

**FILTERSORB
FILTRATION**

ADSORPTION

INSTANT PRODUCTS

OXY TREATMENT

SYSTEMS

NITRO TRAPP

ADVANCED NITRATE REMOVAL TECHNOLOGY

INTRODUCTION //

SMARTER REGENERATION. BETTER NITRATE REMOVAL.

Nitrate contamination has become one of the world's fastest-growing drinking water concerns. As agricultural intensity increases and aging infrastructure struggles to keep pace, nitrate levels in source water continue to rise across both rural and urban regions - placing growing pressure on water utilities, industrial operators, and private well owners alike.

What makes nitrate particularly difficult to manage is that it rarely arrives from a single, identifiable point source. It accumulates gradually, from multiple directions at once, often over years - which means that by the time a well or treatment plant registers a compliance breach, the contamination is already well established in the surrounding aquifer. Addressing it requires a technology built specifically around nitrate's chemistry, not a general-purpose filtration approach adapted after the fact.

ADVANCED NITRATE REMOVAL TECHNOLOGY

High Capacity **Regenerable** **Reliable** **Cost Effective**

- Removes Nitrate (NO_3^-)
- Protects Drinking Water Quality
- Suitable for Municipal, Industrial & Residential Applications
- Long Service Life
- Low Salt Consumption
- High Operating Efficiency
- Designed for Continuous Water Treatment



APPLICATION //



Municipal Drinking Water



Point-of-Entry (POE)



Rural Water Systems



Industrial Water Treatment



Food & Beverage Industry



Agriculture Water Systems



PREMIUM QUALITY
MADE IN GERMANY

NITRO TRAPP

FILTERSORB

FILTRATION

ADSORPTION

INSTANT PRODUCTS

OXY TREATMENT

SYSTEMS



THE NITRATE CHALLENGE

WHY NITRATE REMOVAL IS IMPORTANT

Nitrate contamination has become one of the world's fastest-growing drinking water concerns.



MAJOR SOURCES OF NITRATE CONTAMINATION

- **Agricultural fertilizers** - the leading global source of groundwater nitrate
- **Animal farming** - manure runoff into water tables
- **Septic systems** - leaching into local groundwater
- **Industrial wastewater** - nitrate-rich effluent discharge
- **Landfill leachate** - migration through soil into aquifers
- **Groundwater contamination** - cumulative buildup over years

EXCESSIVE NITRATE CONCENTRATIONS MAY LEAD TO:

Drinking water regulatory non-compliance

Risk of methemoglobinemia (blue-baby syndrome) in infants

Environmental degradation of waterways and ecosystems

Increased treatment costs for utilities

Public health concerns and liability

Many municipalities around the world struggle to maintain nitrate concentrations below regulatory limits.

NitroTrapp[®] was developed to provide a dependable and economical solution.

WHAT IS NITROTRAPP[®]?

ADVANCED SELECTIVE NITRATE REMOVAL MEDIA

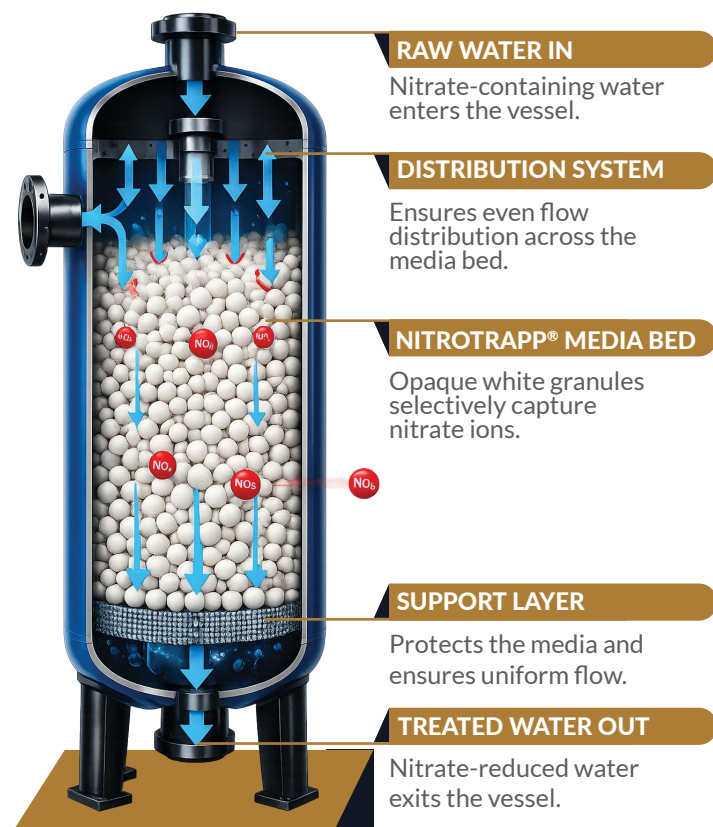
NitroTrapp[®] is a specially engineered nitrate-selective adsorption and ion-exchange technology designed for the efficient removal of nitrate ions from water.

