



# HYDRA MATICX™ SERIES

High-Performance Hydraulic Erosion Control Products



## HYDRACX<sup>2</sup>™

Extreme Slope Matrix™

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## HYDRACM™

Steep Slope Matrix™



Developed in cooperation with Cotton Incorporated and the USDA.

# HydraMatriCx™ Series

High-Performance Hydraulic Erosion Control Products



HydraMatriCx™ Series high-performance hydraulic erosion control products are made with a proprietary blend of straw, reclaimed cotton plant material, tackifiers, and polymers.

This exciting line of products from North American Green was developed in cooperation with Cotton Incorporated and the U.S. Department of Agriculture.

## Consider the benefits of HydraMatriCx Series products:

- Cost-effective application
- Low water-to-mulch ratio
- One-step application of seed, fertilizer, and mulch
- No synthetic fibers
- Pleasing, deep-green color

In many slope-protection applications, HydraMatriCx products can replace temporary erosion control blankets.



## HYDRACX<sup>2</sup>

HydraCX<sup>2</sup>™ Extreme Slope Matrix™ is a high-performance hydraulic mulch designed especially for steep to severe slopes, 2:1 to 1:1.

## HYDRACM

HydraCM™ Steep Slope Matrix™ is a high-performance hydraulic mulch designed especially for medium-length, moderate to steep slopes, 4:1 to 3:1.

## HydraCX<sup>2</sup>: Proven Performance

The porosity, absorbency, and proprietary blend of tackifiers and polymers of HydraCX<sup>2</sup> deliver exceptional erosion control and fast vegetation establishment.

### San Diego State University Slope Testing

Cover Factor (2, 4, and 6 inches/hour event, 20-minute-duration events)	ASTM D 6459*	0.002*
Percent Effectiveness	ASTM D 6459*	99.8%*
Vegetation Establishment	ECTC Test Method #4	500%

\*Modified ASTM D 6459 (Standard Test Method for Determination of Erosion Control Blanket (ECB) Performance in Protecting Hillslopes from Rainfall-Induced Erosion) conducted by the Soil Erosion Research Laboratory (SERL) at San Diego State University in December 2007. Test beds utilized by SERL measure 2 m x 8 m. Target application rate was 3,500 pounds per acre.

To push HydraCX<sup>2</sup> to its performance extremes, one of the test beds received an extended rain event:

Slope	Rainfall	Duration	Extended Intensity	Extended Duration
3H:1V	2, 4, and 6 inches per hour	20 minutes	6 inches per hour	60 minutes

This extended rain event totaled 10 inches of rain over a two-hour time period (an average of 5 inches of rain per hour). The data from this event showed that HydraCX<sup>2</sup> can reduce sediment loss by as much as 99.7% compared to a non-protected plot.

### TRI/Environmental Slope Testing

ASTM D 6459†			
Cover Factor	Rainfall	Duration	Percent Effectiveness
0.004	2, 4, and 6 inches per hour	20 minutes	99.6%

†Testing pursuant to ASTM D 6459 (Standard Test Method for Determination of Erosion Control Blanket (ECB) Performance in Protecting Hillslopes from Rainfall-Induced Erosion) was conducted by TRI/Environmental, Inc. The test used two plots on a 3H:1V slope gradient with an application rate of 4,000 pounds per acre. The plots used were 8 feet wide by 40 feet long. Raindrop sizes varied as a function of rainfall intensity. Wind speeds were maintained below 3 miles per hour. Rainfall height was a minimum of 15 feet. Each of the plots received an average rainfall of 2.2 inches per hour, 4.75 inches per hour, and 6.5 inches per hour for 20-minute durations. The average sediment loss for both plots was less than 2 pounds each. HydraCX<sup>2</sup> was determined to be 99.6% effective, with a C factor of 0.004.

HydraMatriCx Series products achieve maximum performance once the matrix has dried.



