



INSTALLATION OF AVM GAS-LOCK® 420

AVM Gas Lock® 420

DESCRIPTION

AVM Gas-Lock® 420 is a Hi-Performance 2-component fluid applied epoxy coating specifically engineered to block the intrusion of moisture, methane, and volatile organic compounds (VOCs). **AVM Gas-Lock® 420** is comprised of 100% reactive solids with no solvents, no plasticizers, no fillers, and zero VOC emissions.

AVM Gas-Lock® 420 is installed on slab on grade making it ideal for sealing out harmful methane gases when retrofitting existing structures. Applications include repurposing warehouses, garages, or formally unoccupied spaces into occupied spaces.

AVM Epoxy 420 is installed in a single 30-mil coat which cures quickly allowing the team to maintain schedule. In addition to being quick to install, **AVM Gas-Lock® 420** can be installed practically with any finished flooring desired.

In addition to sealing out harmful methane gases and moisture, **AVM Gas-Lock® 420** can be used to seal green concrete when used in conjunction with AVM System 570 Hot Rubberized Asphalt. This will allow installers to bypass the typical 28 day wait time for concrete to cure prior to installing

Approximate Coverage Rates		Standard 2.4 Gallon Kit
First thin coat to control pin-holding	200 sq ft/gallon	480 sq ft per unit
10 mils	160 sq ft/gallon	384 sq ft per kit
20 mils	80 sq ft/gallon	192 sq ft per kit
30 mils	55 sq ft/gallon	132 sq ft per kit
40 mils	40 sq ft/gallon	96 sq ft per kit

MATERIALS NEEDED

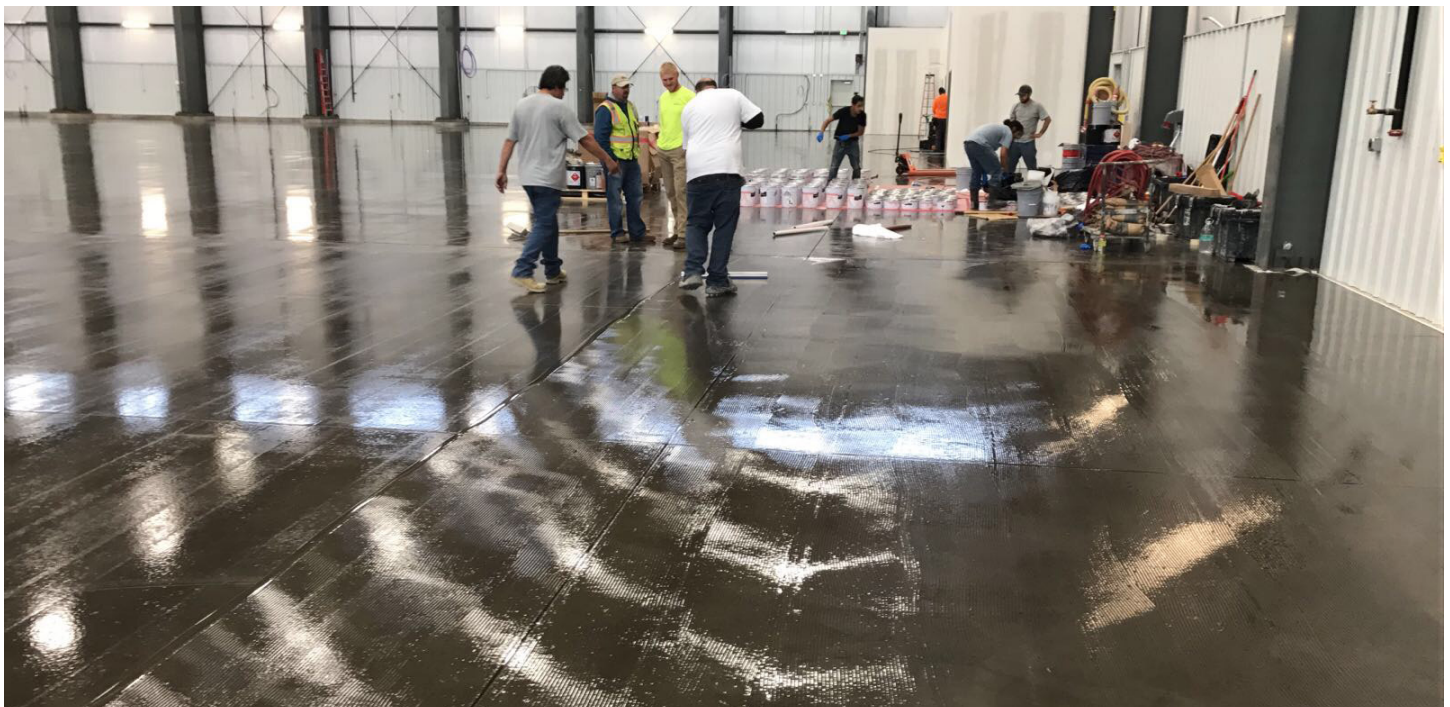
- Spiked Shoes
- A 300-400 RPM Drill
- Jiffy Mixer Drill Attachment
- Flat or 20 Mil Notched Squeegee
- 3/8" Nap Roller
- Edging Brushes
- Spiny or porcupine roller
(to use if bubbling appears in coating)
- Proper PPE – gloves/eye protection/etc.
- Acetone/xylene/other cleaning tools
- Shot Blaster or Grinder (concrete prep)
- Vacuum or Broom to Remove Dirt or Debris After Prep

