

Nitrification & Denitrification

Boost the nitrification and maintain nitrification
under stressful condition



Nitrification & Denitrification Microbe

Introduction

As total nitrogen removal becomes more prevalent on wastewater treatment permits, plants need to incorporate denitrification into their wastewater treatment process. Total nitrogen removal using biological method employs two distinct processes: nitrification and denitrification.

Ammonia removal is one of the most important and difficult processes to maintain in wastewater treatment plants. It can be impacted by various environmental factors, shock loading, toxicity and solids loss. Success or failure of the process depends on the ability of nitrifying bacteria within the microbial community to degrade ammonia, tolerate harsh conditions, and respond quickly after nitrification disruptions.

Wastewater denitrification is a sensitive process and requires a specific set of operating conditions, an available carbon source, nitrate, and denitrifying bacteria.

What is Nitrification microbe

Nitrification microbial enzyme is unique nitrification technology containing nitrifying bacteria for a variety of wastewater types. The nitrifying bacteria thrive in a wide range of wastewater types and respond quickly during upset conditions to restore nitrification. It contains the most effective nitrifying bacteria for wastewater nitrification.

Denitrification microbial enzyme contains fast-acting and robust denitrifying bacteria that work in a wide range of industrial and municipal wastewater treatment processes. It increases start-up speed, improves

denitrification stability, shortens recovery time after upsets, and reduces the risk of non-compliance.



Application & Uses

- ✓ Wastewater treatment plants
- ✓ Industrial waste water treatment
- ✓ Municipal sewage
- ✓ Commercial waste water
- ✓ Septic waste water

How does it work

The biological conversion of ammonium to nitrate nitrogen is called Nitrification. Nitrification is a two-step process. Bacteria known as Nitrosomonas convert ammonia and ammonium to nitrite. $\{2\text{NH}_3 + 3\text{O}_2 \rightarrow 2\text{HNO}_2 + 2\text{H}_2\text{O} + 158\text{ kcal (660kJ)}.\}$

Next, bacteria called Nitrobacter finish the conversion of nitrite to nitrate. The reactions are generally coupled and proceed rapidly to the nitrate form; therefore, nitrite levels at any given time are usually low. $\{\text{HNO}_2 + 1/2\text{O}_2 = \text{HNO}_3 - \Delta G = 18\text{ kcal}.\}$

Denitrification. The biological reduction of nitrate (NO_3) to nitrogen gas (N_2) by facultative heterotrophic bacteria is called Denitrification. "Heterotrophic" bacteria need a carbon source as food to live. "Facultative" bacteria can get their oxygen by taking dissolved oxygen out of the water or by taking it off of nitrate molecules.

Benefit of Nitrification & Denitrification microbe.

- ✓ Effective removal of ammonia nitrogen
- ✓ Speed up the nitrification process; convert the harmful nitrite/ hydrogen sulfide/ ammonia nitrogen to harmless nitrogen and/or nitrogen oxide.
- ✓ Control and reduction of excess sludge generation.
- ✓ Reduction in Color of the treated sewage water
- ✓ Suppresses foul odor of the treated effluent.
- ✓ Prevents proliferation of Pathogens
- ✓ Improved ability to handle higher hydraulic loads and shock loads.

Dosage & Method

For Industrial waste water:

- 1) Initially dosing 100~200 gram / 1time / cum to aeration tank,
- 2) Dissolve bacterial into water, 1kg: 10 liter, stir a little bit until complete dissolved , keep for 30 mins.
- 3) Turn off inflow & outflow valve, then pour bacterial into aeration tank. Keep aerating for 24 hours.
- 4) 1/3 inflow at first day, 2/3 at second day, full open at 3rd day, to reduce shock impact to biological system.

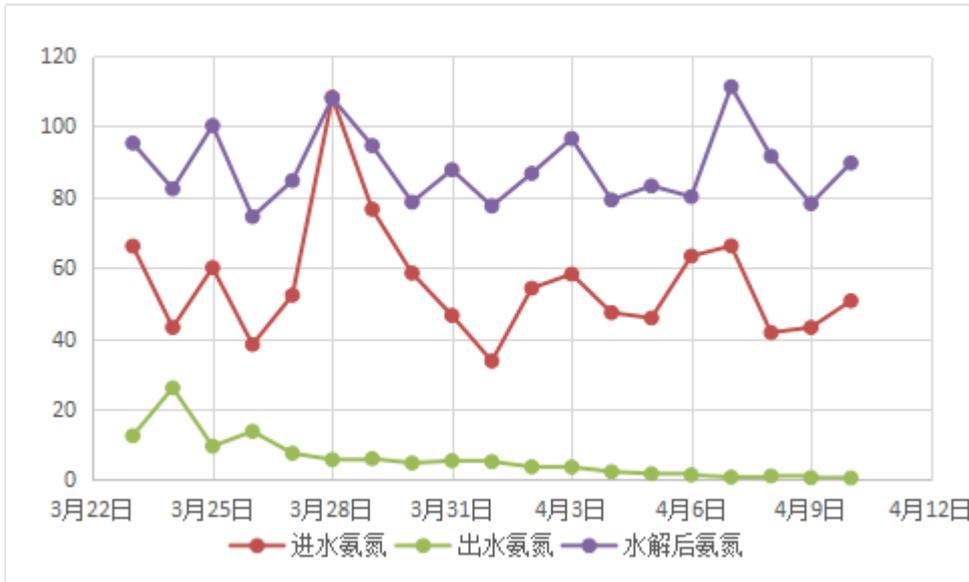
For domestic waste water:

- 1) Initially dosing 50~80 gram / 1 time /cum, 1 time / 3 days, keep dosing 5 times.
- 2) Subsequently dosing 30 ~50 gram / 15 days for keep system performance.

Case Study

Textile & Dying Industry (Shangdong Daiyin Textile Co., ltd)





Chemical Industry (Shangdong Xinsha Energy Co., Ltd)

