



Lab Testing Procedures for bench test of WaterMix in municipal wastewater

Overview

Natura Solve provides a complex liquid medium that is produced via a proprietary fermentation process. It consists of a selected spectrum of naturally occurring microorganisms, sustained within a matrix of micro elements and macro elements that provide the critical building blocks for respiration and growth. Thus it simultaneously works as both a biocatalyst, stimulating endogenous bacteria metabolic and production rate and a specialized delivery medium for the highly effective bacteria. The formula is very aggressive due to the essential balance between the selected groups of microorganisms, which, when combined with the enzymes they produce, synergistically create catalyzing proteins that significantly speed up the biochemical reactions and natural decomposition processes of the organic material into humic matter

As such it requires four elements to operate:

1: Air

2: Nitrogen

3: Carbon

4: Moisture

In sewage, provided aeration is applied, all four elements are available to allow product to work. Once product is applied to sewage water, the microbiology immediately commences bio solid decomposition and stimulating native beneficial bacteria.

The resultant decomposition forms an active mud or sludge, which will settle at the bottom of the basin. Once the said mud reaches a 60 to 80% reading on an settling beaker, the plant is fully active and will process the desired inflow.

Daily the active mud will increase in proportion with the COD and the BOD and any excess mud or sludge (over 80%) can be drained and utilized as an organic fertilizer. Once the treated water exits the basin, it can be used for irrigation or safely discharged into river/sea/lake.

Note: Stage three of an existing sewage plant where chlorination takes place, can be eliminated.

Benefits

Rapid HRT – up to 75% Faster

Supremely Superior Set of Microbiology, adaptive and efficient

Pathogen Free Process

Odorless

Complete Decomposition of Organic Materials producing a nutrient rich Class A Fertilizer.

Rapid Digestion of Fats and Grease

Decomposition of Nano Materials

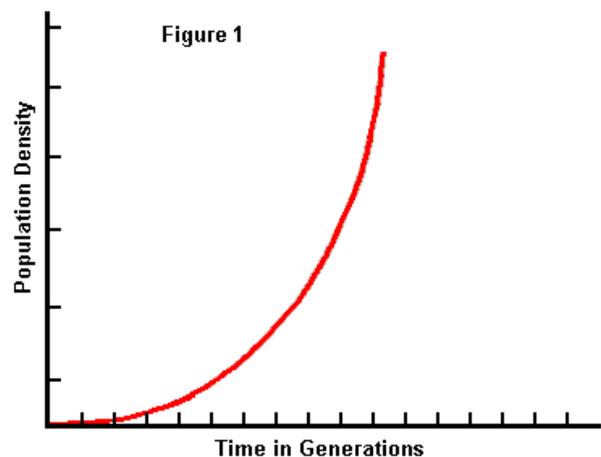
Full Reclamation of Water for Safe Agricultural Irrigation

Primary Test Data Required (before and after):

1. BOD / COD levels 2. Pathogen levels 3. Suspended Solid Levels-% 4. Dissolve Organic carbon-% 5. Precipitates-Humus-% 6. Fat and Grease levels 7. pH Levels, Temperature & Odor on 0-5 [max] scale 8. Opacity or clarity of water quality

Testing Equipment required:

- 2 Tote Tanks 330 gallon - capacity each
- 1 aerator pump for the above (small compressor)
- 1 Dissolved Oxygen meter (digital) to measure oxygen levels in the water
- 2 Ea. 1000 ml Settling cone.
- Raw municipal sewage water-Black color 1-2 GPH
- 1 kg Molasses ([Natura Solve will provide](#))
- 100 grams Calcium Oxide (CaO)
- 500 grams product ([Natura Solve will provide](#))
- 100 grams Phosphoric acid or organic lime
- 1 kg Powder milk (to accelerate the formation of active mud, in case of a low organic matter level in the sewage) ([Natura Solve will provide](#))
- Iron Sulphate (FeSO₄)
- Urea



Considering the natural curve of bacteria growth, the testing cycle takes a minimum of 6 days. This same test can be done in a digester as well, with more ease. Natura Solve will provide the first month at 50% of cost for the opportunity to do the test in the digester as opposed to the lab.

Pricing will be provided if you'd like to consider this option.

Bacteria

growth curve

Process

1. Start on Day 1 by pouring 50 gallons of raw sewage (black water) into the tank.
2. Switch on the aerators and ensure that a level of 2 milligrams per liter of dissolved oxygen is maintained for the first 24 hours. (Record DO Level)
3. Add 3.0 oz of product to start seeding the tank.
4. Add 50 Gallons of black water every 24 hours as per table below to the initial 50 Gallons.

First day : Sewer Water in Sludge Tank is reacting with product & Oxygen. Second day : Add 50 gallons of fresh raw screened sewage & 0.42 oz of product Third day : Add 50 gallons of fresh raw screened sewage & 0.42 oz of product Fourth day : Add 50 gallons of fresh raw screened sewage & 0.42 oz of product Fifth day : Add 50 gallons of fresh raw screened sewage & 0.42 oz of product

- Ensure Ph. is maintained between 6.4 and 7.2. Correct accordingly with Organic lime or Phosphoric acid. This must be done every day. Carbon/Nitrogen ratio should be maintained approximately 20:1.
- At this point, a 1000 ml sample must be taken with the settling beaker from the tank. Allow for a resting period of 30 minutes before reading the active mud or sludge volume.

*******DO NOT EXCEED 30 MINUTES*******

500 to 600ml of active mud should be present. If that is the case, carry on and add 1 Gallon of black water daily, reducing the amount of product to 0.5 gram per new 1 Gallon of black water added. At this point the Active Sludge/ Mud is now ready to be

self-sustaining for continuous flow of waste-water.

NOTE:

- After the sixth day, as black water is added, smells will be eliminated in minutes. The active mud should be of a chocolate color and fairly compact. Check that the mud or sludge is uniform and not stratified.

- Record observations. Smell, Color of mud, temperature and DO level- Daily

- Record odor level again after 1 hour after adding black water. Scale: 0-5 [Worst smell =5]

Continue adding 1 Gallon of raw sewage & 0.5 grams of product every 24 hours until the tank is full and observe the parameters with each addition.

Final Test (optional)

Involves continuous flow at 1 Gallon per day & 0.5 grams of product to prove HRT & SRT and quality of digestion in 12 hours. Third party lab analysis, sampling and pathogen certification is part of these tests besides HRT & SRT when continuous flow is established with increase in flow rate.