



COLORADO

Department of Public
Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

March 5, 2015

Amanda Renner, Coordinator, Regulatory Affairs
Bio-Microbics, Inc.
8450 Cole Parkway
Shawnee, KS 66227

Subject: Bio-Microbics Proprietary Treatment Products - Review Acceptance
For Use in Colorado On-site Wastewater Treatment Systems

Dear Ms. Renner:

Pursuant to section 43.13 of the On-site Wastewater Treatment System Regulation 5 CCR 1002-43 (Regulation 43), the Water Quality Control Division (Division) has reviewed drawings and specifications received between October 10, 2014 and February 24, 2015, for the following Proprietary Treatment Products:

- Bio-Microbics, MicroFAST® 0.5, 0.625, 0.75, 0.9 and 1.5
- Bio-Microbics, RetroFAST® 0.375

The Bio-Microbics, MicroFAST® treatment technology is accepted as a higher level treatment system for use as a component of an on-site wastewater treatment system (OWTS) subject to the design criteria listed in Table 1 below. This acceptance is not intended as an endorsement or third-party certification of the technology.

This acceptance addresses the following models:

- Bio-Microbics, RetroFAST® 0.375 at the **treatment level TL2N** for flows up to 375 gpd.
- Bio-Microbics, MicroFAST® 0.5 at the **treatment level TL2N** for flows up to 500 gpd.
- Bio-Microbics, MicroFAST® 0.625 at the **treatment level TL2N** for flows up to 625 gpd.
- Bio-Microbics, MicroFAST® 0.75 at the **treatment level TL2N** for flows up to 750 gpd.
- Bio-Microbics, MicroFAST® 0.9 at the **treatment level TL2N** for flows up to 900 gpd.
- Bio-Microbics, MicroFAST® 1.5 at the **treatment level TL2N** for flows up to 1500 gpd.

This acceptance applies only to OWTS with design capacity less than or equal to 2,000 gallons per day (gpd). **Review and approval for the design of any OWTS proposing to use this technology will be reviewed by the local public health agency.** As individual local public health agency regulations may be more stringent than Regulation 43, the Division cannot ensure the acceptance of a treatment technology within any given jurisdiction.

Any modifications to the physical attributes or characteristics of this treatment technology must be submitted to this office for review and acceptance by the Division prior to sale in Colorado. The Division will review modifications, any additional third party verification reports and issue a revised acceptance letter, or denial, as appropriate.



- **Table 1. Design Criteria for Bio-Microbics, MicroFAST® 0.5, 0.625, 0.75, 0.9, 1.5 and RetroFAST® 0.375:**

Design Criteria

1. Surge volume may be needed for some non-residential applications based on manufacturer recommendations. Pretreatment for non-residential kitchens must include adequate separate grease separator tank(s) prior to the primary septic tank(s) as required in section 43.9(J) of Regulation 43.
2. The settling/trash tank prior to the treatment zone shall provide for a volume of at least 50 percent of the maximum daily design flow. Note, local agencies may, at their discretion, require additional tankage (volume) prior to the treatment zone.
3. The control panel and blower must be supplied by Bio-Microbics or their designated local supplier for both the RetroFAST and all MicroFAST models.
4. The air piping shall not exceed 100 feet in length and have a maximum of 4 elbows between the blower and the treatment unit. The piping shall be installed at a minimum 1% grade sloping back to the treatment unit so as to allow for the drainage of condensate in the pipe.
5. For installations at increased elevations, the size of the blower unit shall be adjusted so as to account for lower oxygen content. For sites up to 5,000 ft. in elevation, the standard blower unit may be installed. For sites up to 10,000 ft. in elevation, an increased blower must be used. For sites above 10,000 ft. in elevation, the manufacturer must be consulted.
6. It is the expectation that the blower unit will run on a continuous basis for all full-time residences. The available timer settings may only be applied to a part-time residence upon the acceptance of the manufacturer, design engineer and local permitting agency.
7. For sites where ambient temperatures can be below freezing and TL2N is the desired treatment level, system start up should occur prior to the onset of cold temperatures. Warm weather start-up is necessary in order to develop nitrifying bacteria in the treatment unit. The following criteria have been established in order to ensure that the required reduction in total nitrogen can be attained:
 - a. The system start up must be completed prior to the onset of cold temperatures during a period when the temperature of the wastewater entering the treatment unit is above 15 °C.
 - b. Should start-up of a treatment system be required during a period of cold weather where the temperature of the wastewater entering the treatment unit is 15 °C or below, a temporary heat source shall be provided until the nitrifying bacteria can be established. Sampling of the treated effluent for total nitrogen should be conducted in order to ensure that it is acceptable to remove the heat source. A 50 percent reduction in total nitrogen is required in order to meet TL2N standards.
8. The tank containing the treatment unit shall provide an additional access port no less than 6" in diameter, located in such a manner so as to provide easy access for pumping excess biomass that may accumulate within the treatment zone.
9. It is recommended that a sampling port be provided in order to obtain samples of the effluent subsequent to the treatment unit.
10. Design flow shall be for maximum occupancy. Design flow for single-family residential designs may vary based on the regulations adopted by the local board of health for the design location. Design flow values and strengths for multi-family and commercial systems shall be consistent with section 43.6(A)(4). Therefore, all design criteria in this acceptance are based on total gallons per day and the assumption of residential strength wastewater.

