# Data sheet of SERENACEL SC-100 / MCAS STERAPORE™ membrane module

Membranes made by

MITSUBISHI CHEMICAL AQUA SOLUTIONS

SERENACEL SC-100 is a submerged hollow fiber membrane module, used for solid–liquid separation in MBR (Membrane Bioreactor) waste water treatment.

The module consists of the following parts:

1. Elements of hollow fiber membranes composed of polyvinylidene fluoride (PVDF)
2. Elements of the ABS resin membrane permeation and manifold in stainless steel AISI 304 (or AISI 316)
3. Air diffusers placed in the base of the module in stainless steel AISI 304 (or AISI 316)
4. Frame in stainless steel AISI 304 (or AISI 316)

All of these parts are corrosion-free when used in contact with active sludge.

An external pump aspires the permeate through the main pipe, connected to the pipes at the top of each module.

Biological sludge is moved in cross-flow by air, which is provided from air diffusers placed on the bottom of the module, fed by a blower.

The air is required to generate the cross flow bypass to the membranes that helps remove sludge deposits created on the surface of membranes during permeation.

SERENACEL SC-100 module has the following technical characteristics:

| | | |
|---|---|---|
| **Membrane** | Membrane material | PVDF (Polyvinylidene fluoride) |
| | Membrane type | Porous hollow fiber |
| | Nominal pore size [micron] | 0.05 |
| | Membrane outer diameter OD [mm] | 1.65 |
| **Membrane element** | Type of membrane elements | 57E0005SM |
| | Membrane element area [$m^2$] | 5 |
| | Membrane element materials | ABS resin - Polyurethane resin |
| | Membrane element dimensions (LxWxH) [mm] | 594 x 18 x 1000 |
| | Membrane element weight [kg] | approx. 1.3 |
| **Membrane module** | Membrane module area [$m^2$] | 100 |
| | Membrane module frame materials | SS AISI 304 (optional SS AISI 316) |
| | Membrane module pipe materials | SS AISI 304 (optional SS AISI 316) |
| | Membrane module dimensions (LxWxH) [mm] | 970 x 670 x 1600 |
| | Membrane module dry weight [kg] | 110 |
| | Membrane module wet weight [kg] | 150 ÷ 350 |
| | N° membrane elements per module | 20 |
| | Permeate connections | Rc 1"¼ |
| | Air connection | 80A |
| | Foot print [$m^2$] | 0.65 |

Head office:
Via Fasana, n° 21
00195 ROMA

Operating center of Belluno:
Phone 0437 949414
Fax 0437 298182

www.serenambiente.com

VAT 01705580221

| | | |
|---|---|---|
| **Operation data** | Minimum water height [mm] | 1700 |
| | Minimum distance from walls (L/W) [mm] | just enough to the pipes/ 165 (axis: 500) |
| | Minimum distance between modules (L/W) [mm] | just enough to the pipes / 330 (axis: 1000) |
| | Design flux (daily average) [l/m$^2$h] | 8.3 ÷ 41.7 |
| | Operation TMP [mbar] | 50 ÷ 300 |
| | Operation mode (Permeate/relaxation) [min] | 5÷7/1÷2 |
| | Typical Air flow rate [Nm$^3$/h] | 29.4 ÷ 58.8 |
| | Operation Temperature [°C] | +5 ÷ +40 |
| | Content of TSS [g/l] | 3 ÷ 18 |
| **Maintenance cleaning NaOCl** | Typical frequency | once 1 week |
| | Typical cleaning reagent | NaOCl (12% solution) |
| | Typical concentration of reagent [mg/l] | 500 |
| | Typical cleaning volume [liters per cycle] | 200 |
| | Typical cleaning time [min] | 30 |
| | Typical maintenance cleaning flux [l/h] | 400 |
| | Typical chemical volume [liters per cycle] | 0.7 * |
| | Typical dosing pump flux [l/h] | 1.4 |
| **Recovery cleaning NaOCl** | Typical frequency | once every 3 months |
| | Typical cleaning reagent | NaOCl (12% solution) |
| | Typical concentration of reagent [mg/l] | 3000 |
| | Typical cleaning volume [liters per cycle] | 200 |
| | Typical cleaning time [min] | 30 |
| | Typical recovery cleaning flux [l/h] | 400 |
| | Typical chemical volume [liters per cycle] | 4.2 * |
| | Typical dosing pump flux [l/h] | 8.4 |
| **Recovery cleaning Citric Acid** | Typical frequency | as needed (once 1 year) |
| | Typical cleaning reagent | Citric acid (50% solution) |
| | Typical concentration of reagent [mg/l] | 10000 |
| | Typical cleaning volume [liters per cycle] | 200 |
| | Typical cleaning time [min] | 30 |
| | Typical recovery cleaning flux [l/h] | 400 |
| | Typical chemical volume [liters per cycle] | 3 |
| | Typical dosing pump flux [l/h] | 6 |

* We recommend purchasing a NaClO tank with volume to satisfy three months of Maintenance cleaning cycles and one Recovery cleaning cycle. In this case, a tank of at least 15 liters.

Head office:
Via Fasana, n° 21
00195 ROMA

Operating center of Belluno:
Phone 0437 949414
Fax 0437 298182

www.serenambiente.com

VAT 01705580221