6.18

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COMPOST BLANKETS

Definition

Compost is the organic product resulting from the controlled biological decomposition of organic material, occurring under aerobic conditions that has been sanitized through the generation of heat and stabilized to the point that it is appropriate for its particular application. Active composting is characterized by a high-temperature phase that sanitizes the product and allows a high rate of decomposition. This is followed by a lower-temperature phase that allows the compost to stabilize while it continues to decompose at a slower rate. Compost should possess no objectionable odors. It shall not contain substances toxic to plants, and shall not resemble the raw material from which it was derived. Compost is not a fertilizer.

It is recommended that compost utilized on construction sites in North Carolina meet the minimum rules and regulations for proper thermophilic composting set forth by NCDENR, defined by USEPA, described in 40 Code of Federal Regulations Part 503, Appendix B, and as described in Table 6.18a.

Most compost contains a wood based fraction (e.g., bark, ground brush, wood chips, etc.) which is typically removed before the compost is used as a soil amendment. However, this coarser, woody fraction of the compost plays an important role in erosion and sediment control. For certain compost applications it may be advantageous to add fresh, ground bark or composted, properly sized wood based material to a compost product to improve its efficacy in a particular application.

Compost materials may be considered fill material when placed in wetlands or riparian buffers. Prior to installation in these areas consult with the U.S. Army Corp of Engineers, and the NCDENR Division of Water Quality for permitting requirements.

Compost Blankets

A compost blanket is a slope stabilization, erosion control, and vegetation establishment practice used on construction sites to stabilize bare, disturbed, or erodible soils. Compost blankets may be used for temporary erosion control and in the process of providing permanent vegetative cover.

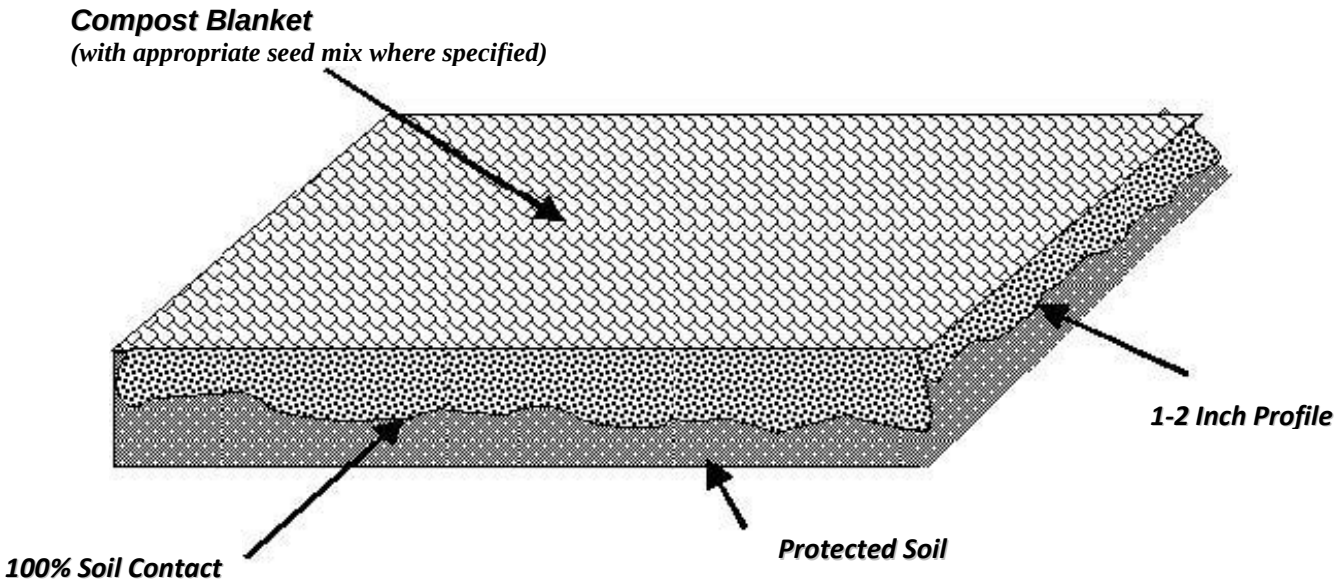

Figure 6.18 Compost Blanket

Conditions Where Practice Applies

Compost blankets should be considered when soil is poor. Compost blankets can be placed on rocky slopes and shallow or infertile soils to improve the growth medium for grasses. Care should be taken not to apply compost where it can raise the nutrient level of streams. When the blanket is specified for permanent stabilization, vegetative cover shall be incorporated with the compost at rates shown in the seeding specification on the approved plan and maintained until the permanent cover is established. Where specified for temporary stabilization the blanket must be installed and maintained as specified in the construction sequence on the approved plan. A temporary vegetative cover or nurse crop should be considered for incorporation with temporary compost blankets.

