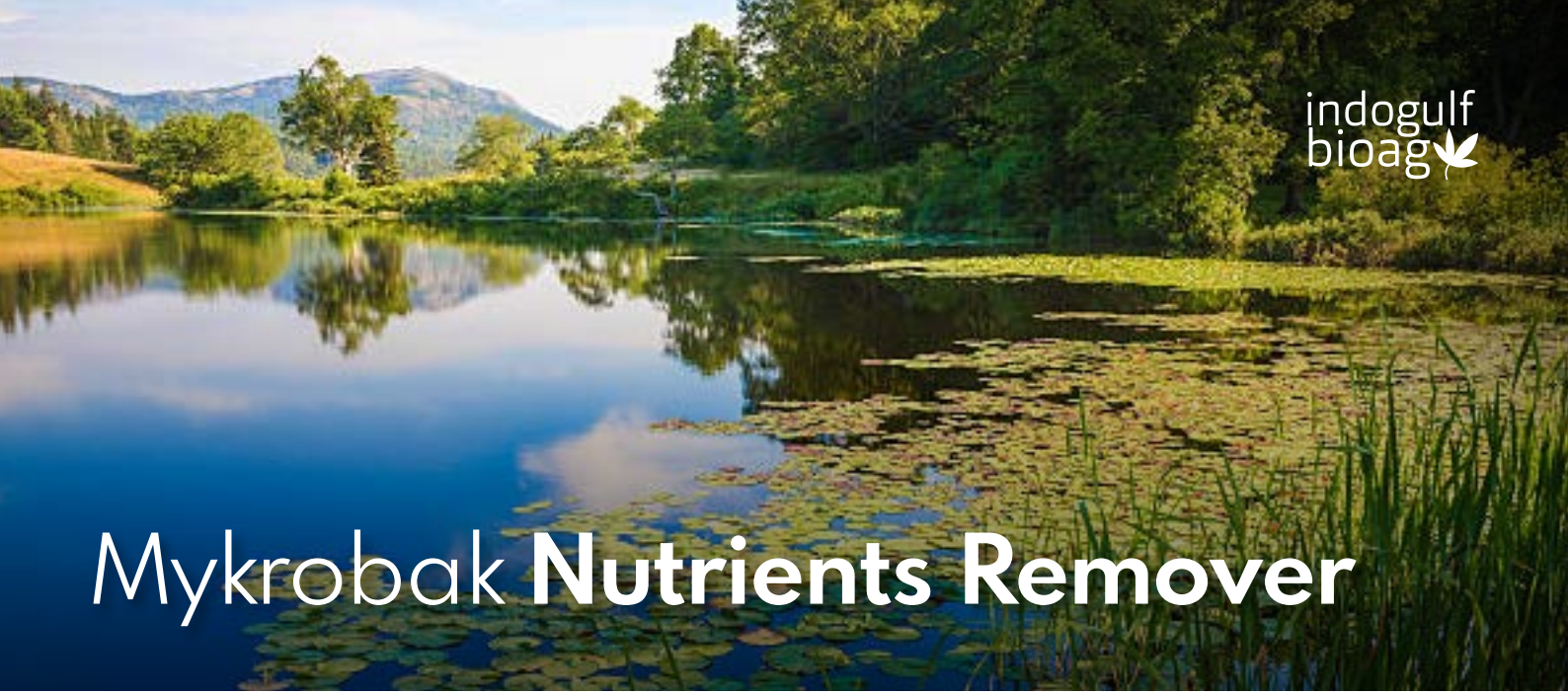
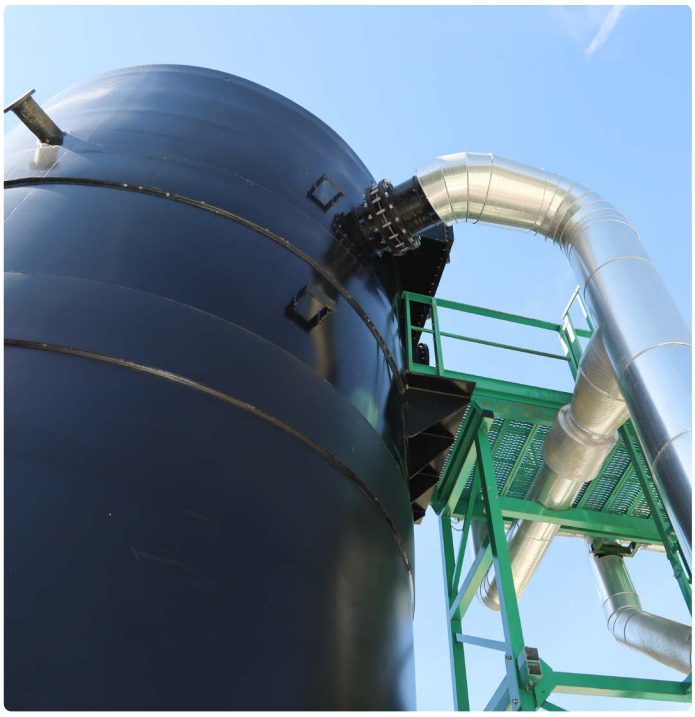


Mykrobak **Nutrients Remover**

What is Mykrobak Nutrients Remover?