## Cost-Effective Application

- One-step application
- Low water-to-mulch ratio
- Ready to agitate instantly
- Uses convenient, spray-on technology
- Easy to clean up



## Low Water-to-Mulch Ratio

HydraCX<sup>2</sup> and HydraCM require a maximum of only 100 gallons of water per 50 pounds of mulch. Water-to-mulch ratio is important when you consider the costs of water and the time, labor, and fuel consumption for trips to and from the water source.

## One-Step Application

HydraMatriCx products can be applied in one step together with seed and fertilizer. Contractors will appreciate the convenience and the quick, easy tank loading and one-step application of HydraMatriCx products.

## No Synthetic Fibers

HydraCX<sup>2</sup> and HydraCM contain no synthetic fibers.

In multiple toxicity studies conducted according to EPA-821-R-02-123 Methods for Measuring Acute Toxicity of Effluents, the Ceriodaphnia dubia, Daphnia magna, and Pimephales promelas tests of HydraCX<sup>2</sup> detected no significant toxicity in any of the tests, and control performance criteria were met.

In addition, HydraCX<sup>2</sup> contains beneficial nitrogen, phosphorous, and potassium, nutrients that are important for plant growth.

## Grows Grass Fast

HydraCX<sup>2</sup> enhances seed germination and vegetation establishment. Its natural absorbency holds moisture and promotes seed-to-soil contact and germination, quickly promoting vegetation.

HydraCX<sup>2</sup> has been tested according to ASTM 7322, Determination of Rolled Erosion Control Products (RECP) Ability to Encourage Seed Germination and Plant Growth Under Bench-Scale Conditions. The results concluded that the average plant height was improved by 35 percent in comparison to the control plot. In addition, vegetation establishment was increased by 500 percent.

### Compost Analysis of HydraCX<sup>2</sup> Extreme Slope Matrix

Item	% Dry Basis	% Wet Basis	lbs./100 cu. ft.	lbs./cu. yd.	lbs./ton
lbs./gal.		0.83			
lbs./cu. ft.		6.24	624	168.5	
Total Solids (TS)		86.62			
Moisture		13.38			
Total Nitrogen (TKN)	1.59	1.38	8.61	2.32	27.60
Available Nitrogen	0.54	0.47	2.93	0.79	9.40
Ammonia Nitrogen	0.04	0.03	0.19	0.05	0.60
Available Ammonia	0.02	0.02	0.13	0.03	0.40
Organic Nitrogen	1.55	1.34	8.36	2.26	26.80
Available Organic N	0.52	0.45	2.81	0.76	9.00
Phosphorous (P)	0.20	0.17	1.06	0.29	3.40
Phosphate (P205)	0.46	0.40	2.50	0.67	8.00
Potassium (K)	2.49	2.16	13.48	3.64	43.20
Potash (K20)	2.99	2.59	16.16	4.36	51.80
Calcium (Ca)	0.50	0.43	2.68	0.72	8.60
Carbon: Nitrogen Ratio		29:1			

These analyses are representative samples. Percentages may vary from sample to sample. Calculations are approximate and are not guaranteed.

Unlike some wood-based mulches that may have carbon-to-nitrogen (C:N) ratios of more than 300:1, HydraCX<sup>2</sup> has a carbon-to-nitrogen ratio that is typically less than 40:1. HydraCX<sup>2</sup> requires less nitrogen from the soil for decomposition, leaving more of that nutrient available for plant growth.

### HydraCX<sup>2</sup> Content

- 65% ± 3% Mechanically processed straw
- 25% ± 3% Mechanically processed cotton fibers and byproducts
- 10% ± 1% Proprietary hydrocolloidal tackifiers and activators

### HydraCM Content

- 75% ± 3% Mechanically processed straw
- 15% ± 3% Mechanically processed cotton fibers and byproducts
- 10% ± 1% Proprietary hydrocolloidal tackifiers and activators

## Pleasing, Deep-Green Color

HydraCX<sup>2</sup> and HydraCM have a natural-looking, deep-green color. The color gives a pleasing appearance to the applied HydraMatriCx Series products.