Planning Considerations

Compost blankets have a mulch function and cover 100% of the soil surface, and therefore provide the beneficial effects characteristic to mulches, including: reduced raindrop impact and splash erosion, reduced runoff energy and sheet erosion, buffered soil temperature for plants, decreased moisture evaporation, increased moisture holding capacity at the soil surface, reduced runoff volume and velocity, and increased infiltration. Where planned and applied correctly to a properly prepared subgrade, compost blankets can aid in amending the soil. This can provide benefits to the soil's structure; increased aggregation, aeration, infiltration and percolation, moisture holding capacity, activity of beneficial microbes, availability of nutrients; decreased runoff volume and velocity, and decreased erosion; increased plant health; and long-term site sustainability.

A compost blanket may be considered appropriate for erosion and sediment control in conjunction with other methodologies, during the construction process. Compost blankets should only be used to control sheet flow from rainfall. Blankets may not be utilized in areas of concentrated runoff. Blankets may not

be utilized in areas subject to vehicular traffic and use by heavy equipment. Very coarse compost should be avoided, if the slope is to be landscaped or seeded, as it will make planting and crop establishment more difficult.

When planning the use of compost blankets, it is recommended to use products that are certified by the US Composting Council's Seal of Testing (STA) Program (**www.compostingcouncil.org**). This practice will allow for the acquisition of products that are analyzed on a routine basis, using the specified test methods. STA participants are also required to provide a standard product label to all customers, allowing easy comparison to other products. Compost use for compost blankets should be considered mature as defined by USCC-STA Biological Assays Seedling Emergence and Relative Growth test.

Design Criteria

Compost blankets may be used for temporary erosion/sediment control applications. This application is appropriate for slopes up to a 2:1 grade (horizontal distance: vertical distance), and only be used in areas that have sheet flow drainage patterns (not areas that receive concentrated flows). Slopes steeper than 2:1 may require special installation techniques (consult compost supplier for recommendations). The chemical, physical and biological parameters of compost blankets approved for use in this application are described in Table 6.18a. Only compost products that meet all applicable state and federal regulations pertaining to its production and distribution may be used. Approved compost products must meet related state and federal chemical contaminant (e.g., heavy metals, pesticides, etc.) and pathogen limit standards pertaining to the source materials from which it is derived.

Table 6.18a – Compost Blanket Parameters

Parameters[1,4]	Reported as (units of measure)	Surface Mulch to be Vegetated	Surface Mulch to be left Un-vegetated	Test Method	Test Method Name
pH[2]	pH units	5.0 - 8.5	N/A	TMECC 04.11-A	Electrometric pH Determinations for Compost. 1:5 Slurry Method
Soluble Salt Concentration[2] (electrical conductivity)	dS/m (mmhos/cm)	Maximum 5	Maximum 5	TMECC 04.10-A	Electrical Conductivity for Compost. 1:5 Slurry Method (Mass Basis)
Moisture Content	%, wet weight basis	30 – 60	30 – 60	TMECC 03.09-A	Total Solids and Moisture at 70±5°C
Organic Matter Content	%, dry weight basis	25 – 65	25-100	TMECC 05.07-A	Matter Method. Loss On Ignition Organic Matter Method
Particle Size	% passing a selected mesh size, dry weight basis	• 3" (75 mm), 100% passing • 1" (25mm), 90- 100% passing • 3/4" (19mm), 65-100% passing • 1/4" (6.4 mm),	• 3" (75 mm), 99% passing • 1" (25mm), 90-100% passing • 3/4" (19mm), 65-100% passing • 1/2" (12.5 mm),	TMECC 02.12-B	Laboratory Sample Preparation. Sample Sieving for Aggregate Size Classification

		0-75% passing • Maximum particle length of 6" (152mm)	0-30% passing • Maximum particle length of 6" (152mm)		
Stability[3] Carbon Dioxide Evolution Rate	mg CO_2-C per g OM per day	< 8	N/A	TMECC 05.08-B	Respirometry. Carbon Dioxide Evolution Rate
Maturity (Bioassay) Percent Emergence Relative Seedling Vigor	% (average) % (average)	100% 100%	90-100% 90-100%	TMECC 05.05-A	
Physical Contaminants (man-made inerts)	%, dry weight basis	< 1	< 1		Biological Assays. Seedling Emergence and Relative Growth

1 Recommended test methodologies are provided in Test Methods for the Examination of Composting and Compost (TMECC, The US Composting Council)

2 Each specific plant species requires a specific pH range. Each plant also has a salinity tolerance rating, and maximum tolerable quantities are known. When specifying the establishment of any plant or turf species, it is important to understand their pH and soluble salt requirements, and how they relate to the compost in use.

3 Stability/Maturity rating is an area of compost science that is still evolving, and as such, other various test methods could be considered. Also, never base compost quality conclusions on the result of a single stability/maturity test.

