

# BIO-CEL® 416

## Submerged MBR Module for Wastewater Treatment

The BIO-CEL® MBR series is ideal for biological wastewater treatment in industrial and municipal applications. BIO-CEL MBR combines the benefits of traditional hollow fiber and plate and frame configurations without any of their inherent disadvantages. The module has an extremely high packing density due to the thin and self-supporting membrane sheets, and the laminate offers a self-healing mechanism.

### MEMBRANE CHARACTERISTICS

<b>Membrane</b>	NADIR® UPI50
<b>Membrane Polymer</b>	Polyethersulfone (PES)
<b>Nominal Pore Size</b>	0.04 µm
<b>Preservative</b>	Glycerine 20 % / Sodium benzoate 3 %

### MODULE SPECIFICATIONS

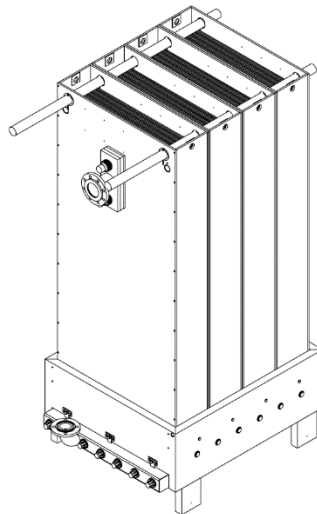
<b>Housing Material Options</b>	Polyvinyl chloride (PVC) Polyethylene (PE)
<b>Drainage Layer</b>	Polyester (PET)
<b>Diffusors Material Options</b>	Membrane hose: Polyurethane (PUR) / Silicone (SI) Support tube: Polypropylene (PP)
<b>Nominal Membrane Area</b>	416 m <sup>2</sup> (4478 ft <sup>2</sup> )

### OPERATING PARAMETERS

<b>pH Range</b>	2.0 - 11.0
<b>Temperature Range</b>	5 - 40°C (41 - 104°F)
<b>Maximum TMP during Filtration</b>	- 400 mbar (-5.8 psi)
<b>Maximum TMP during Regular Backwash</b>	+150 mbar (+2.2 psi)
<b>Recommended Air Scour Rate <sup>a</sup></b>	82 Nm <sup>3</sup> /h (48 SCFM)
<b>Maximum Air Scour Rate <sup>a</sup></b>	105Nm <sup>3</sup> /h (61 SCFM)
<b>Recommended MLSS in MBR Tank</b>	8 - 12 g/L
<b>Maximum MLSS in MBR Tank</b>	15 g/l
<b>Maximum Particle Size in MBR Tank</b>	2 mm
<b>Total Chlorine Resistance</b>	1,000,000 ppm•hr

<sup>a</sup> volumetric flow rate at standard conditions according to DIN ISO 2533:1979-12.

**PHYSICAL DIMENSIONS**



<b>Dry Weight</b>	800 kg (1763 lb)
<b>Wet Weight without Solids</b>	1100 kg (2425 lb)
<b>Maximum Load for Lifting<sup>b</sup></b>	2800 kg (6173 lb)
<b>Length</b>	1810 mm (5.9 ft)
<b>Width</b>	1152 mm (3.8 ft)
<b>Height</b>	2763 mm (9.1 ft)
<b>Filtration Tank Minimal Water Level</b>	3400 mm (11.2 ft)
<b>Connection for Permeate</b>	Lapped flange PP/steel, DN100 (ISO/DIN 2501, PN16)
<b>Connection for Aeration</b>	Flange DIN 2633 - Type C Series 1 (ISO), PN16, DN65x76.1

<sup>b</sup> Sludge deposit must be removed before lifting unit

**IMPORTANT INFORMATION**

**Scope of Supply, Accessories & Spare Parts:**

Please see BIO-CEL® 416 – Scope of Supply, Accessories and Spare Parts (TDS-WW001).

**Storage & Handling:**

BIO-CEL MBR modules must be handled and stored appropriately to ensure proper operation and to prevent membrane damage. Please see BIO-CEL® MBR – Storage Conditions (TB-WW002).

MANN+HUMMEL Water & Fluid Solutions reserves the right to change specifications without prior notification.

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