



Product Group: Vapor Lock™
Product Name: Vapor Lock™ 40/40
Corrosion Inhibiting & Waterproof Concrete
Admixture

ASTM C494 TYPE S Approved
NSF-61 Approved

DESCRIPTION

Vapor Lock 40/40™ Corrosion Inhibiting & Waterproofing Concrete Admixture is a ready to use concrete admixture that uses Volatile Organic Compound (VOC) free proprietary technologies that act as a powerful corrosion inhibitor while water and vapor proofing concrete. This corrosion resistant protection reaction is a permanent self-healing Nano technology and integral component of the finished concrete.

MAJOR ADVANTAGES OF Vapor Lock™ 40/40

- ◆ Virtually eliminates oxidation of steel reinforcement
 - Inside the concrete matrix
 - Exposed steel reinforcement in cracked concrete
- ◆ Water proofs concrete
- ◆ Improved concrete strength
- ◆ Increased tensile strength
- ◆ Increased abrasion resistance
- ◆ Requires no additional Chemical Curing
- ◆ 58% reduction of Alkaline Silica Re- action (ASR)
- ◆ Effective in reducing:
 - Corrosion of unexposed & exposed steel reinforcement
 - Plastic & Drying shrinkage cracking
 - Efflorescence
 - Freeze-thaw spalling
 - Delamination
 - Slab curl

TECHNICAL AND PRODUCT DATA

- ◆ Appearance: Translucent
- ◆ Odor: None
- ◆ Toxicity: None
- ◆ Flammability: None
- ◆ Ph: Alkaline
- ◆ Shelf Life: 1 year
- ◆ Freeze Temp: 32 F°/ 0 C°
- ◆ Storage Temp: 35 F° Min/ 1.7 C°
- ◆ Solvent: None. Water base
- ◆ Hazardous Vapors: None
- ◆ Capillary Break: Calcium Silicate Hydrate (C-S-H)
- ◆ Packaging: 330 US Gallon Totes, 275 US Gallon Totes, 55 Gallon Drums, 5 Gallon Pails

ASTM	Title	Results
C-494/C-494M	Standard Specification for Chemical Admixtures for Concrete	Pass
NSF-61	Approval Testing for use with Potable Drinking Water	Pass
C-39/C-39M	Test Method for Compressive Strength of Cylindrical Concrete	2.1-.5% Increase over Control-28 days
C-78	Test Method for Flexural Strength of Concrete (Using Simple Beam with	4-1% Increase over Control-28 days
C-138/C-138M	Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete	1% Decrease over control-28 days
C-143/C-143M	Test Method for Slump of Hydraulic-Cement Concrete	0% Change against Control
C-157/C-157M	Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete	-0.021% Avg 3 Tests
C-231	Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method	0.3% Increase over Control
C-403/C-403M	Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance	Initial set Vapor Lock decreased setting time by 1 minute
C-403/C-403M	Test Method for Time of Setting of Concrete Mixtures by Penetration Resistance	Final set Vapor Lock decreased setting time by
C-666/C-666M	Test Method for Resistance of Concrete to Rapid Freezing and	1.1% Improved Durability Factor over Control
D-5084	Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter	40% Increase Over other WVRA Products
D-5084	Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter	500% Increase over Crystalline Growth Admixture
D-5084	Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter	1,000% Increase Over Control
D-7102-06	Standard Test Method for determining the adhesive and cohesive	Pass

