

- FILTERSORB
- FILTRATION
- ADSORPTION
- INSTANT PRODUCTS
- OXY TREATMENT**
- SYSTEMS

QUANTUM XSW-ULTRA®

THE ULTIMATE SURFACE WATER & WASTEWATER RESTORATION TECHNOLOGY

WHAT IS QUANTUM XSW-ULTRA®?

A NEXT-GENERATION RESTORATION PLATFORM

QUANTUM XSW-ULTRA® is an integrated surface water restoration platform – combining Advanced Oxidation, Solar Activation, and Oxygen Restoration in a single powder-based technology. No complex infrastructure. No toxic by-products. Apply directly to any water body at any scale.

It helps break down organic contamination, reduce odor, and restore healthier water conditions. Solar-driven activation supports faster treatment performance without heavy equipment.

THE COMBINED POWER OF

QUANTUM XSW® + QUANTUM XSW-SOLAR®

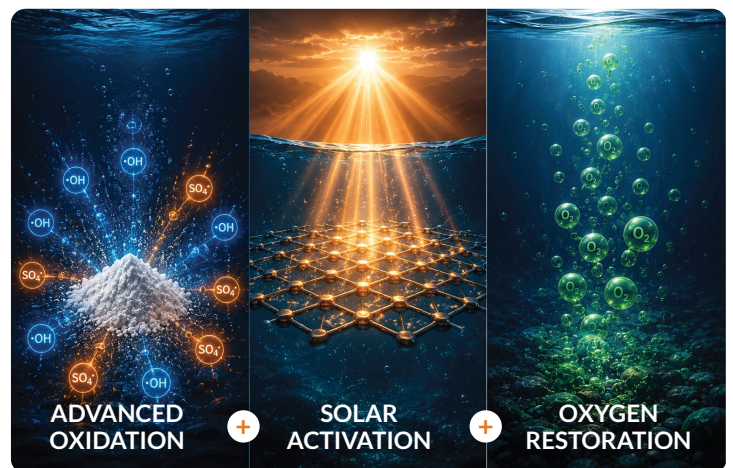
KEY BENEFITS

- ✓ Restores contaminated water
- ✓ Eliminates algae blooms
- ✓ Reduces phosphorus pollution
- ✓ Destroys pesticides and herbicides
- ✓ Oxidizes organic contamination
- ✓ Improves dissolved oxygen
- ✓ Controls odors
- ✓ Reduces sludge formation
- ✓ Supports aquatic ecosystems
- ✓ Easy powder application

QUANTUM XSW-ULTRA®

ONE SOLUTION FOR ALL SURFACE WATER

- Lakes
- Rivers
- Reservoirs
- Lagoons
- Mining Water
- Industrial Wastewater
- Agricultural Runoff



APPLICATIONS



Lakes & Reservoirs



Rivers & Lagoons



Mining Water



Industrial Basins



Agricultural Storage Ponds



Stormwater Retention Systems



PREMIUM QUALITY
MADE IN GERMANY

QUANTUM XSW-ULTRA®

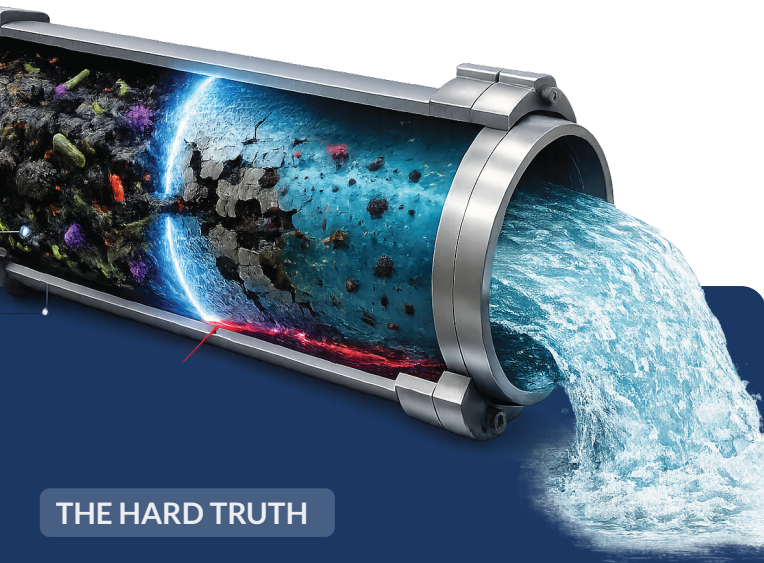
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THE GLOBAL WATER CRISIS

