

REMOVAL OF SILTS AND COLLOIDAL FOULING

This two step cleaning program is recommended for the removal of **inorganic and organic deposits** such as clay, silt and colloidal matter from polyamide membranes (includes Thin Film Composite [TFC], Composite Polyamide [CPA]).

These types of foulant are common in surface waters. If not completely removed by the pre-treatment system they can lead to membrane fouling, and this is usually seen as a high silt density index (SDI) which gives an increase in differential pressure (feed water pressure minus concentrate pressure), particularly in the first stage.

Colloids can also be present as humic and tannic acids caused by decaying vegetative matter. With this type of fouling it is important to carry out the high pH clean **before** the acid clean, as shown below.

CLEANING STEPS: (All % values are volume product to volume of fresh water)

Step 1- An alkaline surfactant combined with a chelating agent to break down and remove bio film, colloidal material and organic debris.

Step 2- An acidic wash to remove iron and any scale deposits.

Step 1

Prepare a 2% solution of PermaClean® **PC-99** at pH 10.0 - 11.0 and 30oC (86oF)

Add 2% PermaClean® **PC-33** (adjust the pH to <11.0 with hydrochloric acid (HCl)).

Flush 20% of solution through membranes to drain.

Circulate and soak remaining solution at 15 minute intervals for 4 hours.

Discard and flush thoroughly with good quality, chlorine free water.

If cleaning solution shows heavy discoloration, discard and make up a new solution and repeat this cleaning stage.

[Alternative Step 1] Substitute PermaClean PC-99 with 2.0% PermaClean® **PC-67**

Step 2

Prepare a 4% v/v solution of PermaClean® **PC-77** at 20 - 25oC (68 - 77 oF)

Flush 20% of solution through membranes to drain.

Circulate and soak remaining solution at 15 minute intervals for 2 hours.

Discard and flush thoroughly with good quality, chlorine free water.

If cleaning solution shows heavy discoloration, discard and make up new solution and repeat this cleaning stage.

NOTE

1. Membrane manufacturer's guidelines must always be followed with respect to pH, temperature, flow rate and differential pressure.

2. Flush out membranes thoroughly with good quality, chlorine-free water between each cleaning stage. Before returning the system to service ensure that any residual cleaning products are removed from the membrane surfaces by thorough flushing.