

Polymer Stabilized Fiber Matrix Specification: EarthGuard Fiber Matrix

Use in counties where the AQMD is concerned with the potential air quality impact of blown straw. In these areas, this spec is a good substitute for Erosion Control (Type C), and Erosion Control (Type D).

Consult with District Landscape Architect before using this SSP.

Use the single contract item – 203016A -to pay for "Erosion Control (Type PSFM)".

Insert in Section 10-1. DO NOT USE in Section 10-2.

10-1. __ EROSION CONTROL (TYPE PSFM)

Erosion control (Type PSFM) shall conform to the provisions in Section 20-3, "Erosion Control," of the Standard Specifications and these special provisions and shall consist of applying erosion control materials to embankment and excavation slopes and other areas disturbed by construction activities.

2. Use only when SSP 20-020, "Move-in/Move-out (Erosion Control)," is included in project.

Erosion control (Type PSFM) shall be applied when an area is ready to receive erosion control as determined by the Engineer and in conformance with the provisions in "Move-in/Move-out (Erosion Control)" of these special provisions.

3. Use when Para 2 is deleted.

If the slope on which the erosion control is to be placed is finished during the rainy season as specified in "Water Pollution Control" of these special provisions, the erosion control shall be applied immediately to the slope.

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Prior to installing erosion control materials, soil surface preparation shall conform to the provisions in Section 19-2.05, "Slopes," of the Standard Specifications.

4b Use when SSP 05-200 (Order of Work – pre-measurement of areas to receive PSFM) is included in the project.

Prior to application the Engineer will designate the ground location of erosion control (Type PSFM) in increments of one hectare by directing the placing of stakes or other suitable markers. The Contractor shall furnish all labor, materials and transportation required to adequately indicate the various locations. Attention is directed to "Order of Work" of these special provisions regarding pre-measurement of areas to receive erosion control (Type PSFM) prior to application.

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MATERIALS

Materials shall conform to the provisions in Section 20-2, "Materials," of the Standard Specifications and these special provisions.

6*. Use when another erosion control SSP specifies the same seed specifications; otherwise delete. Delete Paras 7 thru 11 when this Para is used. Edit blank space for the type of erosion control.

Seed

Seed for erosion control (Type PSFM) shall conform to the provisions specified for seed in "Erosion Control (_____)" of these special provisions.

7. Use Paras 7 thru 11 when seed is NOT specified elsewhere in the special provisions. Delete Para 6.

Seed

Seed shall conform to the provisions in Section 20-2.10, "Seed," of the Standard Specifications. Individual seed species shall be measured and mixed in the presence of the Engineer.

8. State law limits total weed content to 1.5% by weight. Assign a more stringent threshold if required by the local or regional regulatory agency. Insert weed species to be excluded (e.g., Bromus tectorum, Melilotus spp., Cirsium spp.) from the project. Do not insert names of California prohibited or restricted noxious weeds as these are already prohibited by law. Delete this para if job specific weed species are not to be excluded.

Seed shall contain not more than 1.0% total weed by weight. Seed shall be free of the specific weed species _____, _____, and _____.

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A minimum of 10 days prior to seed application, seed shall be delivered to the job site in unopened separate containers with the seed tag attached so that seed samples can be taken. Containers without seed tags attached will not be accepted. For each seed lot greater than 1 kg, a sample of approximately 30 g or 60 ml of seed will be taken from the seed lot by the Engineer.

Deleted: A

Deleted: each seed container

10*. Delete when legume seed is not required. It is acceptable to apply legume and non-legume seed together in a single application when there is no commercial fertilizer in the hydroseed mix to jeopardize the inoculant. A single application is more cost effective than multiple applications.

Legume seed shall be pellet-inoculated or industrial-inoculated and shall conform to the following:

- A. Inoculated seed shall be inoculated in conformance with the provisions in Section 20-2.10, "Seed," of the Standard Specifications.
- B. Inoculated seed shall have a calcium carbonate coating.
- C. Industrial-inoculated seed shall be inoculated with Rhizobia and coated using an industrial process by a manufacturer whose principal business is seed coating and seed inoculation.
- D. Industrial-inoculated seed shall be sown within 180 calendar days after inoculation.

11*. Insert seed names, germination and application rates in the table. Increase or decrease rows in table as required. Do NOT edit column headings. Percent germination shown in the table may be 10% less than the published rates.

Legume and non-legume seed shall consist of the following:

SEED		
Botanical Name (Common Name)	Percent Germination (Minimum)	Kilograms Pure Live Seed Per Hectare (Slope Measurement)

*Seed produced in California only.

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Tackifier

The tackifier shall conform to the provisions in Section 20-2.11, "Stabilizing Emulsion," of the Standard Specifications. The tackifier shall be nonflammable, nontoxic to aquatic organisms, and shall have no growth or germination inhibiting factors.

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The tackifier shall be a liquid formulation having polyacrylamide (PAM) as the primary active ingredient, and shall be available as a prepackaged product. The PAM shall be a linear, anionic copolymer of acrylamide and sodium acrylate. The residual monomer content of the PAM shall not exceed 0.05 percent by weight.

