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Technical Datasheet

VAPORTIGHT COAT®-SG2

Oil & Water Vapor Barrier Coating

CSI Div. 07 + 09
07 26 00 VAPOR RETARDERS
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®-SG2 is a unique 2-component, alkali resistant, moisture tolerant, extremely high density and chemically enhanced epoxy based product which prevents capillary infiltration of oil and other chemicals from the ground. Applied in one coat, SG2 reduces the passage of water vapor and moisture through slabs and walls, thus eliminating delamination of adhesives, floor coverings and coatings.

Typical Applications:
- Indoor and outdoor, new and existing concrete slabs: on grade, above grade, below grade and split slabs.
- Oil and other chemically contaminated slabs.
- Industrial/retail facilities, office buildings, hospitals and schools, food processing plants, secondary containment slabs, etc.

Advantages:
- Low VOC and meets USDA/FSIS guidelines
- High chemical and alkalinity (pH 14) resistance
- Barrier against radon & other gases
- Excellent adhesion to steel
- Compatible with most flooring systems
- Minimal downtime - flooring system installed next day
- Does not support mold growth
- Protects non-breathable floor coverings/coatings from water vapor transmission through concrete substrates.
- Full broadcast system - provides excellent substrate for bonding
- Seals oil contaminated slabs
- For slabs with MVER up to 25 lbs and RH up to 100%
- Can be applied to 5 day old concrete and damp concrete slabs

Testing Concrete Slabs for Contaminants:
Aquafin recommends testing slabs with unknown history, as well as slabs with previously failed flooring systems, for contaminants (i.e. hydrocarbons, other organic compounds, un-reacted water soluble silicates, chlorides, ASR, Sulfurous compounds, etc.) to determine suitability of SG2. Provide Ion Chromatography and IR Spectroscopy data to Aquafin before commencing application. A separation screed may be required.

Moisture Vapor Emission Testing:
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. This testing can be used to determine application rate of material required to obtain AQUAFIN warranty.

Physical and Technical Data	
Material	2-component epoxy
Color:	White
Density:	14.66 lbs/gal (1.76 kg/L)
VOC:	47 g/L
Volume Solids	97.3 %
Flash Point: Part A Part B	>212°F (>100°C) 170°F (77°C)
Mixing Ratio:	100:12 (by weight)
Pot Life @ 73°F (23°C)	~60 Minutes
Open to Foot Traffic:	after 12 hrs at 73°F (23°C)
Application Temperature:	min. 45°F (8°C) – max. 95°F (35°C)
Curing Temperature:	min. 45°F (8°C)
Full Strength:	after 7 days at 73°F (23°C)
Compressive Strength:	>11,000 psi (>80 MPa)
Flexural Strength:	>4,300 psi (>30 MPa)
Adhesion to Concrete: (ASTM D-7234)	>480 psi (>3.3 MPa) @ 60 days Failure in substrate
Temperature Resistance:	Continuous Exposure: • *Dry heat: 140°F (60°C)* • *Humid heat: 113°F (45°C)* Intermittent Exposure: • *High pressure water: 185°F (85°C);* • *248°F briefly (120°C)* • *Dry heat 140°F (60°C)*
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.	

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 SG2. Concrete must be clean, sound and have an "open"/absorptive surface ("tooth and suction"). All slabs must be mechanically prepared (i.e. Shot blast) to a concrete surface profile (CSP) 3 – 5 per the International Concrete Repair Institute (ICRI) Guideline No. 301-2R-2013. *Acid etching is not allowed, broom finish on new slabs is not acceptable.* Burn off any

reinforcing fibers and vacuum remains.
- After surface preparation, check slab surface with the water drop method. Pour a drop of water about the size of a dime in several places. If the water beads, the surface is not absorptive and requires additional preparation or core extraction and testing. If the water "wets out" or penetrates the concrete within 30 - 60 seconds the surface is ready to receive the SG2 treatment. Note: This method does not replace pre-testing of concrete cores. A test application is highly recommended on existing slabs to determine adhesion (i.e. Elcometer, etc.).
- Treat saw cut and expansion joints as per drawings on page 3.

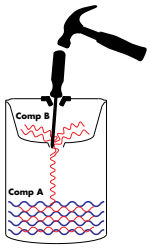
Separation Screed:
Concrete floors which contain water soluble, unreacted sodium and/or potassium silicates or chlorides can not be coated when certain thresholds of these compounds are exceeded. If these soluble mediums have deeper penetration into the substrate than standard steel shot blasting will 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 to prevent substrate failure when trapped rising moisture activates these mediums. SG2 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.

