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Technical Datasheet

VAPORTIGHT COAT®-SG3

100% Solids, Moisture mitigation, vapor intrusion and pH barrier coating

CSI Div. 07 + 09
07 14 16 Cold Fluid-Applied Waterproofing
07 26 00 Vapor Retarders
09 05 61.13 Moisture Vapor Emission Control
09 91 33 Primers
09 96 56 Epoxy Coatings

LEED Points
IEQ Credit 4.2, Low-Emitting Materials, Paints & Coatings: 1 Point
Using this AQUAFIN product can help contribute to LEED certification of projects in the categories shown above.

Product Description:
VAPORTIGHT COAT®-SG3 is a unique 2-component, moisture tolerant, low viscosity, solvent free, chemically enhanced epoxy based product which reduces the passage of water vapor and moisture through slabs on, below and above grade as well as split slabs, thus eliminating delamination of adhesives, floor coverings and coatings. VAPORTIGHT COAT®-SG3 meets or exceeds the requirements of ASTM F3010-13 Standard Practice for Two-Component Resin Based Membrane-Forming Moisture Mitigation Systems for Use Under Resilient Floor Coverings.

Typical Applications:
- Indoor and outdoor, new and existing concrete slabs: on grade, above grade, below grade and split slabs, old cementitious underlayment (no gypsum) and ceramic tiles with missing or damaged under-slab vapor barriers.
- To protect from soil gases and vapors rising up through the concrete.
- Industrial/retail facilities, office buildings, supermarkets, food processing plants, airplane hangars, hospitals, schools, etc.
- Below grade waterproofing (consult Aquafin Technical Department).

Advantages:
- One or two coat system - No sand broadcast
- Low viscosity, solvent free, no VOC's
- For slabs with MVER up to 25 lbs and RH up to 100%
- ASTM E 96 perm rating 0.10 grains/h-ft²-in.Hg @ 16 mils (0.40 mm)
- Traffic bearing membranes, deck coatings, roofing systems, and flooring systems installed next day
- Can be applied to damp & green concrete (min. 5 days old)
- High alkalinity barrier (pH 14)
- Can be used as a barrier against methane & radon gases
- Resistant to chemical vapors from soil such as TCE, PCE & benzene
- Compatible with most traffic bearing membranes, deck coatings, roofing systems, and flooring systems
- Does not support mold growth
- Great for indoor applications: low odor and non-flammable.
- VAPORTIGHT COAT®-SG3 passed Indoor Air Quality Material Emissions Test as per DIN EN ISO 16000 (Report CT-10-06-22-01:250005/2-3)
- Withstands negative side water pressure. Tested up to 100 feet hydrostatic pressure.

Physical and Technical Data	
Material	2-component, clear epoxy
Density:	~9.08 lbs/gal (1.09 ± 0.02 kg/L)
VOC:	0 g/L
Volume Solids	100 %
Flash Point: Part A Part B	>212°F (>100°C) 170°F (77°C)
Mixing Ratio	100:52 (by weight)
Viscosity	600±80 cps (mPa*s) @ 77°F (25°C)
Pot Life @ 73°F (23°C)	~35 Minutes
Open to Foot Traffic at 73°F (23°C)	after 12 hrs
Recoat Time: Interior Exterior	minimum 12 hrs to max. 5 days minimum 12 hrs to max. 48 hrs
Application Temperature	min. 45°F (8°C) – max. 95°F (35°C)
Curing Temperature	min. 45°F (8°C)
Full Strength at 73°F (23°C)	after 7 days
Compressive Strength:	>11,000 psi (>80 MPa)
Adhesion to Concrete (ASTM D7234)	>480 psi (3.3 MPa) Failure in substrate
pH 14 Resistance	Pass 14 day test. (ASTM D-1308)
Water Vapor Transmission (ASTM E 96)	0.100 grains/h-ft²-in.Hg
Average Critical Radiant Flux (CRF)	1.00 W/cm² - Passed = nonflammable (ASTM E 648-03)
Methane Permeability (ISO 15105-2)	2.20 [cm³ / (m²*d*bar)] at 36 mils (0.90 mm) thickness
Indoor Air Quality Control (DIN EN ISO 16000)	Passed: VOC (0 mg/m³) & Formaldehyde emissions (<0.01 ppm)
Permeability +/- side water head: (DIN EN 12390-8)	No water ingress with: 100 ft (30 m) (3 bar) hydrostatic pressure.

