

AquaSust MBBR Volume Calculator 2.0

Blue block is the design datameter : be filled in

Green: calculate process data

Red : last result for your process

Standard SALR Loading Rates - gram/m².day

Temp.	20 C°	13 C°
SALR BOD loading(Removal)	15	9.16
SALR TKN loading(Removal)	1.1	0.67

Specific Surface area of media (Media MBBR)

1200 m²/m³

Output Assumed loading for this Process

SALR BOD5 Loading Rate (Removal)	6	gr/m ² .day (This can be 4 to 25, most time we choose 5 is safe)
SALR NH ₄ - N loading Rate (Removal)	1	gr/m ² .day(This can be 0.4 to 2, mosttime we can choose 1 is safe)

Input daily flow Rate	400	m ³ /day
	16.67	m ³ /hr
	105,618.93	gpd

Input BOD - Influent	2000	mg/l
Input Primary BOD removal	0%	
Input Anoxic BOD removal	0	mg/l
Input BOD - Effluent	20	mg/l
Input NH ₄ -N - Influent	50	mg/l
Input NH ₄ -N - Effluent	30	mg/l

BOD removal - Biologically	1980	
NH ