APPENDIX IR396-1 PROPERTIES OF PROMATRIX

ALBERTA TRANSPORTATION SPRINGBANK OFF-STREAM RESERVOIR PROJECT
RESPONSE TO NRCB AND AEP SUPPLEMENTAL INFORMATION REQUEST 1, JULY 28, 2018

Appendix IR396-1 Properties of Promatrix
May 2019

Stantec

Profile
Solutions for your Environment

ProMatrix™
Engineered Fiber Matrix

GREEN DESIGN ENGINEERING™
EARTH-FRIENDLY SOLUTIONS FOR SUSTAINABLE RESULTS

Description

ProMatrix™ Engineered Fiber Matrix™ (EFM™) is 100% biodegradable, made in the United States and is composed of 100% recycled, thermally refined (within a pressurized vessel) virgin wood fibers, crimped interlocking biodegradable fibers, mineral activators and wetting agents (including high-viscosity colloidal polysaccharides, cross-linked biopolymers, and water absorbents). The EFM is phytosanitized, free from plastic netting, and when cured forms an intimate bond with the soil surface to create a continuous, porous, absorbent and flexible erosion resistant blanket that allows for rapid germination and accelerated plant growth. The EFM performs as a Bonded Fiber Matrix (BFM) product and may require a 4-24 hour curing period to achieve maximum performance.

Recommended Applications

- Erosion control for slopes ranging from mild to extreme (≤1H:1V)
- Meets or exceeds performance of bonded fiber matrix (BFM)
- Equivalent performance to most erosion controlled blankets
- Rough graded slopes
- Enhancement of vegetation establishment

Technical Data

Physical Properties*	Test Method	Units	Tested Value
Mass/Unit Area	ASTM D6566[1]	g/m^2 (oz/yd^2)	≥ 390 (11.6)
Thickness	ASTM D6525[1]	mm (in)	≥ 4 (0.16)
Ground Cover	ASTM D6567[1]	%	≥ 98
Water Holding Capacity	ASTM D7367[1]	%	≥ 1,400
Material Color	Observed	n/a	Green
Performance Properties*	**Test Method**	**Units**	**Tested Value**
Cover Factor[2]	Large Scale[4]	n/a	≤ 0.05
Percent Effectiveness[3]	Large Scale[4]	%	≥ 95
Cure Time	Observed	hours	4-24
Vegetation Establishment	ASTM D7322[1]	%	≥ 600
Functional Longevity[5]	ASTM D5338	months	≤ 12
Environmental Properties*	**Test Method**	**Units**	**Tested Value**
Ecotoxicity	EPA 2021.0	%	48-hr LC_{50} > 100%
Biodegradability	ASTM D5338	n/a	Yes
Product Composition			**Typical Value**
Thermally Processed Wood Fibers[6]			77 %
Wetting Agents - including high-viscosity colloidal polysaccharides, cross-linked biopolymers, and water absorbents			18 %
Crimped, Biodegradable Interlocking Fibers derived from plant sugars			2.5 %
Micro-Pore Granules			2.5 %

* When uniformly applied at a rate of 3500 pounds per acre (3900 kilograms/hectare) under laboratory conditions. 1. ASTM test methods developed for Rolled Erosion Control Products that have been modified to accommodate Hydraulic Erosion Control Products. 2. Cover Factor is calculated as soil loss ratio of treated surface versus an untreated control surface. 3. % Effectiveness = One minus Cover Factor multiplied by 100%. 4. Large scale testing conducted at Utah Water Research Laboratory and Texas Transportation Institute. For specific testing information please contact a Profile technical service representative at 800-508-8681 or +1-847-215-1144. 5. Functional Longevity is the estimated time period, based upon field observations, that a material can be anticipated to provide erosion control and agronomic benefits as influenced by composition, as well as site-specific conditions, including; but not limited to temperature, moisture, light conditions, soils, biological activity, vegetative establishment and other environmental factors. 6. Heated to a temperature greater than 380 degrees Fahrenheit (193 degrees Celsius) for 5 minutes at a pressure greater than 50 psi (345 kPa) in order to be Thermally Refined™/Processed and to achieve phytosanitization.

