



WATER FILTRATION APPLICATIONS FOR FOOD & BEVERAGE



A SUCCESSFUL PARTNERSHIP for the Food & Beverage Industry

Water filtration - why?

Regardless of how simple or complex a food or beverage manufacturing process is, every process owner needs to make sure his product complies with relevant standards and requirements as well as consumer expectations.

Therefore the quality of any water- from CIP solutions to process water and even ingredient water - needs to be ensured. Donaldson's best-in-class filtration solutions help to achieve this.

Filtration usually begins upstream with the retention of suspended solids such as sediments and particulates*. It is needed at the start of the process to protect downstream treatment steps and at the end of the process to remove any surviving contaminants and prevent the pickup of harmful bacteria* just prior to packaging.

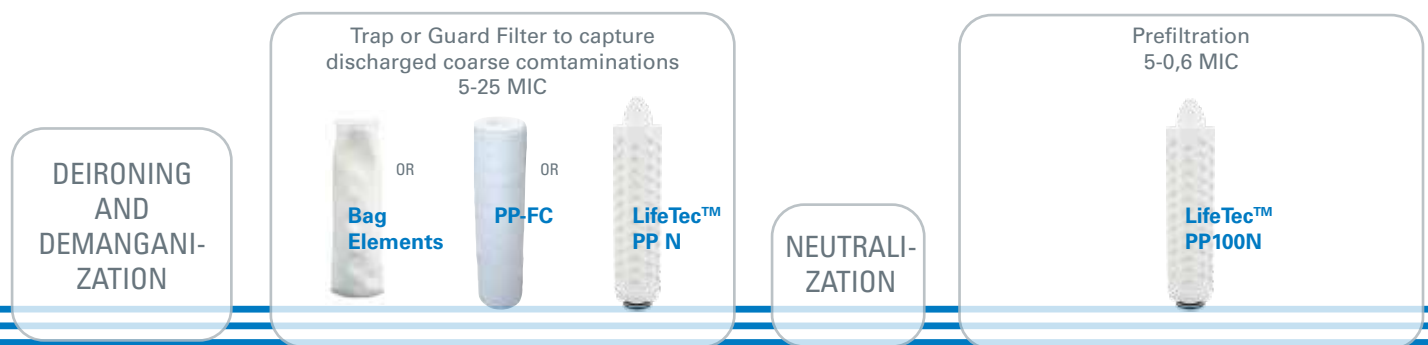
With LifeTec™ Liquid filter elements, Donaldson delivers best-in-class filtration solutions for the food & beverage industry. The filters are developed to support manufacturers' process and product integrity:

- 1 Strength**- robust polypropylene filter liner (rhombus structure), that improves the static and flow conditions. Improved pressure stability and torsional stiffness, preventing damage to the filter element during filter replacement
- 2 Performance**- excellent flow rate and low pressure drop reducing total cost of ownership
- 3 Availability**- Single piece flow manufacturing guarantees product availability of large batches and single item lots.