Report of Results for Concrete Permeability Testing

Product: Vapor Lock Testing Program

TEC Services Project No: TEC

16-1345 TEC Services Laboratory No: 17-124

Table 1 – Concrete Theoretical Mix Designs and Plastic Properties

MATERIAL		Mix Proportions (lbs/yds)		
		17-124-C (Control Mix)	17-124-V (Vapor Lock)	17-124-E (Other)
Lehigh Type I/II Cement		611	611	611
Vulcan – Lithonia Quarry #57		1,720	1,720	1,720
Lambert Sand		1,248	1,248	1,248
Water		324	321	320
Total		3,903	3,900	3,899
Designed Air Content (%)		2.0	2.0	2.0
Designed Unit Weight (pcf)		144.56	144.43	144.41
Admixtures	Gs	Admixture Dosage		
Vapor Lock™ (oz/yd)	1.085	-	61.1	-
Other (oz/yd)	0.7	-	-	64.6
Plastic Properties				
Slump (inches)		3½	4	4
Unit Weight (pcf)		146.5	145.5	145.5
Air Content (%)		0.7	1.3	1.2

Table 2 – Results Summary of CRD-C 48-92 Water Permeability Testing

	17-124-C (Control Mix)	17-124-V (Vapor Lock)	17-124-E (Other)
Specimen Set ID			
Age at time of Testing (days)	28	28	28
Test Duration (days)	28	28	28
Diameter (in.)	6.00	6.00	6.00
Length (in.)	6.00	6.00	6.00
Flow Rate for Last 5 Days of Testing (ft3/sec)	0.365	0.222	0.287
Water Permeability (ft3/sec)/ft2 (ft head/ft)	1.99E-11	1.21E-11	1.56E-11
Total Change in Volume of Water based on Readings (cm3)	199.50	94.97	168.31
Total Volume of Water Passed through Specimen (cm3)	0	0	0

Report of Results for Concrete Permeability Testing *cont'd*

Table 3 – Results of CRD-C 48-92 Water Permeability Testing of the Control Mix

Specimen Set ID	17-124-C1	17-124-C2	Average
Age at time of Testing (days)	28	28	28
Test Duration (days)	28	28	28
Diameter (in.)	6.00	6.00	6.00
Length (in.)	6.00	6.00	6.00
Flow Rate for Last 5 Days of Testing	0.314	0.416	0.365
Water Permeability (ft ³ /sec)/ft ² (ft head/ft)	1.71 E-11	2.27 E-11	1.99 E-11
Total Change in Volume of Water based on Readings (cm ³)	119.81	279.19	199.50
Total Volume of Water Passed through Specimen (cm ³)	0	0	0

Table 4 – Results of CRD-C 48-92 Water Permeability Testing of the Vapor Lock

Specimen Set ID	17-124-V1	17-124-V2	Average
Age at time of Testing (days)	28	28	28
Test Duration (days)	28	28	28
Diameter (in.)	6.00	6.00	6.00
Length (in.)	6.00	6.00	6.00
Flow Rate for Last 5 Days of Testing (ft ³ /sec):	0.172	0.271	0.222
Water Permeability (ft ³ /sec)/ft ² (ft head/ft):	9.40 E-12	1.48 E-11	1.21 E-11
Total Change in Volume of Water based on Readings (cm ³)	74.05	115.89	94.97
Total Volume of Water Passed through Specimen (cm ³)	0	0	0

Report of Results for Concrete Permeability Testing *cont'd*

Table 5 – Results of CRD-C 48-92 Water Permeability Testing of the Other Mix

Specimen Set ID	17-124-E1	17-124-E2	Average
Age at time of Testing (days)	28	28	28
Test Duration (days)	28	28	28
Diameter (in.)	6.00	6.00	6.00
Length (in.)	6.00	6.00	6.00
Flow Rate for Last 5 Days of Testing (ft ³ /sec):	0.348	0.225	0.287
Water Permeability (ft ³ /sec)/ft ² (ft head/ft):	1.90 E-11	1.23 E-11	1.56 E-11
Total Change in Volume of Water based on Readings (cm ³)	238.83	97.79	168.31
Total Volume of Water Passed through Specimen (cm ³)	0	0	0

