



# MEMBRANE CLEANING

## REGENERATION & SANITATION

**COMPLETE RANGE OF DETERGENTS AND ENZYMES**

**WASHING PROCEDURES THAT RESTORE FLOW RATES  
AND CORRECT PRESSURES**

**QUALIFIED TECHNICAL ASSISTANCE TO STUDY  
EACH SPECIFIC NEED**

**FEEL SAFE WITH US**



**CHRISTEYNS**

FOOD HYGIENE



# COMPLETE SYSTEM FOR MEMBRANE REGENERATION

Filtration is a physical procedure that allows the separation of different molecules present in a liquid according to their size. After of used, the industries needs to clean the membranes, but for cleaning them we need to know before the characteristics as the kind of water, the membranes used, for example.

Christeyns Food Hygiene has developed a portfolio of specialist membrane cleaning chemicals. The chemicals are suitable for use with spiral wound, thin film composite membranes, plate and ceramic style filtration plants.

The cleaning system comprises alkali, acid and enzyme technology specifically developed to remove complex soil types in the dairy, beverage and brewing industries.

Christeyns Food Hygiene has experience with whey, white water, skim milk, extended shelf life milk, and effluent treatment using membrane techhology.

## MAIN FOOD APLICATIONS

In the food and beverage industries, membrane filtration is state-of-the-art technology for clarification, concentration, fractionation (separation of components), desalting and purification of a variety of beverages. It is also applied to improving the food safety of products while avoiding heat treatment. Some examples of final products using this technique are fruit and vegetable juices, like apple or carrot; cheeses, like ricotta, ice cream, butter or some fermented milks; skimmed or low-lactose dairy products; microfiltered milk; non-alcoholic beers, wines and ciders, etc.

Membrane filtration processes depend on pore size and separation done by a driving force. According to this, membrane processes are classified in Microfiltration (MF), Ultrafiltration (UF), Nanofiltration (NF) and Reverse Osmosis (RO).

Our chemistry combined with the skill and knowledge of our team have allowed us to reduce energy and water consumption in both cleaning and production. Micro results and flux rates reflect the standard and integrity of the cleaning regimes in place.

We offer technical expertise and assistance in trouble-shooting and cleaning of membranes to give you an optimum system performance.

**Keep the membranes like the first day.**

**With our range of products for membranes cleaning you will be able to increase the membran life.**



*Filtration with reverse osmosis.*

**MIDA MEMCARE** is a liquid additive product range containing a **stabilised blend of enzymes**, including proteases, lipases, amylases and others, and is used in combination with MEMCARE products that set the optimum pH of enzyme action and provide an additional cleaning effect for membranes.

The MIDA MEMCARE range consists of specially formulated detergents that provide gentle cleaning of MF (microfiltration), UF (ultrafiltration), NF (nanofiltration) and RO (reverse osmosis) membranes and help to optimise their lifetime.

## REGENERATION - SANITATION

During the production process, filtration equipment and installations inevitably get dirty. Some of the molecules that do not pass through the membrane and that are collected in the concentrate, accumulates during production causing a progressive occlusion of the pores of the membrane.

When the flow rates are reduced and the working pressures increase, a washing process also known as “regeneration” is necessary.

It is important to always check the membrane limits before setting the washing conditions.



## Do you need choosing the right membrane cleaning chemical solution for your system?

To identify the most suitable cleaner, you must know:

- The kind of water
- The materials from which membranes are made
- Restrictions in the chemicals use
- The type of soiling
- Compatibility with oxidants (chlorine and PAA): some membranes are incompatible and some others are compatible but only at certain PPM.
- Always check the TDS on membranes to verify compatibility in terms of pH, temperature and concentration (ppm).

## CHLORINE REDUCTION - MEMBRANE CLEANING

Considering the materials from which membranes are made and their structure, it is easy to understand that its cleaning is not a simple matter and cannot be improvised, either from the point of view of the products or from that of the procedures. Using our specially blended products we are able to clean plants without using chlorine based products. By eliminating the chlorine, we have been able to increase the membrane life and ensure that there are no residual chlorates or chlorites in product, retentate or permeate.

## OTHER OPTIONS AS ENZYMATIC PRODUCTS

The cleaning system incorporates alkaline, acid and enzyme technology, more environmentally friendly, specifically designed to remove complex soils in the dairy, beverage and brewing industries with limited use of chlorine to meet the needs of modern production plants with improved surfactant structure and more complex enzyme chemistry. Enzymes break down proteins and increase membrane life compared to other chemicals as a chlorine cleaning. In addition, the use of this type of product makes it easier to predict dosage. Enzyme activity stops completely when acid is used in the subsequent cleaning step.

## CLEANING PROCEDURE

Membranes have a porous structure in which processing residues accumulate. They can be damaged if washing solutions have extreme pH or if the temperatures are too high. Always check the TDS of membranes.

In addition, the use of surfactants and oxidizers must also be analysed and studied on a case-by-case basis.

In the food industry, different kind of soil can be found depending on the food and water composition: protein, fat or starches or hardness. These substances can be removed with alkaline detergents, enzymatic products and/or acid descaling detergents, surfactants and sequestrant and chlorinated products. These features together with CHRISTEYNS expertise on the subject

will help you to reach the highest level of hygiene of your membrane system.

Our range include both high pH, low pH, neutral pH and enzymatic cleaners each designed to give superior performance in combination with low cost in specific applications for both organic and ceramic membranes.

From our wide range of product any membrane cleaning challenge can be solved, including scaling problems, biological fouling and complex cleanings of membranes in food industry applications.