How to treat NATURAL MINERAL WATER AND SPRING WATER

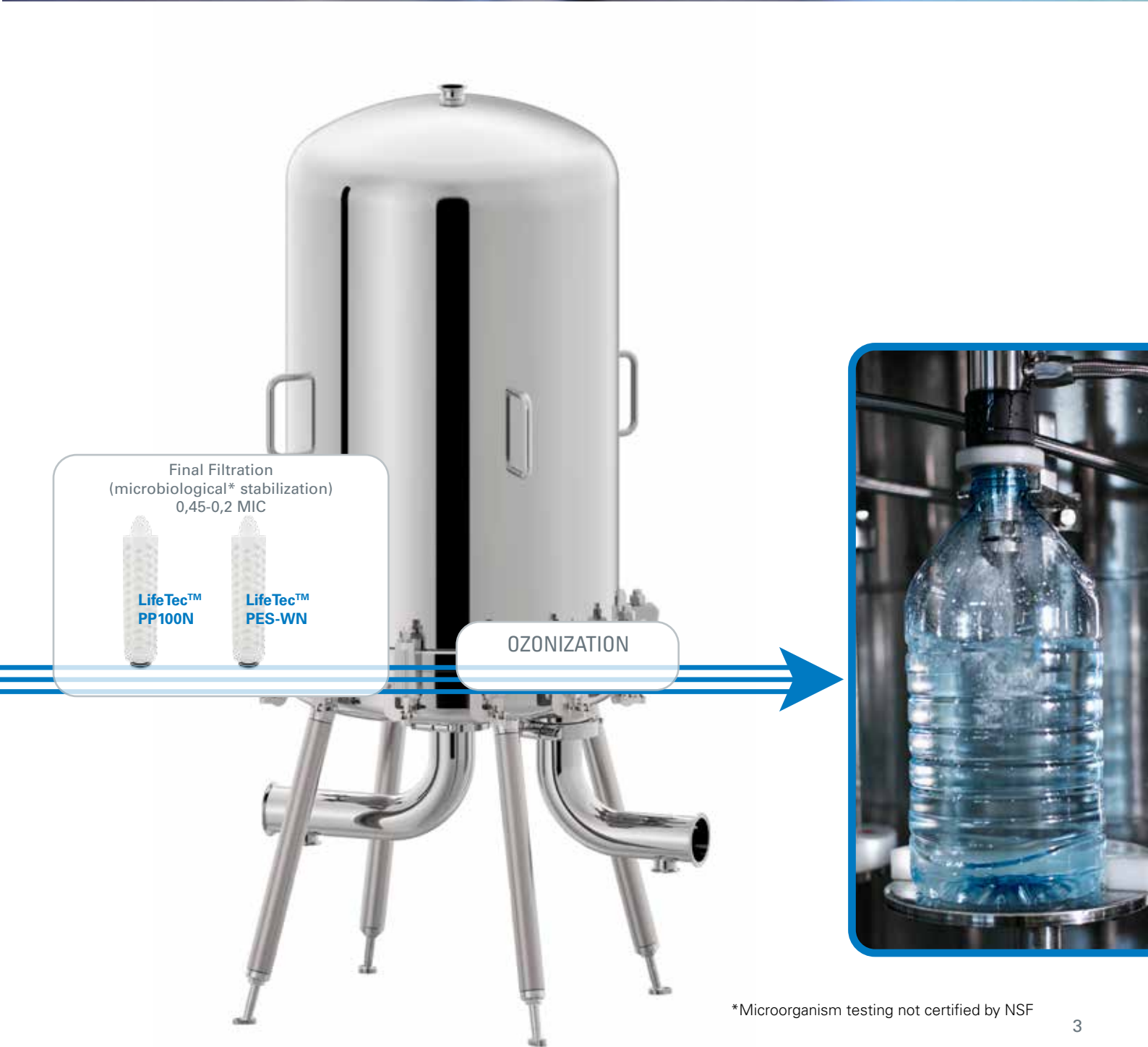
Natural mineral water is characterized by its high and consistent level of minerals. It is defined by having high purity and a source naturally protected from contamination. Spring water differs from mineral water because of its varied and typically lower mineral content.

Regulations only allow limited treatment of both kinds of water, including filtration to remove unstable elements and undesired components. The filtration starts with the removal of large contaminants and ends right before bottling with the removal of micro-organisms*. The aim of the filtration is bacterial* stabilization and particulate* removal.



In this brochure, we cover best practice examples for water filtration applications within the food and beverage industry. Filtration needs vary depending on various factors.

Feel free to contact us on CAP-europe@donaldson.com so we can discuss your specific needs.



*Microorganism testing not certified by NSF

How to treat TABLE WATER AND BOTTLED TAP WATER

Table water as well as bottled water comes from large wells, lakes, rivers or reservoirs and can be treated to meet local or national drinking water regulations and standards. The natural mineral content found in these water sources is usually low, therefore artificial mineralization is possible.

There are several options to treat table and bottled water. Very common treatment methods include reverse osmosis, softening steps, UV-disinfection or ozonization. All of these methods can be supported using Donaldson filtration products.

Prefiltration
2,4-0,6 MIC



Trap or Guard Filter to capture
discharged coarse contaminants
5-25 MIC



OR



SOFTENER

Protection of
RO-Membrane
~5 MIC



OR



OR



REVERSE OSMOSIS

Protection of
UV-System for better efficiency
~ 5 MIC (or lower)



