



How to Use the List of Registered Treatment and Distribution Products Subsurface Sewage Treatment Systems

The Subsurface Sewage Treatment System (SSTS) Product Listing, and accompanying information, provides direction on the use of registered treatment and distribution products in Minnesota. This factsheet provides information about the process used to register SSTS products, treatment levels, list(s) of SSTS products, along with design, installation, and operation and maintenance requirements.

A webpage was developed to provide SSTS information for the following groups of products: 1) sewage tanks, 2) sewage treatment devices, and 3) sewage distribution media products. This main webpage is found on the Minnesota Pollution Control Agency's (MPCA) website at: <http://www.pca.state.mn.us/qzqhb0e>.

Background

The process for listing registered treatment and distribution products for SSTSs was established initially in 2008 and amended in 2011.

The products on the 'Lists' are registered for use in Minnesota. What this means is that listed products have demonstrated they meet minimum requirements contained in the rules; these rules are currently found at the following website: <https://www.revisor.mn.gov/rules/?id=7083&view=chapter>.

Manufacturers of proprietary products provide documentation to the MPCA, as specified in the rules, in order to register a product for use in Minnesota. Independent, third-party testing is required as part of the submittal process for treatment products. Manuals specific to Minnesota's requirements are typically prepared by manufacturers, and include design, installation, and operation and maintenance requirements.

The MPCA is not endorsing any product contained on the Registered Products lists. Inclusion on the lists means the products have met the minimum criteria outlined in Minnesota rule. Not all products listed are appropriate for all applications. Use of these lists does not take the place of MPCA licensed designers, advanced designers, inspectors, advanced inspectors, and service providers in designing, inspecting, and servicing these systems.

Technical Advisory Panel

A Technical Advisory Panel (TAP), composed of practitioners in the SSTS industry, is an integral part of the product review process. The TAP plays an important role in the review of submittals, providing recommendations to the MPCA, and helping to ensure product information is accessible and user-friendly. Further information on TAP can be found on the MPCA's website at: <http://www.pca.state.mn.us/foypb19>.

Registered Treatment Products Listing

There are two 'Lists' for Registered SSTS Treatment Products: 1) residential strength sewage treatment products, and 2) high strength sewage treatment products. Each list provides the name of the company, information about the product(s) registered, and a link to each company's website.

The product name and model(s) are listed, along with its design rated capacity (both flow and organic loading) for each model. Other information specific to each product, such as the need for a product to be operated in a certain way (i.e., in Mode 1 operation) or if ultraviolet light disinfection is required as part of the treatment process, is also specified in the listing. The MPCA product registration letter sent to each manufacturer is also posted on MPCA's website; this letter lists the specific conditions for product use in Minnesota.

Product Information

Manufacturers provide information to the MPCA as part of the registration process. The items listed under the section *Important Product Use Information* contains important information for each registered product, and should be ‘clicked’ to review it. The following provides a brief overview of the information under this section of the product listing:

- **Notice of Product Listing** – official notification letter from the MPCA to the manufacturer that the product is registered for use in Minnesota; describes its rated capacity, treatment level (for treatment products), and conditions for product use.
- **Manufacturers Manual** – this is a link to the manufacturer’s website that contained detailed information about their treatment or distribution media product.
- **Management Plan** – this is a link to the University of Minnesota Onsite Sewage Treatment Programs website, which contains numerous management plans for registered treatment products and for above-grade and below-grade soil treatment and dispersal systems.
- **Operating Permit** – numerous operating permit templates, instructions to complete an operating permit, with suggested permit language and monitoring and maintenance requirements.

Product Performance and Renewal

Proprietary treatment and distribution products are registered in Minnesota for up to three years, unless a product is recalled, found to be defective, or is no longer available. The product renewal process will include a feedback loop on product performance. Field assessments from local units of government will be requested as part of product renewal beginning in the fall of 2011.

Operating permits issued at the local level should provide some information related to product performance during the initial period of product registration. An independent, third-party audit of system performance may be needed to effectively evaluate product performance ‘in the field’ as the registration process is fully implemented over time.