LIMITATIONS

AVM Gas-Lock® 420 must be installed over properly prepared concrete that complies with ASTM F710, ASTM F3010, ASTM F3191, and ACI 302.R.

AVM Epoxy 420 must be installed over concrete that has a minimum 200 PSI tensile and 300 PSI compressive strength. The substrate must be absorbent. Products must be stored at temperatures between 50-90°, out of direct sunlight and away from areas where they can be damaged by water or rain.

Ambient temperatures must be within 40-90° during installation. The concrete substrate temperature must be at least 5° above the ambient dew point to avoid/reduce the risk of condensation as condensation may cause adhesion failure or “amine blushing” on the product finish. Do not apply if rain, high humidity, or extreme temperature changes are expected during mixing, application or cure time.



CONCRETE INSPECTION/PREPARATION

AVM Gas-Lock® 420 is perfect for installation over slab on grades. The concrete of these slab on grades can be existing, new concrete, or new green concrete. Regardless, the concrete will require preparation in order for the **AVM Gas-Lock® 420** to function properly when installed.

For existing slabs and renovations, it is important to note the cracks and any imperfections in the slab prior to installation. Ensure there are not any sign of liquid water, puddles, or stains. Existing coatings, coverings, flooring, or any other applied materials should be removed by mechanical means. Any gypsum-based underlayment or patching material should be removed as moisture in gypsum will cause blistering to occur, new concrete must be a minimum of 3-days or 72 hours from the initial set. If concrete is applied in colder temperatures (under 50°) then a longer cure time of 4-5 days should be allowed.

The concrete must be clean and porous enough for the material to absorb into the concrete. It is highly recommended to shotblast or grind the surface of the concrete to open up the surface. General requirements regarding concrete surfaces are the following:

- 2,000 psi compressive (Rebound-hammer test: ASTM C805)
- 200 psi cohesive (Pull off test: ASTM D7234)
- Absorptive (water drop test: ASTM F3191)
- Stain and dust-free (visual: Eyes-hands)
- Comply with ACI standards concerning concrete: ACI 201.2R; ACI 302.1R & 302.2R

The recommended Concrete Surface Profile for new concrete is a minimum of 3 while existing concrete is a 4. Shot or bead blasting is the preferred method as it provides the most consistent, dust free anchor pattern. If shot or bead blasting is not allowed due to jobsite restrictions, grinding can be done.

Cracks in concrete can be treated with a two-component epoxy caulking or a Portland-cement based concrete grout that meets the requirements of the concrete listed above.