Packaging Data

Properties	Test Method	Units	Value
Bag Weight	Scale	kg (lb)	22.7 (50)
Bags per Pallet	Observed	#	40

UV and weather-resistant plastic bags. Pallets are weather-proof stretch wrapped with UV resistant pallet cover.

Profile Products LLC
750 Lake Cook Road, Ste. 440
Buffalo Grove, IL 60089
800-508-8681 or +1-847-215-1144
www.profileproducts.com

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1 PRODUCT AND COMPANY IDENTIFICATION

Manufacturer

PROFILE Products, LLC
750 LAKE COOK ROAD
SUITE 440
BUFFALO GROVE, IL 60089

Emergency:	Emergency Phone: (800) 424-9300 (ChemTrec
Contact:	ChemTrec Acct #: CCN792719
Phone:	(847) 215-1144
Fax:	(847) 215-0577
Email:	tech@profileproducts.com
Web:	www.profileproducts.com

Product Name:	ProMatrix®
Revision Date:	1/1/17
SDS Number:	CON069
CAS Number:	Not applicable
Product Use:	Erosion control and revegetation mulch for hydraulic seeding

Product Description: Green dyed wood fibers, biodegradable fibers, minerals and a proprietary binder mixture.

2 HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

GHS Classification in Accordance with 29 CFR 1910 (OSHA HCS):

No GHS Classifications Indicated

GHS Label Elements, Including Precautionary Statements

GHS Signal Word: NONE

no GHS pictograms indicated for this product

GHS Hazard Statements:

no GHS hazards statements indicated

GHS Precautionary Statements:

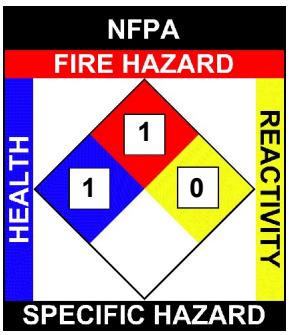
no GHS precautionary statements indicated

Hazards not Otherwise Classified (HNOC) or not Covered by GHS

Route of Entry:	Inhalation, skin contact, eye contact
Inhalation:	Wood may cause sneezing, irritation, and dryness of the nose and throat. Dust may aggravate pre-existing respiratory conditions.
Skin Contact:	Wood dust can cause irritation. Skin absorption is not known to occur.
Eye Contact:	Wood dust can irritate the eyes.
Ingestion:	No reports of human ingestion.

OSHA Classification: Wood dust is a hazardous substance as defined by the Hazard Communication Standard 29CFR 1910.1200

NFPA: Health = 1, Fire = 1, Reactivity = 0, Specific Hazard = n/a



3 COMPOSITION/INFORMATION OF INGREDIENTS

Ingredients:

Cas#	%	Chemical Name
0	Proprietary	Hydrocolloidal Based Polysaccharide Tackifier
9000300	Proprietary	Guar Gum

4 FIRST AID MEASURES

Inhalation: Usually not a problem. Remove to fresh air if respiratory irritation develops, and get medical aid promptly if irritation persists. In high dust levels wear dust mask.

Skin Contact: Usually not a problem. Wash off with running water if irritation is experienced.

Eye Contact: Open eyelids and flush with water.

Ingestion: Get medical attention.

5 FIRE FIGHTING MEASURES

Flammability: Combustible product

Flash Point: Not applicable

Flash Point Method: Not applicable

Autoignition Temp: 200-260°C (400-500°F)

Conditions to avoid: In contact with flames or hot surfaces

Flammable- Extinguish with water; same as a wood fire

6 ACCIDENTAL RELEASE MEASURES

Scoop up product. Wear goggles and respirator if dust is produced in unventilated areas. Wet product will be slippery.

7 HANDLING AND STORAGE

Handling Precautions: Clean up areas where dust settles. Minimize blowdown or other practices that generate high airborne dust concentrations.

Storage Requirements: Store in a cool, dry place. Keep away from sources of ignition.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: None required for outdoor mixing and application. Use dust collection system for indoor handling operations.