OR



OR



Guard Filter in case of
malfunction of UV lamp
~ 1 MIC

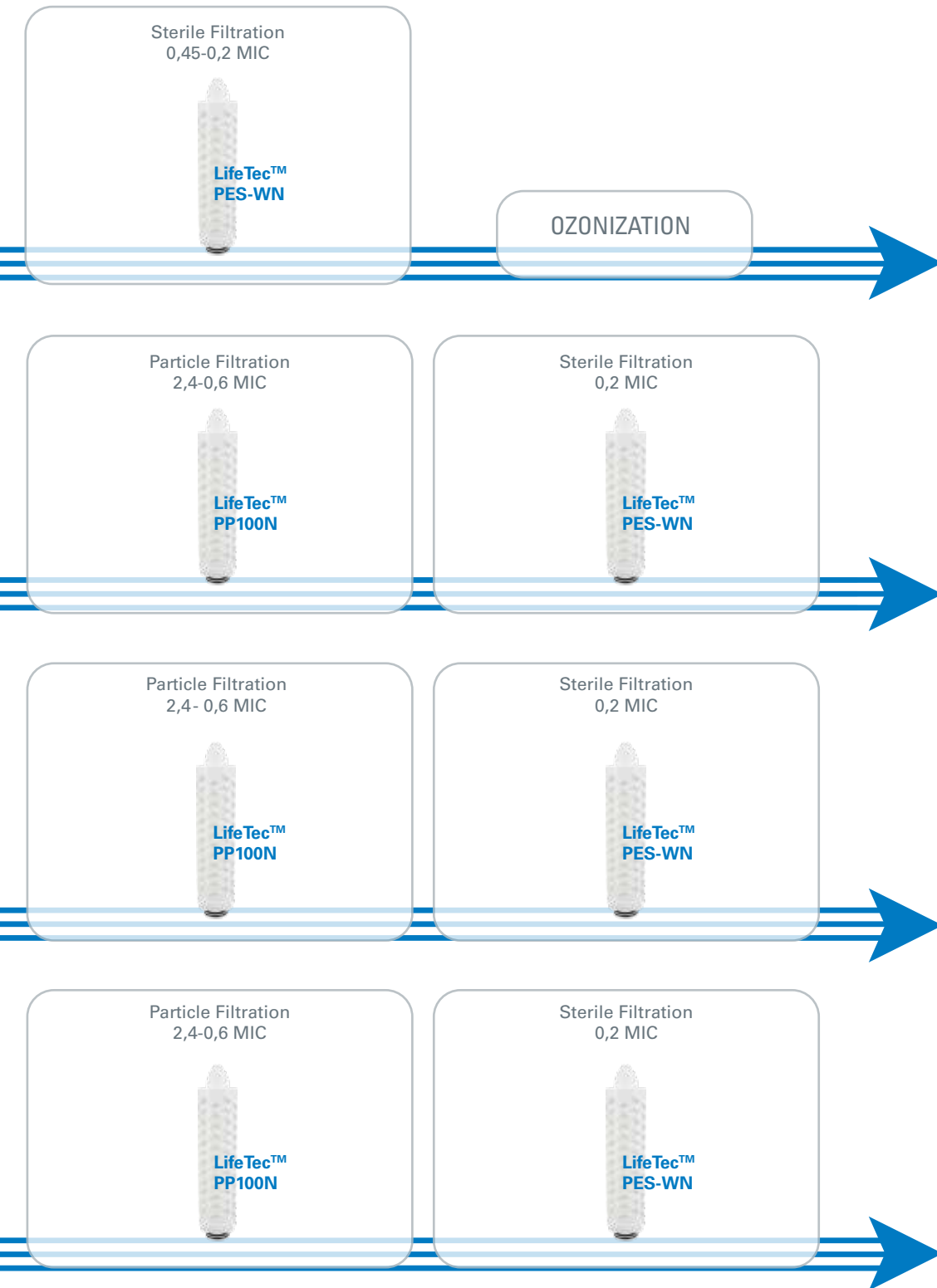


OR



UV-DISINFECTION

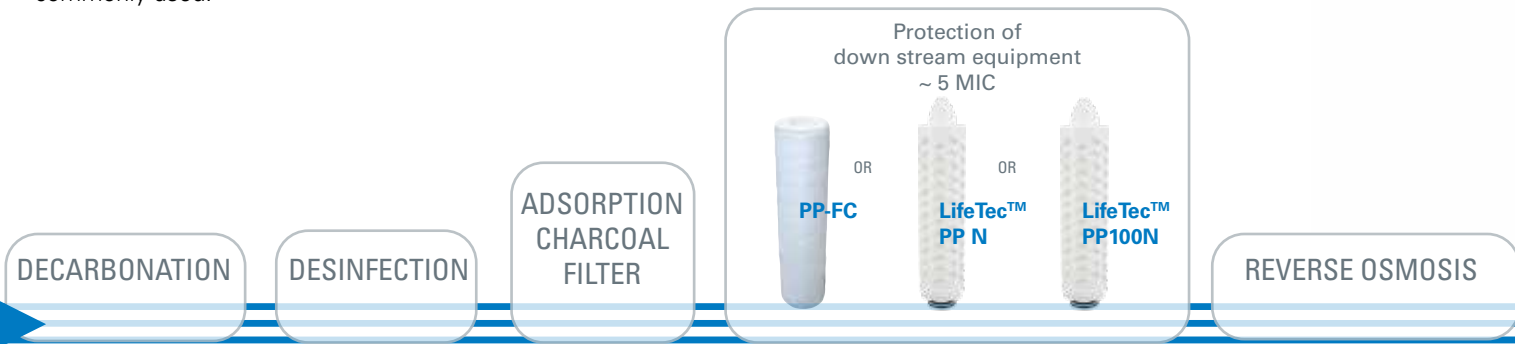
Donaldson LifeTec™ elements serve many processing steps - from protecting fragile RO membrane from particulate* to removing microorganisms* from the final product.