MYKROBAK Nutrient Remover consists of a wide variety naturally selected bacterial consortium such as Nitrobacter winogradskyi and Nitrosomonas europaea which is used to degrade Nutrients (Ammonia, Nitrogen, Phosphorus) and other organic compounds. Ammonia, Nitrogen and phosphorus are essential for the growth of microorganism, plants, and animals, so that they are known as major nutrients. They are the primary cause of eutrophication within surface water. The negative aspect of eutrophication is designated by low dissolved oxygen, fish killing, and depletion of desirable flora and fauna. Excessive amount of these nutrients can also stimulate the activity of microbes, that can be potentially harmful to human health which can be potentially harmful to human health. Hence, the removal of nutrients before discharging treated wastewater is desirable not only to prevent eutrophication, but for reuseable purpose.

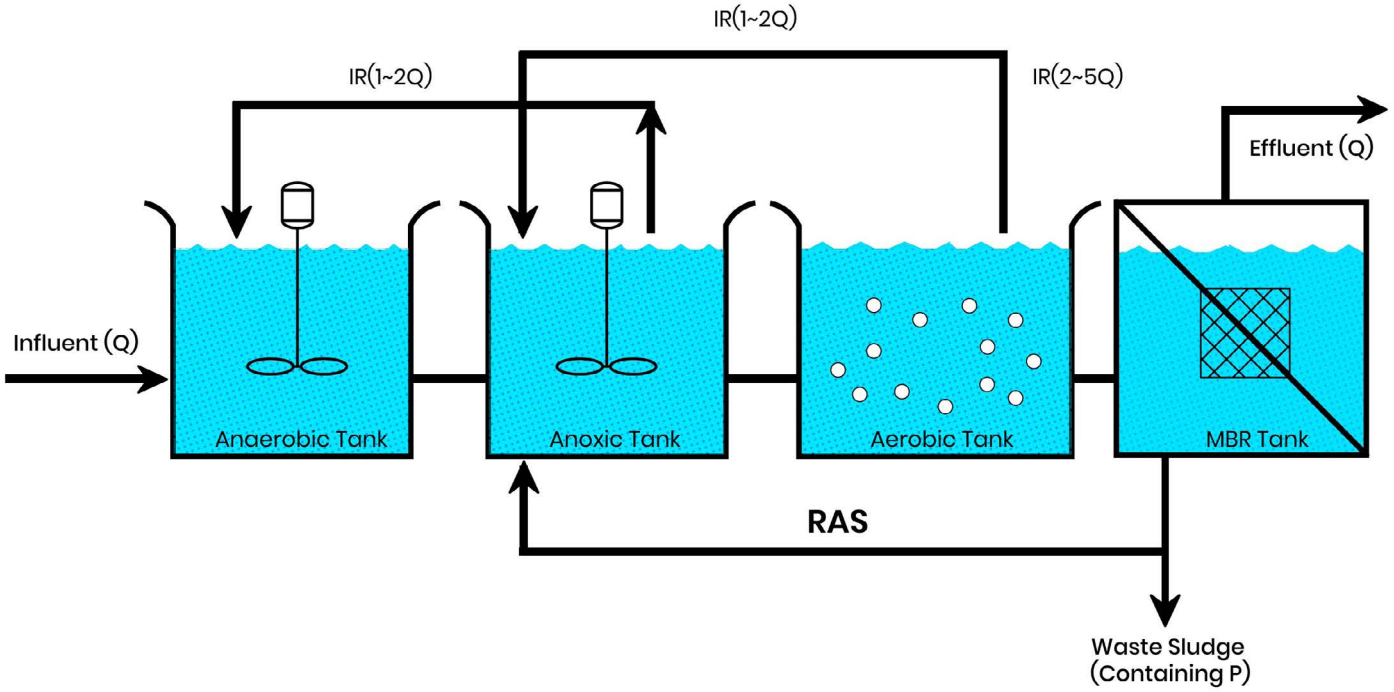


Ammonia Removal

Ammonia is formed when urease enzymes produced by various microbial strains such as Escherichia coli, Hafnia elei Moller, Ureaplasma urealyticum Shephard, Sporosarcina pastureii (Miguel) Chester, (formerly Bacillus pasteurii), some Bacillus amyloliquefaciens and other strains, contact urea and uric acid from animal urine and water. Ammonia is also produced when proteins are degraded first to amino acids and then to ammonia Special strains of Nitrobacter winogradskyi and Nitrosomonas europaea with superior talent for rapid nitrification under aerobic conditions, are included in our Mykrobak Nutrient remover formulas.