All data are average values obtained under laboratory conditions. In practical use temperature, humidity and absorbance of the substrate may influence the above given values.

Testing Concrete Slabs for Contaminants:
Aquafin recommends testing slabs with unknown history, as well as slabs with previous failures of traffic bearing membranes, deck coatings, roofing systems, flooring systems, etc. for contaminants (i.e. hydrocarbons, other organic compounds, un-reacted water soluble meta silicates, chlorides, ASR, Sulfurous compounds, etc.) to determine suitability of VAPORTIGHT COAT®-SG3. Provide Ion Chromatography and IR Spectroscopy, and where necessary ASR data to Aquafin before commencing application. A separation screed may be required. See Separation Screed section for more information.

VAPORTIGHT COAT®-SG3

Concrete Moisture Testing:
Aquafin recommends moisture testing of all concrete slabs. However, moisture testing is only a guideline and can be influenced by environmental factors.

- Interior Concrete Slabs: Aquafin recommends testing to determine moisture vapor emission rate (MVER) including "Anhydrous Calcium Chloride" testing as per ASTM F 1869-11 on slabs to be treated, to determine the MVER in lb/1000 ft2 • 24 hrs (grams/m2 • hr) and to determine RH content (%) as per ASTM F 2170.
- Exterior Concrete Slabs: To obtain an approximate measurement of the moisture in exterior concrete slabs, Aquafin recommends using a combination of in-situ RH content (%) testing and surface MC (%) testing and then comparing the results.

Substrate Preparation:

- Concrete must be a minimum 5 days old or have reached a minimum 2,500 psi (17 MPa) compressive strength, to be treated with VAPORTIGHT COAT®-SG3. Concrete must be clean, sound and have an "open"/absorptive surface ("tooth and suction"). All concrete must be mechanically prepared (i.e. Steel shot blast) to a concrete surface profile (CSP) 3 – 5 per the International Concrete Repair Institute (ICRI) Guideline No. 310-2R-2013. Acid etching is not allowed, broom finish on new concrete is not acceptable. Burn off any reinforcing fibers and vacuum remains.
- Remove glaze from "quarry tiles".
- After mechanical preparation, check the porosity of the concrete surface using the water drop test method (ASTM F3191). Beading water drops signal a non-absorptive condition. Additional profiling will be necessary until all contaminants are removed, and the water drop test verifies an absorptive, porous concrete surface. If additional profiling does not remedy the non-absorptive condition, contact Aquafin's Technical Department.
  Note: Concrete core sample analysis can be very beneficial in this scenario, as it will pinpoint the depth of contaminants in the concrete and estimate how much of the surface will need to be removed to achieve the requirement of a contaminant-free, porous concrete surface.

Mock-up:
Aquafin recommends installation of a field sample of min. 100 ft² at the project site or other pre-selected area as agreed to by owner's representative and applicator.

- Apply all materials to field sample area in the correct layering sequence. Include all layers and materials that will be used in the application (screeds, patching compounds, membranes, coatings, roof systems, underlayments, adhesives, flooring, etc.). Follow all manufacturer's written instructions.
- Maintain field sample during construction for workmanship comparison. Use field sample as standard for judging aesthetics on remainder of project. Do not alter, move, or destroy field sample until work is completed and approved by owner's representative.
- Mock-ups are also recommended for adhesion testing to confirm compatibility with all materials being used in the application, and also to better define recoat times based on actual jobsite conditions.

Crack and Joint Treatment:
Pre-treat all saw cut joints, expansion joints, and cracks 1/8" and wider. Refer to drawings on page 4 for saw cut joint and expansion joint treatment.

