Data sheet of Serenacel SC-1600 / MCAS STERAPORE™ membrane module

Membranes made by

MITSUBISHI CHEMICAL AQUA SOLUTIONS

SERENACEL SC-1600 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-1600 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	56E0040SA
	Membrane element area [m^2]	40
	Membrane element materials	ABS resin - Polyurethane resin - SS 304
	Membrane element dimensions (LxWxH) [mm]	1250 x 30 x 2000
	Membrane element weight [kg]	approx. 15
Membrane module	Membrane module area [m^2]	1600
	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]	2320 x 1525 x 2800
	Membrane module dry weight [kg]	1000
	Membrane module wet weight [kg]	1400 ÷ 3400
	N° membrane elements per module	40
	Permeate connections	2 x 65A
	Air connection	80A
	Foot print [m^2]	3.538

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Operation data	Minimum water height [mm]	3000
	Minimum distance from walls (L/W) [mm]	just enough to the pipes / 337.5 (axis: 1100)
	Minimum distance between modules (L/W) [mm]	just enough to the pipes / 675 (axis: 2200)
	Design flux (daily average) [l/m^{2}h]	8.3 ÷ 33.3
	Operation TMP [mbar]	50 ÷ 300
	Operation mode (Permeate/relaxation) [min]	5÷7/1÷2
	Typical Air flow rate [Nm^3/h]	174 ÷ 354
	Operation Temperature [°C]	+5 ÷ +40
	Content of TSS [g/l]	3 ÷ 15
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]	3200
	Typical cleaning time [min]	30
	Typical maintenance cleaning flux [l/h]	6400
	Typical chemical volume [liters per cycle]	12 *
	Typical dosing pump flux [l/h]	24
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]	3200
	Typical cleaning time [min]	30
	Typical recovery cleaning flux [l/h]	6400
	Typical chemical volume [liters per cycle]	68 *
	Typical dosing pump flux [l/h]	136
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]	3200
	Typical cleaning time [min]	30
	Typical recovery cleaning flux [l/h]	6400
	Typical chemical volume [liters per cycle]	48
	Typical dosing pump flux [l/h]	96

* 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 225 liters.