4 Landscape architects and project (field) engineers may modify the allowable compost specification ranges based on specific field conditions and plant requirements.

Construction Specifications

The following steps shall be taken for the installation of compost blankets for erosion/sediment control. The information shall also be included in the construction sequence on the approved erosion and sediment control plan.
Prepare the soil by removing large clods, rocks, stumps, roots as described in Chapter 6 of this manual.

Apply the compost blanket to 100% of the area as required on the approved plan.

1. The blanket shall cover 100% of the bare or disturbed soil area, whereas, no native soil shall be visible in or through the compost blanket. It shall be applied at the application rates, as specified in Table 6.18b. Seed shall be thoroughly mixed with the compost prior to application or surface applied to the compost blanket at time of application at the appropriate rates as prescribed by the approved plan.

2. Compost blankets shall be installed at least 10 ft over and beyond the shoulder of the slope and/or into the edge of existing vegetation to ensure runoff does not undercut the blanket. When installing into the edge of existing vegetation, care must be taken not to disturb the existing root mat.

3. Compost blanket application rates should be designed and specified based on specific site (e.g., soil characteristics, existing vegetation) and climatic conditions, as well as particular project related requirements and calculated storm water runoff.

4. Compost blankets installed on slopes greater than or equal to 4:1 shall be tracked. Blankets on 3:1 slopes shall be tracked and secured with an adequate rolled erosion control product. (See Practice Standard 6.17 *Rolled Erosion Control Products* (RECP) for installation procedure.) Where high winds and wind erosion are expected, RECPs shall be installed over the compost blanket, regardless of slope. All other installation procedures and specifications will be as shown on the approved plan and described in the approved construction sequence. Compost shall be uniformly applied as described in the approved construction sequence with the appropriate equipment. If required, thorough watering may be used to improve settling of the blanket.

Table 6.18b – Compost Blanket Application Rates

Annual Rainfall/Flow Rate	**Total Precipitation & Rainfall Erosivity Index**	**Application Rate For <u>Vegetated*</u> Compost Surface Mulch**	**Application Rate For <u>Unvegetated</u> Compost Surface Mulch**
Low	1”-25”, 20-90	1”–1 ½” (25 mm – 37.5mm)	1”–1 ½” (25 mm – 37.5mm)
Average	26”-50”, 91-200	1”–1 ½” (25 mm – 37.5mm)	1 ½”–2” (37 mm – 50 mm)
High	51” and above, 201 and above	1”-2” (25 mm - 50 mm)	2”-4” (50mm – 100mm)

*these lower application rates should only be used in conjunction with seeding, and for compost blankets applied during the prescribed planting season for the particular region.

Maintenance

Inspect compost blankets weekly and within 24 hours of a rainfall event of ½ inch or greater. If failure or damage to the blanket occurs or if vegetation does not establish within the expected germination time of the selected seed type, reapply compost and seed to the affected area to return it to the original condition. Take additional measures as necessary to establish permanent ground cover. Compost blankets shall be inspected until permanent vegetation is established. RECP placed over the compost blanket should be repaired if it has been moved or damaged by wind or storm runoff and/or if part of or the whole blanket is not in contact with the soil surface.

Compost Sampling And Characterization Of Compost

Sampling procedures to be used for purposes of this specification (and the Seal of Testing Assurance program) are as provided in 02.01 Field Sampling of Compost Materials, 02.01-B Selection of Sampling Locations for Windrows and Piles of the Test Methods for the Examination of Compost and Composting (TMECC), Chapter 2, Section One, Sample Collection and Laboratory Preparation, jointly published by the USDA and USCC (2002 publishing as a part of the USDA National Resource Conservation Technical Bulletin Series). The sample collection section is available online at http://compostingcouncil.org/tmecc/.

Test Methods to be used for purposes of this specification are as provided in The Test Methods for the Examination of Compost and Composting (TMECC), Jointly published by the USDA and USCC (2002 publishing as a part of the USDA National Resource Conservation Technical Bulletin Series). A list of such methods is provided online at http://compostingcouncil.org/tmecc/

References

Chapter 3 Vegetative Considerations
Chapter 6 Surface Stabilization

- 6.03 Surface Roughing
- 6.10 Temporary Seeding
- 6.11 Permanent Seeding
- 6.17 Rolled Erosion Control Products

Test Methods for the Examination of Compost and Composting TMECC), jointly published by the USDA and US Composting Council (2002 publishing as a part of the USDA National Resource Conservation Technical Bulletin Series). http://compostingcouncil.org/tmecc/

ECTC. 2004. Erosion Control Technology Council Standard Specification for Rolled Erosion Control Products. Rev. 4904. www.ectc.org

Fifield, J. 2001. Designing for Effective Sediment and Erosion Control on Construction Sites. Forester Press, Santa Barbara, CA. GA Soil and Water Conservation Commission, 2000. Georgia Erosion and Sediment Control

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