Compost Research & Education Foundation

EROSION CONTROL BLANKET

USING COMPOST AS A MEDIA

Description:
This work consists of applying a coarser compost onto a sloped soil surface to prevent runoff, reduce erosion and enhance vegetation establishment for long-term slope stabilization.

Key Benefits/Return on Investment:

- Reductions in sediment movement: 67–99%,
- Stormwater runoff reductions: 60–97%,
- Nutrient savings: 50–100% for multiple years,
- Water savings – minimum of 25%,
- Enhances seed germination, plant establishment and slope cover percentage,
- Cost of 1 and 2 inch application is equal to single and double rolled erosion control blankets, and less if seeding, and
- Assists with building projects seeking LEED credits.

This technique can be used for both temporary and permanent erosion/sediment control applications in areas affected by sheet flow erosion patterns (not concentrated flow). It is appropriate for slopes up to a 2:1 grade (horizontal distance:vertical distance), but may also be used on up to 1:1 slopes with proper consideration to length of slope and compost application rates (depth). In severe cases, an erosion netting that is stapled/staked to the soil surface may be used under or over the blanket.

Construction Requirements:

- Coarse compost should be uniformly applied over the graded surface using a grading blade, pneumatic blower, slinger, or other spreading unit, to a depth described below. The goal is to achieve 100% soil coverage with the compost layer. Areas receiving greater precipitation, possessing a higher erosivity index, or which will remain unvegetated, will require greater application rates.
- Seed may be applied to the soil surface before compost application, during application (using specialized equipment) or after application. If applied after compost application, seeds should be covered to protect them from birds and desiccation (drying out).
- Apply compost layer uniformly, achieving 100% soil coverage, approximately 3 feet beyond the top of the slope or overlap it into existing vegetation. On highly unstable soils, use compost in conjunction with appropriate structural and diversion measures. Follow by seeding or ornamental planting if desired. Where possible, track (compact) the slope, before or after compost application, using a tracking bulldozer or other appropriate equipment. The indentations can capture water and prevent any water from moving between the soil-compost interface.

Product: Use only a well-composted product that contains no substances toxic to plants where immediately planting grass, wildflower, legume seeding or ornamental plants. Very coarse compost may need to be avoided if the slope is to be landscaped or seeded, as it will make planting and crop establishment more difficult. Compost containing fibrous particles that range in size produce a more stable compost blanket.

Annual Rainfall	Total Precipitation & Rainfall Erosivity Index	Application Rate for Vegetated* Compost Surface Mulch	Application Rate for Un-vegetated Compost Surface Mulch
Low	1-25″	½ - ¾″	1″ – 1 ½″
Average	26-50″	¾ - 1″	1 ½″ – 2″
High	51″ and above	1-2″	2-4″

EROSION CONTROL BLANKET
Using Compost as a Media

Compost Parameters:

Parameters [1,2]	Reported as (Units of Measure)	Surface Mulch to Be Vegetated	Surface Mulch to Be Left Un-vegetated
pH[3]	pH units	6.0–8.5	N/A
Soluble Salt Concentration (Electrical Conductivity)	dS/m (mmhos/cm)	Max 5*	Max 10
Moisture Content	%, wet weight basis	30–60%	30–60%
Organic Matter Content	%, dry weight basis	25–65%	25–100%
Particle Size	% passing a selected mesh size, dry weight basis	3 in. (75 mm), 100% passing 1 in. (25 mm), 90% to 100% passing 3/4 in. (19 mm), 65% to 100% passing 1/4 in. (6.4 mm), 0% to 75% passing Max particle length of 6 in. (152 mm)	3 in. (75 mm), 100% passing 1 in. (25 mm), 90% to 100% passing 3/4 in. (19 mm), 65% to 100% passing 1/4 in. (6.4 mm), 0% to 75% passing Max particle length of 6 in. (152 mm)
Stability - Carbon Dioxide Evolution Rate	mg CO2-C per g OM per day	< 4	< 8
Maturity (Bioassay) Seed Emergence and Seedling Vigor	%, relative to positive control %, relative to positive control	Minimum 80% Minimum 80%	N/A
Physical Contaminants (man-made Inerts)	%, dry weight basis	< 0.5 (0.25 film plastic)	< 0.5 (0.25 film plastic)
Chemical Contaminants[4]	mg/kg (ppm)	Meet or exceed US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3 levels	Meet or exceed US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3 levels
Biological Contaminants[5] Indicator Organisms Fecal Coliform Bacteria, and/or Salmonella	MPN per gram per dry weight MPN per 4 grams per dry weight	Meet or exceed US EPA Class A standard, 40 CFR § 503.32(a) levels	Meet or exceed US EPA Class A standard, 40 CFR § 503.32(a) levels

**Note: maximum salt allowances may be 10 dS/m if seed germination trials confirm both germination and vigor of 80% or more*

General:

The Engineer or Landscape Architect shall specify the compost application rate depending upon specific site (e.g., soil characteristics, existing vegetation) and climatic conditions, as well as particular project related requirements. The severity of slope grade, as well as slope length, will also influence compost application.

References:

Alexander, R. 2022. AASHTO Designation: R 52-10 specification.

Faucette B, C. Jordan, M. Risse, M. Cabrera, D. Coleman, L. West. 2005. Evaluation of Storm Water from Compost and Conventional Erosion Control Practices in Construction Activities. Journal of Soil and Water Conservation. 60:6: 288-297.

Faucette, L. Britt, J. Governo, C.F. Jordan, B. G Lockaby, H. F. Carino, and R. Governo. 2007. Erosion control and storm water quality from straw with pam, mulch, and compost blankets of varying particle sizes. Journal of Soil and Water Conservation. 62:6: 404-413.

Faucette, B., B. Scholl, E. Beighley, and J. Governo. 2009. Large-scale performance and design for construction activity erosion control best management practices. Journal of Environmental Quality. 38:1248-1254.

Gaskin, J., J. Governo, B. Faucette, Debbie Borden. 2002. Closing the Organic By-Product Loop Part 1: An Overview of Large-Scale Composting in Georgia.

***The Seal of Testing Assurance (STA) Certified Compost Program provides a comprehensive history of compost analysis results from proficiency-tested laboratories, list of ingredients, and suggested directions for using that unique product.**
www.compostingcouncil.org/participants

[1] Recommended test methodologies are provided in Test Methods for the Examination of Composting and Compost (TMECC, The Compost Research & Education Foundation).
[2] Landscape architects and project (field) engineers may modify the allowable compost specification ranges based on specific field conditions and plant requirements.
[3] 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.
[4] US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3 levels = Arsenic 41ppm, Cadmium 39ppm, Copper 1,500ppm, Lead 300ppm, Mercury 17ppm, Molybdenum 75ppm, Nickel 420ppm, Selenium 100ppm, Zinc 2,800ppm.
[5] US EPA Class A standard, 40 CFR § 503.32(a) levels = Salmonella <3 MPN/4grams of total solids or Fecal Coliform <1000 MPN/gram of total solids.

Developed for the CREF by R. Alexander Associates, Inc.