*Testing not certified by NSF

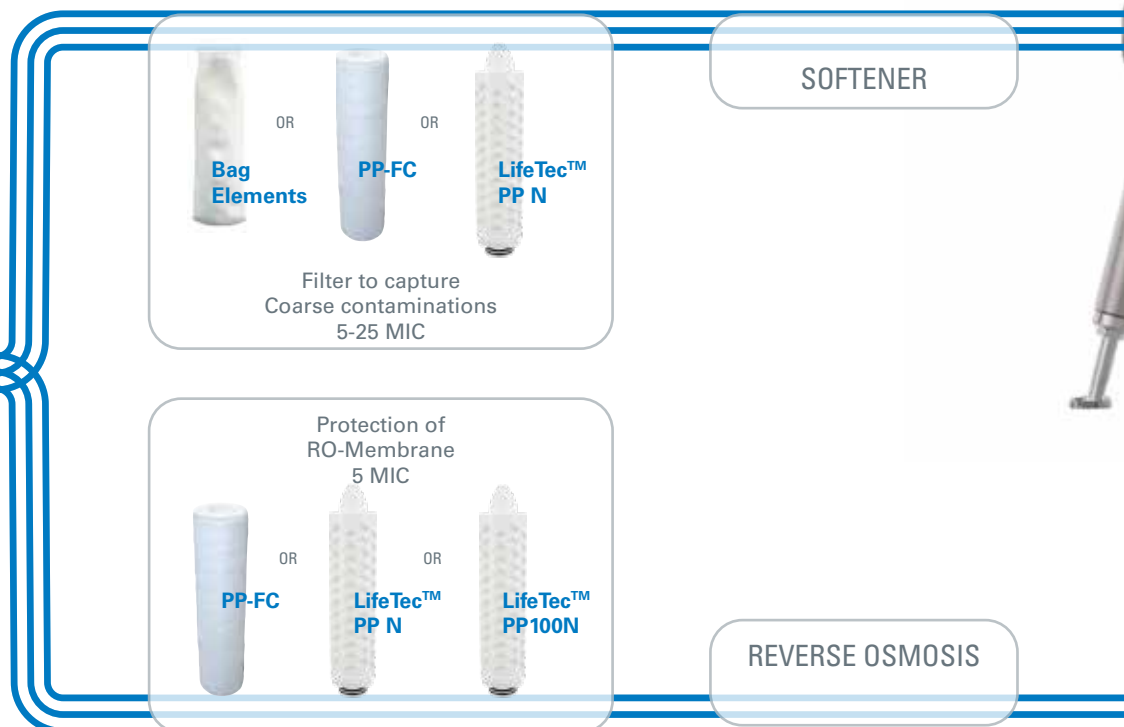
How to treat SOFT DRINK WATER

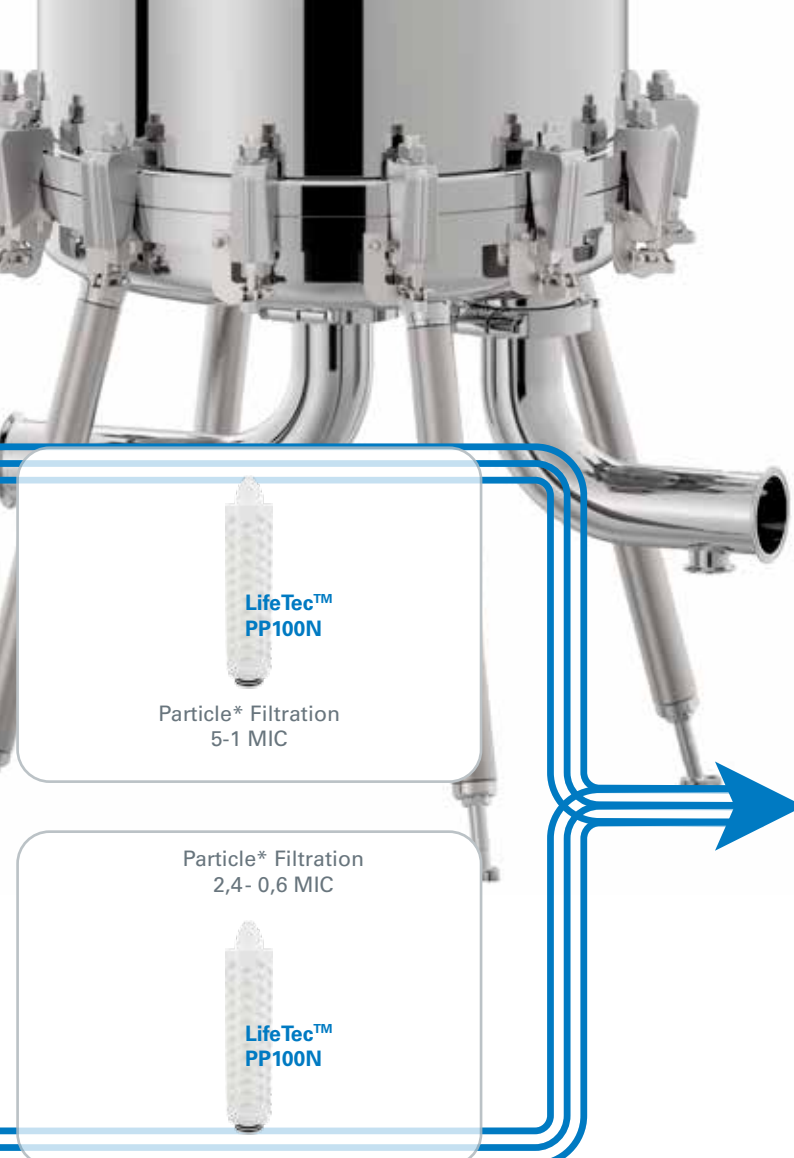
Water for soft drink production such as soda or juice needs to meet hygienic purity according to drinking water regulations and must be treated accordingly. Reverse osmosis treatment is considered the industry standard and disinfection treatment methods are commonly used.



How to treat BREWING WATER


Filtration is necessary at several different points in the beer brewing process. Depending on the water source and the beer type different treatment steps are possible. Residual alkalinity, carbonate hardness and total hardness (°dH) are important parameters to define the correct treatment steps. Decarbonization and desalination are commonly used.