Oil contaminated slabs:
Citrus based degreasing agents are recommended for hydrocarbon contaminated slabs containing low to medium amounts of oil. If the IR analysis reveals high concentrations of hydrocarbons then microbial remediation is required. *We strongly recommend carrying out a test application of SG2 for both remediation processes, prior to installation of SG2.*
- De-greasing: After steel shot blasting, treat surface with a de-greasing cleaning agent by the "Detergent Scrubbing" method as outlined in ICRI Guideline No. 310.2R-2013. Multiple cleaning cycles may be required. Dispose of the oily wastewater in accordance with federal, state and local regulations.
- Microbial remediation: Follow microbial product manufacturer's instructions regarding application of microbes or "bugs".

1. After de-greasing or microbial remediation, clean treated surface with high pressure water blasting (minimum 2,500 psi).
2. The surface shall be damp/moist without standing water, when applying SG2. If the substrate dries before applying SG2, oil can rise again and prevent SG2 from bonding.

Water-Vapor Transmission Treatment:
1. Remove existing floor coverings, coatings, adhesives, curing compounds, efflorescence, dust, grease, laitance, etc. down to bare concrete with steel shot blasting, scarifying or grinding using a diamond cup blade (run with low RPM and assure that surface is profiled).
2. Repair cracks with a suitable patching mortar or SG2 mixed with 5 parts by volume of oven-dried sand.
3. Install cementitious underlayment's or leveling mortars on top of SG2.

Mixing:
SG2 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 SG2.



- Material should be min. 60°F (15°C) at time of mixing.

1. Pierce a hole through the rubber membrane in the lid and continue through the bottom of "lid well". Assure that 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 (approx. 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:
- Substrate and ambient temperatures must be between 45°F (8°C) and 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" before sand broadcast.
- Application equipment needed: Clean mixing containers, soft-edge squeegee, non-shed synthetic roller, long handled scrub brush.

1. All surfaces must be saturated surface dry (SSD) with no standing water.
2. Pour SG2 in sufficient quantity over the area to be treated (refer to "Application Rates" chart) and uniformly distribute with a 3/16" to 1/4" (4.5 mm to 6 mm) notched squeegee or non-shed 3/8" nap roller to the SSD substrate
3. Carefully scrub material into the substrate with a long handled scrub brush.
4. Follow with a non-shed roller to achieve uniform coverage.
5. Immediately (within 2 minutes) broadcast clean, oven dried #20 - 50 silica sand (ASTM E11 No. 18 - 35 sieve size [0.5 - 1.0 mm dia.]) to "rejection" (full broadcast), or at a rate up to 30 - 50 lb/100ft^2 (1.5 kg/m^2) into the fresh (wet) SG2.
6. Allow to cure min. 12 hours before removing all excess sand.
7. Immediately clean all equipment and tools with mineral spirits.

Flooring
- If the flooring system requires a primer over concrete, it should also be used over the broadcasted SG2.
- Water or solvent based adhesives may require a cementitious underlayment (see Aquafin LEVEL-Ultra TDS) of a minimum 1/8" (3 mm) thickness to absorb excess moisture/solvent (check with adhesive manufacturer).
- Pressure sensitive adhesives installed directly over SG2 require a longer "tack" time than listed on manufacturer's literature to prevent adhesive moisture or solvent entrapment.
- Many flooring systems require a more level or smooth surface. In such cases an application of a self-leveling cementitious underlayment (minimum 1/8" (3 mm) thickness) is required to provide a proper substrate for the floor covering and the adhesive (See Aquafin LEVEL-Ultra TDS).

Underlayment's and Patching:
If cement based toppings, such as underlayments, screeds, "flash" patching, repair mortars are to be used, the manufacturer's recommended primer or SLU-PRIMER must be applied over SG2.

Packaging & Shelf Life:
2.2 gal kit = 33 lbs (8.5 L = 15 kg), which contains:
- A-Comp: 1.8 gal/29.5 lb (6.7 L/13.39 kg) (resin)

VAPORTIGHT COAT®-SG2

• B-Comp: 0.4 gal/3.5 lb (1.8 L/1.61 kg) (hardener).
Shelf life is 2 years in closed, original packaging, stored in a dry, cool place.

