
Supplemental Technical Specification for

HYDRAULIC EROSION CONTROL PRODUCTS

SCDOT Designation: SC-M-815-11 (07/26)

1.0 Description

Hydraulic Erosion Control Products (HECPs) are designated on the Plans or by the Resident Construction Engineer (RCE). Use HECPs as an allowable mulch for Temporary Cover by Mulch, Temporary Cover by Seeding, or Permanent Cover by Seeding applications as outlined in SCDOT *Supplemental Specification for Seeding*, SC-M-810. Do not use HECPs as a channel liner or for areas receiving concentrated flow.

1.0.1 HECP Selection

Provide the appropriate Type of HECP based on the following conditions.

- When the target functional longevity of soil protection is:
 - 60 days – Type 1
 - 90 days – Type 2
 - 180 days – Type 3
 - 365 days – Type 4
- When weather conditions permit:
 - Apply Types 1 and 2 only when soil is dry and rain is not expected within 48 hours after application.
 - Apply Type 3 only when soil is dry and rain is not expected within 24 hours after application.
 - Type 4 is not subject to weather limitations and may be applied when immediate erosion protection is required, including conditions of anticipated heavy rainfall.

Type 4 HECPs may be installed in environmentally sensitive wetlands and other wildlife areas not compatible for products containing netting or when the site requires immediate erosion protection and there is a risk of impending weather. Type 4 HECPs may also be installed as a Temporary Erosion Control Blanket for slope applications only. Refer to SCDOT *Supplemental Specification for Rolled Erosion Control Products (RECP)*, SC-M-815-9.

Do not use Type 1, 2, and 3 HECPs as Temporary Erosion Control Blankets (ECBs), channel liners, or in areas receiving concentrated flow. Do not use Type 4 HECPs as turf reinforcement matting (TRM), channel liners, or in areas receiving concentrated flow. Each HECP type shall be used only for the application for which it is specified. Lower-type HECPs shall not be used to satisfy the requirements of higher-type HECPs.

1.1 Materials

Provide HECP materials consisting of a hydraulically applied matrix of non-toxic fibers and additives designed to eliminate direct raindrop impact on soil. All HECP materials shall meet the applicable minimum requirements of Table 1, consider the guidance in Table 2, and shall be listed on the most recent edition of SCDOT Qualified Product List (QPL) 79 for the specified Type.

Provide HECP materials for all Types that:

- Contain no germination or growth-inhibiting factors
- Do not form a water-resistant crust that inhibits plant growth
- Completely photo-degrade or biodegrade, except as modified by reinforcing fibers in Type 4

Furnish HECP materials with all components pre-packaged by the manufacturer to assure material performance and compliance with Table 1 requirements. Under no circumstances will field mixing of HECP components or additives be accepted.

Add seed, lime, and fertilizer to the HECP mixture in accordance with SCDOT *Supplemental Specification for Seeding*, SC-M-810.

1.1.1 Material Properties by Type

Provide HECP Materials in accordance with the following Type-specific requirements:

- Type 1
Consist of a minimum of 70% non-toxic wood fiber or natural fibers containing non-toxic tackifiers that, upon drying, become insoluble and non-dispersible.
- Types 2 and 3
Consist of a minimum of 70% non-toxic defibrated organic fibers with, at a minimum, one of the following non-toxic additives that, upon drying, become insoluble and non-dispersible:
 - Soil tackifiers
 - Soil flocculants
 - Soil polymers
 - Cross-linked hydro-colloidal polymers
 - Cross-linked tackifiersDo not use materials composed of paper, cellulose fiber, or any mixture containing paper or cellulose.
- Types 3 and 4 Additional Requirements
Incorporate a minimum of 70% non-toxic long stand organic fibers. These fibers should be thermally processed or refined and heated to a minimum temperature of 212 degrees Fahrenheit.
- Type 4 Additional Requirements
Incorporate non-toxic interlocking natural and/or synthetic reinforcing fibers and non-toxic, water insoluble, cross-linked hydro-colloidal tackifiers

Table 1 lists specific material properties required by Type and Table 2 provides guidance for HECP use by Type.