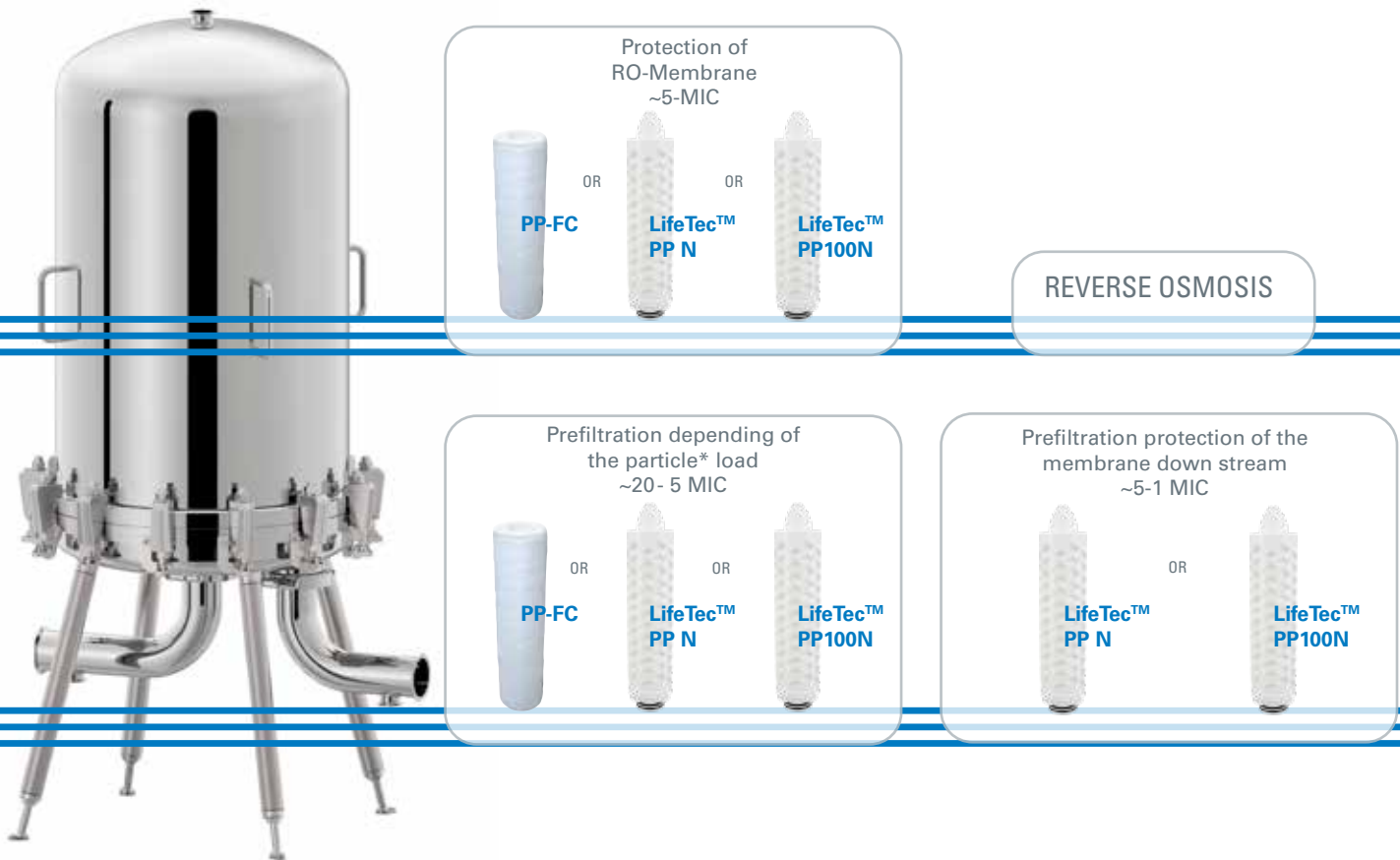


*Testing not certified by NSF

How to treat PROCESS WATER

Process water can indirectly come in contact with the final product, such as recovery of product residues, water used for rinsing bottles, rinsing after chemical disinfectants or for sterilization in place (SIP). The main source for process water regularly used in the food and beverage production is municipal water, but it can also be regained from internal production steps. 

The hygienic requirements for process water are typically identical to the regulations for drinking water, thus, any treatment methods to meet drinking water regulations can be used.



How to treat CIP WATER

Clean in place (CIP) water can be monitored for pH, filtered and re-used in many applications rather than sourcing new water. Many production sites have water fed CIP systems to clean and sanitize the equipment in line. Filtered water is essential to avoid contamination and equipment downtime.

The filtration aims for particle* free water quality.



How to treat **PRODUCT INGREDIENT WATER**

Sterile grade water is typically sourced from a municipal water supply and can be used as an ingredient in many food and beverage production processes. Ingredient water comes in direct contact with the final product, such as water that becomes part of the final product. This water can be filtered down to sterile grade using Donaldson PES membrane elements.

