

# FERAZUR® MANGAZUR® NITRAZUR™



DRINKING  
WATER

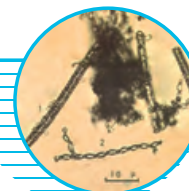
FERAZUR®/MANGAZUR®/NITRAZUR™ is a biological filtration process for the removal of iron, manganese, arsenic, ammonia and nitrates from ground water sources. The precipitate is removed by using Biolite™, our specially developed media that requires no replacement. The bacteria remain in the media even after backwashing, allowing continual operation for indefinite time periods.

## APPLICATIONS

- » Ferazur® for iron removal
- » Ferazur® for arsenic removal
- » Mangazur® for manganese removal
- » Nitrazur™ for ammonia & nitrates removal

## MAIN FEATURES

- » Naturally occurring bacteria and their ability to rapidly oxidize dissolved metals are key to the FERAZUR®/MANGAZUR®/NITRAZUR™ processes
- » Requires less water for backwashing
- » Higher metals retention on the Biolite™ media allows longer filters runs
- » Very low operating costs
- » Due to rapid biological oxidation rates, FERAZUR®/ MANGAZUR®/NITRAZUR™ systems are designed at filtration rates up to 20 gpm/ft<sup>2</sup> (50 m<sup>2</sup>/h) - allowing smaller filters and smaller footprint installations



## Ferazur®/Mangazur®/Nitrazur™ SPECIFIC TECHNOLOGY

Contaminants are found in surface and ground waters at varying concentration levels. Even at low concentrations, these metals can cause a host of problems in water, including metallic taste, discoloration, laundry spotting, pipe scaling, and fixture staining.

Conventional plants rely on physical-chemical processes using special media, intense aeration, or chemical oxidation for Fe/Mn/NH<sub>4</sub> removal. Disadvantages of physical-chemical processes include the expense of chemical consumption, the frequent need for backwash, limited filtration rates, time-consuming operation and maintenance, and inconsistent effluent quality.



## HOW IT WORKS

During the process, bacteria attach to Infilco Degremont's Biolite™ filter media—designed specifically for biological removal of metals. Biolite™ media acts as a support for bacteria, enables high-rate filtration, and does not require periodic replacement or regeneration.

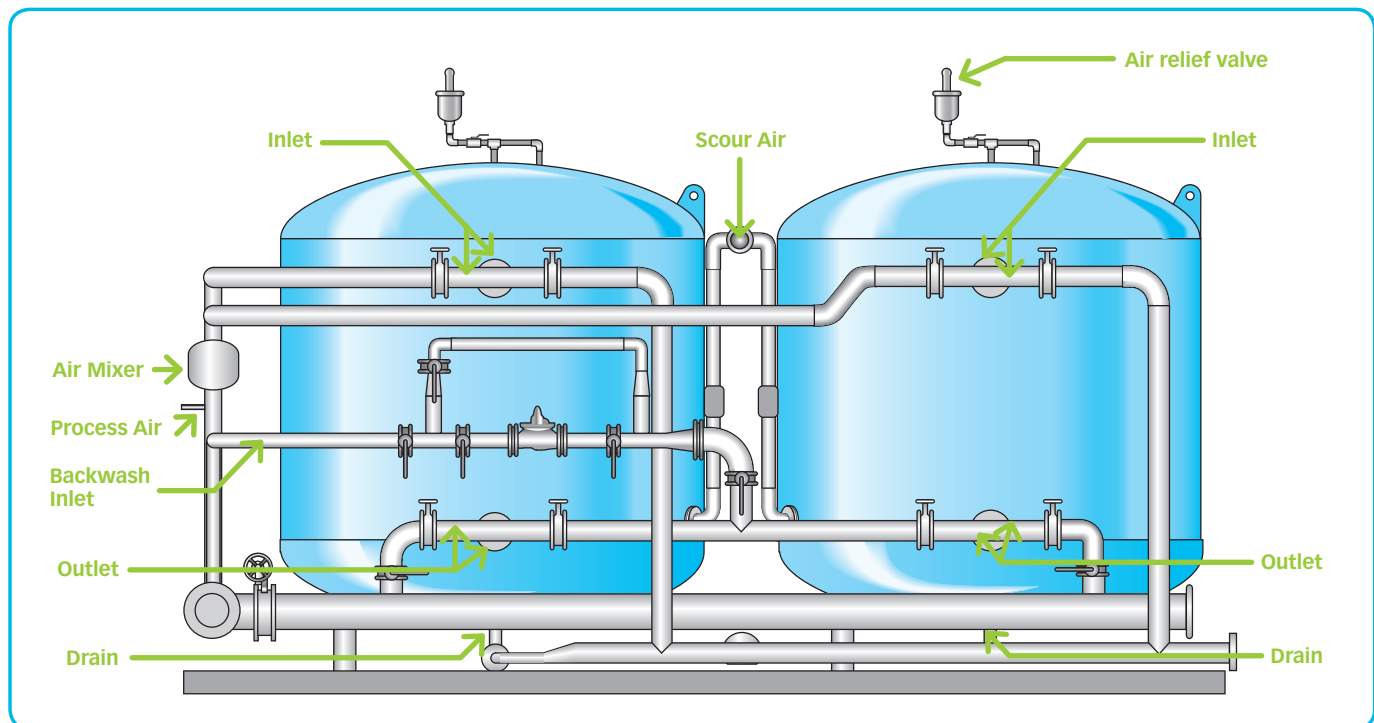
Infilco Degremont's Ferazur®/Mangazur®/Nitrazur™ process controls the environmental conditions within the filter, ensuring the development of an efficient biofilm.