Once concrete has been prepared, a Water Drop Test on the substrate per ASTM F3191 should be performed to test the absorbency of the concrete. The test is

* If any additional coats are desired, installer must install any coat within 72 hours of original system.

performed by dropping a single drop of water onto the concrete surface. If the water does not penetrate the concrete within a minute, then the surface may still contain potential bond breakers and will need to be removed through additional preparation.



INSTALLATION INSTRUCTIONS

This section will cover a comprehensive step by step guideline for installation of the **AVM Gas-Lock® 420**.

1. AVM Gas-Lock® 420 comes with 2 parts – Part A is the resin and Part B is the Hardener. Pour entire content of Part B (Hardener) into Part A (Resin) and mix for 3 minutes using a 300-400 RPM drill with a Jiffy Mixer attachment. Partial mixes are not recommended (please see Approximate Coverage Rate Table on Page 1).
2. Immediately after the kit is mixed, pour entire contents of pail onto the prepared substrate. Be aware that the pot life is short (10-20 minutes).
3. AVM Gas-Lock® 420 is installed in a single 30-mil coat in one pass. Do this by spreading the material using a flat or 30-mil notched squeegee onto the substrate to achieve a minimum of 30 mils across the desired surface.
4. Cure time is approximately 4 hours. This varies depending on temperature during application. For colder temperatures, allow for longer cure time. The area should be protected from moisture, dirt, debris, dust, and foot traffic during the cure time. If coating with another system, that system must be compatible with the epoxy and installed within 72 hours of original system.
5. Add finish (instruction/details in next section)

FINISHING OPTIONS

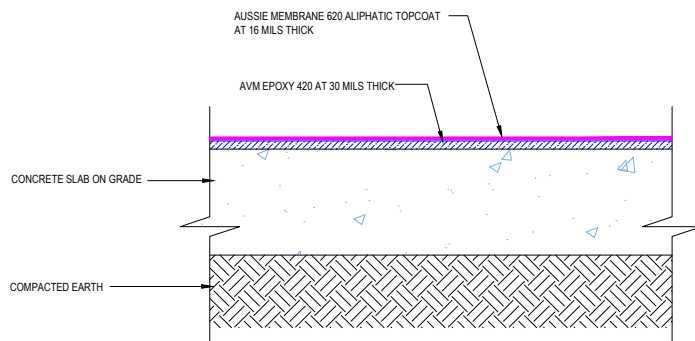
Once the 30-mil system has been installed, there are several different finishing options depending on preference and project. This section will outline the finished options along with any additional installation guidelines that are required per finish.

Exposed Finish

Exposed finishes are common in warehouse floors and residential garages. When installing AVM Epoxy 420 in an exposed finished application, a topcoat would be required for protection. The topcoat can be an Aliphatic or Aromatic Polyurethane or a UV Stable Epoxy. In this application, allow the **AVM Gas-Lock® 420** to become completely cured prior to installing the topcoat.

Once cured, the topcoat should be installed per the manufacturer's installation guidelines at 15 mils thick.

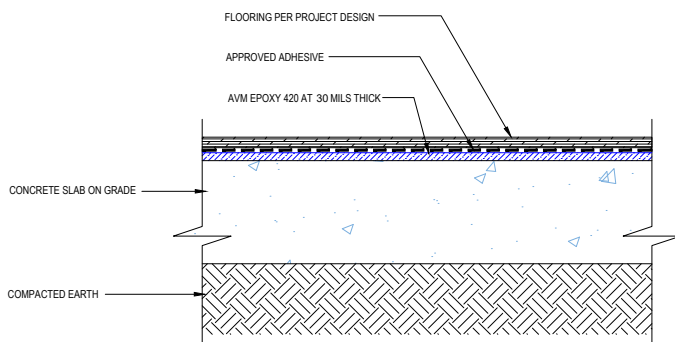
See below diagram.