## Award-Winning Hydraulic Erosion Control

HydraCX<sup>2</sup> was recognized by *Better Roads* as one of the Top 50 Rollouts of 2007. The editors reviewed more than 500 new product introductions, and selected HydraCX<sup>2</sup> as one of the 50 with the greatest significance to highway and bridge professionals.

Source: *Better Roads*, December 2007

## Performance Comparison

HydraMatriCx™ Series	High-Performing Wood and Wood/Synthetic Hydromulch
Requires only 100 gallons of water per 50 lbs. of mulch	May require 125 gallons of water per 50 lbs. of mulch
One-step application: seed and additives can be mixed <i>with</i> the product	Two-step application recommended for many wood-based mulches
Mulch fibers naturally separate when unpackaged, ready for agitation	Mulch fibers often remain compressed in a dense block when unpackaged, requiring separation prior to agitation
Contains no synthetic fibers	May contain synthetic fibers
Contains reclaimed cotton plant material	May not contain reclaimed content
Pleasing, natural-looking, deep-green color	Color may be unnatural-looking

## HydraCX<sup>2</sup> and HydraCM Mixing & Application

Consult *Installation and Application Guide* for complete instructions.

### Mixing

1. Consult application and loading charts to determine the proper application rates. Confirm hydraulic mulch loading rates with equipment manufacturer.
2. Fill tank of a mechanically agitated hydroseeding machine with sufficient water to suspend seed and fertilizers.
3. Add all soil amendments (seed, fertilizer, etc.).
4. Continue adding water slowly, while adding HydraMatriCx material (HydraCX<sup>2</sup> or HydraCM) at a steady rate. Mix at a rate of 50 pounds of HydraMatriCx material per 100 gallons of water. All HydraMatriCx material should be in the tank by the time the tank is approximately three-fourths full of water.
5. Agitate for a minimum of 15 minutes after adding the last amount of HydraMatriCx material.
6. For machines with variable-speed agitation, bring agitator to a slow roll while maintaining high RPMs.



### Application

1. Apply HydraMatriCx material in a uniform layer from two opposing directions to ensure complete soil coverage. Irregular surfaces may need slightly higher application rates to obtain adequate coverage.
2. Apply material at the following minimum application rates.

#### HydraCX<sup>2</sup> Minimum Application Rates

SLOPE	APPLICATION RATE
≥1H:1V	4,500 lbs./ac (5,100 kg/ha)
≥2H:1V and <1H:1V	4,000 lbs./ac (4,500 kg/ha)
≥3H:1V and <2H:1V	3,500 lbs./ac (3,900 kg/ha)
<3H:1V	3,000 lbs./ac (3,400 kg/ha)

#### HydraCM Minimum Application Rates

SLOPE	APPLICATION RATE
2H:1V	4,000 lbs./ac (4,500 kg/ha)
≥3H:1V and <2H:1V	3,500 lbs./ac (3,900 kg/ha)
≥4H:1V and <3H:1V	3,000 lbs./ac (3,400 kg/ha)
<4H:1V	2,500 lbs./ac (2,800 kg/ha)

3. Material should not be applied in channels, swales, or other areas where concentrated flows are anticipated, unless installed in conjunction with a temporary erosion control blanket or permanent turf reinforcement mat. HydraMatriCx material may be applied on saturated soils.

### Cleaning and Protection

Clean equipment properly after use of HydraCX<sup>2</sup> or HydraCM to ensure that the material is removed from the pump, tank, and hoses. Clean spills promptly. Do not allow foot traffic or grazing on treated areas until vegetated. Be cautious of slippery surfaces while applying.

Warning: Do not store near an open flame or heat source. Use caution when stacking units.





A *tensar* Company

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