Personal Protective Equipment: Eye Protection: Wear goggles when emptying bags and during other operations where there is a risk of dust entering the eyes.
Gloves: Leather, plastic or rubber gloves could be worn to minimize skin irritation.
Respirators: When handling methods generate dust at concentrations that exceed occupational exposure limits, wear a NIOSH approved respirator. A fabric respirator or a facepiece respirator with dust cartridges will generally provideadequate protection.
Footwear: The product is slippery when wet. Wear appropriate footwear.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Dyed green wood fibers - Pine & mixed hardwoods

Physical State: Wood Fibers

Odor: Mild wood odor

Spec Grav./Density: Lighter than water

Vapor Pressure: N/A

10 STABILITY AND REACTIVITY

Chemical Stability: Stable product

Conditions to Avoid: Contact with strong acids and oxidizers may generate heat. Product may ignite at temperatures in excess of 200°C (400°F).

Materials to Avoid: Strong acids and oxidizers

Hazardous Polymerization: Will not occur.

11 TOXICOLOGICAL INFORMATION

EFFECTS OF CHRONIC EXPOSURE:

Inhalation: Frequent and repeated exposure to wood dust is associated with an increased risk of developing nasal cancer.
Skin Contact: Although rare, wood dust may cause dermatitis in sensitized people.

Occupational Exposure Limits:

Wood dusts- All other species: ACGIH (2007): TLV-TWA 1 mg/m³ (Inhalable fraction); A4

Particulates Not Otherwise Regulated (PNOR): OSHA: PEL-TWA 15 mg/m³ (Total Dust); 5 mg/m³ (Respirable fraction)

Irritancy: Wood dust is a mild irritant
Sensitization: Some wood dusts may cause allergic skin reactions

12 ECOLOGICAL INFORMATION

Guar Gum (CAS# 9000-30-0) is listed as an inert ingredient permitted for use in nonfood use pesticide products by EPA. It is also classified under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) as a minimal risk inert substance (List 4A) meaning that as a pesticide, Guar Gum is considered by the EPA to pose little or no risk to humans or the environment. The Us Department of Agriculture (USDA) National Organic Program (NOP) also allows the use of Guar Gum in a variety of applications, but primarily as a pesticide in organic production operations. Finally, Guar Gum is listed on the Generally Recognized as Safe (GRAS) list by the Food and Drug Administration (FDA).

48-hr LC_{50} = >100% for Daphnia magna when runoff generated using ASTM D7101 (2"/hr rainfall rate) was tested according to EPA-821-R-02-012.

13 DISPOSAL CONSIDERATIONS

Normally can be disposed of as a wood residue. Ensure disposal is in compliance with local, provincial (state), and federal regulations.

14 TRANSPORT INFORMATION

15 REGULATORY INFORMATION

Component (CAS#) [%] - CODES

Hydrocolloidal Based Polysaccharide Tackifier (0) [Proprietary]

Guar Gum (9000300) [Proprietary] TSCA

Regulatory CODE Descriptions

TSCA = Toxic Substances Control Act

COMPONENT / (CAS/PERC) / CODES

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*Guar gum (9000300 n/a%) TSCA

REGULATORY KEY DESCRIPTIONS

MASS = MA Massachusetts Hazardous Substances List
NRC = Nationally Recognized Carcinogens
OSHAWAC = OSHA Workplace Air Contaminants
PA = PA Right-To-Know List of Hazardous Substances
TXAIR = TX Air Contaminants with Health Effects Screening Level

CERCLA = Superfund clean up substance
CSWHS = Clean Water Act Hazardous substances
EHS302 = Extremely Hazardous Substance
EPCRAWPC = EPCRA Water Priority Chemicals
HAP = Hazardous Air Pollutants
NJEHS = NJ Extraordinarily Hazardous Substances
NJHS = NJ Right-to-Know Hazardous Substances
OSHAPSM = OSHA Chemicals Requiring process safety management
SARA313 = SARA 313 Title III Toxic Chemicals

TSCA = Toxic Substances Control Act

16 OTHER INFORMATION

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