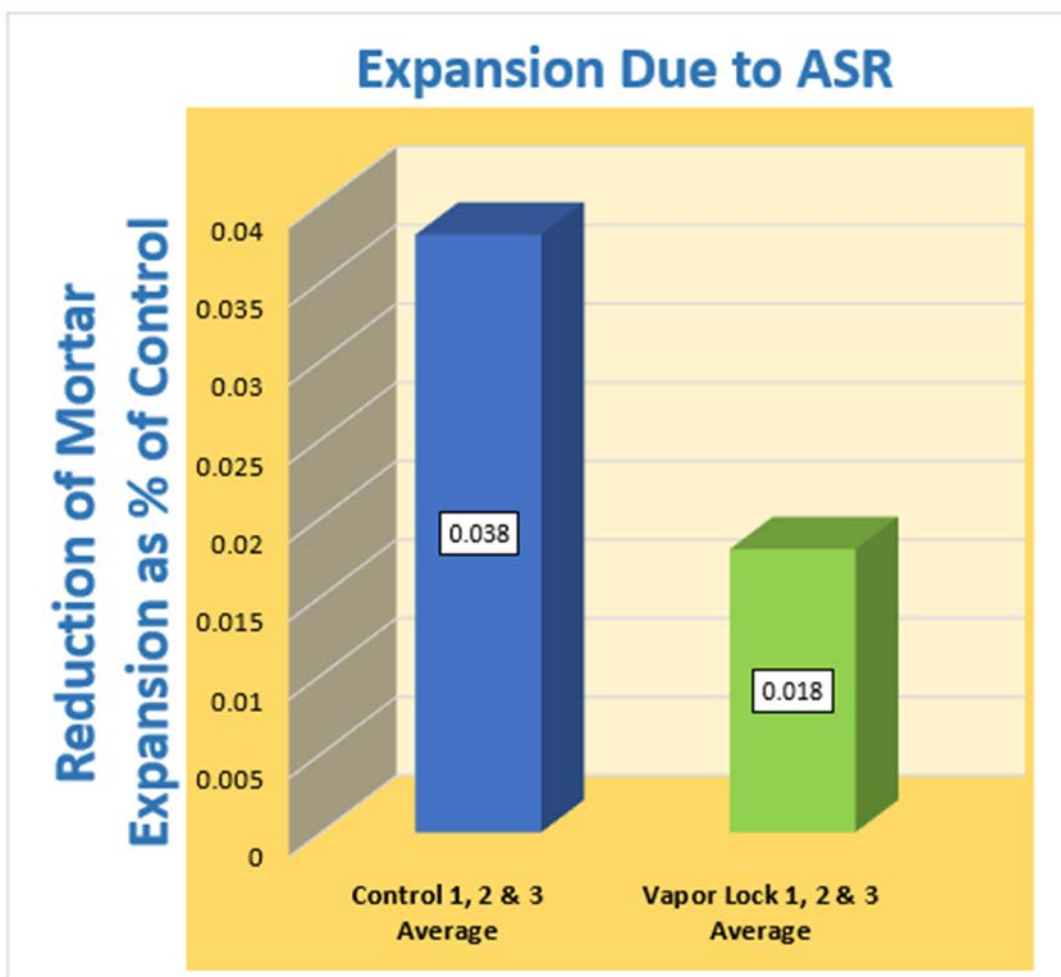
Report for Vapor Lock ASTM C441 Testing TEC Services
Project No: TEC 16-1345 TEC Services Laboratory No: 17-124

Table 1 – C441 Mix Proportions

Material	Control	Vapor Lock
Buzzi Cement	400	400
Vapor Lock	0	0.26
Graded Pyrex Glass	900	900
Water	217	218
Flow (100-115%)	103	100

Table 2 – Expansion Due to ASR Test Results (%)

	Length (inches)		Length Change (%)
	Initial	14 Days	
Control 1	0.0536	0.0576	0.04
Control 2	0.0640	0.0678	0.04
Control 3	0.0655	0.0679	0.028
Average			0.03
17-124- IVL	0.0724	0.0740	0.02
I 7-124-2VL	0.0665	0.0677	0.01
17-124-3VL	0.0600	0.0614	0.01
Reference	0.0438	0.0434	---
Average			0.01
Reduction of Mortar Expansion as % of Control			52.6