Nitrogen Remover

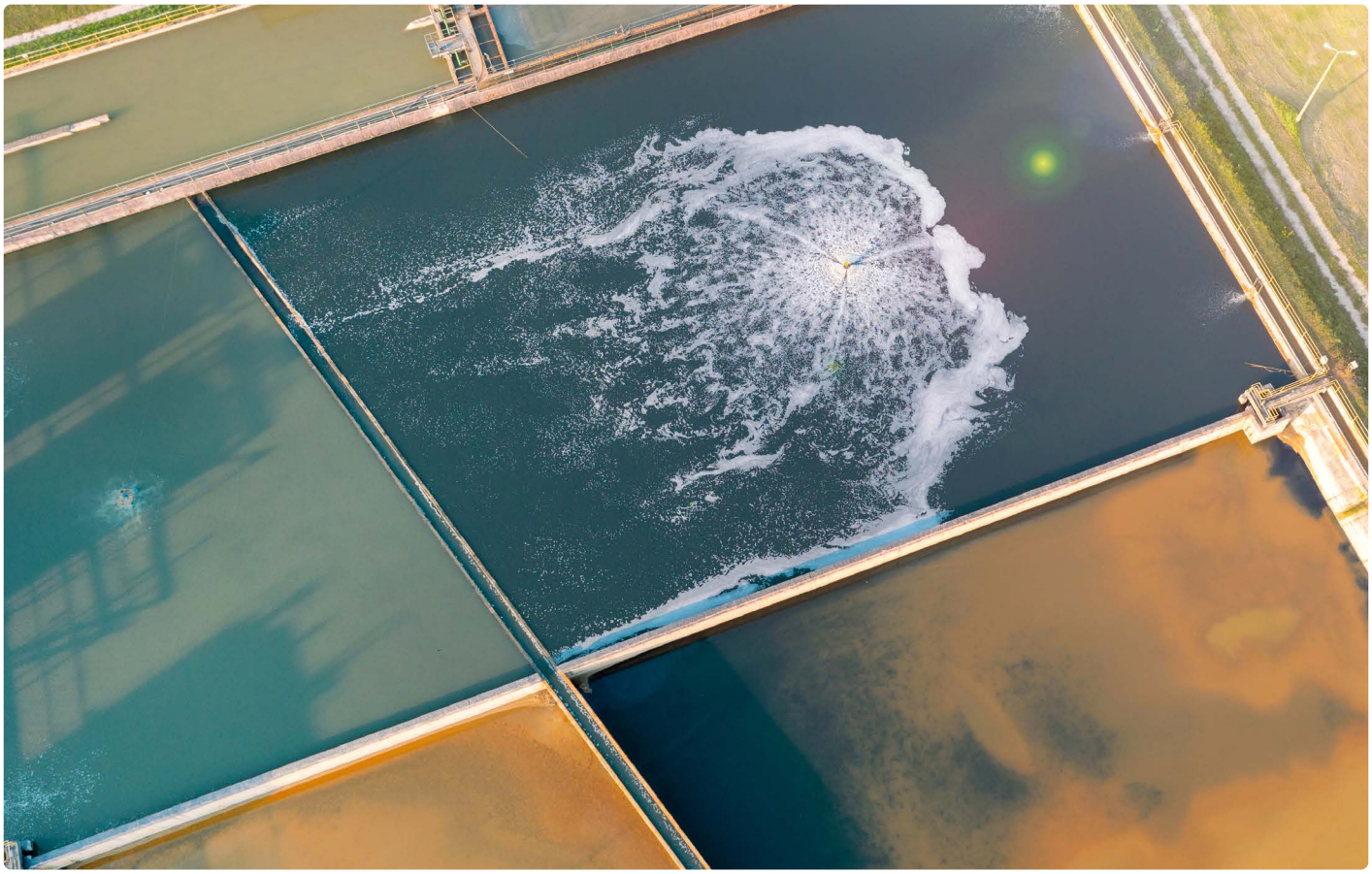
The biological processes that primarily remove nitrogen are nitrification and denitrification. Nitrification is defined as a two-stage biological process, that occurs under aerobic conditions (in the presence of oxygen). During nitrification, ammonia is oxidized to nitrite by one group of autotrophic bacteria, known as Nitrosomonas. The nitrite is then further oxidized to nitrate by another group of autotrophic bacteria, known as Nitrobacter. Typical aerobic biological activated sludge existing at wastewater treatment plants can be modified to achieve nitrification by extending the mean cell residence time beyond the values used for typical activated sludge processes also maintaining adequate dissolved oxygen. Thus, Nitrification can be accomplished simultaneously with BOD removal process if the mean cell residence time is extended from 6 to 8 days, thereby being very close to the optimum value for CBOD (carbonaceous BOD) removal. Denitrification occurs under anaerobic conditions (in the absence of oxygen), and involves the biological reduction of nitrate to nitric oxide, nitrous oxide, and nitrogen gas which is released to the atmosphere. De-nitrification can be accomplished by heterotrophic bacteria in the absence of dissolved oxygen. These bacteria use the oxygen from the nitrate, instead of dissolved oxygen, to digest organic material, thereby releasing nitrogen gas as a waste by product. For treatment facilities to achieve optimum biological nitrogen removal it is important to process wastewater through a series of aerobic and anaerobic stages, to ensure complete nitrification and de-nitrification is achieved. Nitrifiers are fragile microorganisms which are sensitive to acid despite the fact that they produce acid during oxidation of ammonia and nitrite.