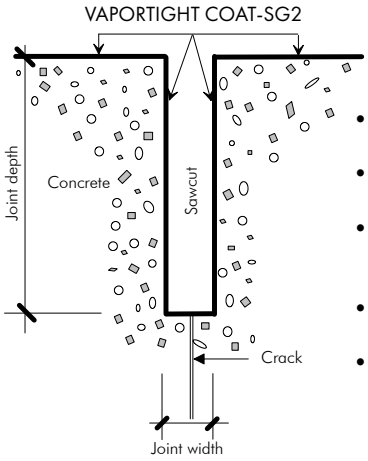
Limitations:
- Do not spray apply SG2.
- Post-cracking of the concrete, slab warping or warping relaxation at joints or cracks after installation of the SG2 may cause a breach in the coating and void warranty.
- Do not apply over gypsum based substrates.
- Do not alter mixing ratios, thin or mix with Cab-O-Sil.
- Call Aquafin Technical Department for slabs with floor heating systems or installation recommendations for any substrates and conditions not listed.

Note:
Installer is responsible for proper product application. 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.**

Safety: Refer to SDS.
Part A - irritant; sensitizer - contains epoxy resins.
Part B - corrosive; sensitizer - contains amines.
Avoid contact with skin and eyes and prolonged inhalation. Wear chemical resistant gloves and safety goggles. After contact with skin, wash immediately with water and soap and rinse thoroughly. In case of eye contact, rinse opened eye for several minutes under running water and immediately seek medical advice. After inhalation supply fresh air and call doctor for safety reasons. Use NIOSH/ MSHA approved vapor respirator in poorly ventilated areas.
KEEP OUT OF REACH OF CHILDREN.
Spills: Ventilate area. Contain and collect spillage with noncombustible, 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.

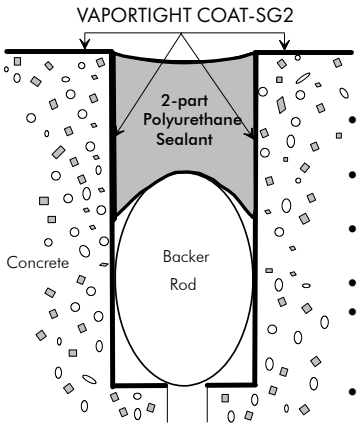
LIMITED WARRANTY: AQUAFIN, INC. warrants its products to be manufactured free of defects for one year and to be consistent with its standard high quality. We will replace or, at our election, refund the purchase price of, any product which is proven to be defective, provided that the product was properly 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. 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 warranty's.

Sealing Saw Cut Joints in Concrete Slabs:



- Coat slab surface with SG2 as per specifications.
- Coat sidewalls and bottom of cavity with SG2.
- Fill cavity with a flooring system manufacturer recommended joint filler.
- Touch-up slab surface if necessary.
- Install sub-flooring system.

Sealing of Expansion Joints in Concrete Slabs:



- Coat slab surface with SG2 as per specifications.
- Coat sidewalls and bottom of cavity with SG2.
- Allow SG2 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.
- Install sub-flooring system.

"SG2" Application Rates & Yield of 2.2 gal (8.5 L) kit							
MVER per ASTM F 1869-11 or RH per ASTM F-2170	No. of coats	Application rate ft^2/gal	(k g/m^2)	Yield per 2.2 gal kit ft^2	(m^2)	Appx.Thickness mils	(mm)
up to 20 lbs MVER or < 95% RH	1	95	0.80	200	18.7	16	0.4
up to 25 lbs MVER or 95-100% RH	1	75	1.0	160	15	21	0.5
New concrete (min. 5 days old) and Oil contaminated slabs	1	95	0.80	200	18.7	16	0.4
Walls: contact our technical dept. Note: all values theoretical. Application thicknesses are approximate,some variations may apply due to porosity and absorption of substrate.							

Sample Water Vapor Transmission Reduction Test : ASTM E 96-95, Test carried out by independent laboratory (wet method)			
Water Vapor Transmission:	BEFORE: Untreated Control	AFTER: VAPORTIGHT COAT®-SG2	REDUCTION %
• **lbs/1000 ft^2 * 24 hours**	**19.24**	Average of 6 samples: **1.03**	**95**
• grams/m^2 * hour	3.91	0.21	
Permeance: • perms	15.54	0.83	95
• grams/Pa*s*m^2	8.89 x 10^{-07}	4.76 x 10^{-08}	

Check our website for the latest version of the Technical Datasheet. Only the current version is legally binding - and only for the intended market. In cases of uncertainty contact our technical department for further information before starting any applications.