- ***Product Overview***

duoMatrix –C[tm] is new polymer additive that enhances the physical and performance properties of cementitious materials such as portland cements and mortars. **duo-Matrix-C**[tm] **(Matrix-C**[tm] **for short)** eliminates the need for the usual 7-day post cure. It drastically reduces water and salt absorption and fills in micro cracks to minimize crack propagation. Other performance characteristics include greatly enhanced freeze/thaw, ultra-violet, and chemical resistance. Higher flexural strength reduces brittleness.

Matrix-G[tm] is available to enhance the performance of alpha-gypsums.

Matrix-C[tm] is easy to use and can be introduced to any aggregate mix. It is usually cast solid or mixed with chopped fiber and sprayed. **Matrix-C**[tm] can be pigmented and improves color uniformity.

Matrix–C[tm] will improve processing of GFRC, making architectural elements and concrete castings (ornamental, etc.) more durable.

- ***Technical Overview***

Matrix-C[tm] is a one component latex additive for cementitious materials. When added in the proper proportions, **Matrix-C** enhances the physical and performance properties of concrete.

duoMatrix–C[tm] **Mix Ratio for GFRC**:

Pot Life: 45-90 min
Demold: 16 hrs.

	PRE-MIX:	**SPRAY UP:**
Type I cement:	100 parts	100 parts
Sand	80 parts	100 parts
Matrix-C	15 parts	15 parts
Water	23 parts	23 parts
A-R Glass	6 parts	10 parts

Pot Life and Demold times can be reduced or extended with addition of an accelerator or retarder. See "Accelerating and Extending" portions of technical bulletin.

Density: 100-130 pcf
Tensile Strength: up to 900 psi
Freeze thaw Resistance: Excellent (over 300 cycles)
Compressive Strength: up to 13,000 psi
Flexural Strength: up to 5,000 psi
Permeability : 1200 coulombs

Maximum values attained after 28-day cure.

- ***Preparation***

Environment - Materials should be stored and used in a warm environment (72° F / 23° C). Colder temperatures will slow the working/cure time, while warmer temperatures will reduce working times. Freezing of latex will render it useless.

Mold Preparation - When solid casting **Matrix-C**[tm] into a rubber mold, rinse the mold with solution with any standard concrete release agent prior to each casting. This will help minimize air bubbles, facilitate demold, reduce build-up during production and give longer mold life.

- ***Preparation – Required Materials***

Assemble all components and accessories before you begin. You will need:

- Portland Cement-Type 1 (White or Gray)
- **Matrix-C**[tm]
- Water
- A-R Chopped Strand * - ½" or ¾". (Do not use E Glass)
- Mixing Containers
- Weighing Scale (Digital Gram or Triple Beam Balance)

- Silica Sand (fine grade – 00 Size) Mechanical / Power Mixer (Jiffy Mixer)
- NIOSH Approved Dust Mask * Available from TCS, Inc

- ***Measuring Proportions – GFRC Mix Pre-Mix For Casting***

To minimize dust inhalation, we recommend that you **wear a NIOSH approved dust mask** while weighing and mixing components. **Weigh materials in proper proportion as accurately as possible.**

Component amounts will vary depending on the size of the batch you are making. Standard mixing proportions:

Parts By Weight

Portland Cement	+ Sand	+ Fiber	= **Mix Thoroughly**	+ Water	+ **Matrix C^{tm}**	Working Time*	Demold
100	80	6	Mix	23	15	90 minutes	16 hrs.
Example:							
100 lbs.	80 lbs.	6 lbs.	Mix	23 lbs.	15 lbs.		
45.36 kgs.	36.29	2.73 kgs.	Mix	10.44 kgs.	6.8 kgs.	-	-

- ***Mixing Components In Sequence*** **Important: Components must be mixed in proper sequence**. A power mixer should be used to mix all components.

Step 1 – Combine All Dry Ingredients Before Adding Liquid Latex

Combine cement, sand & fiber into a suitable size-mixing container (If adding dry pigments or other additives, blend with dry components before adding water and **Matrix-C^{tm}**). Mix dry components thoroughly with mixing paddle, power mixer, etc. until well blended.

Note: For convenience and future use, large amounts of dry powder components can be pre-mixed and stored in a clean, dry, airtight container.

Step 2 – Shake or Stir Matrix-C^{tm} Well, And Add Required Amount

***Be Sure To Shake or Stir* Matrix-C^{tm}**

Pre-mix **Matrix-C^{tm}** with power mixer. Add required amount of **Ctm-C^{tm}** and water by weight and mix all components with a power mixer until all dry powder components are thoroughly dispersed (minimum 90 seconds).

- ***Optional – For Better Flow, Add A Plasticizer . . .*** A plasticizer can be added to the mixture to improve the flow and reduce air bubbles. Sikament 10 (available from Sika Corp.) or Daracem 19 (available from WR Grace & Co.) is available worldwide and will work well with the **Matrix -C** aggregate. Add 8 oz. (237 ml) of plasticizer per 100 lbs. (46 kgs.) Portland cement and mix as directed above.

- ***To Reduce Entrapped Air . . .***

Pouring . . . Pour mixture in a single spot at the lowest point of mold, and let mixture seek its level.

Vibrating . . . After pouring, vibrate mold using a vibrating table or pass-vibrating wand through mixture.

- ***Curing . . .*** Let cure at room temperature for 16 hours before demolding. Colder temperatures will slow the curing process. Do not cure in temperatures below 32°F / 0°C. Warmer temperatures will accelerate the curing process. If curing at temperatures above 105°F / 32°C, castings should be covered to prevent pre-mature evaporation. This could result in surface shrinkage and cracking.

- ***Accelerating Or Slowing* Matrix-C^{tm}** Accelerating or slowing the cure of **Matrix-C^{tm}** may be achieved with conventional ad mixtures (such as Daraccel accelerator or Daratard 17 retarder from WR Grace. Sika Rapid 1 accelerator or Plastiment retarder is also suitable).

- ***Measuring Proportions / GFRC Spray*** For making large architectural panels or for covering large areas, **Matrix-C^{tm}** can be sprayed using standard spray equipment (normally used to spray cementitious materials). **Matrix-C^{tm}** is applied in 2 steps. It is mixed as directed below and is then poured into the spray gun "hopper" where it is forced through the spray equipment and out the spray nozzle. For information about spray equipment, contact duoMatrix, Inc.

To minimize dust inhalation, we recommend that you **wear a NIOSH approved dust mask** while weighing and mixing components. **Weigh materials in proper proportion as accurately as possible.**

Step 1. Apply A Surface Coat Without Fiber. Mix as indicated below WITHOUT FIBER and spray mold surface.

Step 2. Immediately follow with Fiber Mix Coat as indicated below.

Parts By Weight

Portland Cement	+	Sand	+	Fiber	=	**Mix Thoroughly**	+	Water	+	**Matrix C^{tm}**	Working Time*	Demold
100		100		10		Mix		23		15	90 minutes	16 hrs.
Example:												
100 lbs.		100 lbs.		10 lbs.		Mix		23 lbs.		15 lbs.		
45.36 kgs.		45.36		4.54 kgs.		Mix		10.44 lbs.		6.8 kgs.	-	-

- ***Adding Color . . .*** Standard concrete powder pigments can be added at any time during the mix. Experimentation may be required to achieve desired colors

Call Us Anytime With Questions About Your Application.

Phone: (212) 367-7561 Fax: (212) 243-6374

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