

# MICROCAT<sup>®</sup>-DEN

## Denitrifying Bioformula for Wastewater Treatment



### Description

Effective nitrification in wastewater plants (see MICROCAT-XNL/XNC Data Sheet) transforms ammonia nitrogen to nitrite and nitrate but removing nitrogen in these oxidized forms can be difficult from time to time. Under anoxic denitrifying conditions (no molecular oxygen present), facultative bacteria are able to make use of nitrate ion ( $\text{NO}_3$ ) and nitrite ion ( $\text{NO}_2$ ) to respire. The nitrates are progressively reduced to molecular nitrogen ( $\text{N}_2$ ) which escapes as nitrogen gas to the atmosphere. Wastewater discharge limits are set for nitrate and nitrite for individual wastewater treatment plants for two reasons: 1) high nitrogen content of sewage effluent contributes to eutrophication (algae blooms) in the receiving waters, and 2) high nitrate and/or nitrite concentrations in drinking water can cause illness in young mammals. **MICROCAT-DEN** is a synergistic blend of preselected, naturally-occurring microorganisms for aiding and improving the denitrification process (removal of nitrate/nitrite from wastewater under anoxic conditions).

### Applications

Under certain treatment conditions nitrate/nitrite ions can build up in effluent water. Under these conditions **MICROCAT-DEN** can help. **MICROCAT-DEN** combines safe, preselected, naturally-occurring microbial strains with denitrifying capability. **MICROCAT-DEN** contains a combination of facultative anaerobic microorganisms selected from nature for their ability to use nitrate as an oxygen source. Inoculation with **MICROCAT-DEN** augments the natural denitrifying microbial populations for enhanced nitrate/nitrite removal capability.

#### Conditions Necessary to Induce Denitrification:

1. Presence of denitrifying bacteria
2. Nitrogen available in oxidized forms such as nitrate or nitrite
3. Anoxic conditions (lack of dissolved molecular oxygen) – molecular oxygen inhibits denitrification
4. Presence of a small excess of oxidizable matter (BOD, methanol, settled sludge) to drive

the reaction while leaving minimal residual BOD

**MICROCAT-DEN** can aid in:

1. Improving denitrification rates, greater nitrogen removal, and improved low temperature performance.
2. More complete BOD removal. Facultative organisms work in both aerobic and anoxic zones.
3. Removal of some difficult-to-degrade organic components (e.g., amines).

## Product Characteristics

Appearance	Beige, granular powder
Contents	Preselected, denitrifying microorganisms
Nominal Microbe Count	Formulated to contain $>3 \times 10^9$ /gram
Shelf Life	Two Years
Packaging	25 Lb (11.3 Kg) plastic pails/220 Lb (100 Kg) fiber drums

## Application Programs

In general, **MICROCAT-DEN** is applied on a regular basis to the anoxic denitrifying zones of the treatment plant. Your Monera Technologies Corporation Technical Representative will provide you with a custom-tailored application program to fit the specific needs of your treatment process.

## Optimal Application Conditions

CONDITION	RANGE	OPTIMUM
Dissolved Oxygen, ppm	0 - 0.5	0
pH	6 - 9	7
Temperature, ° C	10 - 40	35
Toxic Heavy Metals, ppm	Trace	None

If your system is operating outside these ranges, contact your Monera Technologies Corporation Technical Representative for a complete system survey and recommendations.

## Storage and Handling

Storage	45° - 105° F (7° - 40° C); Dry conditions; DO NOT FREEZE.
Handling	<b>CAUTION:</b> Active enzymes present. Avoid inhalation of dry powder or liquid mist. Avoid exposing skin to dry powder or strong solution as irritation may result. If material contacts skin or eyes, flush thoroughly and repeatedly with water.

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