

E R G O F I T O I N A C T I O N

Give Nature What Nature Wants

Ergofito Sewage Lab Test Using Aqua GW



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www.ergofito.co.za

Tel: + 27 21 447 7114 / Email: info@ergofito.co.za

LABORATORY TEST FOR SEWAGE REMEDIATION USING ERGOFITO AQUA GW:

OBJECTIVE:

To conduct a laboratory pilot test using **Ergofito Aqua GW** as a bio-remediation agent to treat typical municipal sewer water or other effluent.

By implementing **Ergofito Aqua GW**, results will prove rapid elimination of odor and pathogens, remediation of grey water to meet local discharge standards without UV treatment or chlorination.

Bio solids will meet Class A fertilizer criteria and overall reduction in energy cost and operational cost.

Primary Test Data Required (before and after):

- BOD/COD levels
- Pathogen levels
- Suspended Solid Levels %
- Dissolve Organic carbon %
- Precipitates-Humus %
- Fat and Grease levels
- pH. Levels, Temperature & Odor on 0-5 [max] scale

Testing Equipment required:

- 1 X glass fish tank 60-to-80-liter capacity or container of similar size.
- 1 X aerator pump for the above (two are better).
- 1 X Dissolved Oxygen meter to measure oxygen levels in the water.
- 1 1000 ml Imhoff cone or any conical bottom pot with drain.
- 50 to 70 liters raw municipal sewerage (or desired effluent).
- 1Kg of **Ergofito Aqua GW**.

CONSTRUCTION:

Aeration is achieved by using a medium to large sized fish tank aeration pump. The air hose should be fitted with a non-return valve and split into four separate air hose outlets with each end outfitted with porous stones to prevent blockages. Ideally use pumps with dual outlets.

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Introduction:

Ergofito Aqua GW is a group of natural Microbiology and Enzymes acting as a highly efficient inert organic matter decomposer. As such it requires four elements to perform:

- Air
- Nitrogen
- Carbon
- Moisture

In sewage, provided aeration is applied, all four elements are available that allows **Ergofito Aqua GW** perform.

Once **Ergofito Aqua GW** is applied to sewage, the microbiology immediately commences bio solids decomposition.

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 in an Imhoff cone, the plant is fully active and will process the desired inflow of sewage.

The active mud will increase daily in proportion with the COD and the BOD, any excess mud or sludge (over 60%) can be drained and utilized as an organic fertilizer.

Once the treated water exits the basin, it can be used for agricultural irrigation or safely discharged into river/sea/lake.

Note: Stage three of an existing sewage plant where chlorination takes place, is totally eliminated as this will kill the **Ergofito Bacteria**.

Procedure:

1. Start on Day One by pouring 10 Liters of raw sewage in the tank.
2. Switch on the aerators and ensure that a level of 2.5 milligrams per liter of dissolved oxygen is maintained. (Record DO "Dissolved Oxygen" Levels)
3. Add 10 grams of **Ergofito Aqua GW** to start seeding the tank.
4. Add 10 Liters of sewage every 24 hours to the initial 10 liters of sewage in the tank with 5 grams of **Ergofito Aqua GW**.
5. This must be done every day. Carbon/Nitrogen ratio should be maintained approximately 20:1

After 7 days, a 1000 ml sample to be taken with the Imhoff tube from the tank. Allow for a resting period of 30 minutes before reading the active mud or sludge volume. **DO NOT EXCEED 30 MINUTES.**

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500 to 600ml of active mud should be present in the cone.
If this is the case, carry on and add 10 liters of sewage water daily, reducing the amount of **Ergofito Aqua GW** to 0.5 gram per new 10 liters of sewage added.

At this point the Active Sludge or Mud is now ready.
The additionally formed active mud is a ready to use as high-quality organic fertilizer

NOTE:

After the sixth day, as sewage 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 (Dissolved Oxygen) levels daily

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

Continue adding 10L of sewage & 0.5grams of **Ergofito Aqua GW** every 24 hours until the tank is full and observe the parameters with each addition.

Laboratory test conclusion:

The above test will demonstrate **Ergofito Aqua GW** capability to deal with raw sewage, odour, pathogens and converting organics-dissolved & suspended solids to inert organic matter.

The technique of operation remains the same at any scale. The results can be tailor made to produce high quality organic fertilizer and irrigation water.

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Unfortunately, the tank test cannot simulate a continuous flow system, however if one should wish to do such a test it is important to note that a 16-hour retention time in the activated microbiology tank is required prior to the water flowing out continuously. This would require a larger pilot test as detailed in the attached diagram.

Conventional sewage treatment plants application:

There are several type and systems of sewage treatment plants. Some have three stages, some have more as they may chlorinate and de-chlorinate the outlet water.

With **Ergofito Aqua GW**, we are able to maintain a two-stage sewage treatment plant. Only if the outlet water is used to transform it into potable water, will additional stages be required.

For irrigation water or discharge water into a lake/sea/river/pond the two above-mentioned stages with **Ergofito Aqua GW** are sufficient.

Ergofito Aqua GW is able to operate in existing sewage treatment plants with any of the systems or tanks usually constructed in such plants.

Compressed air aeration tanks, rotating arm aeration tanks or any of the other design will allow **Ergofito Aqua GW** to do its work.

Ergofito Aqua GW does not require a degreasing stage for oil and fats, it is considered bacterial food for **Ergofito Aqua GW** and will we break down accordingly.

Practical example:

The theoretical test case is a Continuous Shriver process plant with a capacity of 4 million gallons of raw sewage daily (16,000 cubic meters). The said plant is a 7 stages process.

- | | |
|-------------------|-----------------------------|
| ○ Preliminary | Remain the same |
| ○ Primary | Degreasing is not necessary |
| ○ Aeration | Remain the same |
| ○ Clarification | Remain the same |
| ○ Chlorination | Not required |
| ○ De-chlorination | Not required |
| ○ Digestion | Not required |

The initial bacterial load will be 5 grams per cubic meter; therefore, for this plant it will require 80 Kg of **Ergofito Aqua GW** (Plant Seeding).

The daily requirement thereafter will average at 2 grams per cubic meter per day. Therefore, the daily requirement is 32 Kg of **Ergofito Aqua GW**.

The active mud recovered can be sold as high-grade fertilizer and is calculated at 0.5 grams per liter of black water if the BOD has an average of 800.

The above plant will produce 8 tons of organic fertilizer daily.

Pathogens:

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The purpose of **Ergofito Aqua GW** is to quickly decompose all inert organic matter and eliminate all pathogens rapidly (E-coli, Salmonella etc.). It is therefore practical to use both the treated water and the active mud in agricultural scenarios.

The active mud is totally pathogen free and can be classified as a fertilizer.

Conclusion:

There are many ways to adapt **Ergofito Aqua GW** to practical solutions.

The decomposing ability of **Ergofito Aqua GW** allows it to operate in scrubbers, treatment plants, and effluents plants and anywhere where odor is offensive and needs to be eliminated.

Load bins on Garbage trucks (as well as the garbage bins) can be sprayed with **Ergofito Aqua GW** to eliminate all odors.

Domestic drains and sewer pipes can be sprayed with **Ergofito Aqua GW** to eliminate all odors.



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