

# HyperFlux Tubular Module

## MO 83G\_18 V

Filtration procedure	BioFlow
Module dimensions	Length 3 m, connection diameter 8"
Module material	Glass fibre reinforced plastic (FRP), resin
Membrane diameter (internal)	8.0 mm

### General properties

Berghof HyperFlux modules are especially designed to standardise and optimise the membrane area into standard glass fibre module housings. The HyperFlux module program is based on standard dimensions and connections and offers the best module design for small, medium, and large BioFlow UF-systems. The use of the HyperFlux module ensures a compact system design with reduced investment cost. The strong glass fibre module housing including the robust tubular membranes guarantees a long life with reduced operating costs. For an optimal use of the HyperFlux module program we recommend to read the operation manual as well as cleaning and preservation instructions carefully before start-up.

### Fields of application

- membrane bioreactor
- purification
- biomass separation
- waste water treatment
- preliminary filtration
- enzyme separation
- emulsion separation
- concentration
- filtration of fermentation effluent
- reclamation of reusable materials

### Module data

Module type	MO 83G_18 V
Membrane area [m <sup>2</sup> ]	27.2
Membrane diameter, internal [mm]	8.0
Module length [mm]	3,000
Module diameter, external [mm]	207
Module material	Glass fibre reinforced plastic (FRP), resin
Retentate connection	groove system 8" (219.1 mm) <sup>1)</sup>
Filtrate connection	groove system 2.5" (73.0 mm) <sup>1)</sup>
Filtrate connections, number and placing	2, opposite
Distance, center permeate outlet to module end [mm]	90 <sup>2)</sup>

<sup>1)</sup> compliance with Victaulic® or Grinnell® specification

<sup>2)</sup> see dimension sheet

Module data	
Module type	MO 83G_I8 V
Transmembrane pressure [kPa]	-20 ... +800
Circulation flow [m <sup>3</sup> /h]	66.0 · v <sup>*)</sup>
Pressure drop over length of module [kPa] (approximately for water at 25 °C.)	6.1 · v <sup>1.75 *)</sup>
Max. operating pressure [kPa]	800 (40°C) <sup>**)</sup>
Permeate pressure [kPa]	-80...+1000 <sup>**)</sup>
Max. temperature [°C]	60 (600kPa)
Retentate volume [l]	55
Permeate volume [l]	22
Weight, dry [kg]	41

<sup>\*)</sup> v – crossflow velocity [m/s]

<sup>\*\*) Note:</sup> The stated range for the transmembrane pressure should not be exceeded

<b>Membrane</b>	Operating conditions and technical information are given in the membrane technical data sheet.
<b>Module storage</b>	<p>New modules can be stored for up to two years under conditions as described in operation manual.</p> <p>Used modules have to be preserved in a clean condition. See also operating manual and cleaning and preservation instructions.</p>
<b>Note</b>	<p>The Berghof operating manual and the cleaning and conservation instructions are to be followed.</p> <p>Detailed assembly dimensions with the appropriate components are specified in:</p> <ul style="list-style-type: none"> <li>– “HyperFlux Tubular Module Dimension Sheet”</li> <li>– “HyperFlux Tubular Module List of Accessories”.</li> </ul>

Due to the fact that we have no control over the conditions under which our products are used, the information provided in the data sheets does not represent a guarantee and we are unable to accept any liability claim regarding the use of our products. Technical details and recommendations concerning our products are based on general experience and shall provide guidelines for their selection and use.

The product quality is ensured in our sales terms & conditions.

We permanently enhance our products; therefore we reserve the right to make changes to our products at any time and without prior notice.

# Tubular membrane

## 66.03 I8

<b>Type of filtration:</b>	Ultrafiltration
<b>Membrane material:</b>	Polyvinylidene fluoride (PVDF)
<b>Membrane diameter (internal):</b>	8.0 mm

<b>General properties</b>	<ul style="list-style-type: none"> <li>— asymmetric membrane structure</li> <li>— inside-out filtration</li> <li>— highly efficient hydrophilic tubular membrane</li> <li>— high permeability</li> <li>— excellent anti-fouling characteristics</li> <li>— high pressure stability</li> <li>— excellent chemical resistance</li> <li>— optimised for BioFlow application</li> <li>— used in HyperFlux membrane module</li> </ul>
---------------------------	--

<b>Fields of application</b>	<ul style="list-style-type: none"> <li>— membrane bioreactor</li> <li>— purification</li> <li>— biomass separation</li> <li>— wastewater treatment</li> <li>— prefiltration</li> </ul>	<ul style="list-style-type: none"> <li>— enzyme separation</li> <li>— emulsion separation</li> <li>— concentration</li> <li>— filtration of fermentation effluent</li> <li>— reclamation of reusable materials</li> </ul>
------------------------------	--	---

### Performance characteristics

Membrane type	Type 66.03 I8	Notes
Clean water flux [l/m <sup>2</sup> ·h·100 kPa]	> 750	RO water, 25 °C
Transmembrane pressure max. [kPa]*	-20 to +800	
Mean pore size [nm]	approx. 30	dextran mixture
pH range of application [-]	2 – 10	at 25 °C
Max. temperature [°C]*	40 60	up to 800 kPa up to 600 kPa

\* **Note:** the maximum values for pressure and temperature of HyperFlux I8 module should not be exceeded!

Membrane lifetime is influenced by:

- Operating conditions under normal operation
- Cleaning, especially regarding the combinations of maximal values of pH, concentration, pressure and temperature

**Chemical resistance**

**Process chemicals**

The chemical resistance of a membrane is strongly dependent on the process conditions. The following ratings are to be taken as general guideline only.

Acids (pH > 2)	+++
Bases (pH ≤ 10)	+++
Organic esters, ether, ketones	+
Aliphatic alcohols	++++
Aliphatic hydrocarbons	++++
Halogenated hydrocarbons	+++
Aromatic hydrocarbons	+++
Polar organic solvents	+
Oils	++++

**Key:** ++++ = highly resistant / + = poorly resistant

**Cleaning chemicals**

Depending on nature and degree of contamination, membrane cleaning may be carried out using the following chemicals. The membrane lifetime may be reduced when values, placed in brackets, are exceeded.

- chlorine, active (max. 500 ppm)
- chlorine exposure 250,000 ppm·h (at 25 °C)
- hydrogen peroxide (max. 1000 ppm)
- sodium hydroxide (pH ≤ 11)
- nitric acid (pH ≥ 2)
- phosphoric acid (pH ≥ 2)
- citric acid
- oxalic acid
- enzymes

See Berghof cleaning and preservation instruction.

**Membrane storage**

New membranes can be stored in delivered condition up to two years. Membrane must be stored dry, well packed in a cool, frost free, dark place.

Used membranes must be preserved in a clean state.

See Berghof cleaning and preservation instruction.

Due to the fact that we have no control over the conditions under which our products are used, the information provided in the data sheets does not represent a guarantee and we are unable to accept any liability claim regarding the use of our products. Technical details and recommendations concerning our products are based on general experience and shall provide guidelines for their selection and use.

The product quality is ensured in our sales terms & conditions.

We permanently enhance our products; therefore we reserve the right to make changes to our products at any time and without prior notice.