Phosphorus Removal

Phosphorus removal involves a physical method that results in the growth of a biological population of aerobic heterotrophs that are capable of storing orthophosphate in excess of their biological growth requirements. Exposing the bio culture of an activated sludge process to an anaerobic-aerobic sequence causes the proliferation of these microorganisms, known as phosphate-accumulating organisms (PAO), within the mixed liquor. Under anaerobic conditions, the PAO's readily convert available organic matter to carbon compounds called poly-hydroxyalkanoates (PHA). The PAO's use energy generated through the breakdown of polyphosphate molecules to create PHA's. This breakdown results in the release of phosphorus. Under subsequent aerobic conditions, PAO's use the stored PHA's as energy to take up the phosphorus that was released in the anaerobic zone, as well as any additional phosphate present in the wastewater. Mykrobak consists of a group of Bacteria that facilitate the removal of large amounts of phosphorus from wastewater under certain conditions. PAOS accomplish the removal of phosphate by accumulating it within their cells as polyphosphate. PAOS are the only bacteria that can accumulate polyphosphate within their cells and in fact, the production of polyphosphate is a widespread ability among bacteria.

Most of the other bacteria cannot be consumed under these conditions and therefore PAOS gain a selective advantage within the mixed microbial community present in Mykrobak. Therefore, wastewater treatment plants that have an anaerobic tank (where there is no nitrate or oxygen present as external electron acceptor) prior to the other tanks to give PAOS preferential access to the simple carbon compounds in the wastewater that is influent to the plant. Bacteria consume a range of carbon compounds, such as acetate and propionate, under anaerobic conditions and store these compounds that is consumed as a carbon and energy source for growth using oxygen or nitrate as electron acceptor.



Benefits of Mykrobak Nutrients Remover

- Degrades Ammonia nitrogen, phosphorus and other nutrients
- Degrades high COD & BOD
- Nitrating removing efficiency of system increase
- Improves dissolve oxygen in waste water. Reduces of nutrients will also protect the algal formation in lakes, pond and drains
- Reduces the Foul order of ammonia
- Maintain nitration effect for long
- Suppresses harmful bacterial growth
- Multiple strains of bacteria for effective result
- Stabilize shock load
- Improves overall efficiency of the plant
- Effective under most environmental conditions

Performance properties	
PH	6.5 – 7.5
Temperature	5 to 55°C
Reactivation Rate	99% After addition to water
Concentration	Highly Concentrated
Shelf Life	2 years

Physical properties	
Appearance	Off White Colour
Physical State	Powdered Form
Odour	Odourless
Moisture Content	6-7%
Mesh Size	0.6 mm
Packaging	1 kg Aluminum zip lock

Dosage Schedule

Depend upon the organic load, contaminants and volume of waste water

Area of Application

- Membrane Bio reactor
- Activated sludge Process
- Sequencing batch reactor
- Moving bed bio reactor
- Extended Aeration system
- Water Bodies

Application Matrix

1. Mix Mykrobak 1 kg powder in 20 Liter water (Prefer normal temperature)
2. Stir well and remain in bucket for 30 minutes (for bacteria activation)
3. Directly Dose at inlet of tank

indogulf bioag

BIOTECH DIVISION OF INDO GULF COMPANY
101, Blue Bell Building, Sitaram Compound,
Crawford Market, Mumbai - 400001 India

T: +91-22 2345 5220 **E:** biotech@indogulfgroup.com
F: +91-22-23476536 **W:** www.indogulfbioag.com