WATER IS THE MOST VALUABLE RESOURCE ON EARTH - AND IT IS UNDER THREAT

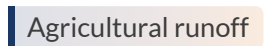
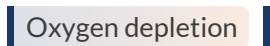
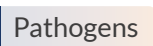



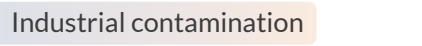
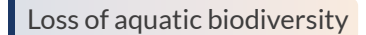
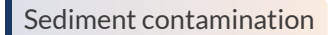
Across the world, lakes, rivers, reservoirs, and lagoons are under mounting pressure from agricultural runoff, industrial discharge, algal blooms, and eutrophication - destroying natural ecosystems, causing mass fish deaths, and compromising water quality for billions of people. Conventional treatment chemicals such as chlorine, chlorine dioxide, and ozone provide only temporary relief, leave behind toxic by-products, and fail to prevent recontamination.



THE HARD TRUTH

TRADITIONAL METHODS ARE EXPENSIVE, SLOW, AND OFTEN INEFFECTIVE FOR LARGE BODIES OF WATER. A FUNDAMENTALLY NEW APPROACH IS NEEDED.

PRESSURES ON LAKES & RESERVOIRS

-  Agricultural runoff
-  Oxygen depletion
-  Pathogens
-  Phosphorus & nitrogen contamination
-  Algae blooms
-  Organic pollution
-  Industrial contamination
-  Loss of aquatic biodiversity
-  Sediment contamination

THE WATCH WATER SOLUTION

QUANTUM XSW-ULTRA[®] A NEXT-GENERATION RESTORATION PLATFORM

Quantum XSW-ULTRA[®] is an integrated surface water restoration platform that combines Advanced Oxidation, Solar Activation, and Oxygen Restoration in a single, easy-to-apply powder-based technology. It works in harmony with natural processes to deliver faster results, longer-lasting protection, and healthier water - with no complex infrastructure and no toxic by-products.

Stage 1

ADVANCED OXIDATION

Extremely high oxidation potential rapidly destroys organic pollutants, algae toxins, pathogens, and industrial chemicals.