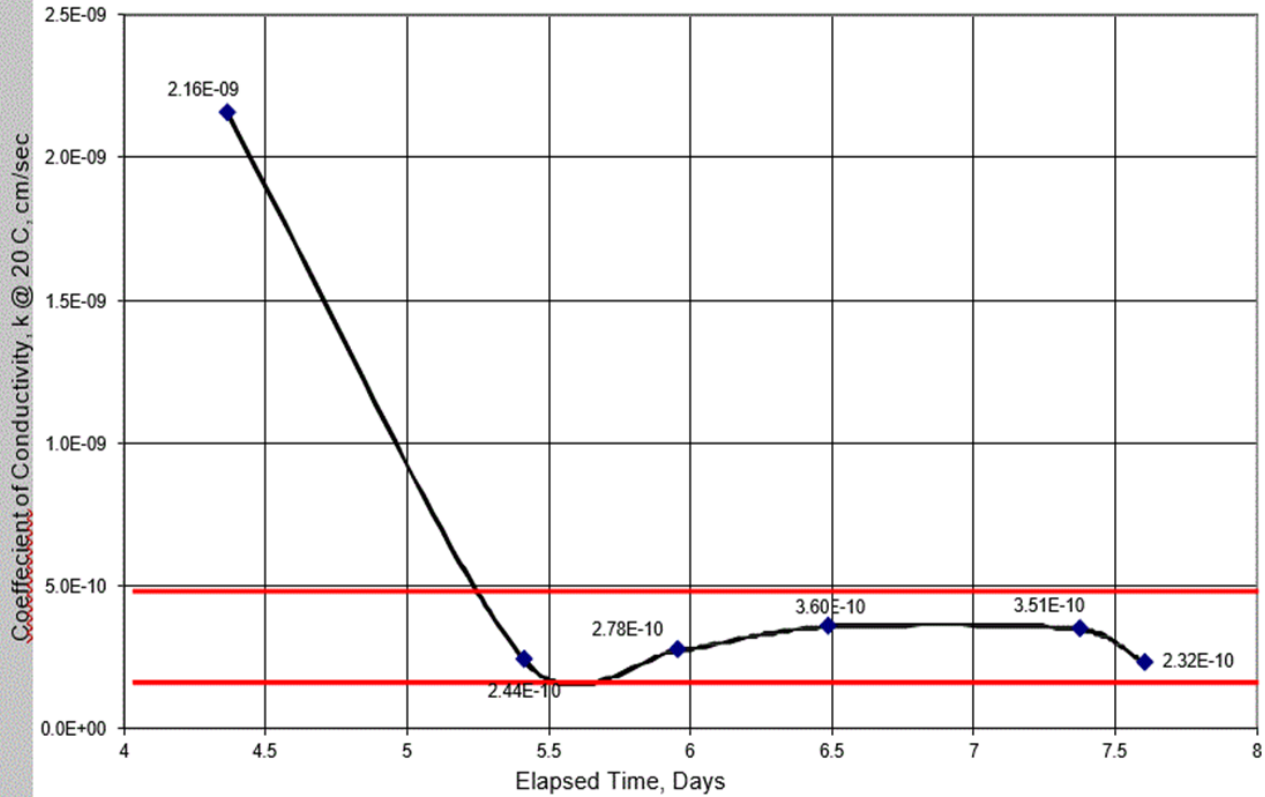
Rapid Chloride Permeability in accordance with Carbonate Silicate (CSA) A23.2-23C Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration

Test Results are provided in the table below

Concrete Mix Information							Charge Passed in 6 hours (coulombs)	Age at Test (days)
ID No.	Mix Code	Date Cast	Design Strength (MPa)	Air Content (%)	Slump (mm)	Cement Type		
2421	612401	Fe 1	35	5.8	85	GU	1045	68
2422		7/16					1071	91

