X-FLOW HFW 1000
NANOFILTRATION MEMBRANE

MEMBRANE ELEMENT DATASHEET

8" HFW 1000 PVC 0.8mm
ARTICLE CODE : 2871FN2MENH

GENERAL INFORMATION

HFW 1000 is a chlorine tolerant nanofiltration module, used for production of process and potable water. Typical applications are the filtration of surface water, potable water and WWTP effluent for the removal of color components (typically humic or fumic acids), and minimal salt retention. Mode of operation is feed-and-bleed with a crossflow with regular backwash (permeate only) and chemically cleaning.

GENERAL SOLVENT RESISTANCE

Since the resistance of the membrane to solvents strongly depends on the actual process conditions, the indications given below should only be considered as guideline.

Acids	++
Bases	++
Organic esters, ketones, ethers	-
Aliphatic alcohols	+
Aliphatic hydrocarbons	+
Halogenated hydrocarbons	--
Aromatic hydrocarbons	--
Polar organic solvents	--
Oils	++

CLEANING CHEMICAL RESISTANCE

Sodium Hypochlorite
- Typical 200 ppm, at ≤ 40 ºC at ≥ pH 10
- 150.000 ppm hours cumulative; pH 11

The HFW 1000 is able to withstand chemical cleaning with chlorine for entire membrane lifetime according to Pentair's process design.

As a good working practice and in order to maximise the lifetime of the membrane it is advised to reduce the membrane exposure to oxidising agents to a minimum. Exposure limits are also affected by temperature , pH and the presence of metals. In order not to exceed maximum exposure limits, membranes must be preserved free of any oxidising agent when the plant is stopped.

Acids
Hydrochloric Acid	+ +
Nitric Acid	+ +
Sulphuric Acid	+ +
Phosphoric Acid	+ +
Acetic Acid	+ +
Citric Acid	+ +

pH > 3 during filtration
pH > 2 during cleaning

Bases
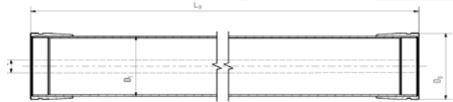|	
Sodium Hydroxide (<4%)	+ +
Potassium Hydroxide (<4%)	+ +

pH < 11 during filtration
pH < 12 during cleaning

MEMBRANE CHARACTERISTICS

- Hydrophilic membrane composed of modified polyethersulfone and polyethersulfone
- Structure highly asymmetric/microporous
- MWCO: 1000 Da (Dextrane)
- High performance and a very good anti-fouling behaviour
- Provides > 4-log (99,99 percent) reduction of viruses
- Typical permeate quality SDI<3, turbidity <0,1 NTU
- Designed for color removal; typical process retention of > 90% (Pt-Co)
- Minimal salt rejection to maintain salt balance

ELEMENT SPECIFICATIONS

Membrane Diameter [mm/mil]	Membrane area [m²/ft²]	Feed connection D_0 [mm/Inch]	Element outer diameter D_1 [mm/Inch]	Element length L_0 [mm/Inch]	Permeate connection d_0 [mm/Inch]
0.8 [31]	40 [430]	220.0 [8.66]	200 [7.9]	1537.5 [60.51]	42.6 [1.68]

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OPERATING SPECIFICATIONS

Max. system pressure	Max. trans-membrane pressure	Max. backflush pressure	Temp. range
[kPa/psi]	[kPa/psi]	[kPa/psi]	[°C/°F]
700 [100]	600 [86]	600 [86]	0-40 [32-104]

- Backwash water should be permeate quality or better.

- Backwash pumps should preferably be made of non-corroding materials, e.g., plastic or stainless steel. If compressed air is used to pressurize the backwash water, do not allow a two-phase air/water mixture to enter the element.

- To avoid mechanical damage, do not subject the membrane module or element to sudden temperature changes, particularly decreasings. Bring the module or element back to ambient operating temperature slowly. Failure to adhere to this guideline can result in irreparable damage.

Operation of membrane modules at any combination of maximum limits of pH, concentration, pressure or temperature, during cleaning or production, will influence the membrane lifetime.

CERTIFICATIONS

- USA: ANSI/NSF, Standard 61
- UK: DWI Regulation 31 (pending)
- The Netherlands: KIWA ATA

TECHNICAL SPECIFICATIONS

Weight Specifications
Dry weight of membrane element ca. 27 kg [59 lbs]

Membrane element filled with water ca. 57 kg [125 lbs]

Materials of Construction
Housing	PVC white
Flow distributor	PES
Potting	EP resin
Membrane:	PESm/PES

Process Characteristics (Water, 20 ºC)

Hydraulic membrane diameter	Crossflow flow rate (*)	Pressure-drop across module at 1 m/s	Pressure-drop across module at 2 m/s
[mm/mil]	[m³/h/gpm]	[kPa/psi]	[kPa/psi]
0.8 [43]	19.8 x v [26 x v]	72 [10]	150 [21]

(*) superficial velocity (v) in m/s [ft/s]

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STORAGE

New membrane modules can be stored as supplied in the original packaging. The membrane elements contain an aqueous preservation solution of glycerine (20wt%) and sodium metabisulfite (1wt%).

Membrane modules should be stored in a dry, normally ventilated place, away from sources of heat, ignition and direct sunlight. Store between 0 and 40 °C.

The membrane modules should not be subjected to any freezing temperatures.

Shelf life is a maximum of 6 months for unused modules in unopened packaging under correct storage conditions after transfer of ownership for X-Flow B.V. to the Client. After the maximum period of 6 months all warrantees are null and void unless otherwise agreed in writing between the parties.

After use, the NF membrane modules need to be stored wet at all times.To avoid biological growth during shutdowns or storage, wet membranes could be treated with a compatible biocide. The membrane is compatible with many common disinfecting agents or biocidal preservatives.

Typically for short-term shutdowns (1 – 7 days), a daily backwash with permeate quality water, should be adequate for bacteria control. Before start of the shutdown period, the modules must be cleaned by a standard Chemical Cleaning.

In case of long-term storage (> 7 days), membranes should be chemically cleaned before the disinfection step is carried out. For disinfection, a 0.5% sodium metabisulfite solution can be used. In both short and long term storage situations, the modules should remain filled with storage solution.

Do not use chorine for storage.