The selected microorganisms oxidize the pollutants into extremely dense precipitates, enabling three to five times the metal retention when compared to chemically-formed

precipitates. Arsenic removal is achieved through biocatalytic oxidation and absorption with the iron oxides that are continuously produced in the filter.

The Nitrazur™ process oxidizes ammonia and reduces nitrates. Ammonia oxidation is achieved through autotrophic bacteria while naturally occurring denitrifying heterotrophic bacteria reduce nitrate to nitrogen gas.

While providing consistent treated water quality, Ferazur®/Mangazur®/Nitrazur™ systems also provide operational flexibility, and backwashes can be performed with raw or treated water.



Optimal pH, and ORP (oxidation-reduction potential) are required for the correct operation of the biological process. This is achieved through the controlled injection of process air (depending on the raw water ORP), which increases the ORP.

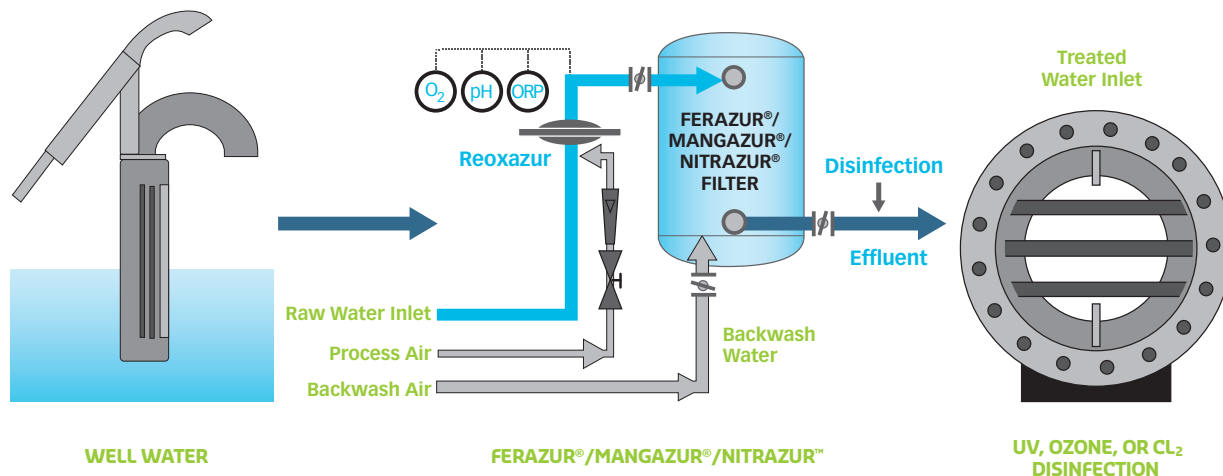
For some applications, a pH adjustment is necessary to obtain the proper operating conditions, requiring the injections of an alkaline reagent (NaOH, Ca(OH)<sub>2</sub> etc).

