

ANQUAMINE[®] 701

Curing Agent

DESCRIPTION

Anquamine 701 is a water-based epoxy curing agent that lets you create unique microporous systems that are breathable and water vapor permeable preventing delamination and blistering. This means floors can be laid and returned to service quickly, without the extra costs involved with reducing moisture content of the concrete. It is based on a polymeric emulsion and, as a result, provides superior performance for a wide range of applications. It has been developed primarily for use with liquid epoxy resins, out-performing solid resin emulsion-based systems by offering the capability to formulate systems with zero VOC and without resin emulsifiers.

TYPICAL PROPERTIES

Property	Value	Unit	Method
Appearance	Opaque Yellow Emulsion		
Viscosity @ 77°F	5,000-10,000	cPs	
Amine Value	130-165	mg KOH/g	
Specific Gravity @ 77°F	1.08		
Equivalent Wt/(H)	300		
Total Solids Content	53-57	wt %	
Recommended Use Level	140-170	phr	EEW 190

ADVANTAGES

- Flooring systems with high permeability— 100 times greater than typical cycloaliphatic-based systems
- Excellent adhesion to green concrete after only 24 Hours of cure
- Very fast film drying with liquid epoxy, and fast throughcure even at low temperatures (down to 5°C)
- Visible end of pot-life as evidenced by a rapid increase in viscosity
- Low viscosity
- Low-cost systems based on high filler levels, particularly in flooring applications
- Very low free-amine content
- Very good early water resistance
- Temperature and shear-stable

SHELF LIFE

At least 24 months from the date of manufacture in the original sealed container at ambient temperature. Store away from excessive heat and humidity in tightly closed containers. Do not freeze.

STORAGE AND HANDLING

Refer to the Safety Data Sheet on Anquamine 701 curing Agent.

TYPICAL CURE SCHEDULE

7 days at ambient temperature.

TYPICAL HANDLING PROPERTIES*

Property	Value	Unit	Method
Pot Life	2-5		(EEW=190)
Dry Time			
Phase 1	0.75	h	BK Recorder
Phase 2	4.00	h	BK Recorder
Phase 3	6.50	h	BK Recorder
Persoz Hardness @ 24 hours	200		
@ 7 days	350		

* Anquamine 701 curing agent with standard Bisphenol-A based (DGEBA, EEW=190) epoxy resin.

ANQUAMINE® 701 SELF-LEVELING FLOOR STARTING POINT FORMULATION

Nb.	A Side	Pounds	Gallons	Supplier
1.	Anquamine 701	11.00	1.20	Evonik
2.	Anquamine 401	2.50	0.27	Evonik
3.	Byk 045	0.70	0.08	Byk Chemie
4.	TiPure R-960 (TiO ₂)	3.80	0.11	DuPont
5.	DI Water	9.10	1.09	—
6.	Cimbar 325	36.00	1.01	Cimbar
7.	Sil-Co-Sil 63	18.00	0.82	US Silica
8.	Quartz Sand [F-110] (150μ)	9.20	0.42	US Silica
9.	Quartz Sand [#1 Dry] (300μ)	9.30	0.42	US Silica
10.	Xanthan Gum FN (3% water)	0.40	0.005	VL Clark Chemicals
	Total A Side	100.00	5.47	
B Side				
1.	Epoxy (EEW = 190)	10.00	1.03	Various
	Total B Side	10.00	1.03	
	Total	110.00	6.51	

FORMULATING PROPERTIES

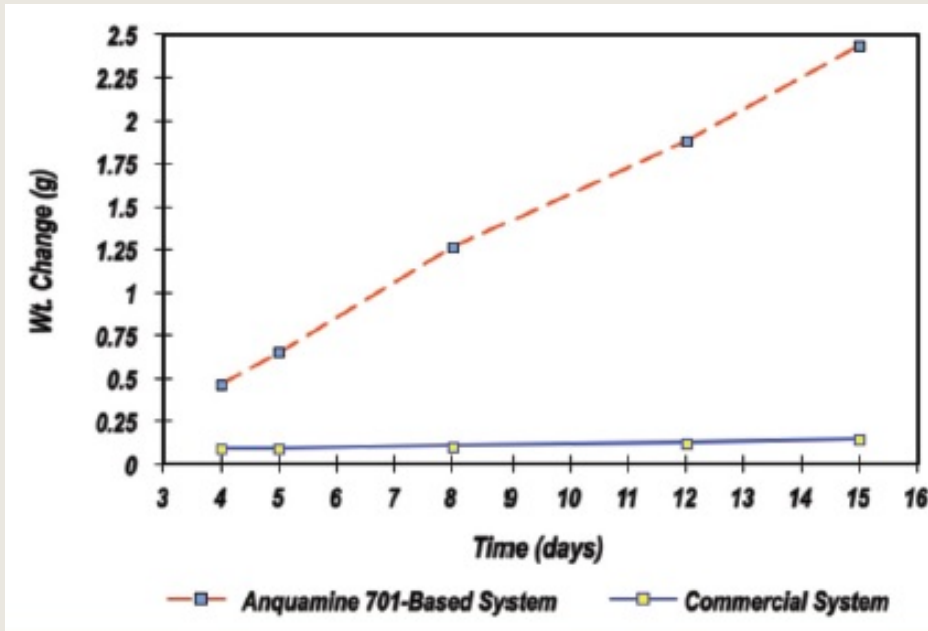
Property	Value	Unit	Method
VOC	0.0	lb/gal	
Volume Solids	70.6	%	
PVC	60.7	%	
Weight/gallon, A Side	18.26		
Weight/gallon, B Side	9.70		
Weight/gallon (admix)	16.90		
Handling Time @ 75°F	45	min	
Volume Shrinkage (max)	<5%	%	
Water Content	15.0	wt %	
Filler: Binder Ratio	4:2:1		

