

HYDRAULIC MULCH (HM)

SCDOT Designation: SC-M-815-7 (11/08)

1.0 Hydraulic Mulch (HM)**1.1 Description**

Use Hydraulic Mulch (HM) as an allowable mulch for temporary or permanent cover as outlined in *Supplemental Specification for Seeding SCDOT (SC-M-810)*. Do not use HM for temporary cover by mulch. Do not use HM as a channel liner or for areas receiving concentrated flow. Install HM in the following situations:

- For enhancement of permanent and temporary cover operations.
- On slopes up to 3H:1V, for permanent and temporary seeding applications on slopes less than 20 feet.
- When the maximum required functional longevity of soil protection is three (3) months.
- When the soil is dry and rain is not expected within 48 hours after application.
- When there is a high degree of certainty that heavy rains will not follow application.

Do not use a HM as Type A Temporary Erosion Control Blankets, channel liners, or in areas receiving concentrated flow. Do not use HM as a Stabilized Mulch Matrix (SMM), Bonded Fiber Matrix (BFM), or Fiber Reinforced Matrix (FRM).

1.2 Materials

Provide a Hydraulic Mulch (HM) composed of hydraulically applied materials composed of defibrated paper, wood, and / or natural fibers that may or may not contain tackifiers. Do not use materials composed of greater than 30 percent cellulose fiber.

Use a HM that does not form a water-insensitive crust that can inhibit plant growth. Provide a HM that completely photo-degrades or biodegrades. Seed, lime, and fertilizer may be added to the HM mixture according to the current requirements of **Section 810, Seeding Specifications**.

Furnish HM components pre-packaged by the manufacturer to assure material performance and compliance with the minimum requirements of Table 1.

Table 1: Minimum HM Requirements

HM Property	Required Value
Moisture Content	12% ± 3% maximum
Organic Matter	90% minimum
Non-Cellulose Fiber by Weight	70% minimum
Cellulose Fiber by Weight	30% maximum
Water Holding Capacity (ASTM D7367)	750% minimum
Functional Longevity	Maximum of 3 months
Color	Colored to contrast application area, shall not stain concrete or painted surfaces.

Provide HM from a manufacturer listed on the most recent edition of the *SCDOT Qualified Product List 70* and provide documentation of testing at an approved independent laboratory demonstrating performance based on reduced water runoff, reduced soil loss, and enhanced plant germination.

1.2.1 Quality Assurance

Before installation of HM, provide the following information from the manufacturer:

- Written quality control program conforming to the requirements of subsection 1.2.2 *Quality Control*.
- Documentation of field and/or laboratory testing that quantifies the performance of the product conforming to the requirements of subsection 1.2.2 *Quality Control*.

Ensure that each Package of HM bears complete identification including, but not limited to, the following:

- Manufacturer's name and location,
- Manufacturer's telephone number and fax number,
- Manufacturer's e-mail address and web address,
- HM name, model, and/or serial number, and
- HM physical composition.

HM is listed on the most recent edition of *SCDOT Qualified Product List 70* prior to being accepted for use. Prior to inclusion on *SCDOT Qualified Products List 70*, HM must meet the physical and performance criteria outlined in this specification.

1.2.2 Quality Control

Before installation of HM, provide the following information from the manufacturer:

- Written description of the manufacturer's quality control program of field and/or laboratory testing that quantifies the performance of the product. Performance testing must take place at a laboratory accredited to perform tests required for the product tested.
- Instructions on the proper installation and maintenance of the HM.
- Certification of the testing requirements upon request.

Provide verification of conformance with manufacturer's published specifications (i.e. the certification) which at a minimum identify the following:

- Independent qualified test facility name and location,
- Manufacturer,
- Product ID,
- Test ID, and
- Test date.

1.3 Construction Requirements

1.3.1 Installation

Use HM with components pre-packaged by the manufacturer to assure material performance. Do not field mix materials, additives, or components.

Examine substrates and conditions before applying materials. Do not proceed with installation until unsatisfactory conditions are corrected. Apply HM to geotechnically stable slopes that are constructed to divert runoff water away from the face of the slope, eliminating damage to the slope face caused by the surface flow from above the slope.

Use personnel or subcontractors certified and trained by the manufacturer in the proper procedures for mixing and application of HM. Strictly comply with the manufacturer's mixing recommendations and installation instructions. Use approved hydraulic seeding/mulching machines with appropriate nozzles for HM applications. Apply HM from opposing directions to the soil surface in successive layers, reducing the

“shadow effect” to achieve maximum coverage of all exposed soil. Do not apply the HM immediately before, during, or after rainfall. Allow HM a minimum of 24 hours to dry after installation. Install HM materials at the general application rates of Table 2.

Table 2: HM Installation Requirements

Condition	Max Continuous Slope Length (ft)	Temporary Cover by Mulch (no seed) Application Rate (lbs/acre)	Temporary Cover by Seeding Application Rate (lbs/acre)	Permanent Cover Application Rate (lbs/acre)
5:1 Slope	30	Not Applicable	1,500	1,500
4:1 Slope	25	Not Applicable	1,500	2,000
3:1 Slope	20	Not Applicable	1,500	2,500
2:1 Slope	Not Applicable	Not Applicable	Not Applicable	Not Applicable

1.3.2 Delivery Storage and Handling

Use HM with components pre-packaged by the manufacturer to assure material performance. Have materials and products delivered in UV and weather resistant factory labeled packages. Store and handle HM in strict compliance with the manufacturer’s instructions and recommendations. Protect HM from damage from weather, excessive temperatures, and construction operations. Clean all spills promptly.

1.3.3 Inspection and Maintenance

Prepare a HM maintenance plan that includes the following:

- Reapplication of HM as directed by RCE to disturbed areas that require repeated vegetation establishment.
- Maintenance of equipment to provide uniform application rates.
- Rinsing all HM mixing and application equipment thoroughly with water to avoid formation of residues and appropriate discharge of rinse water.

Degradation of HM can be expected to occur as a result of mechanical degradation, chemical degradation, biological hydrolysis, sunlight, salt, and temperature. Where necessary, reapply HM in accordance with the manufacturer’s instructions. Reapplication is not required unless HM treated soils are disturbed or turbidity or water quality shows the need for an additional application. If HM treated soils are left undisturbed, the necessity of reapplication will be determined by the RCE. The Department will not pay for the reapplication of HM within three (3) months of the initial application unless the reapplication is approved by the RCE.

1.3.4 Acceptance

Obtain RCE acceptance and approval of HM installations. When requested by the RCE, ensure that a manufacturer’s representative is on-site to oversee and approve the initial HM installation. Obtain a letter from the manufacturer approving the installation when requested by the RCE.

1.4 Measurement

The quantity for the pay item Hydraulic Mulch (HM) is the surface area covered by the HM applied at the recommended rate and is measured by the one-acre (acre) unit of HM in-place, complete and accepted. The installation of HM may require written acceptance by the manufacturer’s representative before acceptance for payment.

1.5 Payment

Payment for Hydraulic Mulch (HM) is full compensation for installing HM as specified or directed by the RCE and includes furnishing, applying, and maintaining the HM including testing and documentation of Quality Control and Quality Assurance programs and all other materials, labor, equipment, tools, supplies, transportation, and incidentals necessary to fulfill the requirements of the pay item in accordance with the Plans, the Specifications, and other terms of the Contract.

Table 3: Bid Item Number

Bid Item Number	Description	Units
8101115	Hydraulic Mulch (HM)	ACRE