Stage 2

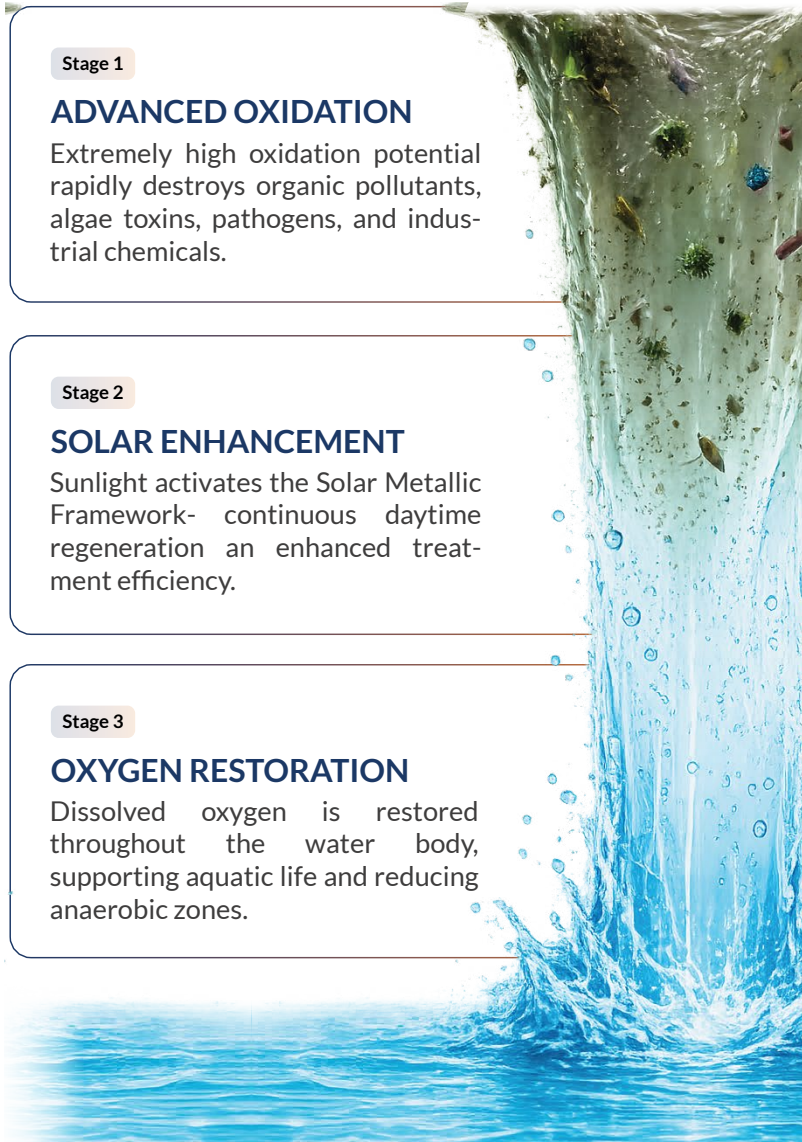
SOLAR ENHANCEMENT

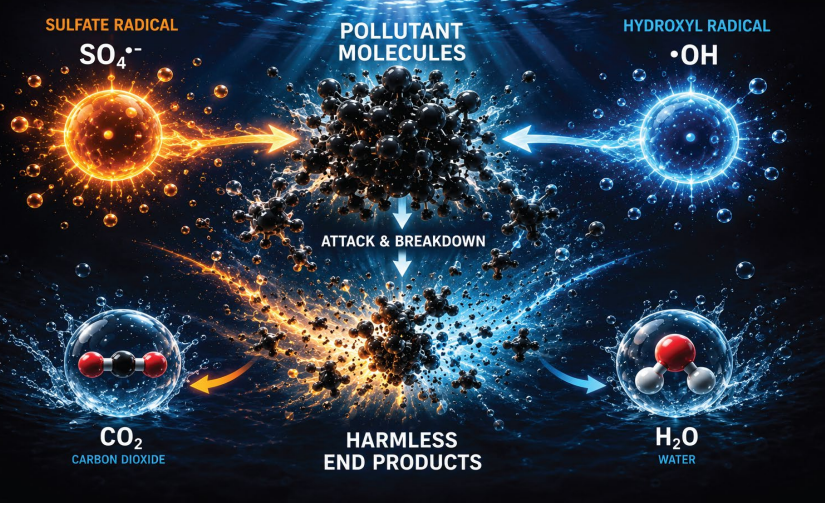
Sunlight activates the Solar Metallic Framework- continuous daytime regeneration an enhanced treatment efficiency.

Stage 3

OXYGEN RESTORATION

Dissolved oxygen is restored throughout the water body, supporting aquatic life and reducing anaerobic zones.





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HOW QUANTUM XSW-ULTRA® WORKS

Quantum XSW-ULTRA® operates through a triple-action mechanism that is simultaneously chemical, photocatalytic, and biological – each stage reinforcing the others, delivering a cumulative treatment effect that no single-chemistry approach can replicate.

STAGE 1 : ADVANCED OXIDATION

THE CHEMISTRY OF RADICAL DESTRUCTION

At the core of Quantum XSW-ULTRA® is a proprietary advanced oxidizing compound - a next-generation solid oxidizer engineered specifically for surface water treatment. When it contacts water, it generates two classes of highly reactive species simultaneously: Sulfate Radicals ($\text{SO}_4\cdot^-$) and Hydroxyl Radicals ($\cdot\text{OH}$) - two of the most powerful oxidants known to water treatment science.

WHY SULFATE RADICALS ARE SO POWERFUL

High oxidation potential

redox potential of more than 5.8 V, comparable to hydroxyl and sulfate radicals together but with better selectivity and longer lifespan in water

Strong selectivity

targets specific organic pollutants efficiently; does not react non-selectively with everything in the water

Effective in a wider pH range

performs well in acidic to neutral pH environments, offering more operational flexibility

Breaks down recalcitrant compounds

destroys pharmaceuticals, PFAS, PFOS, pesticides, dyes, endocrine disruptors, surfactants, and industrial waste pollutants

Minimal by-products

produces less toxic or harmful by-products than chlorine, chlorine dioxide, or ozone

THE QUANTUM HALOGEN GENERATOR

The Quantum Halogen Generator - a proprietary formulation - establishes and maintains free halogen residuals in the treated water without toxic chemicals. In the presence of this component, the advanced oxidizing compound undergoes catalytic activation, leading to rapid formation of hydroxyl radicals that instantly react with and break down nearly every class of organic contaminant in surface water. The halogen residual also provides lasting disinfection and prevents biofilm regrowth after treatment.