PERFORMANCE PROPERTIES

Property	Value	Unit	Method
Water Vapor Permeability	0.15 perm in.		
Hardness (Shore D) (1 day)	70		
Hardness (Shore D) (14 days)	80		
Flow Out	15.9	cm	
Surface Appearance	Matt		
Coefficient of Friction	0.28		
Abrasion Resistance	156	wt loss	(mg/1000 cycles)
Bond Strength on Concrete	500	psi	

WATER VAPOR TRANSMISSION THROUGH SELF-LEVELING FLOORS

Permeability Measurements ASTM E96-95 (wet cup)



Water Vapor Permeability Self-Leveling Floors

Property	Anquamine 701 System	Cycloaliphatic System
Water Vapor Transmission	9.75×10^{-4}	6.48×10^{-6}
Water Vapor Permeability	6.67×10^{-7}	4.69×10^{-9}

Anquamine 701 Self-Leveling System Permeability: 100x Cycloaliphatic System



IMPACT OF PRIMER AND/OR TOPCOAT ON THE MOISTURE VAPOR TRANSMISSION CAPABILITY OF AN ANQUAMINE 701-BASED SELF-LEVELING FLOOR

Permeable Primer Formulation	Weight %
Epilink® 360	36.7
Deionized Water	18.4
Glacial Acetic Acid	1.5
Ancarez™ 718NC *	31.1
Deionized Water	12.3

Permeable Top Coat Formulation	Weight %
Ancamine 1618	36.1
Ancarez 718NC *	63.9

* Ancarez 718NC is a standard liquid epoxy resin with 18% Epodil® 748 diluent.

- The primer was evaluated at 4 mil DFT.
- The primer was moisture-free prior to subsequent applications.
- The topcoat was evaluated at 4 mil DFT.
- The self-leveling floor formulation was moisture-free prior to application of the topcoat.
- All formulations were evaluated with a 1/8" thick Anquamine 701-based self-leveling floor formulation.

COMMENTS

- The Epilink 360-based primer formulation combined with the self-leveling floor maintained >95% of the moisture vapor transmission capability of the self-leveling floor formulation outlined above.

The Ancamine 1618-based topcoat formulation combined with the Epilink 360-based primer formulation and the selfleveling floor maintained >95% of the moisture vapor transmission capability of the self-leveling floor formulation outlined above.

APPLICATION OF ANQUAMINE 701 SELF-LEVELING FLOOR FORMULATION

ON GREEN CONCRETE: Conventional epoxy flooring and coating formulations for concrete require a 28-day waiting period from the time of the concrete pour to application. The Anquamine 701 development program has demonstrated flooring systems that exhibit excellent bond strength to green concrete, addressing the market demand for a faster return to service and minimal down time.

TEST PROTOCOL: Concrete slabs were poured into forms with a bottom plastic liner. The slabs were finished by 1) Steel trowel*, 2) Broom finish**, and 3) Mild shot blast after three days**. The slabs were cured for 24 hours, the forms were removed, and the sides were sealed with a 100% solids epoxy formulation. The Anquamine 701-based self-leveling formulation (outlined below) was then applied to the top of the slab (application was done in 3 days for the shot blast finish). The bond strength to the concrete slab was tested after 7-day and 30-day cures for the self-leveling floor formulation.



Concrete Formulation 1*

Cement	470 lb
Fly ash	100 lb
Fine Aggregate	1420 lb
Coarse Aggregate	1850 lb
Water	30.8 gal
Admixture	17.1 oz
W/C ratio = 0.45	

Concrete Formulation 2**

Cement	470 lb
Fine Aggregate	1450 lb
Coarse Aggregate	1900 lb
Water	34 gal
W/C ratio = 0.60	

1/8 INCH SELF-LEVELING FLOOR FORMULATION (BY WEIGHT) APPLIED TO GREEN CONCRETE

Anquamine 701	11.0
Anquamine 401	2.5
BYK-045	0.7
TiPure® R-960	3.8
Water	9.1
Cimbar 325	36.0
Sil-Co-Sil 63	18.0
Quartz Sand [F-110] (150m)	9.2
Quartz Sand [#1 dry] (300m)	9.3
Xanthan Gum (3% in water)	0.4
Epoxy Resin (190 EEW)	10.0

BOND STRENGTH RESULTS (PSI)

Property	Concrete Finish		
	Steel Trowel	Broom	Mild Shot Blast
7-Day Formulation Cure			
Concrete Control	—	155	140
Anquamine 701 Self-Leveling Floor	419	300	300
30-Day Formulation Cure			
Concrete Control	—	98	278
Anquamine 701 Self-Leveling Floor	531	385	317

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