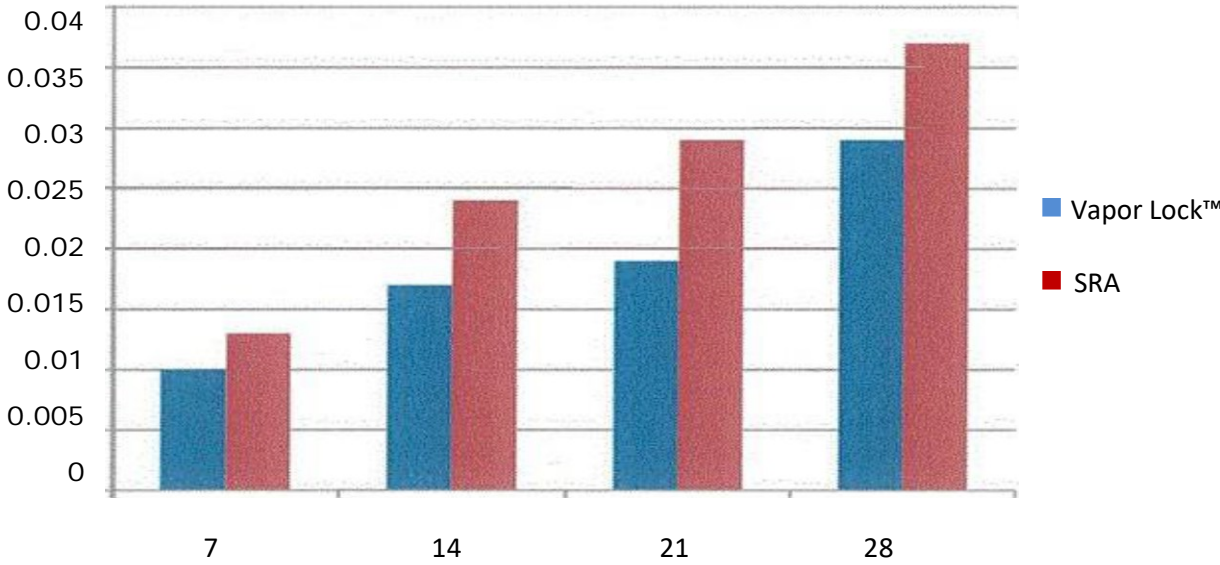
	07/02/16	07/09/16	07/16/16	07/23/16
Mix Design	Ave. 7 days in Air Storage	Ave. 14 days in Air Storage	Ave. 21 days in Air Storage	Ave. 28 days in Air Storage
RRM0938 with Vapor Lock™	0.010%	0.017%	0.019%	0.029%
RRM0938 with no Vapor Lock™	0.013%	0.024%	0.029%	0.037%

D5084 Testing		
Sample Location	Sample Description	Mix Design
Roof Level Suspended Slab	Concrete cylinder with Vapor Lock	V6000PT2

