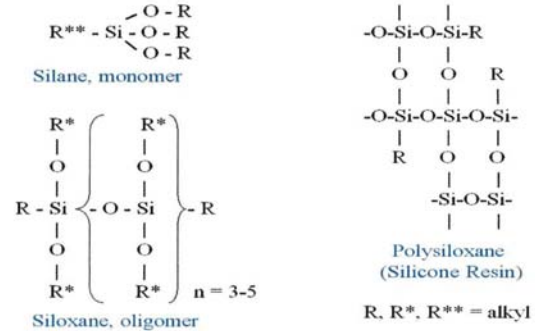


A novel product formulation engineered to provide the highest performance in integral waterproofing protection.

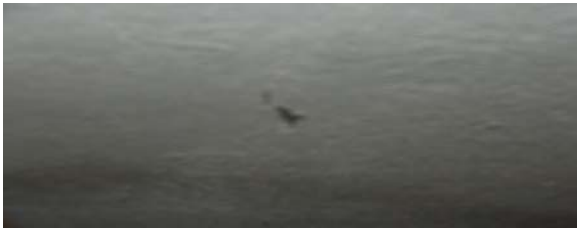
### Product Information

IMRAE is proud to launch **CoatMasters® 9007** Admixture for GFRC integral application providing effective water proofing, increases flexural strength, and densifies film properties upon cure. The results provide long term protection from efflorescence from various salt build-ups for many years.

**CoatMasters® 9007** is a product of novel technology made from new generation of oligomeric silicon emulsions and other trade secret blends (patent pending), designed to protect GFRC from moisture and other type of fluid penetration. All products are compatible with most type of major cementitious mix design compositions.



Sample C (control) after 5 minutes



Sample X crystalline type admixture after 10 minutes



Sample I made CM9007 admixture (after 5-days)

Samples of precasted GFRC panels subjected to 70-lbs head force of water pressure on a ¼ inch thick square foot panels. From top-to-bottom, C-control (no waterproofing admixture); X-control mix design with crystalline water proofing type admixture and I-control mix design with CM 9007 @ 15-ozs/sack. Water penetrations were observed on samples C and X; however, no evidence of penetration was observed on sample I with CM9007 admixture.

The silicones or silanes used in the hydrophobisation of construction or construction materials can be subdivided into three classes.

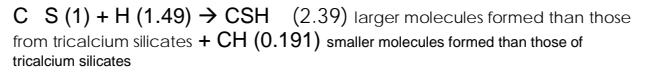
- Monomeric alkyl alkoxy silanes
- Oligomeric alkyl alkoxy siloxanes
- Polymeric siloxanes

### Illustration of standard cement reaction with water (using standard cement chemistry abbreviation)

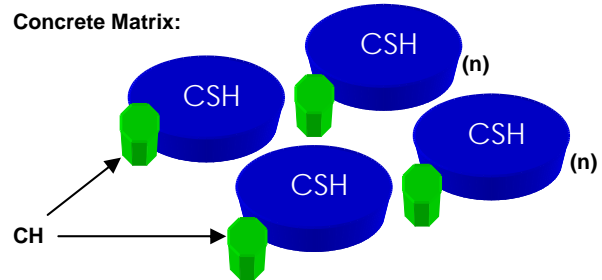
Tricalcium Silicate (50-70% in cement):



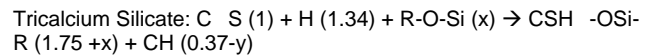
Dicalcium Silicate:



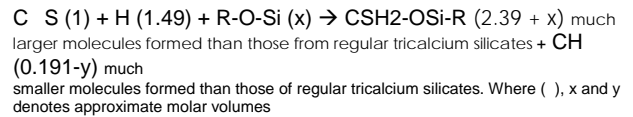
Concrete Matrix:



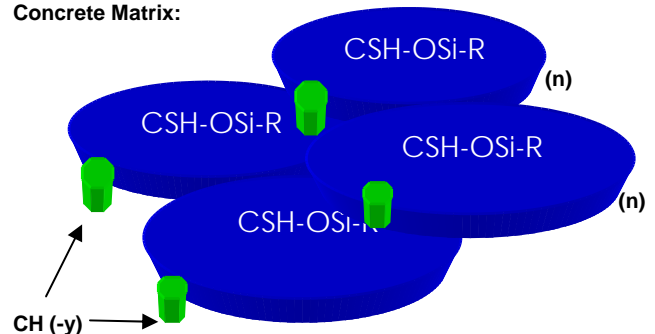
### Integral admixture reaction on hydration of cement



Dicalcium Silicate:



Concrete Matrix:



## Molecular structure determines key properties

The alkylated silicon reacts (R-O-Si) with the amorphous calcium silicate hydrate (CSH) increasing its molecular size, and thus help reduce the molecular size of calcium hydroxides (CH) due to the “further” Ca/Si imbalance. In the concrete matrix the molecular structure of alkylated silicates blocks capillary pores which greatly reduces absorption of water. This creates tiny microscopic voids rendering the matrix breathable for passage only of water vapors.

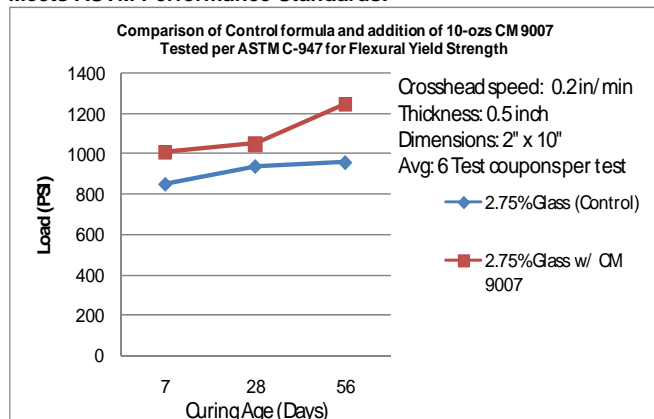
**Environmentally and Regulatory compliant water based system is also FDA compliant. All chemical materials used are verified and listed under CFR (Code of Federal Regulations) to be compliant at its cured state property.**

The use of **CoatMasters® 9007** admixture as an integral part of any cementitious composition totally eliminates the need for any VOC related add-on coating sealers, such as water repellants and acrylic type sealers.

## Resulting performance characteristics on GFRC:

- Eliminates efflorescence effect from cementitious compositions.
- Provides excellent water repellency from water and salt water solutions.
- Reduced salt transmission and chloride ion penetration thus providing additional corrosion protection.
- Excellent freeze thaw stability, and greatly reduces tendency for cracking.
- Maintains natural appearance of any cementitious substrate materials.
- Protects structure from various harmful growths of mosses, fungi, and algae.
- Contributes to the lowering of W/C water to cement mix ratio for increased flexural strengths.
- Improved workability when used with polycarboxylates type plasticizers. **(Note: Decrease in workability time is observed when used with certain type of highly anionic water reducers such as sulfonates, compatibility testing with existing chemical type reducers are highly recommended before planned batch spray-ups).** For questions, and support please contact IMRAE for technical assistance.
- Increases flexural strengths (both yield and ultimate strengths) by at least 200 PSI in 7 and 28-days per ASTM C-947
- Exhibits no gain or loss of surface tension enabling additional coating or texturing requirements if needed.
- Very compatible with recycled mix materials such as pozzolan, and fly ash.

## Meets ASTM Performance Standards:



ASTM C 948-81 – Determines Dry and Wet Bulk Density, Water Absorption, and Apparent Porosity of Thin Sections of Glass-Fiber Reinforced Concrete.

ASTM C-666 Determination of resistance of concrete to rapid freeze thaw cycles and thawing (50 cycles).

ASTM C-1202 Determines the electrical conductance of concrete to provide a rapid indication of its resistance to the penetration of chloride ions.