Table 1: Minimum HECP Performance and Physical Requirements

HECP Property	Test Method ¹	HECP Type 1	HECP Type 2	HECP Type 3	HECP Type 4
Physical					
Color	Observed	Colored to contrast application area, shall not stain concrete or painted surfaces.			
Organic Matter	ASTM D2974	90% minimum			
Water Holding Capacity	ASTM D7367	200% minimum	300% minimum	400% minimum	500% minimum
Acute Toxicity	ASTM D8151 EPA Method 2021 or EPA Method 2002	Pass (LC50 ≥ 100%)			
Performance					
Cover Factor	ASTM D6459 ^{2,3}	C ≤ 0.30	C ≤ 0.10	C ≤ 0.05	C ≤ 0.01
Vegetation Establishment	ASTM D7322 ²	200% minimum			

¹ HECPs listed on the current QPL will remain listed until January 31, 2028. After this date, all products listed on the QPL must meet the requirements of this Specification.

² ASTM test methods developed for RECPs that have been modified to accommodate HECPs.

³ The stated Cover Factor should be assessed from ASTM D6459 at a rainfall event factor (R-factor) of 140 for classification purposes. Though higher R-factors may be achieved during testing, provide the Cover Factor at R=140 for consistency of classification.

Table 2: HECP Application Guidance

HECP Property	HECP Type 1	HECP Type 2	HECP Type 3	HECP Type 4
Functional Longevity	Up To 60 days	Up To 90 days	Up To 180 days	Up To 365 days
Maximum Slope Application	4.0H:1V	3.0H:1V	2.0H:1V	1.0H:1V

1.1.2 Quality Assurance

Provide HECP listed on the most recent edition of *SCDOT Qualified Product List 79* in the appropriate category.

At the time of delivery, provide the RCE with the specific HECP packing list containing complete identification, including but not limited to the following:

- Manufacturer name and location,
- Manufacturer telephone number,
- Manufacturer's e-mail address and web address, and
- HECP name, model and/or serial number.
- Certification that the specific HECP meets the physical and performance criteria of this specification.

1.2 Construction Requirements

1.2.1 Installation

Use HECF where all components are pre-packaged by the manufacturer to assure material performance. Under no circumstances will field mixing of HECF additives or HECF components be accepted.

Examine substrates and conditions before applying materials. Do not proceed with installation until unsatisfactory conditions are corrected. Apply HECF to stable slopes that do not receive concentrated flow. Divert runoff water away from the face of the slope, thus eliminating damage to the slope face caused by concentrated flow.

Use personnel or subcontractors experienced in the proper procedures for mixing and application of HECF. Use personnel or subcontractors certified and trained by the manufacturer in the proper procedures for mixing and application of HECF Type 3 and 4. Strictly comply with the manufacturer's mixing instructions. Use approved hydraulic seeding/mulching machines with appropriate mixing methods and nozzles for HECF applications. Apply HECF from opposing directions to the soil surface in successive layers, reducing the "shadow effect" to achieve maximum coverage of all exposed soil.

Install HECF materials at the minimum application rates of Tables 3, 4, 5, 6, and 7 or at manufacturer's recommended rate, whichever is greater.

Table 3: HECF Type 1 Installation Requirements

Slope Condition ¹	Minimum Application Rate (lbs/acre -dry) ²
Slope ≤ 4H:1V	2,000
Slope > 4H:1V	Not Applicable

Table 4: HECF Type 2 Installation Requirements

Slope Condition ¹	Minimum Application Rate (lbs/acre -dry) ²
Slope ≤ 4H:1V	Follow Table 3 Application Rates
4H:1V < Slope ≤ 3H:1V	2,500
Slope > 3H:1V	Not Applicable

Table 5: HECF Type 3 Installation Requirements

Slope Condition ¹	Minimum Application Rate (lbs/acre -dry) ²
Slope ≤ 3H:1V	Follow Table 3 and Table 4 Application Rates
3H:1V < Slope ≤ 2H:1V	3,000
Slope > 2H:1V	Not Applicable

Table 6: HECP Type 4 Installation Requirements

Slope Condition ¹	Minimum Application Rate (lbs/acre -dry) ²
Slope ≤ 2H:1V	Follow Table 3, Table 4, and Table 5 Application Rates
2H:1V < Slope ≤ 1H:1V	3,500
Slope > 1H:1V	4,000 (temporary cover) ³