Attack and destroy complex pollutants

pesticides, herbicides, pharmaceuticals, PFOA/PFOC, microplastics, and endocrine-disrupting compounds (EDCs)



Oxidize detergents, surfactants, and industrial waste

surfactants, and industrial waste at molecular level - leaving behind only harmless CO_2 and H_2O



Effectively inactivate microorganisms

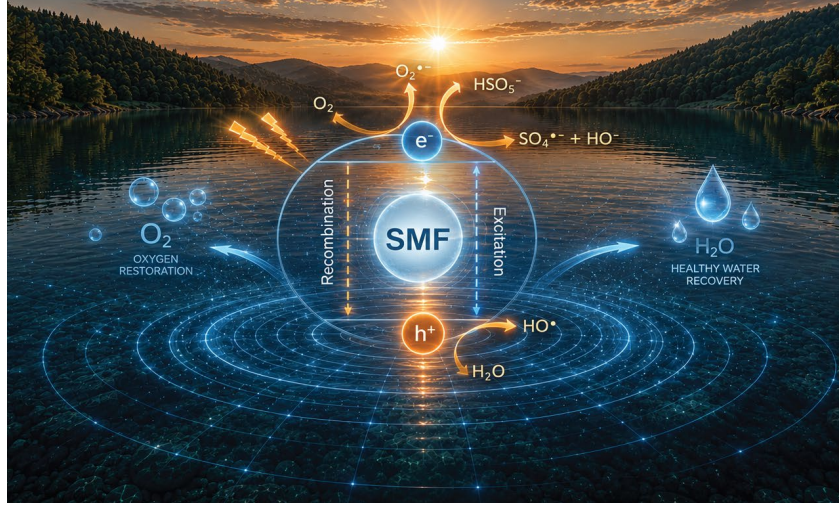
bacteria, viruses, and protozoa – making the water microbiologically safe



Remove taste, odor, color, and turbidity

improving the aesthetic and chemical quality of water

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STAGE 2 : SOLAR ENHANCEMENT

SOLAR METALLIC FRAMEWORK TECHNOLOGY

The Solar component of Quantum XSW-ULTRA[®] is built on the Solar Metallic Framework (SMF) – a proprietary heterogeneous framework architecture engineered specifically for deployment in open aquatic environments. The SMF interacts with sunlight and water simultaneously, supporting natural photocatalytic oxidation and ecosystem restoration processes.

Unlike conventional lake treatments that require electrical infrastructure, pumps, or complex mechanical systems, the SMF operates entirely on natural sunlight – zero operating energy cost, continuous daytime performance, no infrastructure dependency.

SMF TECHNOLOGY ARCHITECTURE

The Solar Metallic Framework (SMF) is a **proprietary heterogeneous framework design** - engineered specifically for deployment in open aquatic environments.

SOLAR ACTIVATION PROCESS

The SMF technology activates through a sequential solar-driven process - clean, renewable, and designed to work within the natural dynamics of aquatic environments.

**NO COMPLEX EQUIPMENT.
NO ELECTRICAL INFRASTRUCTURE.**

**JUST SUNLIGHT, WATER, AND
THE FRAMEWORK -
WORKING TOGETHER.**

ECOSYSTEM IMPROVEMENT - OUTCOMES

- Improved water quality and clarity
- Reduced organic loading and sludge accumulation
- Better dissolved oxygen conditions
- Healthier aquatic environments and biodiversity



Solar Activated

Uses natural sunlight as the sole activation energy source - no electrical infrastructure required



Framework Based

Advanced heterogeneous framework design - maximized active surface area for water interaction



Sustainable

Supports long-term environmental goals - designed for recurring natural restoration cycles



Eco-Responsible

Designed for sensitive aquatic ecosystems where chemical herbicides are restricted or undesirable

**SUNLIGHT IS FREE.
THE FRAMEWORK DOES THE WORK.**



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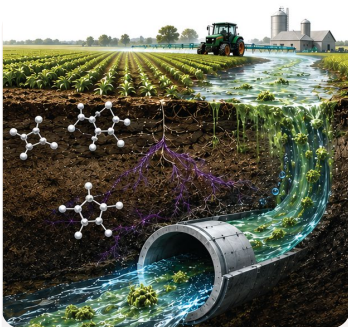
STAGE 3 : OXYGEN RESTORATION

REOXYGENATE, REBALANCE, RESTORE, RENEW.

