

Mixing Guidelines: AV-160 SuperGel™ IBC Tote (2,500 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) 2,500 lb. IBC tote of AV-160 SuperGel will make (2) each, 540-gallon (2,044.1 L) batches **OR** 18 each, 60-gallon (227.1 L) batches of ~10% injectable grout. For best results, these grouts should be used at solids concentrations of 10% or greater. Concentrations of up to 15% 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 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) 2,500 lb. tote of AV-160 SuperGel
- (1) 45 lb. pail (5 gal. pail) AV-101 Catalyst T+ (triethanolamine (TEA))
- (1) 50 lb. pail AV-103 Catalyst SP (sodium 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 270 gallons of AV-160 SuperGel. If using a tote to mix a grout batch, transfer 135 gallons (511 L) - half the contents of a full tote of AV-160 - 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.
2. If using a tote to mix, Tote A (grout tote) will have 135 gal. (511 L) of AV-160 SuperGel. If using other mixing equipment, pour or pump 135 gal. (511 L) of AV-160 SuperGel 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 270 gal. (1,022 L) mark. Stir well.
6. Optional but encouraged – add 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.
2. Add AV-103 Catalyst SP (50 lbs.; 5 gal. pail) to Tank B. Stir until material is completely dissolved.
3. Add enough water to Tank B to reach 270 gal. (1,022 L) mark. Stir well.
4. Optional but encouraged – tracer dye to mixture to track grout travel

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TANK/TOTE A	TANK/TOTE B	
AV-160 SuperGel: 135 gal. (511 L) Water: 54-81 gal. (204-306 L) AV-101 Cat-T+: 45 lbs. (5 gal. pail) Water: add to 270 gal. (1,022 L) mark *Do not exceed 5% AV-101 Cat-T+	Water: 190 gal. (719 L) AV-103 SP: 50 lbs. (5 gal. pail) Water: add to 270 gal. (1,022 L) mark *Do not exceed 5% AV-101 Cat-T+	~10% AV-160 concentration in solution
270 gal. (1,022 L)	270 gal. (1,022)	540 gal. (2,044 L)

Table 1. Mix Component Steps by Tank

Grout Concentration	Total Tank A Fill Volume (gal.)	Total Tank B Fill Volume (gal.)
~10%	270.0	270.0
~12%	243.0	243.0
~15%*	202.5	202.5
~20%*	135.0	135.0

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

* Do not fill Tank A with the suggested amounts of water above.

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 60-75 seconds for a standard batch 10% grout concentration. Higher concentrations will cure faster. For additional information regarding gel times, call your Avanti International representative.

AV-160 Gel Times in Seconds

AV-160 Temp.	AV-101 and AV-103 % on Total Batch				
	1%	2%	3%	4%	5%
80°F	34	9			
70°F	73	15	7		
60°F	223	22	11	8	
50°F	266	39	19	13	7
40°F	553	94	36	22	12

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-160 SuperGel™** – acrylamide free, acrylate gel
- **AV-101® Catalyst T+** - colorless liquid which is used as a required activator for the reaction of AV-160. The special blend of ingredients in AV-101 reduces its freezing point to 0°C and enhances the final gel. AV-101 is 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-103® Catalyst SP** – Sodium 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 lbs. to a maximum of 25 lbs. AV-103 can only be added to the catalyst side tank. AV-103 is a strong oxidizing material which decomposes over time.

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Optional Additives

- **AV-257 Icoset™** - 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.
- **Tracer Dyes** – dye powder or tablets used to track the travel of the grout. Various colors are available.
- **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-160's gel time:
 - i) Mix (1) lb. of KFe into (1) gal. (3.8L) of planned mix water to create a 12% KFe solution based on weight.
 - ii) 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.
 - iv) **CAUTION:** the combination of KFe and AV-101 added to the grout tank will prematurely gel the grout tank when kept overnight.