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Tackifier shall conform to and be labeled as one of the following:

- A. Tackifier shall be formulated as a water-in-oil emulsion and shall contain a minimum of 0.30 kg pure PAM per liter. The pure PAM shall be a minimum of 30 percent active.
- B. Tackifier shall be formulated as a liquid dispersed polyacrylamide (LDP) and shall contain a minimum of 0.53 kg pure PAM per liter. The pure PAM shall be a minimum of 35 percent active.

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The prepackaged product label shall indicate that the PAM is registered and approved by the California Department of Food and Agriculture as an auxiliary soil and plant substance, and nonplant food ingredient.

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If requested by the Engineer, the Contractor shall provide certification of the percent of pure PAM present by weight, the percent activity, the average molecular weight, and the charge density of the PAM; and shall provide a material safety data sheet for the prepackaged product.

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Wood Fiber

Wood fiber shall conform to the provisions in Section 20-2.07, "Fiber," of the Standard Specifications and these special provisions. Fiber shall be long strand, whole wood fibers, thermo-mechanically processed from clean, whole wood chips, containing a minimum of 25 percent at 10 mm long, with a minimum of 40 percent retained on a 710 µm sieve. The wood chips shall not contain lead paint, printing ink, varnish, petroleum products, seed germination

inhibitors, or chlorine bleach. Fiber shall not be produced from sawdust, cardboard, paper, or paper by-products.

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Cellulose Fiber

Cellulose fiber shall conform to the provisions in Section 20-2.07, "Fiber," of the Standard Specifications and these special provisions. Cellulose fiber shall be produced from natural or recycled (pulp) fiber, such as wood chips, sawdust, newsprint, chipboard, corrugated cardboard, or a combination of these processed materials. Cellulose fiber shall be free of synthetic or plastic materials, and shall not contain more than 7 percent ash.

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A coloring agent shall be added to the polymer stabilized fiber matrix to contrast with the area on which it is applied. The coloring agent shall not include copper, mercury, or arsenic, and shall be biodegradable and nontoxic.

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APPLICATION

Polymer stabilized fiber matrix shall be applied as follows:

21*. Determine total Fiber rate based upon slope and soil conditions and as recommended by the polymer stabilized fiber matrix manufacturer. Adjust quantities of Wood Fiber and Cellulose (Paper) Fiber but maintain a minimum of 50 percent Wood Fiber. Consider the following application rates:

1V:1H slope	2800-3300 kg/ha (2500-3000 lbs/ac) total fiber
1V:1.5H slope	2200-2800 kg/ha (2000-2500 lbs/ac)
1V:2H slope	2000-2200 kg/ha (1800-2000 lbs/ac)
1V:3H slope	1700-2000 kg/ha (1500-1800 lbs/ac)
1V:4H slope	1300-1700 kg/ha (1200-1500 lbs/ac)
1V:5H slope	1100-1300 kg/ha (1000-1200 lbs/ac)

Determine tackifier application rates based on the slope:

1V:1H slope	93.5+ l/ha (10+ gal/ac)
1V:1.5H slope	84.1-93.5 l/ha (9 gal/ac)
1V:2H slope	65.4-74.8 l/ha (8 gal/ac)
1V:3H slope	56.1-65.4 l/ha (7 gal/ac)
1V:4H slope	46.7-56.1 l/ha (6 gal/ac)
1V:5H slope	18.7-28.1 l/ha (5 gal/ac)

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A. The following mixture in the proportions indicated shall be applied with hydroseeding equipment. Successive applications or passes shall be used to achieve the indicated rate:

Material	Application Rate
Wood Fiber	_____ kg/ha
Cellulose Fiber	_____ kg/ha
Tackifier	_____ L/ha

- B. The dilution of fiber to water per hectare shall be as required to facilitate even application of material.
- C. Material shall be applied to form a continuous mat covering all of the disturbed soil surface, shall have a minimum thickness of 2 mm, and shall have no gaps between the mat and the soil surface.
- D. Material shall be applied from 2 or more directions to achieve a continuous mat.
- E. Material shall be applied in layers to avoid slumping and to aid drying.
- F. Material shall be applied during dry weather, with a minimum of 24 hours of dry weather between completion of material application and predicted precipitation.

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The Contractor shall provide written documentation certifying erosion control (Type PSFM) was applied in accordance with specified rates, including area of application, time of application, and quantities used.

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MAINTENANCE

Erosion control (Type PSFM) shall be reapplied when the area treated exhibits visible erosion. Erosion control (Type PSFM) shall be reapplied by the Contractor within 24 hours of identifying visible erosion, unless otherwise directed by the Engineer.

25. Verify this requirement applies to perm BFM.

The General Construction NPDES Permit for soil amendments, including soil stabilization products, requires monitoring for pollutants not visually detectable in storm water.

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MEASUREMENT AND PAYMENT

The quantity of erosion control (Type PSFM) to be paid for will be measured by the square meter as determined from measurements along the slope of the actual areas covered by the erosion control (Type PSFM)

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The contract price paid per square meter for erosion control (type PSFM) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in applying erosion control (type PSFM), complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.