------|---------------------------------|---------------------------------|
| ~10% | 30.0 | 30.0 |
| ~12% | 25.0 | 25.0 |
| ~15% | 22.5 | 22.5 |
| ~20%* | 15.0 | 15.0 |

Table 2. Concentrations Based on Total Fill Volume of Tank A and B

* Do not add more than 10 gallons of water to Tank A before adding AV-100 granules.

Note: Before grouting, perform a “cup test”. A cup tests consists of using two (2) disposable cups, filling one cup 25% full of Tank A solution, and the other cup 25% full of Tank B solution. Using a watch with a second hand or stopwatch, track the time required for the solutions to gel – or cure - as you mix the solutions together, gently stirring the mixed solution. The normal gel time at 72°F should be approximately 30 – 40 seconds for a standard batch at a ~10% grout concentration. Higher concentrations will cure marginally faster. Refer to Table 3 for estimated gel times at various temperatures or call your Avanti International representative for assistance.

AV-100 Gel Times in Seconds

| AV-100 Temp. | AV-101 and AV-102 % on Total Batch | | | | |
|--------------|------------------------------------|----|----|----|----|
| | 1% | 2% | 3% | 4% | 5% |
| 80°F | 18 | | | | |
| 70°F | 32 | 8 | | | |
| 60°F | 58 | 18 | 8 | | |
| 50°F | 97 | 34 | 20 | 8 | |
| 40°F | 140 | 44 | 30 | 21 | 8 |

Table 3. Estimated Gel Times in Seconds

Note: The gel times presented are based on controlled laboratory conditions and are for reference purpose only. It should be expected that gel times will vary on the job site. It is the sole responsibility of the user to verify and monitor gel times of their specific grout mix.

About the Products

- **AV-100® Chemical Grout (Granules)** – white granular solid mixture of acrylamide and N,N'-methylenebisacrylamide (MBA) at a 95:5 ratio of acrylamide to MBA.
- **AV-101 Catalyst T+™** - colorless liquid which is used as a required activator for the reaction of AV-100. The special blend of ingredients in AV-101 reduces its freezing point to 0°C and enhances the final gel. AV-101 can only be added to the grout side tank. AV-101 is incompatible with oxidizing compounds such as AV-102 AP or AV-103 SP and should be stored in a tightly closed container in an area isolated from other chemicals.
- **AV-102 Catalyst AP™** – Ammonium persulfate, white crystalline solid used as the initiator for the radical polymerization reaction of acrylic and acrylate monomers. AV-102 is a strong oxidizing

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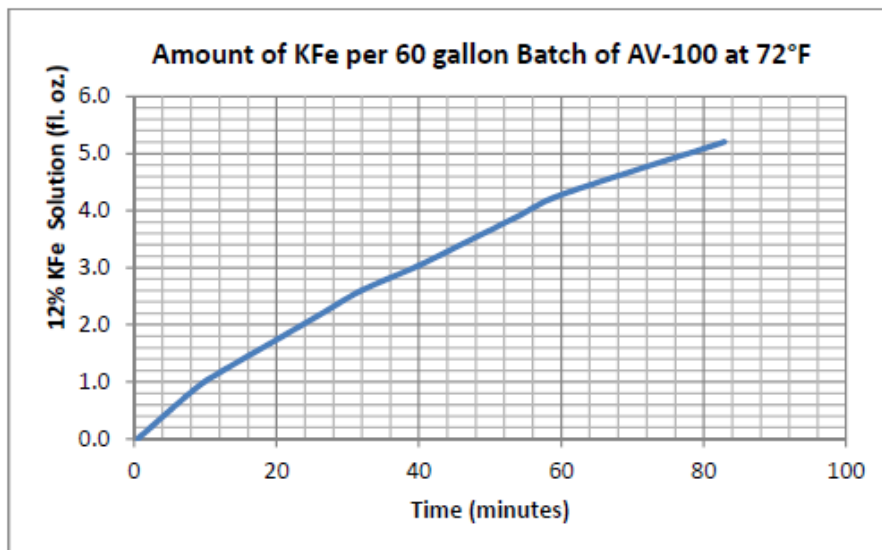
Stop leaks. Stabilize soil.
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material which decomposes over time. AV-102 can only be added to the catalyst tank. Exposure to moisture will reduce the effectiveness of AV-102 as an oxidizer.

Optional Additives

- **AV-105 Gel Guard™** - clear liquid designed to reduce the freezing point of AV-100. Adding 10% can lower freezing temperatures by as much as 9°F/5°C.
- **AV-257 Icaset™** - white liquid emulsion, copolymer latex gel strengthening agent. AV-257 provides the cured material with improved hydrostatic pressure resistance, better low-temperature plasticity, and improved adhesion. This premium product has a freeze-grade rating.
- **Potassium Ferricyanide (KFe)** – red crystal, chemical compound used in small quantities to extend gel times. See Technical Data Sheet for more details. Use the following guidelines to extend AV-100's gel time:
 - i) Mix (1) lb. of KFe into (1) gal. (3.8 L) of planned mix water to create a 12% KFe solution based on weight.
 - ii) Using the graph below, determine your desired set time. Actual set times vary for specific site and temperature conditions. Completing a panel test to determine site specific set times is recommended. Contact your Avanti representative for KFe Panel Testing Guidelines.
 - iii) Add desired amount of KFe/Water mixture to Tank A (grout side) only and mix thoroughly.



Graph 1. KFe Set Time Chart

Note: The gel times presented in the chart above are based on controlled laboratory conditions and are for reference purpose only. It should be expected that gel times might vary on the job site. It is the sole responsibility of the user to verify and monitor gel times of their specific grout mix.