Particle* Filtration
2,4- 0,6 MIC



LifeTec™
PP100N

Sterile Filtration
0,2 MIC

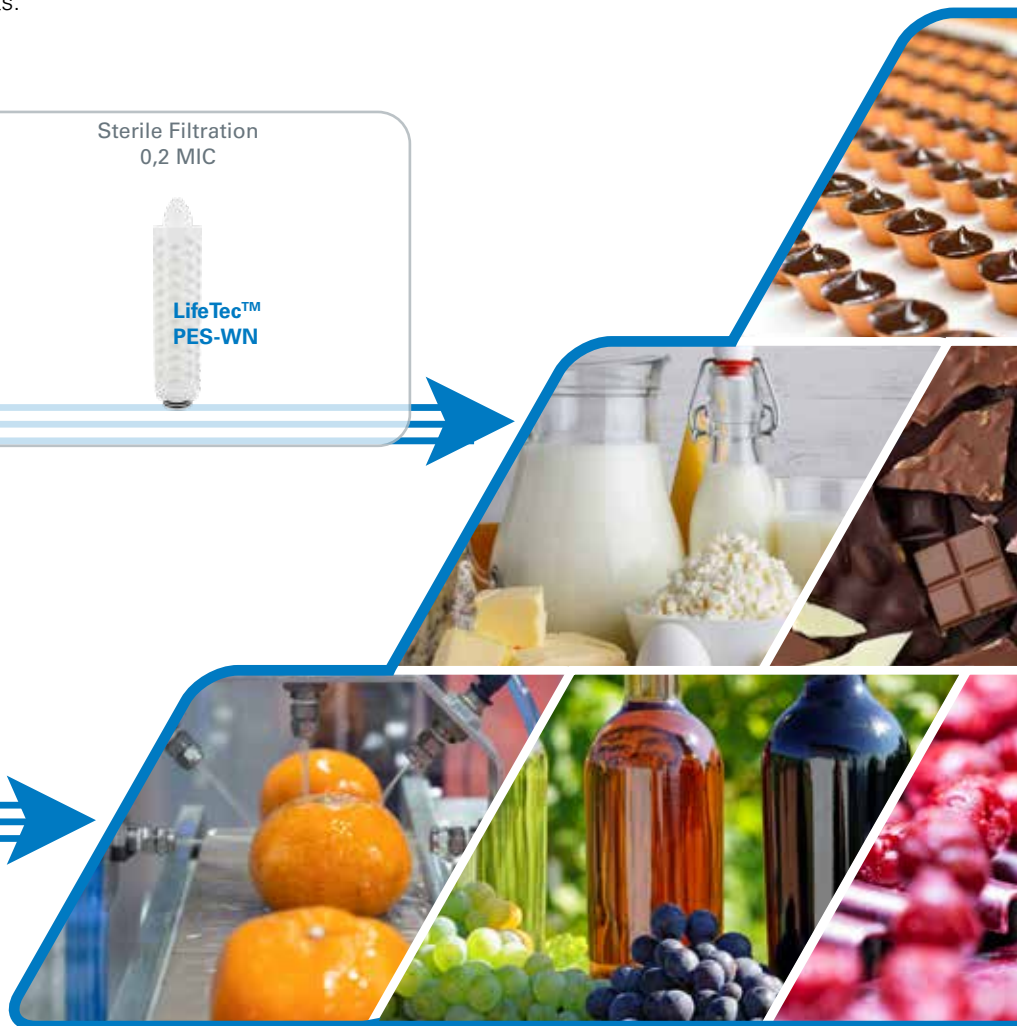


LifeTec™
PES-WN

Sterile Filtration
0,2 MIC



LifeTec™
PES-WN



*Testing not certified by NSF

LIQUID FILTRATION SOLUTIONS



LifeTec™ PP N



Donaldson LifeTec™ PP N filters deliver outstanding flow rates and high throughput, with nominal submicron particulate retention and high dirt holding capacity.

Features

- Highly robust polypropylene construction protects against deformation
- Outstanding flow rate
- Extremely high dirt holding capacity
- Asymmetrical filter matrix for longer service life
- Approved for Food Contact Use according to US CFR Title 21 & EC/1935/2004

LifeTec™ PP100 N



Donaldson LifeTec™ PP100 N filters are absolute rated depth type filters constructed of 100% polypropylene deliver superior flow rates and high throughput.

Features

- Absolute particle* removal
- Asymmetrical pore structure for longer service life
- Highly robust polypropylene construction protects against deformation
- Excellent flow rate
- Approved for Food Contact Use according to US CFR Title 21 & EC/1935/2004

LifeTec™ PP100 CN



Donaldson LifeTec™ PP100 CN filters are specifically developed for maximum safety, performance and economics in protecting bottled water and soft drinks from Cryptosporidium and Giardia contamination*

Features

- Absolute removal of Cryptosporidium and Giardia*
- Tapered pore structure for longer service life
- Highly robust polypropylene construction protects against deformation
- Excellent flow rate
- Approved for Food Contact use according to US CFR Title 21 & EC/1935/2004

STERILE FILTRATION OF WATER

LifeTec™ PES-WN



Donaldson LifeTec™ PES-WN filters are sterile grade, pleated high-performance polyethersulfone membrane filters for liquid filtration of processed foods and beverages

Features

- Sterile grade membrane filters with a log reduction value of 7 for 0.2, 0.45 & 0.6 micron
- Excellent flow rate
- Highly robust polypropylene construction protects against deformation
- Extremely low adsorption of proteins
- High thermal stability, permanently hydrophilic

What is sterile filtration and why is it important?

