

## Mixing Guidelines: AV-100® Chemical Grout – Liquid IBC Tote (2,300 lbs.) – Standard 10% Concentration

**\*\*Disclaimer:** The information contained in the document is property of Avanti International. Avanti offers the following verbiage as a technical reference to assist in the education of injection grouting contractors and government agencies in addition to the creation of specifications for injection grouting.\*\*

When properly mixed, (1) 2,300 lb. IBC tote of liquid AV-100 Chemical Grout will make (2) each, 530-gallon (2,006.2 L) batches **OR** 17.6 each, 60-gallon (227.1 L) batches of ~10% 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 handle 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. For mixing tote batches, use totes as mixing tanks. See Tote Pre-Mixing Guidelines.

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) 2,300 lb. tote of AV-100 Chemical Grout (acrylamide) - Liquid
- (1) 45 lb. pail (5 gal. pail) AV-101 Catalyst T+ (triethanolamine (TEA))
- (1) 50 lb. pail 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

### **TOTE PRE-MIXING GUIDELINES**

A standard IBC tote holds 265 gallons of AV-100 Chemical Grout - Liquid. If using tote to mix grout batch, transfer 132.5 gallons (501.5 L) - half the contents of a full tote of AV-100 - into another clean, empty tote.

### **MIXING TANK/TOTE 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](http://avantigrout.com).
2. If using a tote to mix, Tote A (grout tote) will have 132.5 gal. (501.5 L) of AV-100 Chemical Grout Liquid. If using other mixing equipment, pour or pump 132.5 gal. (501.5 L) of AV-100 into Tank A.
3. Add approximately 54-81 gal. (204-306 L) of water to Tank A.
4. Add AV-101 Catalyst T+ (45 lbs.; 5 gal. pail) to Tank A. Stir well.
5. Add enough water to Tank A to reach the 265 gal. (1,003.1 L) mark. Stir well.
6. Optional but encouraged – tracer dye to mixture to track grout travel.

### **MIXING TANK/TOTE B (Catalyst Tank) – See Table 1**

1. Fill Tank/Tote B (catalyst tank) with 190 gal. (719 L) of water.

**Avanti International | 800.877.2570 | [customerservice@avantigrout.com](mailto:customerservice@avantigrout.com) | [avantigrout.com](http://avantigrout.com)**



2. Add AV-102 Catalyst AP (50 lbs.; 5 gal. pail). Stir until material is completely dissolved.
3. Add enough water to Tank B to reach the 265 gal. (1,003.1 L) mark.
4. Optional but encouraged – tracer dye to mixture to track grout travel.

TANK/TOTE A	TANK/TOTE B	
AV-100 Chemical Grout – 132.5 gal. (501.5 L) Water: 54-81 gal. (204-306 L) AV-101 Cat-T+: 45 lbs. (5 gal. pail) Water: up to 265 gal. (1,003.1 L) mark *Do not exceed 5% AV-101 Cat-T+	Water: 190 gal. (719 L) AV-102 AP: 50 lbs. (5 gal. pail) Water: up to 265 gal. (1,003.1 L) mark *Do not exceed 5% AV-102 AP	<b>~10% AV-100 concentration in solution</b>
<b>265 gal. (1,003.1 L)</b>	<b>265 gal. (1,003.1 L)</b>	<b>530 gal. (2,006.2 L)</b>

**Table 1.** Mix Component Steps by Tank

Grout Concentration	Total Tank A Fill Volume (gal.)	Total Tank B Fill Volume (gal.)
~10%	<b>265.0</b>	<b>265.0</b>
~12%	<b>221.0</b>	<b>221.0</b>
~15%	<b>199.0</b>	<b>199.0</b>
~20%	<b>132.0</b>	<b>132.0</b>

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

**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 (Liquid)** – clear liquid 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

**Avanti International | 800.877.2570 | customerservice@avantigrout.com | avantigrout.com**

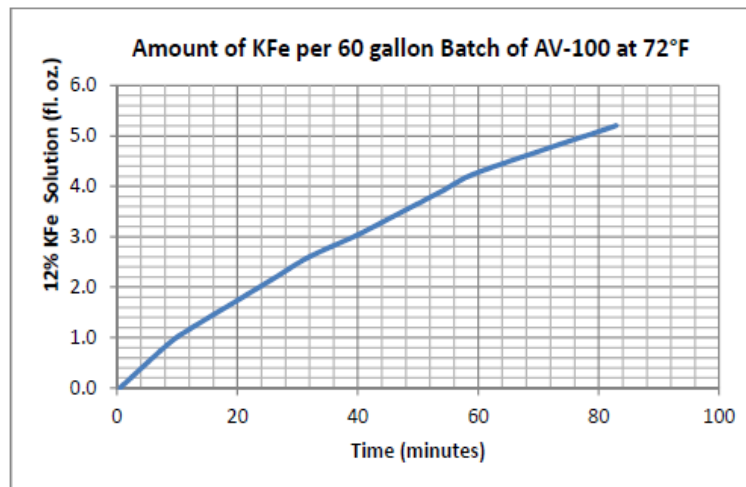


with oxidizing compounds such as AV-102 AP or AV-103 SP and should be stored in a tightly closed container in an area isolated from other chemicals.

- **AV-102 Catalyst AP™** – Ammonium persulfate, white crystalline solid used as the initiator for the radical polymerization reaction of acrylic and acrylate monomers. Required component and can be increased from 5.5 lbs. to a maximum of 16.5 lbs. AV-102 is a strong oxidizing 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.