The media provides:

- Exceptional nitrate selectivity
- High nitrate loading capacity
- Excellent hydraulic performance
- Long operational cycles
- Regeneration capability
- Consistent treated water quality

THE NITROTRAPP[®] TREATMENT CYCLE

When nitrate-containing source water passes through the **NitroTrapp[®]** media bed, the resin's functional groups selectively bind to nitrate ions, exchanging them for chloride ions. The result is treated water with dramatically reduced nitrate concentration - consistently below regulatory limits.





**FILTERSORB
FILTRATION**

ADSORPTION

INSTANT PRODUCTS

OXY TREATMENT

SYSTEMS

STEP 01

**Raw Water
Enters System**

STEP 02

**NO₃⁻ Ions
Selectively Captured**

**STEP-BY-
STEP
PROCESS**

STEP 03

**Cl⁻ Released
Into Stream**

STEP 04

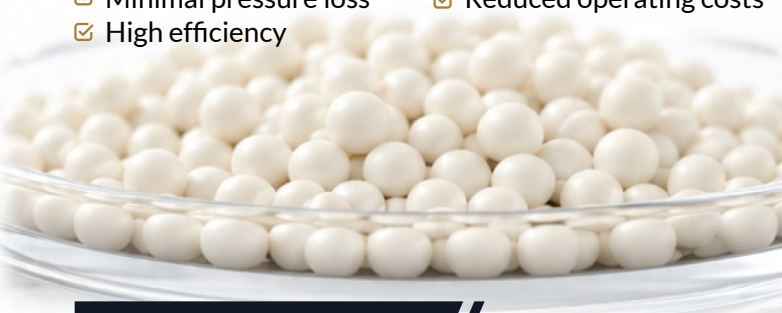
**Treated Water
Exits Clean**

Result

**CONTINUOUS NITRATE REMOVAL WITH
REPEATABLE REGENERATION CYCLES.**

BENEFITS

- ✓ Stable operation
- ✓ Minimal pressure loss
- ✓ High efficiency
- ✓ Reliable performance
- ✓ Reduced operating costs



BUILT TO KEEP WORKING

COMPLETE TECHNOLOGY, CONSISTENT RESULTS

NitroTrapp® integrates selective media, pressure-vessel engineering, hydraulic optimization, and controlled regeneration into a unified nitrate-removal solution.

The result is a system designed not only to achieve treatment targets but also to maintain them consistently through repeatable and reliable operation.



RESIDENTIAL
Up to 10 m³/h

COMMERCIAL
10-100 m³/h

MUNICIPAL
100-1000+ m³/h

SYSTEM DESIGN

NitroTrapp® systems are configured in standard pressure vessels for residential and commercial applications, and custom-engineered for large-scale municipal installations. Systems support both upflow and downflow service modes.

RESIDENTIAL SYSTEMS

APPLICATION	FLOW RATE	MEDIA VOLUME
Small Home	0.5 m³/h	10 L
Medium Home	1.0 m³/h	20 L
Large Home	2.0 m³/h	40 L

COMMERCIAL SYSTEMS

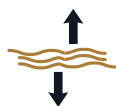
APPLICATION	FLOW RATE	MEDIA VOLUME
Small Commercial	5 m³/h	100 L
Medium Commercial	10 m³/h	200 L
Large Commercial	20 m³/h	400 L



MUNICIPAL SYSTEMS

Custom-engineered systems available up to thousands of cubic meters per hour.