Adhered Flooring

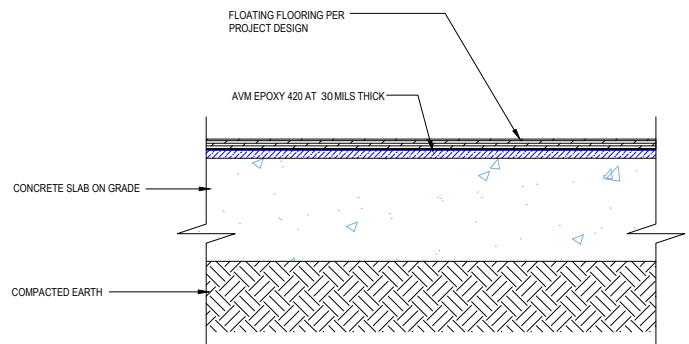
Adhered Flooring finishes are very common in the industry and an industry standard in Southern California.

This finish requires an adhesive designed to bond to non-porous substrates. For this method, wait for **AVM Gas-Lock® 420** to be completely cured. Once cured, place approved adhesive over the system per the manufacturer's installation instructions. The adhered flooring per the project design would be installed over the adhesive. See diagram below.



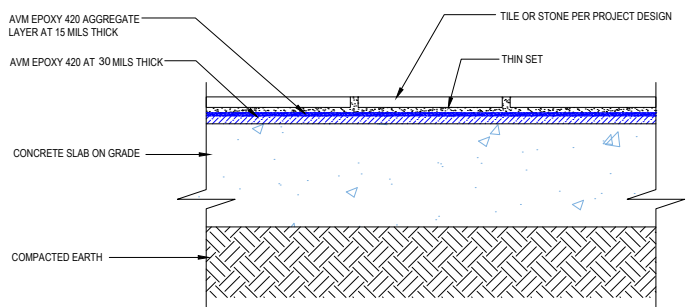
Floating Flooring

Floating floor options, like laminates, are common in residential basements. This is the simplest option when finishing over the **AVM Gas-Lock® 420**. There is no moisture barrier required. Wait for **AVM Gas-Lock® 420** to be completely cured and simply install per the flooring manufacture recommendations. See diagram below.



Tile/Stone Thin Set Flooring

Tile/Stone thin set is also a popular option in residential basements or homes that sit on slab on grade. This option will require a thin layer of **AVM Gas-Lock® 420** with aggregate cast into it installed above the 30-mil system. The purpose of the aggregate layer is to provide a textured substrate for the thin set mortar to bond with. Once the Gas-Lock® 420 is completely cured, install an additional 15-mil coat over that and cast aggregate into it. Once this thin aggregate layer of the Gas-Lock® 420 is cured, install the thin set mortar per the manufacturer's installation instructions over it followed by the placement of the tiles/stone. See diagram below.



APPLICATION ISSUES

With any fluid applied system that involves mixing and can be influenced by moisture and temperature, there are a few issues to be aware of when installing **AVM Gas-Lock® 420**. By understanding the causes and repairs to these issues, it will help the project run smoothly. Below are a few examples of these issues that may be encountered, why they are encountered, and how to repair.

Pinholes

Pinholes can be identified as tiny craters left in the membrane by popped bubbles. The main cause of pinholes is a temperature differential between concrete and the ambient air. This is more common in applications that are open to outside temperatures. Other causes can be Inducing air in the mixture with a high-speed drill, over-rolling and/or using a too thick nap roller cover which may “roll” air into the coating are a few of the alternative air inductions.

If caught during installation, simply run a spiny or porcupine roller through the material and it should pop the bubbles and fill the pin holes if not too aggressive. If it is caught after the layer cures, sand the existing coat, and apply a new coat to fill the pin holes. Be sure when doing this that the temperatures are steady.

Amine Blush

The Hardener (Part B) contains amine curing agents which absorb moisture and in turn form ammonium carbamate by-products. During the cure of the system, the by-products are created on the surface and produces a white or brownish, greasy film or haze over the surface. This is caused by high humidity like dew, fog, and mist during the curing of the product. While this is mostly relative to exterior applications, it can occur indoors if there is not an HVAC system in place to assist in controlling climate.

The film would need to be removed prior to any additional coats or material application. If it is fresh, it can be carefully washed off using a light detergent and rinsed or with a solvent wipe with acetone or xylene. If the film has been on for a longer period of time, sanding the surface to remove may be required.

