LIGNOFEED® Aqua

LignoFeed® AQUA
Functional Lignocellulosic Fiber for Sustainable Aquaculture

Product Overview

LignoFeed® AQUA is a natural lignocellulosic fiber ingredient specifically developed for modern aquaculture systems, including Recirculating Aquaculture Systems (RAS), flow-through farms, and intensive fish production.

Derived from selected plant-based lignocellulosic sources, LignoFeed® AQUA acts as a functional dietary fiber that improves fecal quality, supports water quality management, and enhances nutrient recovery from aquaculture effluents.

Unlike conventional feed ingredients, LignoFeed® AQUA is designed to influence the physical properties of feces, helping producers reduce suspended solids, improve filtration efficiency, and support more sustainable production.

Key Benefits

Improved Fecal Integrity

- Increases fecal cohesion and structural stability.
- Reduces fecal fragmentation during digestion and water circulation.
- Produces larger and more easily removable particles.

Enhanced Solid Removal

- Facilitates efficient mechanical filtration.
- Reduces accumulation of fine suspended solids.
- Supports lower organic loading within production systems.

Better Water Quality

- Reduces particulate organic matter in culture water.
- Supports lower biological oxygen demand (BOD).
- Contributes to improved system stability in RAS operations.

Nutrient Management

- Promotes retention of phosphorus and nitrogen within fecal particles.
- Improves opportunities for nutrient recovery and waste valorization.
- Helps reduce nutrient leaching into the water column.

Sustainable Production

- Plant-based and renewable.
- Supports circular economy principles.
- Compatible with environmentally responsible aquaculture strategies.

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Mechanism of Action

LignoFeed® AQUA functions through physical modulation of fecal properties.

After ingestion:

1. **Fibers become incorporated into the fecal matrix.**
2. **Fecal casts maintain greater structural integrity.**
3. **Fragmentation is reduced during transport through tanks and pipes.**
4. **Larger particles are more efficiently captured by drum filters, settlers, or other solid-removal devices.**
5. **Nutrients remain associated with particulate matter for longer periods, reducing losses to dissolved forms.**

This approach improves waste management at the source, before particles break down into difficult-to-remove fine solids.

Applications

Suitable Species

- **Atlantic Salmon** (*Salmo salar*)
- **Rainbow Trout** (*Oncorhynchus mykiss*)
- **Tilapia** (*Oreochromis spp.*)
- **European Seabass** (*Dicentrarchus labrax*)
- **Gilthead Seabream** (*Sparus aurata*)
- **Carp species**
- **Shrimp and other intensive aquaculture species**

Production Systems

- Recirculating Aquaculture Systems (RAS)
- Flow-through farms
- Hatcheries
- Smolt facilities
- Nursery systems
- Intensive grow-out operations

Recommended Inclusion Levels

Objective	Inclusion Rate
Fecal stabilization	0.5–2.0%
Water quality support	1.0–3.0%
Advanced solids management in RAS	2.0–5.0%

Optimal inclusion should be validated according to species, feed formulation, and production objectives.

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Technical Specifications

Parameter	Typical Value
Product type	Functional lignocellulosic fiber
Origin	Plant-derived
Physical form	Fine granules / powder
Fiber content	>80%
Solubility	Insoluble
GMO status	GMO-free
Shelf life	24 months
Storage	Cool, dry conditions

Expected Outcomes

Producers using LignoFeed® AQUA may achieve:

✓ Improved fecal quality
✓ Reduced suspended solids
✓ Enhanced filtration efficiency
✓ Better nutrient capture
✓ Improved water quality management
✓ Reduced environmental footprint
✓ Increased sustainability of aquaculture operations

Scientific Background

Recent research in salmon RAS systems has demonstrated that modifying the physical characteristics of feces through dietary fiber technologies can substantially improve solid and nutrient removal efficiencies while maintaining fish growth and feed performance. Functional fiber strategies represent a new generation of nutritional tools that combine feed formulation with environmental management, helping aquaculture operations become more efficient and sustainable.

LignoFeed® AQUA

Engineering Better Feces for Cleaner Water

Functional Lignocellulosic Solutions for Sustainable Aquaculture

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Fine modulo

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