Both the oxidation chemistry and the solar activation contribute to a third critical outcome: the restoration of healthy dissolved oxygen conditions throughout the water body. The proprietary oxidation reaction directly increases dissolved oxygen levels while the breakdown of organic material reduces the biological oxygen demand (BOD) that depletes it. Together, these effects create the conditions for genuine ecosystem recovery - not just surface-level treatment.

- Improved aquatic health and biodiversity
- Better biological balance throughout the water column
- Reduced anaerobic zones in bottom sediments
- Reduced hydrogen sulfide odors from anaerobic decomposition

DESIGNED FOR REAL-WORLD WATER PROBLEMS



Agricultural Runoff

- ✓ Fertilisers & nitrates
- ✓ Herbicides & fungicides
- ✓ Pesticides
- ✓ Phosphorus & agrochemicals



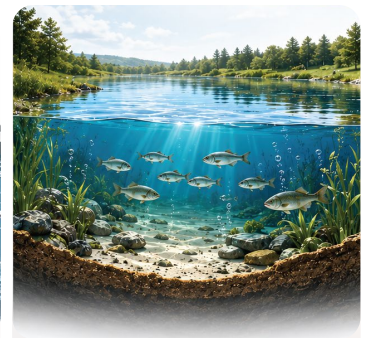
Municipal Pollution

- ✓ Organic waste & nutrients
- ✓ Odors & turbidity
- ✓ Biofilm contamination
- ✓ Pathogens



Industrial Wastewater

- ✓ Organics & color compounds
- ✓ COD reduction
- ✓ PFAS / PFOS / pharmaceuticals
- ✓ Odorous contaminants



Environmental Restoration

- ✓ Algae blooms & eutrophication
- ✓ Sediment contamination
- ✓ Fish habitat restoration
- ✓ Wetland revitalisation

PRODUCT COMPOSITION & MECHANISM

Proprietary Advanced Oxidizing Compound

Generates high concentrations of Sulfate Radicals (SO₄•-) and Hydroxyl Radicals (•OH), initiating powerful oxidation reactions that destroy all classes of organic and inorganic contaminants



Quantum Halogen Generator

Establishes and maintains free halogen residuals for long-lasting disinfection and biofilm prevention - without toxic chemicals



Solar Metallic Framework (SMF)

Proprietary heterogeneous framework activated by natural sunlight - provides continuous daytime photocatalytic enhancement, additional oxidation energy, and ecosystem restoration support



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WHY QUANTUM XSW-ULTRA[®] WINS

Conventional approaches to surface water treatment - aeration, dredging, chemical dosing, mechanical algae harvesting - were designed for a different era and a different scale of problem. Each addresses a single symptom, requires significant infrastructure, and demands ongoing operational cost. **Quantum XSW-ULTRA[®]** addresses the root causes simultaneously, with a fraction of the operational complexity.

Parameter	Conventional Systems	Quantum XSW-ULTRA [®]
Operating Cost	⊗ High	☑ Lower operating cost
Equipment	⊗ Complex - pumps, electrical systems	☑ Simple powder application
Treatment Area	⊗ Limited - localised only	☑ Large-scale coverage
Maintenance	⊗ High - ongoing intervention	☑ Minimal maintenance
Response Time	⊗ Slow - gradual effect	☑ Rapid action
Oxidation Power	⊗ Limited	☑ Advanced - sulfate & hydroxyl radicals
Solar Enhancement	⊗ None	☑ Solar activated - continuous
By-products	⊗ Toxic - chlorinated compounds	☑ Harmless - CO ₂ and H ₂ O
Emergency Use	⊗ Not suitable	☑ Suitable for emergency response
Infrastructure	⊗ Requires fixed systems	☑ No infrastructure required



PRECISE DOSING. EVEN COVERAGE. MAXIMUM WATER RESTORATION.

