

EXPANDED CLAY TIRE (ECT) MEDIA SPECIFICATION

1.1. Description

Bold & Gold ECT Filtration media is a Biosorption Activated Media (BAM) for stormwater treatment in conjunction with other structural or non-structural stormwater BMPs. Bold & Gold (B&G) Filtration media is a patented product developed at the Stormwater Management Academy of the University of Central Florida.

1.2. Responsibility

The contractor shall be responsible for the satisfactory delivery, stockpiling, installation, and maintenance of the ECT filtration media during construction based on information provided in the Contract Documents and as provided by the supplier. The ECT filtration media shall be purchased from an approved source.

Contact the local Ferguson Waterworks branch for pricing information. **A Certificate of Authenticity to the Engineer of Record at the completion of the project can be provided. The Certificate of Authenticity includes the quantity of media delivered to the project site and certifies CTS delivered meets the patent requirements of the University of Central Florida.**

1.3. Material

Composition: The ECT filtration media shall be manufactured with mineral materials and no organic materials. The final product shall have less than 2% passing the US #200 (75 micron opening size) sieve. The media mix shall be composed of 75% expanded clay (light-weight aggregate of maximum aggregate size of $\frac{3}{8}$ inches) and 25% sorption materials composed of recycled tire chip with no measurable metal contents. Percentages shall be determined by in place volume.

Water passing through the media must not exhibit acute or chronic toxicity and not change the pH of the filtered water by more than 1.0 unit. The material shall have a water holding capacity of at least 5%, as measured by porosity, and a total porosity of 40%. The permeability as measured in the laboratory must be greater than 96 inches per hour at maximum compaction.

Storage and Handling: The ECT filtration media is delivered pre-mixed and ready to install. Media shall not be stockpiled longer than 30 days before installation and must be covered to prevent separation of the material due to adverse weather and environmental conditions such as but not limited to rainfall and wind.

1.4. Construction

Delivery of the Material: ECT filtration media is delivered to the jobsite pre-mixed and ready for installation. The delivered material is certified to meet the patent requirements and a certificate shall be issued as stated in Section 1.2 of this specification.

Installation: Surface on which the ECT filtration media is placed shall be reasonably levelled within ± 1 -inch of the elevations shown in the plans. Unless a slope grade is specified in the plans, a level surface is recommended for the subgrade soil to ensure even infiltration of filtered stormwater spread over the entire surface area.

Adjacent Areas: The ECT filtration media shall not be installed until all areas that drain to it have temporal/permanent erosion and sedimentation stabilization in place. No runoff shall be directed to the specified location of the ECT filtration Media until all drainage area leading to the location are stabilized. If the installed ECT filtration media becomes contaminated with sediment, prior to the placement of the cover material, it shall be removed and replaced at the contractor's expense.

Compaction: The ECT filtration media shall be placed loosely or compacted to meet the specifications as shown in the plan by the design engineer. Compaction of the ECT filtration Media shall be achieved by using industry-standard compaction techniques. The ECT filtration media may be placed in one lift and compacted to the density specified in the plan by the design engineer. The compacted thickness shall be no less than the thickness shown in the plans. Clean water with no contaminants may be added to the material to meet the compaction requirements. If the compacted ECT filtration media has an in- place density greater than 105% of the required density, the material will be reworked to meet density requirements.

1.5. Maintenance

Maintenance requirements for the ECT filtration media shall be dependent on the proper functioning and maintenance of all components of the applicable BMP in which the filter media is used. To prevent the clogging of the voids of the ECT filtration media, there shall be installed a prefilter prior to the filter media surface for gross pollutant controls.

In the event of the clogging resulting from the reduction of permeability through the prefilter material and the filter media, the sediment-laden cover prefilter shall be removed and replaced with new material meeting the original specifications. Reduction in permeability shall be described as the increase of the drawdown time that exceeds the design duration for the specific BMP application.

ECT filtration media is typically designed to last the life span of the applicable BMP. However, maintenance shall be performed if the ECT filtration media has shown a reduction in the performance efficiencies on the reduction of Total Phosphorus (TP) below the design value before and/or at the expiration of the design service life. The maintenance procedure shall involve the removal of the prefilter and ECT filtration media and replaced with new material and filter media meeting the original

specifications. The spent filter media and cover material shall be disposed of at an approved landfill.

1.6. Applications

ECT filtration media is recommended for use as first BMP such as Up- flow filter baffle box and constructed wetland as defined by the user.

It is not intended for storage to control volume attenuation but provides some storage capacity to the limits of the available porosity of 0.25 of the volume occupied by the filter media.

1.7. Design Considerations

The primary control for sizing the ECT filtration media is to capture the water quality volume to achieve a specific removal effectiveness and to pass it through the filter media with a specified hydraulic residence time to achieve the target level pollutant mass removal within a specific recovery time. There are two primary calculations needed, namely surface area and for a given thickness of media an expected service life.

Surface Area: Surface area is the area through which the water flows. The minimum surface area is dependent on the treatment rate and the volume of runoff to be treated. The volume of runoff to be treated is a function of the rainfall excess at the water quality treatment depth. A factor of safety is applied to the area or to the treatment rate to recognize clogging over a period of time. Most applications required a minimum depth to achieve the removal. Thus, the volume and mass of media is calculated based on the surface area and flow rate of the media.

Expected Service Life: Expected service life is dependent on the removal rate of a mass of pollutant, usually orthophosphate, per unit weight of filter media, as well as the mass of pollutant that must be removed in a period of time, usually one year. Thus, the expected service life in years is the removed mass of the pollutant achieved by the media divided by the removal rate per year.