MEMBRANE MATERIALS / MEMCARE DETERGENTS						
		MIDA® MEMCARE				
	BUFFER	504 - 505	508 - 509	515	510	513
		Medium alkaline	Strong alkaline	Chlorinated alkaline	Acid	Acid
PS	✓	✓	✓ <sup>2</sup>	✓	✓	✓
PES	✓	✓	✓	✓	✓	✓
PVDF	✓	✓	-	✓	✓	✓
TFC	✓	✓	-	-	✓	✓
Ceramic	✓	✓	✓	✓	-	✓

1: MIDA MEMCARE BUFFER slightly alkaline suitable for combination with enzyme additives.

2: MIDA MEMCARE 508 too strong alkaline if the spacer inside the membrane are in PEs or PP.

3: MIDA MEMCARE 510 is not possible to apply on Ceramic membrane.

MEMBRANE MATERIALS / ADDITIVES MEMCARE						
	MIDA® MEMCARE					
	518	519	520	521	540	541
	Enzymatic <sup>1</sup>	Enzymatic <sup>1</sup>	Enzymatic <sup>1</sup>	Additive	Additive	Additive
PS	✓	✓	✓	✓	✓	✓
PES	✓	✓	✓	✓	✓	✓
PVDF	✓	✓	✓	✓	✓	✓
TFC	✓	✓	✓	✓	✓	✓
Ceramic	✓	✓	✓	✓	✓	✓
CA	✓	✓	✓	✓	✓	✓
RCA	✓	✓	✓	✓	✓	✓
AN	✓	✓	✓	✓	✓	✓

1: MIDA MEMCARE 504, 505, 508, 509 and BUFFER can be mixed with enzymatic additives 518, 519 and 520.

Please always check on the TDS of membrane (PH washing range) before use the chemical product.

## APPLICATIONS

Membranes used in different applications differ not only in the materials used but also in the average size of the pores. Additionally, there are a lot of applications in membrane cleaning: beer, wine, milk or blood, among others.

WINE	
SOILING TYPE	TYPES OF CLEANING CHEMICALS
Organic residues Tartrates	<ul style="list-style-type: none"> <li>• High causticity with surfactants.</li> <li>• Medium alkalinity with enzymes.</li> </ul>
Inorganic scale	<ul style="list-style-type: none"> <li>• High causticity with EDTA.</li> <li>• Strong acid.</li> </ul>

FRUIT JUICE	
SOILING TYPE	TYPES OF CLEANING CHEMICALS
Organic residues	<ul style="list-style-type: none"> <li>• High causticity with surfactants.</li> <li>• Chlorinated alkalines.</li> <li>• Medium alkalinity with enzymes.</li> </ul>
Inorganic scale	<ul style="list-style-type: none"> <li>• High causticity with EDTA.</li> <li>• Nitric Acid.</li> </ul>

BREWING	
SOILING TYPE	TYPES OF CLEANING CHEMICALS
Beer	<ul style="list-style-type: none"> <li>• High causticity with EDTA.</li> </ul>
Organic residues	<ul style="list-style-type: none"> <li>• High causticity with surfactants.</li> <li>• Chlorinated alkalines.</li> <li>• Medium alkalinity with enzymes.</li> </ul>
Beerstone	<ul style="list-style-type: none"> <li>• High causticity with EDTA.</li> <li>• Nitric Acid.</li> </ul>
Microorganisms	<ul style="list-style-type: none"> <li>• Chlorinated alkalines.</li> <li>• Disinfectants.</li> </ul>

DAIRY	
SOILING TYPE	TYPES OF CLEANING CHEMICALS
Fat	<ul style="list-style-type: none"> <li>• High causticity.</li> <li>• Medium causticity with surfactants.</li> </ul>
Protein	<ul style="list-style-type: none"> <li>• High causticity with surfactants.</li> <li>• Chlorinated alkalines.</li> <li>• Low alkalinity with enzymes.</li> <li>• Acid based detergents.</li> </ul>
Milkstone	<ul style="list-style-type: none"> <li>• High causticity with high EDTA content.</li> <li>• Nitric Acid.</li> </ul>
Microorganisms	<ul style="list-style-type: none"> <li>• Chlorinated alkalines.</li> <li>• Disinfectants.</li> </ul>

PROCESSED FOOD	
SOILING TYPE	TYPES OF CLEANING CHEMICALS
Fat & Greases	<ul style="list-style-type: none"> <li>• High causticity with surfactants.</li> </ul>
Protein	<ul style="list-style-type: none"> <li>• High causticity with surfactants.</li> <li>• Chlorinated alkalines.</li> <li>• Medium alkalinity with enzymes.</li> <li>• Acid based detergents.</li> </ul>
Mineral	<ul style="list-style-type: none"> <li>• High causticity with high EDTA.</li> <li>• Nitric Acid.</li> </ul>
Microorganisms	<ul style="list-style-type: none"> <li>• Chlorinated alkalines.</li> <li>• Disinfectants.</li> </ul>
Starch	<ul style="list-style-type: none"> <li>• High causticity with EDTA.</li> <li>• Chlorinated alkalines.</li> <li>• Medium alkalinity with enzymes.</li> <li>• Acid based detergents.</li> </ul>



## SERVICES

**CHRISTEYNS** offers its customers a range of products specifically designed for membrane regeneration. An expert team will also analyse the characteristics of the plant, the filtered product and all that is needed to completely ensure the regeneration of the membranes and its long-lasting durability.

- 🔄 Preliminary audit with questionnaire and analysis of parameters.
- 🔄 Drafting of washing procedures in accordance with membranes manufacturers.
- 🔄 Validation of the sanitation system of the filtration plant.
- 🔄 Periodic visits to verify the parameters of the plant and the concentrations in use.

### MORE INFORMATION

Contact your local **CHRISTEYNS** resp to help you find a solution that fits your personal situation.



# CHRISTEYNS

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