Table 7: Combined Mulch Table

Mulch ¹	Applicable Slopes	Minimum Application Rate (lbs/acre -dry) ²
HECP Type 1 - Tracer under RECP	Per RECP	1,000
HECP Type 1	≤ 4H:1V	2,000
HECP Type 2	4H:1V < S ≤ 3H:1V	2,500
HECP Type 3	3H:1V < S ≤ 2H:1V	3,000
HECP Type 4	2H:1V < S ≤ 1H:1V	3,500
	> 1H:1V	4,000 (temp cover only) ³
When site constraints exceed the acceptable application for mulch, use Rolled Erosion Control Products (RECPs); Erosion Control Blankets (ECBs) or Turf Reinforcement Matting (TRM)		

¹ The maximum allowable continuous slope length for mulch applications varies based on slope steepness. Slope interruption devices or ECBs and TRMs are required for slopes 4H:1V and steeper.

² A higher level of mulch may be applied than that specified on the Plans, Specifications, and other terms of the Contract. In this situation, the higher level mulch is applied at the rate for the actual slope condition of the site in accordance with the mulch tables, and payment is for the actual mulch specified, not the higher level mulch.

³ HECP Type 4 may be used for permanent cover applications on slopes 1H:1V or greater at a minimum rate of 4,500 pounds per acre as directed by the RCE only when the proper TRM installation is not practicable due to site constraints.

1.2.1.1 Slope Interruption Devices with HECPs

Slope Interruption Devices are required for use with HECPs Type 1, 2, 3, and 4 on slopes 4H:1V and steeper. Slope Interruption Devices may be utilized on slopes flatter than 4H:1V at the discretion of the RCE. Refer to SCDOT Supplemental Technical Specification for Slope Interruption Devices, SC-M-815-20, for description, materials, spacing, and construction requirements.

1.2.2 Delivery Storage and Handling

Use HECP where all components are 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 HECP in strict compliance with the manufacturer's instructions and recommendations. Protect HECP from damage from weather, excessive temperatures, and construction operations. Clean all spills promptly.

1.2.3 Inspection and Maintenance

Prepare a HECP maintenance plan that includes the following:

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

Degradation of HECP can be expected to occur as a result of mechanical degradation, chemical degradation, biological hydrolysis, sunlight, salt, and temperature. Where necessary, reapply HECP in accordance with the manufacturer's instructions. Reapplication is not required unless HECP treated soils are disturbed or turbidity or water quality shows the need for an additional application. If HECP treated soils are left undisturbed, the necessity of reapplication will be determined by the RCE.

The Department will not pay for the reapplication of HECP Type 1 within 45 days of the initial application unless the reapplication is approved by the RCE. The Department will not pay for the reapplication of HECP Type 2 within 60 days of the initial application unless the reapplication is approved by the RCE. The Department will not pay for the reapplication of HECP Type 3 within 120 days of the initial application unless the reapplication is approved by the RCE. The Department will not pay for the reapplication of HECP Type 4 within 270 days of the initial application unless the reapplication is approved by the RCE.

1.2.4 Acceptance

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

1.3 Measurement

The quantity for the pay item Hydraulic Erosion Control Product Type 1, 2, 3, and 4 is the surface area covered by the HECP applied at the recommended rate and is measured by the one-acre (acre) unit of HECP in-place, complete, and accepted. The installation of HECP may require written acceptance by the manufacturer's representative before acceptance for payment.

1.4 Payment

Payment for Hydraulic Erosion Control Product Type 1, 2, 3, and 4 is full compensation for installing HECP as specified or directed by the RCE and includes furnishing, applying, and maintaining the HECP 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 8: Bid Item Number

Bid Item Number	Description	Units
8151201	Hydraulic Erosion Control Product (HECP) Type 1	ACRE
8151202	Hydraulic Erosion Control Product (HECP) Type 2	ACRE
8151203	Hydraulic Erosion Control Product (HECP) Type 2	ACRE
8151204	Hydraulic Erosion Control Product (HECP) Type 4	ACRE