STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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September 25, 2014

Mr. Erik Krippaehne
Pacific Inter-Mountain Distribution, LLC
468 Ash Road, Unit F
Kalispell, MT 59901

Re: Functional Equivalency with BMP C126 and BMP C140

Dear Mr. Krippaehne:

The Washington State Department of Ecology (Ecology) finds Envirotac II functionally equivalent to BMP C126 Polyacrylamide for Soil Erosion Protection and BMP C140 Dust Control, as described in the *2012 Stormwater Management Manual for Western Washington* (SWMMWW) and the *2004 Stormwater Management Manual for Eastern Washington* (SWMMEW).

We have enclosed additional information on the use of this product with this letter.

Ecology does not endorse this product or its manufacturer.

Contractors may use Envirotac II at construction sites without seeking additional Ecology approval. Users must follow manufacturer operation and maintenance recommendations.

For more information, contact Douglas C. Howie, P.E. at douglas.howie@ecy.wa.gov or (360) 407-6444.

Sincerely

Douglas C. Howie, P.E.
Program Development Services
Water Quality Program

cc: Kathleen Emmett

Enclosures

BMP C126: Polyacrylamide for Soil Erosion Protection

Purpose

Acrylic Copolymers, like Envirotac II, are used on construction sites to prevent soil erosion due to wind and water.

Applying acrylic copolymers like Envirotac II to bare soil significantly reduces wind and water erosion and controls sediment. The Acrylic Copolymer extends down into the soil and, once the water evaporates, forms a tough surface web or crust capable of resisting wind and water erosion. This decreases the sediment transfer on site and improves water quality.

Conditions of Use

Envirotac II shall not be directly applied to water or allowed to enter a waterbody or tributary.

Envirotac II can be applied to bare soil under the following conditions:

- During rough grading operations.
- In staging and construction areas.
- Balanced cut and fill earthwork.
- Exposed soils and slopes prone to erosion.
- Haul roads prior to placement of crushed rock surfacing.
- Compacted soil roadbase/subgrade.
- Stockpiles.
- After final grade and before paving.
- Final seeding and planting (used as tackifier).
- Pit sites.
- Sites having a winter shut down. In the case of winter shut down, or where soil will remain unworked for several months, Envirotac II should be used together with mulch or at a higher concentration.

Design and Installation Specifications

Envirotac II may be applied neat or diluted to the proper rate with water and applied using approved water delivery equipment. The preferred application method is using a distributor truck, water pull, water truck, or hydroseeder. Envirotac II is to be applied a rate of 275-1,200 gallons of concentrate per acre depending on performance requirements. Table 4.8 can be used to determine the Envirotac II and water application rate for disturbed soil areas and slopes. Higher concentrations of Envirotac II do not provide additional effectiveness.

Table 4.8
Envirotac II Dilution and Application Rates

Dilution Rate (water:product)	Application Rate	Longevity	Intended Use
2:1	45-60 ft^2or 20 ft^2 (for heavy traffic)	1-2 years	Any exposed soils/light traffic/heavy traffic
3:1	60-150 ft^2.	1 year	Any exposed soils/light traffic
4:1	170-250 ft^2	12-16 months	Any exposed soils
6:1	200-300 ft^2	8-12 months	Stockpiles/Non-traffic soils
8:1	210-390 ft^2	8-12 months	Non-traffic soils
10:1	450 ft^2	8-10 months	Tackifier

The Preferred Method:

- Pre-measure the area where Envirotac II is to be applied and calculate the amount of product and water necessary to provide coverage and performance at the specified application rate.
- Envirotac II is readily miscible in water and will self-mix, to avoid foaming, add water first and then the Envirotac II.
- Fill the water truck with water to specified volume, then add Envirotac II to water truck. The water does not have to be potable, and can have up to 4% salinity.
- Spray Envirotac II/Water mixture onto pre-moistened or dry soil until the soil surface is uniformly and completely wetted.
- Stay off area and let cure for a minimum of 24-hours. If temperatures are low (45-55°F) and humidity is high during curing, the curing time should be extended to 72-hours or until the treated surface has formed the surface crust.

