

Wastewater Solutions

Novozymes OdorCap® 5700
Novozymes BioAid™ 5535

Application Sheet

Novozymes' biological odor control solutions are advanced blends of microorganisms that target the main odors associated with wastewater treatment plants, including sulfides, mercaptans, organic acids, and sludge odors.

Benefits

Odors in wastewater plants are an inherent part of the treatment process and come in a variety of classes, each having a different origin. Odors have the potential to become problematic, especially if the plant is in close proximity to residential or commercial areas. Compounds that most commonly cause malodorous smells are sulfides ("rotten egg" odor), mercaptans ("sulfur" odor), and volatile organic acids ("rancid butter" or "sweaty socks" odor). Controlling these odors is often necessary for maintaining a favorable reputation with the local community.

Odors are frequently the result of unintended biological processes taking place throughout the collection system and wastewater treatment plant and are often best solved using biological solutions. Chemical oxidizers are expensive and can be disruptive to the microbial community and the treatment process. Masking agents are temporary fixes and do not tackle the root of the problem. OdorCap 5700 is based on microbial degradation of a variety of odor-causing compounds. Not only does OdorCap technology reduce existing odors by degrading the odor compound, it helps prevent odors from forming in the first place.

OdorCap odor control technology increases the degradation of targeted odor compounds, reducing odor complaints as a result. It works in both aerobic and anaerobic environments where odors are formed and can respond immediately when odorous sulfur compounds or organic acids are generated. OdorCap 5700 works within the existing plant infrastructure, is easy to apply, and helps lower the overall cost of odor control.

Product range

OdorCap 5700: Controls sulfur-based wastewater odors

OdorCap 5700 contains patented biological odor control technology for sulfur compounds, including hydrogen sulfide and mercaptans. OdorCap 5700 also degrades a variety of volatile organic acids. It works in both aerobic and anaerobic environments where odors are formed and can immediately respond when odorous sulfur compounds or organic acids are generated.

BioAid 5535: Additive with microbes for use with OdorCap 5700 for controlling odors in anaerobic environments

BioAid 5535 is used in conjunction with OdorCap 5700 in anaerobic environments. Added to strict anaerobic environments, it creates conditions that significantly accelerates the ability of OdorCap 5700 to reduce odors.

Performance

Novozymes' biological odor control solutions are proven to be effective in a variety of wastewater settings. A treatment strategy featuring OdorCap 5700 and BioAid 5535 can address odor problems from two sides. In anaerobic environments, BioAid 5535 is added to the wastewater to shut down the sulfate respiratory pathway by offering another one with a higher energy yield. It also provides microorganisms to accelerate the degradation of organic compounds. OdorCap 5700 is added specifically to improve the microbial community's ability to degrade hydrogen sulfide, mercaptans, and organic acids.

A paperboard mill received complaints from neighbors each spring when temperatures began to rise. The mill operated a 3,785 m³ (1 MGD) wastewater plant that included a 5,700 m³ (1.5 MG) clarifier followed by two aerated lagoons. Final discharge was to the local municipal treatment plant. Warm water temperatures promote faster bacterial growth in anaerobic environments and also lead to increased volatilization of odor compounds. The mill contacted Novozymes to see if a biological solution could control the odors and eliminate the complaints.

Novozymes performed odor testing at several points throughout the plant and determined that the odors were being formed in the clarifier under anaerobic conditions and stripped once they reached the aerated lagoons. Hydrogen sulfide, methyl mercaptan, dimethyl sulfide, dimethyl disulfide, butyric acid, and propionic acid were all detected. A plan calling for the addition of OdorCap 5700 and BioAid 5535 to the clarifier influent to reduce the formation of odors was recommended.

The most recent pretrial data were recorded 15 days before the start of the program. Figures 1 and 2 show a reduction in all key odors as early as day 1 of the trial, compared to pretrial data with continued odor control over the first 2 weeks of the trial and beyond. Success was measured by noting a decrease in odor generation across the clarifier and the elimination of odor complaints.