Fisheyes

Fisheyes can be identified by areas of the system to form a crater on the surface where there is usually very little to no material in the center of the fisheye. This is typically caused by surface contamination. This contamination can be in the form of residual sealer, curing compounds in the concrete surface, oils, grease, fats, and other organic and hydrocarbon contaminates. It can also be caused by too light or improper surface prep.

If this is noticed, halt installation. Determine if the areas are just a small specific area or if it's over the entire project. Concrete will need to be treated properly depending on the severity. If small in numbers, surfactants can be used in the areas where fisheyes are prevalent. If they are over the entirety of the project, surfaces will need to be further prepped.

Green Concrete

AVM Gas-Lock® 420 can be installed over green concrete but there are some concerns to keep in mind when applying the AVM 420 over green concrete. Dewpoint would be the main concern. The ambient temperature and the slab temperature cannot be within 5 degrees °F of the dewpoint temperature during application or curing of the **AVM Gas-Lock® 420**. If dewpoint were to occur during application or curing of the Gas-Lock® 420, amine blush can form in the appearance of a greasy/whitish haze. The amine blush can be removed with a solvent wipe or dish detergent. It can be overlooked which can lead to debonding of subsequent systems.

Because of the above, when installing in cooler temperatures, it is important to keep in mind how that effects cure time. When installing in temperature ranges of 50-60 degrees °F, the Gas-Lock® 420 might take a little longer to cure than it would in warmer temperatures, but as long as ambient conditions are followed it should not be significant (approximately 5 hours).

Humidity and cooler temperatures, especially temperatures that reach lower than 40 degrees °F, are going to affect curing more. It is important to wait until the Epoxy is fully cured prior to any subsequent systems. Using weather apps, portable weather stations, or an infrared thermometer will assist in ensuring the temperatures are known during installation which will assist in planning and scheduling.

PRODUCT SPECIFICATIONS AND TECHNICAL INFORMATION

Application Properties	
Pot Life (45°F/75°F/90°F)	20 mins/15 mins/7 mins
Curing Time / Light Foot Traffic (45°F/60°F/75°F/90°F)	12 hours/8 hours/4 hours/-3 hours
Minimum Recoat Time (45°F/60°F/75°F/90°F)	12 hours/8 hours/4 hours/-3 hours
Maximum Recoat Time (without light sanding) (45°F/60°F/75°F/90°F)	72 hours or by manufacturers guidelines on recoat windows
Full Cure - Full Chemical Resistance and Supports Heavy/Rolling	5-7 Days
Substrate Temperature	40°F-90°F
Application Humidity Dew Point	Slab Temperature + 5°F Above Dewpoint
Concrete Surface Profile (Consult ICRI 310.2R.I3)	CSP-3 (New Concrete); CSP-4 (Existing Concrete)
Shore D Hardness	82 at 48 Hours
Mold Resistance	Does not Promote Mold Growth per ASTM G21

Technical Data	Results	Test Criteria
Mixing Ratio (A:B by Volume)	2.43:1	
Density (75°F)	1.10 g/cm ³	
Volume solids	100%	
VOC Emissions	0.000 g/l	CA Department of Public Health CDPH/EHLB/ Standard Method Version 1.1
VOC Content	0.000 g/l	Calculated
Bond Strength to Concrete	>480 psi	ASTM D7234
Compressive Strength	14,500 PSI	ASTM D-1621
Tensile Strength	4300 PSI	ASTM D 412
flash Point	>212°F	Calculated
Shore D Hardness	82 at 48 hours	Calculated
Alkalinity Tolerance	>PH of 14	ASTM F1869
Mold Resistance	Does not Promote Mold Growth per ASTM G21	ASTM G21
Vapor Mitigation	0.072 perms	ASTM E96-10
Methane Gas Transmission Rate @ 18 mils	103 mL/day*m ² *atm)	ASTM D 1434
Methane Gas Transmission Rate @ 40 mils	15.2 mL/day*m ² *atm)	ASTM D 1434