SYSTEM DESIGN & DOSING

The correct dosage of **Quantum XSW-ULTRA[®]** depends on water body volume and contamination severity. The standard treatment range is 30–50 grams per cubic metre (m³). Apply uniformly over the water surface – directly as powder, or as a slurry using spray systems, dosing pumps, boats, or floating application equipment.

For best performance, ensure even distribution across the affected water area. Dosage may be adjusted after site evaluation, water testing, and treatment objectives.

Water Condition	Recommended Dose
Light Contamination	30 g/m ³
Moderate Contamination	40 g/m ³
Heavy Contamination	50 g/m ³

EXAMPLE DOSAGE CALCULATIONS

Water Volume	Minimum (30 g/m ³)	Typical (40 g/m ³)	Maximum (50 g/m ³)
1,000 m ³	30 kg	40 kg	50 kg
10,000 m ³	300 kg	400 kg	500 kg
100,000 m ³	3,000 kg	4,000 kg	5,000 kg

OPERATING CONDITIONS

Parameter	Recommended Range
Water Temperature	4 – 45°C
pH Range	5.5 – 9.5
Contact Time	Continuous
Dissolved Oxygen	Improves after treatment
Application Frequency	As required based on monitoring

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WHAT QUANTUM XSW-ULTRA[®] DELIVERS

Quantum XSW-ULTRA[®] is more than a water treatment product – it is a platform for environmental restoration. It combines powerful oxidation chemistry, solar activation, and oxygen recovery in one deployable powder. Together, these benefits help solve surface water challenges that conventional technologies struggle to meet.

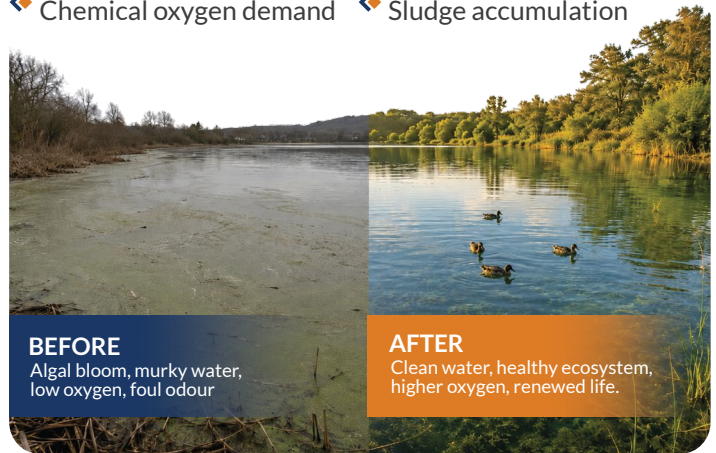
<p>Water Restoration</p> <p>Restores contaminated water to healthy ecological conditions</p>	<p>Algae Control</p> <p>Destroys existing blooms and prevents new growth</p>
<p>Sludge Reduction</p> <p>Breaks down organic bottom sediment accumulation</p>	<p>Nutrient Reduction</p> <p>Reduces nitrates, phosphates, and agrochemical loading</p>
<p>Odor Reduction</p> <p>Eliminates H₂S, ammonia and organic decay odors</p>	<p>Oxygen Improvement</p> <p>Increases dissolved oxygen - critical for aquatic life</p>
<p>Organic Contaminant Oxidation</p> <p>Destroys pesticides, pharmaceuticals, PFAS, dyes</p>	<p>Environmental Remediation</p> <p>Suitable for sensitive ecosystems and protected water bodies</p>

PHYSICAL & CHEMICAL PROPERTIES

Property	Value
Product Form	Free-flowing Granular Powder
Appearance	White to Light Beige
Odor	Mild
Solubility	Dispersible in Water
Bulk Density	0.8 - 1.1 kg/L
pH (1% Solution)	6.5 - 8.5
Storage Stability	24 Months

PERFORMANCE TARGETS

- Organic contamination
- Algae nutrients
- Biological oxygen demand
- Surface water discoloration
- Odor-causing compounds
- Hydrogen sulfide odors
- Chemical oxygen demand
- Sludge accumulation



BEFORE
Algal bloom, murky water, low oxygen, foul odour

AFTER
Clean water, healthy ecosystem, higher oxygen, renewed life.



Standard Packaging

Packaging	Bag	Drum	Bulk Bag	Big Bag
Net Weight	25 kg	50 kg	500 kg	1,000 kg

★ Other packaging can be considered on request