DESIGN FEATURES



Upflow or
Downflow
Operation



Automatic
Regeneration



Corrosion
Resistant
Construction



Municipal
Grade
Components



Low
Maintenance
Requirements



Consistent
High-Quality
Water Output

FILTERSORB
FILTRATION
ADSORPTION
INSTANT PRODUCTS
OXY TREATMENT
SYSTEMS



REGENERATION ADVANTAGE //

LOWER SALT CONSUMPTION

Regeneration is where many nitrate technologies quietly lose their economics - high salt dosing, large brine volumes, and long downtime windows add up over a multi-year service life. NitroTrapp® was deliberately engineered to avoid that trap. It is designed to maximise nitrate removal while minimising regeneration requirements, achieving full capacity recovery with a fraction of the salt typically required by less selective media. The standard regenerant is **sodium chloride (NaCl)**, applied through a precisely controlled, repeatable six-stage sequence.

TYPICAL REGENERATION PROCESS



1 Service Cycle



2 Backwash



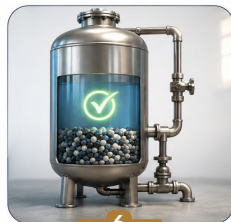
3 Brine Draw



4 Slow Rinse

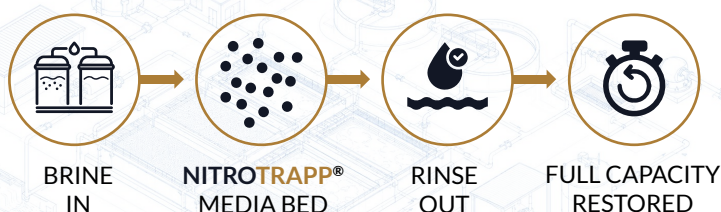


5 Fast Rinse



6 Return to Service

EFFICIENT REGENERATION PATH //



ADVANTAGES //

- ✓ Reduced salt consumption
- ✓ Lower operating costs
- ✓ Reduced wastewater generation
- ✓ Extended media life
- ✓ Reliable regeneration performance

MAXIMUM NITRATE REMOVAL, MINIMUM REGENERATION COST.



STANDARD REGENERANT

Sodium Chloride

NaCl brine is applied in a controlled sequence to restore the media to complete working capacity.

WHY THE ECONOMICS HOLD //

Lower chemical demand, reduced brine volume and repeatable capacity recovery limit operating cost over the full service life - without turning regeneration into the hidden cost centre of the system.

Alternative Regenerants: While sodium chloride is the standard regenerant, potassium chloride (KCl) or magnesium chloride ($MgCl_2$) may be used as alternatives in select applications — offering the additional benefit that the resulting spent brine can serve as a beneficial source of potassium or magnesium for agricultural use.

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

PERFORMANCE BENEFITS

NitroTrapp[®] delivers measurable advantages across every dimension that matters to water utilities, industrial operators, and engineers - from day-to-day operation to long-term economics and environmental responsibility.

OPERATIONAL BENEFITS

- High nitrate removal efficiency
- Consistent treated water quality
- Regenerable technology
- Long service life
- Easy operation
- Low maintenance
- Scalable system design



ECONOMIC BENEFITS

- Reduced operating expenses
- Lower regeneration costs
- Long-term reliability
- Excellent return on investment



ENVIRONMENTAL BENEFITS

- Sustainable operation
- Reduced waste generation
- Efficient resource utilization



PHYSICAL PROPERTIES

PARAMETER	VALUE
Appearance	Spherical Beads
Color	Light Amber
Ionic Form	Chloride Form
Moisture Content	Typical
Bulk Density	650 – 750 g/L
Particle Size	0.3 – 1.2 mm
Uniformity Coefficient	≤ 1.7
Maximum Operating Temperature	40°C

Nitrate contamination does not disappear on its own and often worsens over time. NitroTrapp[®] provides a selective, regenerable solution engineered for reliable long-term nitrate removal in continuous operation.

OPERATING CONDITIONS

PARAMETER	VALUE
Service Flow Rate	5 – 40 BV/h
Backwash Flow Rate	According to water temperature
Minimum Bed Depth	800 mm
Recommended Bed Depth	1,000 – 1,200 mm
Freeboard	50%
Operating pH	4 – 10
Operating Pressure	2 – 8 bar

REGENERATION

PARAMETER	VALUE
Regenerant	Sodium Chloride
Regeneration Method	Counter Current Preferred
Salt Requirement	Application Dependent
Regeneration Frequency	Based on Nitrate Loading



Standard Packaging

Packaging	Weight of product	Quantity/pallet	Gross Wt./pallet
Drum (60 L)	40 kg	18	808 kg

★ Other packaging can be considered on request