- Cracks 1/8" and Wider: Fill cracks 1/8" and wider with VAPORTIGHT COAT®-SG3 mixed with 5 parts by volume of oven-dried sand. Apply the VAPORTIGHT COAT®-SG3 field coat over crack areas as soon as VAPORTIGHT COAT®-SG3 with sand mixture has reached its initial set.
- Cracks Less Than 1/8" Wide: Fill cracks less than 1/8" wide with VAPORTIGHT COAT®-SG3 neat.

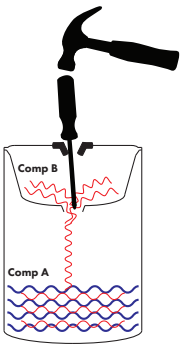
Separation Screed:
Concrete floors which contain water soluble, unreacted sodium and/or potassium silicates or chlorides cannot be coated when certain thresholds of these compounds are exceeded. If these soluble mediums have deeper penetration into the substrate than standard steel shot blasting will remove, it will be required to remove 3/8" - 1/2" (10 mm - 13 mm) of the concrete surface and replace it with a separation screed, such as MORTAR-Screed CI, to prevent substrate failure when trapped rising moisture activates these mediums. VAPORTIGHT COAT®-SG3 will then be applied over the separation screed. All separation screed surfaces must be mechanically prepared like a concrete surface (CSP 3 - 5) as indicated above.

Vertical Applications (Walls):
Note: Wall Projects require pre-approval from Aquafin Technical Services prior to application of VAPORTIGHT COAT®-SG3 in order to qualify for any type of warranty.
1. Apply the first coat of VAPORTIGHT COAT®-SG3.
2. Apply the second coat of VAPORTIGHT COAT®-SG3 "fresh-in-fresh" (green-on-green) as soon as the first coat has adhered and is firm enough to receive the second coat without displacement. Check the mil thickness of the second coat and each subsequent coat using a wet film gauge.
3. Repeat with additional coats of VAPORTIGHT COAT®-SG3 as needed to meet the required total mil thickness.

Mixing:
VAPORTIGHT COAT®-SG3 is supplied in the appropriate mixing ratio (Comp-A = resin, Comp-B = hardener). Always mix full units.

- Use chemical resistant gloves and goggles when mixing or applying VAPORTIGHT COAT®-SG3.
- Epoxy-based coatings are temperature sensitive and care should be taken to condition all components to between 65°F to 75°F (18°C to 24°C) prior to mixing and placement.

1. For 0.24 and 2.4 gal kits only (7.3 gal kit packaged separate A&B containers!): Pierce a hole through the rubber membrane in the lid and continue through the bottom of "lid well". Assure Part B completely drains into Part A.
2. Stir mixture for approx. 5 minutes to a homogenous, streak free consistency, using a slow speed drill (~300 rpm) with a PS Jiffy blade. Avoid entrapping air. Ensure that the material at the bottom and sides are scraped and thoroughly mixed.
3. Pour mixed material from the mixing container into another, clean container and carefully mix for additional 30 seconds.



Application:
Read all instructions thoroughly prior to installation.

- Substrate and ambient temperatures must be at least 45°F (8°C) and rising and no higher than 95°F (35°C).
- All exterior applications must be protected from strong sun light, wind and rain until fully cured.
- All interior applications must be protected from drafts to avoid "skinning over".
- VAPORTIGHT COAT®-SG3 surface must be protected from bond inhibiting contaminants, i.e. dirt, dust and debris.

VAPORTIGHT COAT®-SG3

- Application equipment needed: Clean mixing containers, soft-edge squeegee, non-shed synthetic roller.

1. All surfaces must be saturated surface dry (SSD) with no standing water.
2. Pour VAPORTIGHT COAT®-SG3 in sufficient quantity over the area to be treated and uniformly distribute with a notched squeegee.
3. Follow with a non-shed roller, back rolling at right angle (90 degrees) to the squeegee application to achieve uniform coverage. Always verify that the proper mil thickness has been achieved by measuring the coating using a wet film gauge. As a minimum, it is recommended to check the mil thickness in every corner, plus the center area of the room. Large areas may require additional check points.