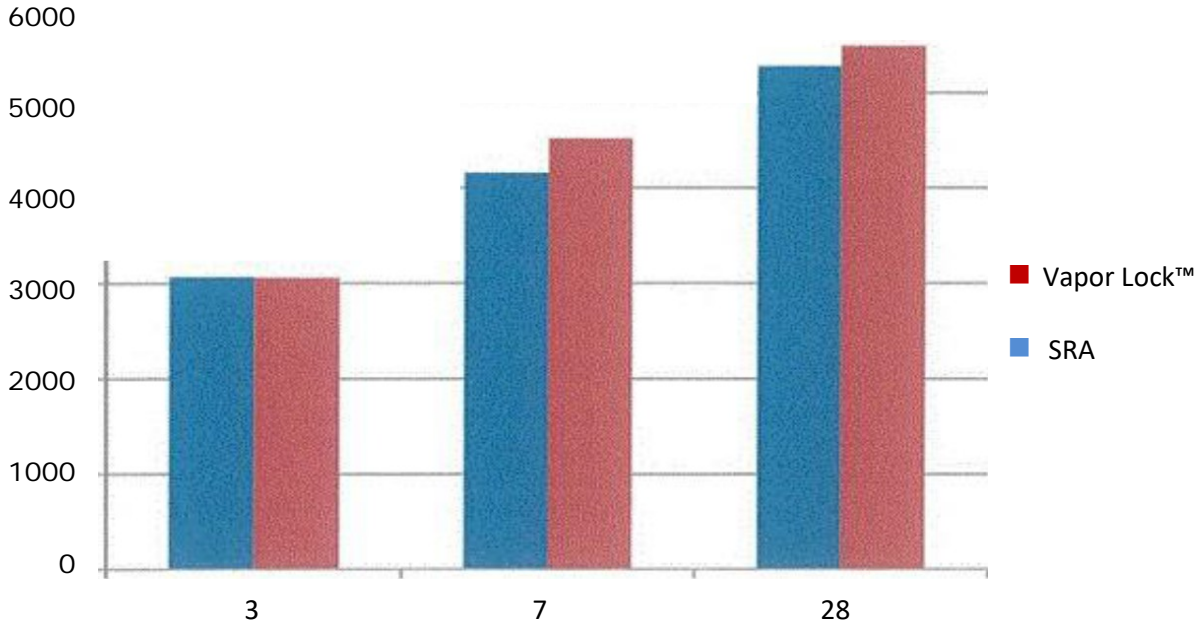


Sample Preparation		Test Conditions		Coefficient of Conductivity, k@20C, cm/sec
SSD Density (pcf)	150.0	Cell Pressure (psi):	115.0	Average of last 4 test cycles
Diameter (in.)	4.004	Back Pressure (psi):	95.0	
Sample Height (in.)	2.048	B-value:	0.95	3.20E-10
		Consol. stress (psi):	20.0	
		Hydraulic Gradient:	143.8	
		Pressure Head (psi):	10.0	
		Start temperature (°C):	21.1	
		End temperature (°C):	21.7	

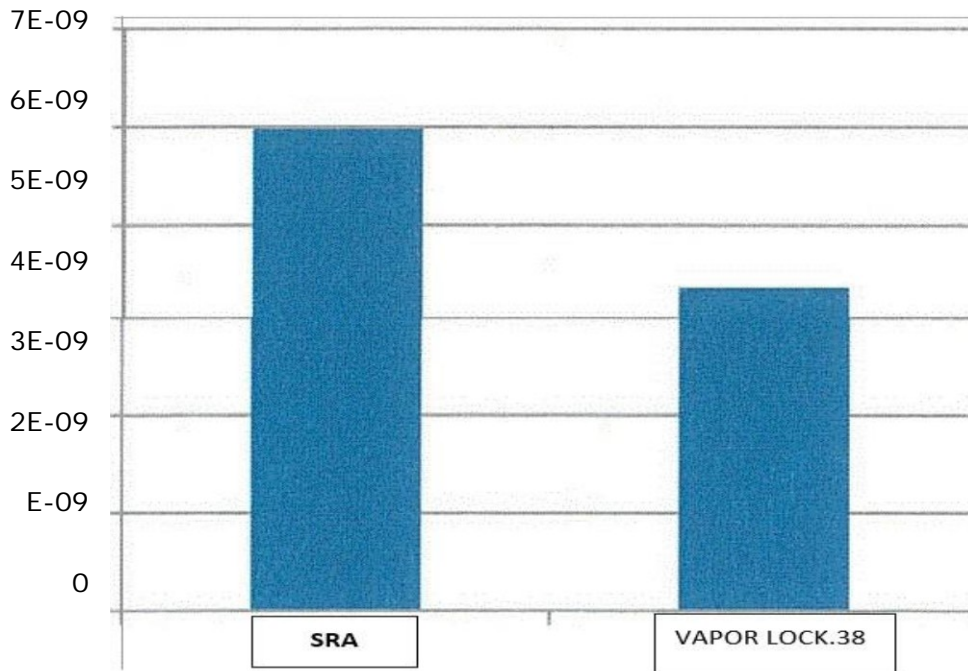
Shrinkage compared with SRA & Vapor Lock™ shows an average 27% decrease in shrinkage when using Vapor Lock™