Slopes

- Slopes shall be treated after slope preparations are complete.
- Use compaction and track walking or pad rolling to roughen the slope in preparation for treatment.
- Pre-moisten the treatment area to relieve surface tension. Depending on which is easier, spray from toe or crown of slope.
- Uniformly spray product on slope working in a sweeping motion from the crown to the toe.
- If material starts to run off, wait and allow for product penetration before continuing application.
- Application must be uniform. Environmentally friendly dyes can be used to help maintain uniformity of applied product.

Pad Rolled Slope

Track Walked Slope

An Alternate Method:

Depending on the protection necessary(traffic vs non-traffic), the product can be scarified and mixed into the top 4 inches of soil and compacted to 95% then treated once more to create a more durable and water resistant surface that can handle traffic.

The following shall be used for application of Envirotac II:

- Envirotac II shall be used in conjunction with other BMPs and not in place of other BMPs.
- Do not use Envirotac II on a slope that flows directly into a stream, wetland,

or other waterbody. The stormwater runoff should pass through a sediment control BMP prior to discharging to surface waters to ensure clean water act compliance.

- Do not add Envirotac II to water discharging from site.
- When the total drainage area is greater than or equal to 5 acres, Envirotac II treated areas shall drain to a sediment pond.
- Areas less than 5 acres shall drain to sediment control BMPs, such as a minimum of 3 check dams per acre, to help slow down the run-off flow rate. The total number of check dams used shall be maximized to help achieve the greatest amount of settlement of any sediment prior to discharging from the site. Each check dam shall be spaced evenly in the drainage channel through which stormwater flows are discharged off-site.
- On all sites, the use of silt fence shall be maximized to limit the discharges of sediment from the site.
- All areas not being actively worked shall be covered and protected from rainfall, using acrylic copolymers. Envirotac II shall not be the only cover BMP used.
- Envirotac II can be applied to any soil, but overly wet soils may need to be dried prior to application and overly dry soils may require some pre-wetting. Envirotac II will work when applied to saturated soil but is not as effective as applications to dry or damp soil.
- Keep product from freezing.
- Proper application and re-application plans are necessary to ensure total effectiveness of Envirotac II usage.
- Envirotac II is very slippery when top loading a truck and can be a safety hazard, therefore, fall protection must be worn.
- Envirotac II will not harm paved surfaces and will simply bind to the paved surface if there is over spray. No hazardous conditions will arise.
- If Envirotac II gets on skin rinse with soap and water. Precautions should be taken to avoid clothing contact as product WILL NOT wash out.
- Some polymers are more toxic and carcinogenic than others. Only the most environmentally safe polymer products should be used.
- The specific acrylic copolymer formulation must be non-ionic. Recent media attention and high interest in soil stabilization has resulted in some entrepreneurial exploitation of the term "polymer & copolymer." Not all polymers are created equal, and not all polymers/copolymers should be considered an appropriate product, simply by the use of the term polymer. Acrylic copolymers like Envirotac II shall consist of 28-55% active solids. Envirotac II use shall be reviewed and approved by the local permitting authority.
- Acrylic copolymers like Envirotac II designated for these uses should be "water soluble".
- Acrylic copolymer tackifiers are available and being used in place of guar and alpha plantago. Typically, acrylic copolymer tackifiers should be used at a rate of no more than 75-150 gallons per acre with 1000-1500 gallons of water in a hydromulch machine. In addition, pump problems can occur at higher rates if not properly rinsed.

Maintenance Standards

- Envirotac II may be reapplied on previously worked areas.
- Reapplication is required after treated soil is disturbed or turbidity levels

show the need for an additional application. If Envirotac II treated soil is left undisturbed a reapplication may be necessary after 12 months.

- More Envirotac II applications may be required for steep slopes, silty and clayey soils (USDA Classification Type "C" and "D" soils), long grades, and high precipitation areas.
- When Envirotac II is applied first to bare soil and then covered with straw, a reapplication may be necessary to tack the straw down, or apply straw prior to applying acrylic copolymer, this application is ideal for long term erosion control.