The accumulated iron, manganese, and arsenic must eventually be removed from the filter through regular backwashes using a simultaneous water and air scour. This reduces backwash water consumption and ensures an efficient cleaning of the media. Backwashes are typically triggered based on pre-set values of measured pressure drop through the filter.

## PRODUCT HIGHLIGHTS

- » Longer filter runs – three to five times greater than conventional processes
- » No oxidation chemicals are needed
- » High filtration rates in a small footprint
- » Natural process offers high net water production and good sludge treatability
- » No periodic regeneration of filter media
- » Rapid response to changing water quality

## FERAZUR®/MANGAZUR®/NITRAZUR™ TREATMENT LINE



## TECHNICAL ADVANTAGES

**SIMPLE, AUTOMATIC OPERATION**

The process is operated in the same way as a conventional filtration system.

- Filtration cycles and backwashing are carried out automatically by the PLC based control system.
- Automatic valves (pneumatic or electric) simplify the operation.
- Water quality analyzers for dissolved oxygen, pH and ORP (depending on the application) are used to monitor the operating conditions in the filter and to adapt to varying raw water quality, in order to maximize process efficiency.

**MECHANICAL ADVANTAGES**

- Filters can be pressurized or open/gravity or upflow type depending on the application and the hydraulic profile of the new or existing plant.
- Retrofit of conventional filters is possible through the installation of new filter internals, modifications to the control system and the elimination of strong oxidant addition.
- Retrofitting to a Ferazur®/Mangazur®/Nitrazur™ process can be a cost effective way of increasing the capacity of an existing plant.

## PERFORMANCE

- » Treats up to 20 mg/L of iron
- » Treats up to 3 mg/L of manganese
- » Treats up to 30 mg/L of ammonia
- » Treats up to 30 mg/L of nitrates
- » Effluent quality:
  - Less than 0.3 mg/L Fe, typically > 0.1 mg/l
  - Less than 0.05 mg/L Mn
  - Less than 0.5 mg/L ammonia
  - Less than 1 mg/L nitrates
- » Filtration rates up to 20 gpm/ft<sup>2</sup> (50 m/h)

**COMPLETE TREATMENT SOLUTIONS**

Infilco Degremont offers an array of water, wastewater and industrial treatment solutions for any size client. Headworks, clarification, filtration, biological and disinfection systems are several of the product disciplines in our portfolio.

If you are interested in this product, check out some of the complementary products:

- Superpulsator® Clarifier
- AquaDAF® Clarifier
- Accelator® Clarifier/Softener
- Greenleaf Filter System
- Monoflor® Nozzle Underdrains

With a variety of filtration and clarification products in our SEPARATIONS department, Infilco engineers carefully evaluate each application to provide the most cost-effective and efficient treatment solution.

- ABW® Automatic Backwash Filter
- PulsaPAK® Package Clarifier/Filter System
- AquaPAK Package Clarifier/Filter System
- AccelaPAK® Package Clarifier-Softener/Filter

**PILOTING SERVICES**

Infilco offers pilot systems and services for the equipment in this brochure as well as many of our other product offerings. Pilot studies are a practical means of optimizing physical-chemical and biological process designs and offer the client several benefits, such as:

- Proof of system reliability
- Optimal design conditions for the full-scale system
- Raw water lab analysis
- Regulatory approval assistance

If you are interested in a pilot study for your system, please contact us for a proposal.



**SERVICES - INFILCARE™**

**PART SALES**

Infilco Degremont sells parts and components for most INFILCO brand equipment as well as parts for demineralizers, thickeners, nozzles, pressure filters, and valves. We offer reliable spare parts at competitive prices. We maintain records of previous installations to quickly identify your requirements. Many items are shipped directly from stock for quick delivery.



**REBUILDS, RETROFITS AND UPGRADES**

Infilco Degremont offers cost-effective rebuilds and upgrades for INFILCO provided systems, no matter what year they were built. If you are interested in an economical alternative to installing a whole new system, contact us for a proposal.



**CONTACTS**

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