11. The design must include pressure dosed distribution of effluent. Reductions in soil treatment area size or separation distances shall be as described in sections 43.10(C)(4) and 43.7 of Regulation 43, respectively.
12. The designated higher level treatment rating is identified for each model on page 1. Use in higher level treatment applications requires system be designed by a Colorado Licensed Professional Engineer. The accepted treatment product may also be used for applications requiring less than the approved treatment level of the product. Reductions in soil treatment area size or separation distances based on higher level treatment may not be applied unless the local public health agency has a maintenance oversight program in place as described in section 43.14.D of Regulation 43. In locations where the local public health agency has not adopted a maintenance oversight program, the treatment system may be used but only with soil treatment area size and separation distances consistent with treatment level TL1 requirements.
13. In addition to these design criteria, other provisions of Regulation 43 and local regulations also apply to a specific design as well as good OWTS design practice. The Division does not approve manufacturer design manuals. Manufacturer provisions shall not be applicable if those provisions are not consistent with Regulation 43, these design criteria, and the regulations adopted by the local board of health for the design location. Local public health agencies will review proposed designs to confirm consistency with Regulation 43, these design criteria, the local board of health regulations adopted pursuant to Regulation 43, and good OWTS design practice.
14. Monitoring of the system may be required by the regulations adopted by the local board of health for the design location.
15. The treatment technology is not intended for industrial sources of wastewater. The treatment technology is intended to receive domestic wastewater with TL1 concentrations (see Table 6-3 in Regulation 43) exiting the septic tank. Wastewater with higher concentrations will require verification of ability to treat wastewater and appropriate modifications or pretreatment.
16. Design shall provide access for maintenance and repair. As per the requirements of Regulation 43, septic tanks and all treatment components, other than the soil treatment area, shall be equipped with access manholes and risers that extend to or above final grade. All risers and lids shall be watertight and secure.

Additional Operation and Maintenance Criteria

1. Design shall include an Operation and Maintenance (O&M) Manual to be provided for all installations. Individual operation plans shall include scheduled inspections, assessments, and maintenance of the treatment. This plan for scheduled inspections and assessments should include a routine inspection as described in section 43.14(D)(4)(b) unless the local regulations require more frequent inspections.

The owner of the OWTS is responsible for arranging proper design, operation, and maintenance of the facility to achieve the desired treatment level.

If you have any questions regarding the Division's review or findings, please contact me at (303) 692-2366 or chuck.cousino@state.co.us.

Sincerely,

Charles J. Cousino, REHS
On-site Wastewater Treatment System Coordinator
Engineering Section
Water Quality Control Division
Colorado Department of Public Health and Environment

cc: Tim Petz, ALL SERVICE septic, LLC
Files