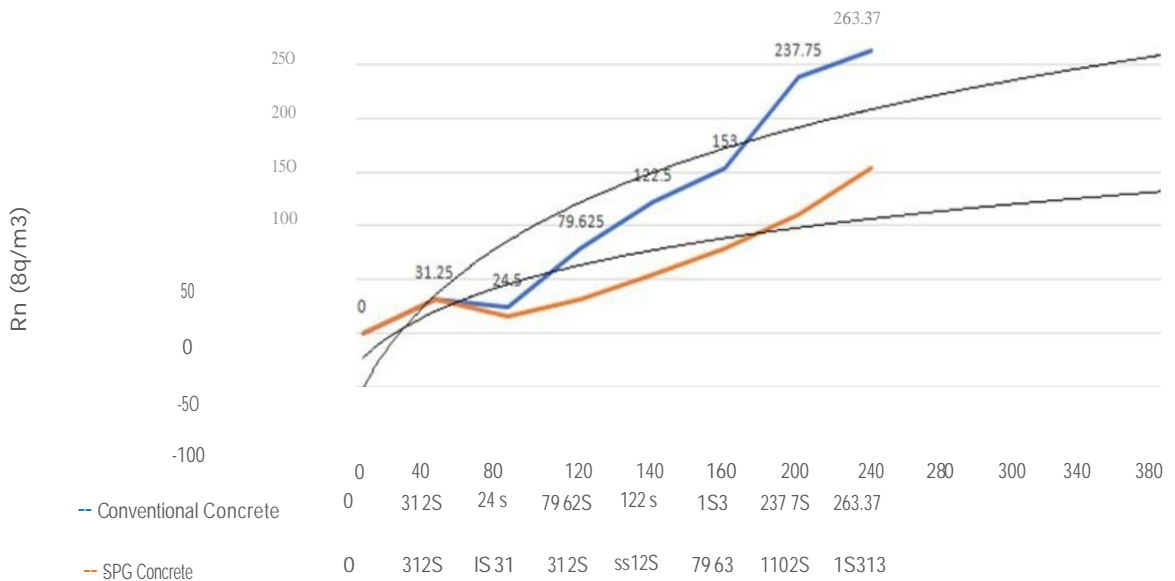
Strength testing shows Vapor Lock™ increased strength by an average 4%



D5084 Test Results



Radon Concentration in Receiving Compartment



0	40	80	120	140	160	200	240	280	300	340	380

APPLICATION INSTRUCTIONS

Normal or lightweight concrete- Vapor Lock 40/40™ is dosed at 10 ounces per 100 weight of cementitious materials and should be added with the head water. SPG will examine and approve all mix designs.

This dose needs to be accurate to minus 0% plus 3%. Vapor Lock 40/40™ must be administered by a concrete ready-mix provider or professional that is Certified by SPG to work with this material and is aware of and follows all the protocols established by SPG.

SPECIAL HANDLING

Discard any frozen or separated, visually observable, product.

SAFETY

Please refer to SDS at www.spgGoGreen.com or contact SPG.

WARRANTY DISCLAIMER

The information herein is to assist customers in determining whether our products are suitable for their application. Our products are intended for sale to industrial and commercial customers. We request that customers inspect and test our products before use and satisfy themselves as to the contents and suitability. We warrant that our products will meet our written specifications. Nothing herein shall constitute a warranty expressed or implied, including any warranty of merchantability or fitness, nor is protection from any loss or patent to be inferred. The exclusive remedy for all proven claims is replacement of our materials and in no event shall we be liable for special, incidental or consequential damages.