Curing:

- Allow to cure for minimum 12 hours [based on 73°F (23°C)].

Notes: Mix VAPORTIGHT COAT®-SG3 with VAPORTIGHT COAT ACCELERATOR when faster curing times are desired. Refer to VAPORTIGHT COAT ACCELERATOR Technical Data Sheet for more information.

- Once VAPORTIGHT COAT®-SG3 has completely dried, inspect the surface for imperfections and voids such as "outgassing channels", and pinholes. These areas will need to be re-treated.
- Prepare areas to be retreated by first sanding the surface and then cleaning with hot water. Allow all areas to dry completely.
- Reapply VAPORTIGHT COAT®-SG3 over areas that need retreating within 5 days after the first coat for interior applications, and within 48 hours after the first coat for exterior applications. Please contact Aquafin Technical if recoat time cannot be met.
- Coatings Systems over VAPORTIGHT COAT®-SG3: VAPORTIGHT COAT®-SG3 provides a suitable substrate for many different types of coating systems, including but not limited to: interior floor coatings, interior/exterior pedestrian traffic coatings, vehicle traffic membranes, and roof coating systems. Refer to the manufacturer of the coating system for approval and recommendations. Pay close attention to recoat times. Apply the first coat in the coating system within 5 days after VAPORTIGHT COAT®-SG3 for interior applications, and within 48 hours for exterior applications. For additional guidelines of coating system applications over VAPORTIGHT COAT®-SG3, please visit our Vaportight Coat Website at: https://vaportightcoat.com/ .
- Finished Flooring Systems over VAPORTIGHT COAT®-SG3: VAPORTIGHT COAT®-SG3 provides a suitable substrate for many different types of flooring systems, including but not limited to: broadloom carpet and carpet tile, resilient tile [LVP (luxury vinyl plank), LVT (luxury vinyl tile), rubber tile, and VCT (vinyl composition tile)], ceramic, natural stone and porcelain tile, floating floors [engineered wood, laminate and WPC (wood plastic composite)], glue-down wood flooring [bamboo, engineered wood, and solid wood], and resilient sheet flooring (rolled rubber and sheet vinyl). Refer to the manufacturer of the coating system for approval and recommendations. For best results, and to prevent imperfections from transferring up through the flooring surface, the use of Aquafin SLU-PRIMER and Aquafin LEVEL-One EZ are recommended. Pay close attention to recoat times. Apply primers within 5 days after VAPORTIGHT COAT®-SG3 for interior applications, and within 48 hours for exterior applications. For additional guidelines of flooring system applications over VAPORTIGHT COAT®-SG3, please visit our Vaportight Coat Website at: https://vaportightcoat.com/ .
- Outdoor Running Tracks and Specialty Sports Surfaces over VAPORTIGHT COAT®-SG3: Refer to the manufacturer of the running track and sports flooring system for approval and recommendations.
- Underlayments over VAPORTIGHT COAT®-SG3: If other brands of cementitious self-leveling underlayments are to be used, start by first priming over VAPORTIGHT COAT®-SG3 with the manufacturer's own primer. Refer to the manufacturer of the cementitious self-leveling underlayment for approval and recommendations. Ensure that the manufacturer's own primer can be used over epoxy vapor barriers.

Clean-up:

EQUIPMENT: Immediately clean all equipment and tools with mineral spirits. Cured material can only be removed mechanically.
MATERIAL: Collect with absorbent material. Flush area with water. Dispose of in accordance with local, state and federal disposal regulations.