Proprietary treatment products and treatment levels

Proprietary treatment products are listed by their ability to treat sewage to a specific treatment level. There are seven ‘Treatment Levels’ at which treatment products can be registered (Table 1). Products that meet the requirements of *Treatment Level A* meet the highest treatment standard in removing organic matter (15 milligrams per Liter [mg/L] Five-day Carbonaceous Biochemical Oxygen Demand [CBOD₅]), total suspended solids (TSS) (15 mg/L), and pathogenic indicator organisms (1,000 colony forming units [cfu]/100 milliliters [ml] fecal coliform bacteria).

Treatment levels are used to register products; they are not intended to be applied as strict, field compliance tools. Their intended use is to establish treatment product performance in the product registration process using established protocols, with testing performed by independent testing entities. By comparison, the requirements of a locally-issued operating permit for these systems will be used to determine system compliance; ‘template’ operating permits are available on the MPCA’s website for various treatment products.

Table 1. Treatment levels for proprietary treatment products in Minnesota

| Treatment Level | CBOD ₅ (mg/L) | TSS (mg/L) | Fecal Coliform (cfu/100ml) | Nutrient (mg/L) |
|------------------|--------------------------|------------|----------------------------|-----------------|
| A | 15 | 15 | 1,000 | - |
| A2 | 15 | 15 | - | - |
| B | 25 | 30 | 10,000 | - |
| B2 | 25 | 30 | - | - |
| C | 125 | 60 | - | - |
| Total Nitrogen | - | - | - | 20 |
| Total Phosphorus | - | - | - | 5 |

Products that meet *Treatment Level B* standards have been tested to reduce organic matter to 25 mg/L CBOD₅, total suspended solids to 30 mg/L TSS, and fecal coliform bacteria to 10,000 cfu/100 ml. Higher quality effluents using products that meet Treatment Levels A and B can be dispersed into suitable soils with reduced vertical soil separation and increased hydraulic loading rates, depending upon soil characteristics. Treatment Levels A2 and B2 require three feet vertical soil separation, but slightly higher hydraulic loading rates may be used. Treatment Level C (septic tank effluent) requires three feet vertical soil separation and full system sizing.

Soil dispersal requirements for different treatment levels are specified in Minn. R. 7080.2150 (Table IX and IXa) and 7080.2350 (Table XI).

Products are registered for treating high strength sewage (i.e., restaurants, grocery stores). These products have been shown to reduce wastewater from high strength to at least typical residential strength wastewater. The high strength wastewater products are listed as products that meet the requirements for *Treatment Level C*, or products shown to reduce wastewater to at least 'typical' residential strength sewage (125 mg/L CBOD₅, 60 mg/L TSS, and 25 mg/L oil and grease).

Nutrient listing

The list also identifies products registered for use in Minnesota that have been tested to reduce nitrogen and/or phosphorus. In order to be listed for nitrogen and phosphorus reductions, independent third party testing must have been completed and shown to meet a total nitrogen concentration of 20 mg/L or less and a total phosphorus concentration of 5 mg/L or less.

Distribution Media Products Listing

Distribution media includes 1) public domain distribution products like aggregate or drainfield rock, and 2) proprietary distribution products like expanded polystyrene aggregate and chambers. Distribution media are required to meet the following four performance standards:

- be non-decaying and non-deteriorating and does not leach unacceptable chemicals when exposed to sewage and soil
- provide adequate void space for the passage and temporary storage of effluent while maintaining a stable density throughout the life of the system
- support the distribution network, provides for suitable effluent distribution, and presents an interface with the infiltrative surface—trench bottom and side wall soil—for absorption of wastewater
- maintain integrity of the excavation, supports soil backfill and cover material, and weight of equipment used in backfilling

For public domain distribution technologies (aggregate or drainfield rock), the Drainfield Rock Distribution Media Recommended Standards and Guidance Document (November 2009) was developed. The purpose of this document is to identify specifications for drainfield rock used in the construction of trenches, beds, at-grades, and mounds. Gravel pit owners are not required to register their drainfield rock with the MPCA. However, drainfield rock is required to meet the specifications contained in the document found on MPCA's website at: <http://www.pca.state.mn.us/publications/wq-wwists4-40.pdf>.

For proprietary distribution media products, the listing contains the name of the company, along with a link to the manufacturer's website and contact information. The list contains detailed information for each product and model listed, along with product dimensions and other information on how the product is to be used in Minnesota. The MPCA product registration letter sent to each manufacturer is also posted, and provides specific conditions of product use in Minnesota.