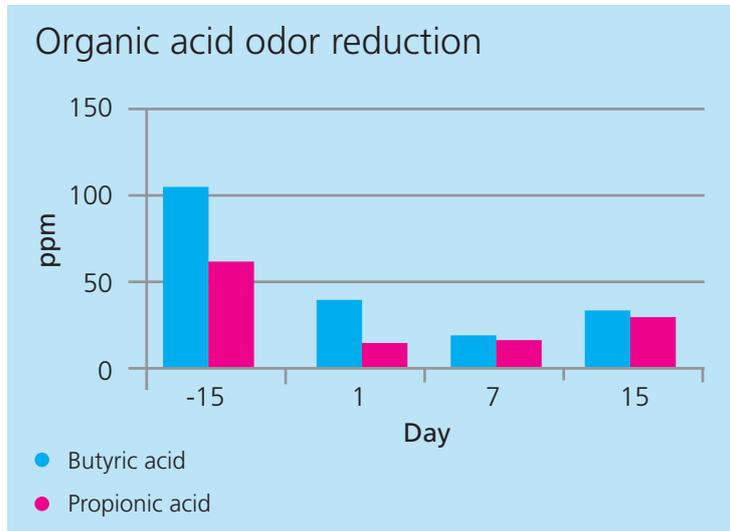


Fig. 1. Organic acid odor reduction.

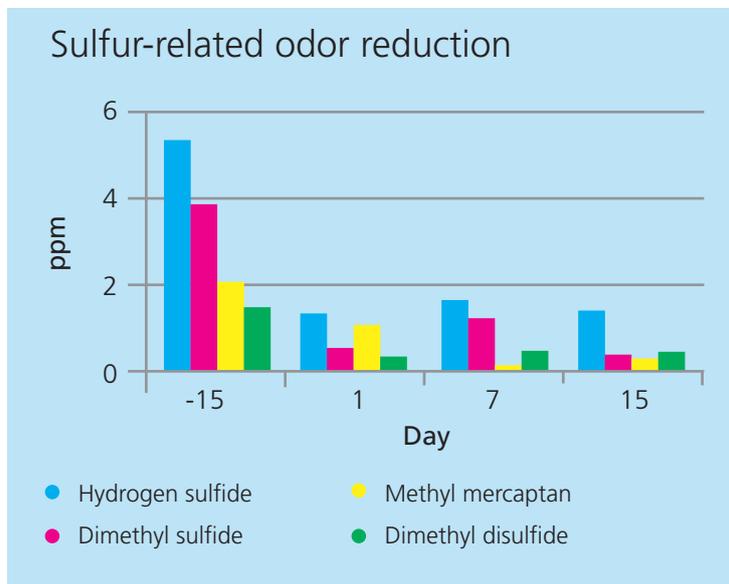


Fig. 2. Sulfur-related odor reduction.

Recommended use

OdorCap 5700

OdorCap 5700 can be added to any wastewater system where sulfur-based odors are a problem. The bacteria in OdorCap 5700 perform within a pH range of 6.0–9.0, with optimal performance at pH 7.0. Temperature affects the growth rate of the bacterial population with improving activity with increasing temperatures up to 40 °C (104 °F). Minimal activity can be expected below 5 °C (40 °F).

BioAid 5535

BioAid 5535 is used in conjunction with OdorCap 5700 in anaerobic environments. Dosing is dependent on the oxidation reduction potential of the wastewater. Dosing should be adequate to create anoxic conditions.

Product characteristics

OdorCap 5700 is a free-flowing, tan powder with a yeast-like odor.

BioAid 5535 is a slightly turbid liquid.

Safety, handling, and storage

Store products in a cool dry place. Recommended storage temperature for OdorCap 5700 is 1–23 °C. (34–75 °F). Avoid inhalation. Wash hands thoroughly with warm, soapy water after handling. Avoid contact with eyes.

BioAid 5535 is harmful if swallowed and can be an irritant to eyes, respiratory system, and skin. Wearing gloves and goggles while handling the product is therefore recommended. No special storage is required.

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