

Vapor Lock™ 20/21

Ultra Low Permeability, Shrinkage Reducing & Corrosion Inhibiting Admixture
ASTM C494 Type S Admixture

	MasterFormat Involving Vapor Lock -
	03 00 00 Concrete -
	03 30 00 Cast-in-Place Concrete
	03 37 00 Specialty Placed Concrete/Shotcrete
	03 40 00 Precast Concrete
	03 50 00 Cast Decks and Underlayment
	03 70 00 Mass Concrete
	07 00 00 Thermal and Moisture Protection -
	07 01 00 Operation & Maintenance of Thermal & Moisture Protection
	07 10 00 Dampproofing & Waterproofing
	07 16 00 Cementitious & Reactive Waterproofing

Product Description

Vapor Lock 20/21 is an liquid admixture designed to provide a permanent capillary break that greatly reduces the permeability in concrete. A complex aqueous solution that reacts with the calcium hydroxide present from cement hydration and the extra mix water (not needed for hydration) creating relatively large amounts of additional c-s-h gel. This extra c-s-h disrupts the formation of a capillary system and provides for a slower, controlled "internal cure" that allows for greater and more thorough cement hydration. It is clear in appearance and weights approximately 9.8 lbs./gallon.

Product Advantages

- Produces a concrete with an Ultra Low Permeability (warranted to be less than 0.174 US Perms) that does not allow for the movement of water or moisture/vapor through the concrete.
- By greatly reducing the egress/ingress of water and moisture, and thus ions and sulfates entering the matrix, Vapor Lock provides for a denser, more *Durable* plain or restrained piece of concrete.
- Because of greater hydration and more developed cement particle structure with Vapor Lock, it produces concrete with significantly less Long-Term drying shrinkage, in either plain or restrained concrete. Slab curl and ASR is also greatly reduced.
- Vapor Lock is 'set neutral'; it does not accelerate nor retard the mix. Compressive strength is **not** lowered.
- *Because of the ability of Vapor Lock to "flash off" the extra mix water and the additional fines supplied - it is the superior choice in pneumatically applied (Structural Shotcrete) concrete.*

Product Uses

Vapor Lock 20/21 should be used whenever an Ultra Low Permeability concrete is required and/or when Long-Term Shrinkage is a concern. It is equally effective in horizontal slabs and vertical walls; in either plain or restrained concrete. Vapor Lock 20/21 enhanced concrete can be used in lieu of traditional waterproofing membranes and coatings or as a 'Belt-and-Suspender' approach when extra protection is needed. By permanently altering the connected pore structure of the inevitable capillary system in concrete, it is the clearest component to inhibit the ingress of chloride ion movement inwards to disrupt the passivity balance surrounding reinforcement steel in concrete.

Product Warranty

Vapor Lock 20/21 Admixture is warranted to be free from defects and to perform as intended. Beyond that, there is a Performance Warranty - WaterTight™ Construction that is attached to the Vapor Lock 20/21 system. **And when used in conjunction with a factory approved **Elastomer Disruptive System**; seamless, spray applied membrane system in higher risk areas, will qualify for a 10-Year Warranty and Insurance package.** The below requirements must be met -

1. The mix design being used shall be submitted to SPG for review.
- 2.. From each day of Vapor Lock placements, two 4"x 8" test cylinders are prepared per ACI guidelines from two random trucks and stored in a cool, dry place. Specimens will be collected, kept and tested at SPG's expense.
3. At least one test specimen will be tested per ASTM D5084 - Coefficient of Permeability, by SPG (manufacturer) and the results will be referenced in both the warranty and insurance documents (if applicable).
4. There should be a pre-job meeting with relevant trades, discussing contents of Spec Data information; including beginning finishing procedures 10-15 minutes earlier (as there is little to no bleed water on the surface), and similar set and finish procedures should be followed.
5. Under engineering/waterproofing consultant oversight, all joints and penetrations will be addressed with the industry standard elements to ensure water tight construction where there is no Vapor Lock enhanced concrete. ***To activate the Insurance and Warranty package, for higher risk areas, the **Elastomer Disruptive System** (seamless, spray applied) will be used under SPG direction. Insurance and Warranty will apply to both horizontal and vertical elements; either plain and/or restrained applications.***
6. **Elastomer Disruptive System** will be applied per specifications; but will not be below 80 mils (Dry) for Vertical elements, and 100 mils (Dry) for Horizontal elements.

Finishability

The rheology of Vapor Lock enhanced concrete is increased with additional fines and an absence of bleed water (after screeding and floating). Most mixes experience about a 1/2 inch increase in slump and a noticeable increase in paste. This allows for a superior finish; either a rough broom or hard toweled finish with tighter surface tolerances.

Packaging & Handling

Vapor Lock is sold and supplied only through commercial ready mix producers and licensed pre-cast facilities. It is measured and added under the direction of only state licensed readymix weight masters. It comes in 275 & 330 gallons standard IBC totes and 55-gallon drums. It has a one year shelf life and should not be allowed to freeze.

Addition Rates & Dispensing

Vapor Lock is dosed based of off cementitious material - 10 ounces per hundred weight. *Both cement and supplemental materials (fly ash, slag, etc.) should be taken into account.* This dosage serves mixes 0.42 thru 0.52 w/cm ratios. Mixes outside of this range, will require modification. Vapor Lock should be added with the majority of head waters. Either portable dosing units or permanent, high-volume, automatic dosing systems wired directly into the batching panel are available.

Compatibility with Other Admixtures

Vapor Lock can be used with a full array of other types and other manufacturers of admixtures - with the exception of another Shrinkage Reducing Admixture. **DELAMINATION WILL OCCUR.** Other admixtures should be kept separate from Vapor Lock and added under their own directions. Vapor Lock can be used with air entrained mixes.

The Vapor Lock admixture shall be considered part of the total water in the mix design. The admixture shall be delivered as a ready-to-use liquid product and shall require no mixing at the batching plant or job site. In regards to actual mix performance, pre-testing is recommended. Please consult your SPG/Vapor Lock representative for guidance. Vapor Lock is a registered trademark of Specialty Products Group.

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