Packaging and Shelf Life:

Shelf life is 2 years in closed, original packaging, stored in a dry, cool place. Components A and B are delivered at a predetermined mixing ratio. Available in the following kit sizes: 0.24 gal (special order only), 2.4 gal, and 7.3 gal

Limitations:

- Do not spray apply VAPORTIGHT COAT®-SG3.
- Do not apply a subsequent membrane, coating, roofing system, flooring system, etc. if VAPORTIGHT COAT®-SG3 surface is wet due to dew point or other causes.
- Where sand broadcast is desired use VAPORTIGHT COAT®-SG2 in lieu of VAPORTIGHT COAT®-SG3, or apply two coats of VAPORTIGHT COAT®-SG3.
- Post-cracking of the concrete, slab warping or warping relaxation at joints or cracks after installation of the VAPORTIGHT COAT®-SG3 may cause a breach in the coating and void warranty.
- Do not apply over gypsum based substrates.
- Do not apply over curing agents.
- Do not alter mixing ratios, thin or mix with Cab-O-Sil.
- Call Aquafin Technical Department for slabs with floor heating systems or installation recommendations for any substrates and conditions not listed.
- VAPORTIGHT COAT® SG3 must be covered with a final protective system (i.e. traffic bearing membrane, deck coating, roofing system, flooring system etc.) and is not designed to be left permanently exposed, except in areas limited to occasional light pedestrian traffic such as elevator pits and mechanical rooms. Contact Aquafin Technical Department for guidance on any applications to be left exposed.

Note:

Proper application is the sole responsibility of the user. Applicators are expected to follow ICRI and ACI guidelines as well as other applicable industry standards. Aquafin personnel or representatives are not site inspectors or construction project managers and therefore do not approve surface preparation, mixing, or application of Aquafin products. Site visits by Aquafin personnel or representatives are solely for the purpose of making technical recommendations, not for providing supervision or quality control. This product is not sold to the Do-it-Yourself market. **For Professional Use Only.**

General Information:

All details in particular to the suggestions for the processing and use of the product is based on our present knowledge and experiences at the time of printing. Depending on specific applications, in particular regarding substrates, processing and environmental conditions may affect the final results.

Safety: Refer to SDS. For commercial use only.
Part A - irritant; sensitizer - contains epoxy resins.
Part B - corrosive; sensitizer - contains amines.
KEEP OUT OF REACH OF CHILDREN.
Spills: Ventilate area. Contain and collect spillage with noncombustible,

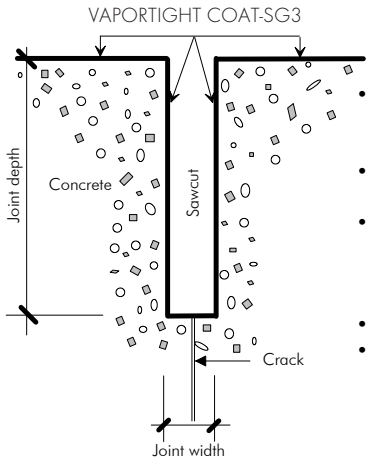
VAPORTIGHT COAT®-SG3

absorbent materials (i.e. sand, vermiculite, universal binders, sawdust, etc.) and place in container for disposal. Emergency procedures are not required. Dispose of in accordance with current local, state and federal regulations. VOC limit: This product is well below the allowable EPA limits as stated in 40 CFR Part 59.

PLEASE NOTE: Standard Warranty is a one-year limited product warranty that is limited to replacement of VAPORTIGHT COAT product.

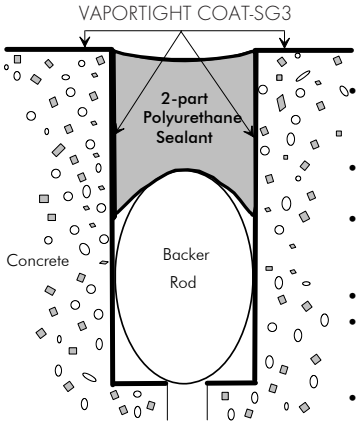
LIMITED WARRANTY: AQUAFIN, INC. warrants its products to be manufactured free of defects for one year and to be consistent with its standard high quality. We will replace or, at our election, refund the purchase price of, any product which is proven to be defective, provided that the product was properly applied. Our product recommendations are based on Industry Standards and testing procedures. We assume no warranties either written, expressed or implied as to any specific methods of application or use of the product. We do not guarantee compatibility of Aquafin products with other brands. For this reason, we strongly recommend application of a sample area at the jobsite to help determine suitability with other products. AQUAFIN, INC. MAKES NO WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. AQUAFIN, INC. shall not be liable for damages of any sort including remote or consequential damages, down time, or delay. Contact Aquafin for information on extended warranties.

