

# X-FLOW XF55 ULTRAFILTRATION MEMBRANE

## MEMBRANE ELEMENT DATASHEET

ARTICLE CODE : 2372FL395A

### GENERAL INFORMATION

XF55 is an ultrafiltration module, used for the production of process and potable water from surface water, for wastewater polishing and reuse, in the pre-treatment of large SWRO plants, and in large-scale drinking water production. The XF55 module can be utilized in Pentair's unique solutions Xiga, Aquaflex and X-Line.

### 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  $\leq 40^{\circ}\text{C}$  at  $\geq \text{pH } 10$
- Maximum 500 ppm
- 250.000 ppm hours cumulative;  $\geq \text{pH } 10$

#### Chlorine Dioxide

- Typical 1 ppm, at  $\leq 40^{\circ}\text{C}$
- Maximum 2 ppm
- 90.000 ppm hours cumulative;  $\text{pH } 11$

#### Hydrogen Peroxide

- Typical 200 ppm, at  $\leq 40^{\circ}\text{C}$
- Maximum 500 ppm
- 350.000 ppm hours cumulative

#### Note:

The above figures for oxidant contact represent the membrane resistance to each individual oxidizing agent. The total combined exposure for Sodium Hypochlorite and Chlorine Dioxide will be calculated as follows:

Combined exposure  $(\text{NaOCl} + \text{ClO}_2) = 2.6 \times$   
 Exposure to  $\text{ClO}_2$  (in ppm hours) + Exposure to  $\text{NaOCl}$  (in ppm hours)  $< 250.000$  ppm hours

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  $> 2$  during filtration  
 pH  $> 1$  during cleaning

#### Bases

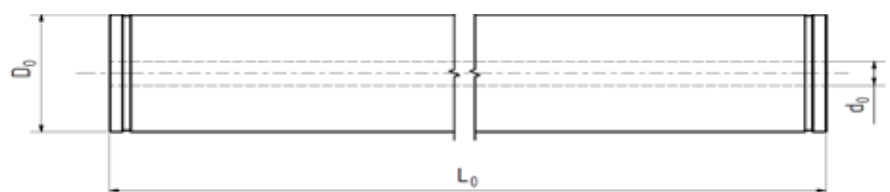
|                                 |    |
|---------------------------------|----|
| Sodium Hydroxide ( $< 4\%$ )    | ++ |
| Potassium Hydroxide ( $< 4\%$ ) | ++ |

pH  $< 12$  during filtration  
 pH  $< 13$  during cleaning

### MEMBRANE CHARACTERISTICS

- Hydrophilic membrane composed of a blend of polyvinylpyrrolidone and polyethersulfone
- A nominal pore size of 20 nm
- Structure asymmetric/microporous
- High performance and a very good anti-fouling behaviour
- Typical permeate quality  $\text{SDI} < 3$ , turbidity  $< 0,1$  NTU
- Membrane filtration provides 99.9999% (LOG6) reduction of bacteria (*Pseudomonas diminuta*) and 99.99% (LOG 4) reduction of virus (MS2 colifages) by mechanical means. EPA Est. No. 090374-NLD-001

| Membrane Diameter [mm/mil] | Membrane area [ $\text{m}^2/\text{ft}^2$ ] | Feed connection $D_0$ [mm/Inch] | Module length $L_0$ [mm/Inch] | Permeate connection $d_0$ [mm/Inch] |
|----------------------------|--|---------------------------------|-------------------------------|-------------------------------------|
| 0.8 [31]                   | 55 [590]                                   | 220.0 [8.66]                    | 1537.5 [60.51]                | 42.6 [1.68]                         |



# X-FLOW XF55

## ULTRAFILTRATION MEMBRANE

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#### OPERATING SPECIFICATIONS

| Max. trans-membrane pressure Filtration | Max. trans-membrane pressure Backwash | Temp. range   |
|---|---------------------------------------|---------------|
| kPa [psi]                               | kPa [psi]                             | °C [°F]       |
| 100 [14.5]                              | 200 [29]                              | 0-40 [32-104] |

- Backwash water should be free of particulates and should be of UF 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 decreasing. Bring the module or element back to ambient operating temperature slowly (max. value 3 °C/min). 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.

#### TECHNICAL SPECIFICATIONS

##### Weight Specifications

Dry weight of membrane element  
ca. 34 kg [75 lbs]

Membrane element filled with water  
ca. 66 kg [145 lbs]

##### Materials of Construction

|                  |           |
|------------------|-----------|
| Housing          | PVC white |
| Flow distributor | PVC       |
| Potting          | PU resin  |
| Membrane         | PES/PVP   |

##### Process Characteristics (Water, 20 °C)

| Hydraulic membrane diameter | Crossflow flow rate (*) | Pressure-drop across module at 1 m/s | Pressure-drop across module at 2 m/s |
|-----------------------------|-------------------------|--------------------------------------|--------------------------------------|
| [mm/mil]                    | [m <sup>3</sup> /h/gpm] | [kPa/psi]                            | [kPa/psi]                            |
| 0.8 [31]                    | 27.5 x v [37 x v]       | 72 [10]                              | 150 [21]                             |

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

#### STORAGE

New membrane modules can be stored as supplied in the original packaging. The membrane modules contain an aqueous preservation solution of glycerine (20wt%) and sodium metabisulfite (1wt%) to prevent dehydration and control bacterial growth. The membrane modules are packed in plastic bags which are vacuum sealed to keep the moisture in the module. Membrane modules should be stored in a dry, normally ventilated place, away from sources of heat ignition and direct sunlight.

Storage temperature should be between 0 and 40 °C. Pentair instructions for transport and storage are to be followed at all times and available upon request. It is recommended to have the membrane modules installed into the UF skids and commissioned as soon as possible. The membrane shelf life is maximum 6 months from the date the modules are announced ready for delivery ex works Pentair warehouse. After expiry of the shelf life all warranties are null and void.



##### X-FLOW BV

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