

AV-254 Gelseal™

Hydrophilic Polyurethane Gel

Description

AV-254 Gelseal™ is a versatile, single-component prepolymer injection resin. AV-254 is activated by moisture/water and has excellent permeation properties when injected into soils. It quickly permeates the soil and cures to create an effective water barrier while providing superb soil stabilization.

Applications

- Stops water infiltration into manholes, storm vaults, tunnels, mines, and various other geotechnical applications and underground structures by creating an impermeable solid and stabilizing external substrate
- Ground modification/slope stability for prevention of landslides, erosion, or any place where site conditions or project requirements dictate modification of the existing soil properties
- Permeation grouting of non-cohesive soils for water control and soil improvement

Features & Benefits

- Five gallons of material will make up to 45 gallons of active solution
- Solvent-free system
- Non-toxic
- Multiple grouting techniques including probe and curtain grouting

How AV-254 Works

AV-254 should be injected using a multi-component variable ratio pump. Two containers are needed: one for water, one for AV-254. Injecting at an 8:1 water to AV-254 ratio into the soil or external substrate will produce a strong gel/soil matrix. Injecting at a 1:1 water to AV-254 ratio will produce a very resilient foam. Optional additives are available to modify the cured gel characteristics.

Optional Additives

- AV-105 Gel Guard™ – reduces freezing point
- AV-203 Multicat™ – cream and gel time accelerator
- AV-257 Icoset™ – increases strength
- Tracer Dyes – used for tracking grout flow

Packaging – product is packaged by net weight

Grout

- Jug – 8.5 lbs. (3.90 kg)
- Pail – 43 lbs. (19.5 kg)
- Drum – 473 lbs. (214.5 kg)

Optional Catalyst

- Container - 78 fl. oz. (2.31 L)

Physical Properties*

UNCURED	
Appearance	Pale yellow liquid
Viscosity (water=1)	175–450 cP @ 72°F (22°C); approx. 10 cP in solution
Flash Point	>200°F (>93°C)
Specific Gravity (water=1)	1.034 @ 72°F (22°C) ± 3%
Density	8.63 lbs. per gal. ± 3% (1.034 kg/L ± 3%)
CURED	
Appearance	Milky colored, flexible
Compressive Strength	Consult Avanti Representative
Toxicity	Non-toxic

* Laboratory results

Mix Guidelines

Gently shake or stir container(s) before using. Pre-mixing is not required. Perform the standard cup test with site water to determine the desired properties. An 8:1 water to AV-254 ratio produces a strong gel. AV-254 resin is highly hydrophilic; when a container is left open, the resin will slowly react with moisture from the air.

Performance - General

For the best results, use AV-254 between 60°F – 72°F (16°C – 22°C). Flush equipment with AV-208 Technical Grade Acetone™ before and after use to remove moisture and clean equipment. Performance will be influenced by site conditions. If site temperatures are low, use a heat source to warm to ~72°F (22°C). Do not use open flame as a heat source. At temperatures of 45°F (7°C), the viscosity of the product is significantly increased, making the miscibility with the reaction-water more difficult. The times presented are laboratory results. Actual results may be different in the field due to site water used or site conditions. Perform a standard cup test with site water to determine the desired reaction time.

Performance Using AV-254

See Table below for approximate Cream/Gel Times for AV-254.

Cream / Gel (Cure) Times for AV-254 Gelseal (Min:Sec) ^{1,2}				
		1:1 Water/AV-254	5:1 Water/AV-254	8:1 Water/AV-254
Temperature	40°F/4°C	0:44 / 2:53	1:01 / 2:19	1:40 / 2:49
	50°F/10°C	0:40 / 2:18	0:50 / 1:42	1:24 / 2:11
	60°F/15°C	0:34 / 1:27	0:42 / 1:21	1:08 / 1:38
	70°F/21°C	0:21 / 0:58	0:33 / 1:00	0:46 / 1:26
	80°F/27°C	0:13 / 0:49	0:21 / 0:47	0:38 / 1:00

**Laboratory results*

Note: Cream time is the visual viscosity increase with grout to water ratios above 1:1.

1. Resin and water temperatures may affect cream / gel times.

2. Actual results may be different in the field due to site water used or site conditions.

Performance When Adding AV-203 Multicat

Note: AV-203 should NOT be used when injecting at ratios higher than 1:1 water to AV-254.

AV-203 Multicat may be used at low temperatures and/or high flow water cut-off situations at a maximum of 78 fl. oz. of AV-203 per pail of AV-254 when injected at 1:1 ratio with water. When AV-203 is used to slow down high waterflows, it should not be used as a stand-alone solution but in conjunction with any of Avanti's hydrophobic or hydrophilic polyurethane resins. See Table below for approximate Cream/Gel (Cure) Times AV-254 used with AV-203.

Cream / Gel (Cure) Times for AV-254 Gelseal + AV-203 Multicat (Min:Sec) ^{1,2}			
		1:1 Water/AV-254 + Half Catalyst (Resin:Catalyst, 16:1)	1:1 Water/AV-254 + Full Catalyst (Resin:Catalyst, 8:1)
Temperature	40°F/4°C	0:24 / 0:58	0:18 / 0:49
	50°F/10°C	0:21 / 0:54	0:16 / 0:35
	60°F/15°C	0:16 / 0:46	0:14 / 0:30

**Laboratory results*

Note: Cream time is visual viscosity increase with grout to water ratios above 1:1.

1. Resin and water temperatures may affect cream / gel times.

2. Actual results may be different in the field due to site water used or site conditions.

Cleaning

Do not use water to clean equipment. AV-254 is water activated and will setup or cure in your hoses and equipment. Flush with AV-284 Pump Wash™ to remove uncured resin in hoses and equipment. Purge equipment and hoses with AV-208 Technical Grade Acetone™ before use to remove any remaining AV-284 and moisture.

- AV-208 Technical Grade Acetone™ – removes moisture from equipment (see Performance section)
- AV-222 Cleaner™ – removes cured resin from equipment
- AV-284 Pump Wash™ – removes uncured resin from pump hose

Storage

Store in temperatures within or near 45°F – 95°F (7°C – 35°C) in a dry atmosphere. Keep container tightly closed when not in use. Packaged under dry nitrogen to keep moisture out and extend shelf life. Storage of opened/partial containers at the lower range of the recommended storage temperature is not advised. The moisture in the air of the head space above a partial container might condensate and might cause the grout to premature gel in the container. Avanti does not recommend storing full or partially filled containers of AV-254 that have been catalyzed or mixed with AV-203. Catalyzed grout may react over time or if not stored correctly.

Safety

Always use OSHA-approved personal protective equipment (PPE). Refer to the SDS for complete safety precautions. The Safety Data Sheets and Mixing Guidelines are available 24/7 at avantigrout.com.

Shipping – Motor and Air Freight available

- Not regulated under US DOT Regulations

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