Sealing Saw Cut Joints in Concrete Slabs:



- Coat slab surface with VAPORTIGHT COAT®-SG3 as per specifications.
- Coat sidewalls and bottom of cavity with VAPORTIGHT COAT®-SG3.
- Fill cavity with a joint filler recommended by the manufacturer of the subsequent membrane, coating, roof system, flooring system, etc.
- Touch-up slab surface if necessary.
- Proceed with the next step in the installation.

Sealing of Expansion Joints in Concrete Slabs:



- Coat slab surface with VAPORTIGHT COAT®-SG3 as per specifications.
- Coat sidewalls and bottom of cavity with VAPORTIGHT COAT®-SG3.
- Allow VAPORTIGHT COAT®-SG3 to cure for min. 12 hrs at 73°F (23°C).
- Install backer rod.
- Fill cavity with a suitable polyurethane sealant or as specified by the A/E.
- Proceed with the next step in the installation.

VAPORTIGHT COAT-SG3 Application Rates per ASTM F-1869 (CaCl) & F-2170 or ASTM F-2420 (RH - Relative Humidity):

Moisture vapor emission rate (MVER): listed by lbs/1000 ft² * 24hrs	RH: listed by percentage (%)	No. of coats	Application Rate			Approx. Thickness		Approx. Yield per 2.4 gal kit (9.2 L)		Approx. Yield per 7.3 gal kit (27.5 L)	
			ft²/gal	(m²/L)	(kg/m²)	mils	mm	ft²	m²	ft²	m²
up to 25 lbs MVER	up to 100%	1	100	2.45	0.45	16	0.40	240	22.3	730	67
Methane gas barrier		2	45	1.09	1.00	36	0.90	108	10.0	330	30
TCE (Trichloroethylene), Benzene, PCE (Tetrachloroethylene) & other solvents (diffusion)		2	52	1.28	0.86	30	0.76	0.76	11.7	380	35
Vertical applications		3	67	1.64	0.66	16	0.40	160	14.8	490	46
New concrete (min. 5 days old or min. 2500 psi)		1	100	2.45	0.45	16	0.40	240	22.3	730	67

Notes: Application rates and yield values are approximate. Actual coverage may vary due to absorption of substrate. Coverage rates for wall applications include a waste factor due to expected loss of material. Failure to achieve the required mil thickness will compromise the effectiveness of the product and void the warranty. It is the applicator's responsibility to verify that the required mil thickness has been attained. Mils are based on WFT (wet film thickness).

Sample Water Vapor Transmission Reduction Test : ASTM E 96

	BEFORE: Untreated Control	AFTER: VAPORTIGHT COAT®-SG3	
Water Vapor Transmission: • lbs/1000 ft² * 24 hrs	24.08	Sample A, No.1 0.18 (Mactec, 3/17/06)	REDUCTION = 99%
Vapor Permeance: • grains/hour/ft²/in.Hg	3.17	0.10 @ 16 mils (Nelson Testing, 01/08/14)	ASTM F3010-13

Notes: Test carried out by independent laboratory (Wet method)

VAPORTIGHT COAT-SG3 Chemical Diffusion Chart

Trichloroethylene (TCE)	Diffusion Coefficient = 5.0 x 10^{-14} m² / sec

Other Solvents

Solvent Name	CAS #	% MS	ACP % MS
Benzene	71-43-2	93	70-137
Chlorobenzene	108-90-7	100	70-132
1.1 Dichloroethene	75-35-4	99	42-130
Toluene	108-88-3	85	70-130
Trichloroethane	79-01-6	94	66-140
Tetrachloroethylene (PCE)	127-18-4	*under testing*	

Notes: %MS = Percent recovery of MS. ACP %MS = Acceptable percent recovery range for Matrix Spike samples.