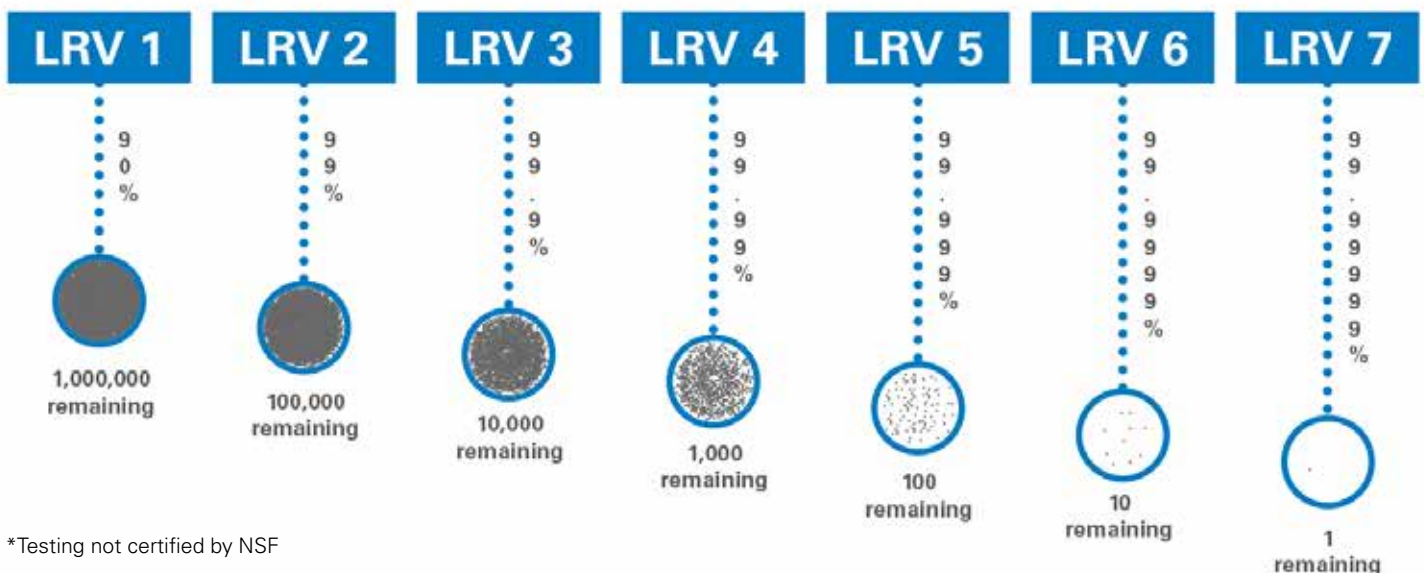
For many products it is crucial to use sterile grade microfilters that keep harmful bacteria from processes. Bacteria sizes reach from 0.2 micron up to 30 micron. The membrane filter needs to be capable of retaining all of those bacteria sizes*.

Sterile filters for water are validated by using a special microorganism as a measuring standard, the *Brevundimonas diminuta**. This microorganism has a typical size of 0.2 to 0.3 micron, which makes it the perfect size to validate sterile filters.

Per definition, a sterile filter holds back all *Brevundimonas diminuta** except for one out of 10 million organisms which are applied to one square centimeter of filter surface. This calculates to retaining 99.99999 % of all bacteria. This 99.99999 % can be calculated into a so called LRV value, which stands for logarithmic reduction value. A retention rate of 99.99999 % equals a LRV 7.

REMAINING MICROORGANISMS

OUT OF **10,000,000**



*Testing not certified by NSF

SUPERIOR FILTRATION. SOPHISTICATED SERVICES.

Your partner for a wide variety of service solutions

To enhance and complement our field services, we provide highly sophisticated in-house laboratory services to validate oil aerosols, oil mist, particle size or concentrations.

- Integrity Test Membranes (Membra Check)
- Integrity Test Depth Filtration (Filter Test Center)
- Differential Pressure Measuring
- Particle Spectrum Analysis for Liquids
- Test Filtration for Compressor Condensate



Membra Check



Filter Test Center (FTCi)



CE FDA



The L-BE Series with PP ring is Tested and Certified by NSF International against NSF/ANSI Standard 42 for material requirements only.

COMPONENT



The LifeTec™ PES-WN Series is Tested and Certified by NSF International against NSF/ANSI Standard 42 for material requirements only.

COMPONENT



The LifeTec™ PP-N and PP100-N Series is Tested and Certified by NSF International against NSF/ANSI Standard 42 for material requirements only.

COMPONENT



donaldson.com/process

Donaldson Company, Inc.
Minneapolis, MN

Contact us



Important Notice: Many factors beyond the control of Donaldson can affect the use and performance of Donaldson products in a particular application, including the conditions under which the product is used. Since these factors are uniquely within the user's knowledge and control, it is essential the user evaluate the products to determine whether the product is fit for the particular purpose and suitable for the user's application. All products, specifications, availability and data are subject to change without notice, and may vary by region or country.

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