## Independent Test Lab Results

**AIIE** APPLIED MATERIALS & ENGINEERING, INC.  
580 41st Street, Oakland, CA 94608  
Tel: (510) 420-8190 Fax: (510) 420-8196 e-mail: info@appliedmg.com

**FLEXURAL STRENGTH OF GLASS FIBER REINFORCED CONCRETE**

Project Number: 107617C	Report Date: 09/02/07
Project Name: Production Testing	Type of Sample: GFRC - Plymate
	Test Method: ASTM C 947
	Date Cast: 08/31/07
Client Name: IMRAE Corporation	Date Tested: 09/02/07
	Age, Days: 7

**Test Conditions and Results**

Sample ID: C-EX16A	Bulk Density, pcf: --	ASTM C 948
Glass Content, %: 2.75	Absorption, %: --	ASTM C 948
Sample Conditioning: Wet	Elastic Modulus, psi: --	PCI M94, 130
Test Spec, in: 10		
Crosshead Speed, in/min: 0.2		

**Laboratory Test Results**

SAMPLE NUMBER	WIDTH (in)	DEPTH (in)	FLEXURAL LOAD		FLEXURAL STRENGTH		REMARKS
			YIELD LOAD (lbs)	ULTIMATE LOAD (lbs)	YIELD STRENGTH (psi)	ULTIMATE STRENGTH (psi)	
1.	1.89	0.537	45	55	881	1009	OK
2.	2.02	0.555	56	75	900	1205	OK
3.	1.88	0.519	42	44	829	869	OK
4.	1.85	0.509	41	42	855	876	OK
5.	1.88	0.496	41	46	1004	1127	OK
6.	1.87	0.501	46	48	960	1023	OK
			Average:		908	1018	

Notes: Samples will be discarded 3 days after reporting.

Reviewed by: *Mohammed Faizy*  
Laboratory Manager

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**FLEXURAL STRENGTH OF GLASS FIBER REINFORCED CONCRETE**

Project Number: 107617C	Report Date: 10/02/07
Project Name: Production Testing	Type of Sample: GFRC - Plymate
	Test Method: ASTM C 947
	Date Cast: 08/31/07
Client Name: IMRAE Corporation	Date Tested: 09/02/07
	Age, Days: 28

**Test Conditions and Results**

Sample ID: C-EX16A	Bulk Density, pcf: --	ASTM C 948
Glass Content, %: 2.75	Absorption, %: --	ASTM C 948
Sample Conditioning: Wet	Elastic Modulus, psi: --	PCI M94, 130
Test Spec, in: 10		
Crosshead Speed, in/min: 0.2		

**Laboratory Test Results**

SAMPLE NUMBER	WIDTH (in)	DEPTH (in)	FLEXURAL LOAD		FLEXURAL STRENGTH		REMARKS
			YIELD LOAD (lbs)	ULTIMATE LOAD (lbs)	YIELD STRENGTH (psi)	ULTIMATE STRENGTH (psi)	
1.	1.90	0.491	40	49	873	1070	OK
2.	1.87	0.504	41	42	863	864	OK
3.	1.87	0.454	42	50	904	1242	OK
4.	1.88	0.494	43	52	937	1133	OK
5.	1.89	0.480	39	46	896	1056	OK
6.	1.86	0.488	41	52	926	1174	OK
			Average:		915	1093	

Notes: Samples will be discarded 3 days after reporting.

Reviewed by: *Mohammed Faizy*  
Laboratory Manager

## Physical Properties

### CoatMasters® 9007 Admixture

Appearance: Opaque Milky Liquid

Specific Gravity: 0.985 – 0.990

pH: 8-9

Starting dosage Rate: 5 – 15 fluid oz / sack

### Product Packaging

**CoatMasters® 9007** are available in 1-gallon, 5-gallon, 55-gallon drum, 220-gallon totes, and bulk tanker containers.

### Disclaimer

The information and recommendations made are on our own studies and research that are believed to be accurate. However, no guarantee of their accuracy is given mainly due to various variations caused by actual application, formulation, and substrate conditions of the material used. The customer must conduct its appropriate testing to ensure compatibility, and suitability for all its intended use.