



e.Clean® Membrane

Enzymatic cleaner for filters and membranes

Preparation

Prepare a 0.5 % solution of e.Clean® Membrane and pump it through the membranes in a cycle. You can always consider the enzyme to be a 100 % concentration for the calculation.

Calcium must be added to maintain amylase activity when using purified water or soft water (< 8.4 °dH). The calcium content should be > 40 mg/L. It can be added by means of a calcium chloride (CaCl₂) solution. (Example: 2,000 L cleaning cycle, addition of 500 mL 35 % CaCl₂ solution). It is very important to adjust the pH value of the cycle to pH 4.5 - 5.0. The pH can be adjusted with an organic (e.g., Boerovin or Erbslöh pH Reducer) or a low concentration of an anorganic acid (sulphur or phosphor), or with sodium hydroxide (NaOH) or potassium hydroxide (KOH).

Method

Basic or preventative cleaning

The optimum solution activity is between 50 - 60 °C (122 - 140 °F). Ideally the cycle should be performed at 50 °C (122 °F) and then at 60 °C (140 °F). Carry out the regeneration at intervals to ensure the greatest degree of regeneration and the enzymatic process's maximum effectiveness, i.e., a pump phase of approx. 10 - 15 min., followed by a break of 10 - 15 min. The total cycle time depends on how dirty the membranes are. The overall effect of the cycle can be monitored by watching the drop in differential pressure via the equipment and can be extended as required. For microbiological reasons the maximum enzyme solution contact time should not exceed 72 hours and should then be followed by chemical cleaning.

Deep cleaning

Temperature: 50 °C (122 °F)

pH value: 5.0

Total time: 60 min.

Cycle: Flow counter to the direction of filtration, 10 min.

Standing time: 10 min.

Flow counter to the direction of filtration, 10 min.

Flow in the direction of filtration, 10 min.

Standing time 10 min.

Flow in the direction of filtration, 10 min.

Temperature: 60 °C (140 °F)

pH value: 5.0

Total time: 60 min.

Cycle: Flow in the direction of filtration, 10 min.

Standing time: 10 min.

Flow counter to the direction of filtration, 10 min.

Flow in the direction of filtration, 10 min.

Standing time: 10 min.

Flow in the direction of filtration, 10 min.

Total time: 120 min.

Downstream cleaning stages

Draining the filter system and thorough rinsing with hot water. Generally speaking, there are no residual enzymes or enzyme activity in the filter after rinsing for approx. 10 min.

Chemical cleaning in accordance with the the manufacturer's instructions using lye at > pH 10 and/or acid at < pH 2 are guaranteed to deactivate potential enzyme residues if the enzyme solution is inadequately rinsed.

Guidance

The best results are achieved if you first run the cycle counter to the filtration direction and then run it again in the filtration direction.

- **Sterilisation**: 30 min. at 80 - 85 °C (176 - 185 °F) with hot water or steam at maximum pressure 0.2 bar in filtration direction (**check of manufacturer's information or manufacturer's approval necessary!**).
- **Automatic enzyme dosing**: e.Clean® Membrane is formulated as a liquid and designed so that it can be recorded using conductivity. This means that it is possible to automatically monitor and regulate the concentration in the filter with automatic dosing equipment.
- **Cleaning after pectin-rich juices/wines**: in order to improve the cleaning result after pectin-rich products, an extra 0.5 % of e.Clean® Tools can be added with e.Clean® Membrane as a booster for pectin degradation.
- **Checking the manufacturer's information**: the stated temperatures and times represent *best practice*. If membrane/filter temperature recommendations are lower, temperatures should be adjusted to those recommended by the equipment manufacturer and the contact time extended.

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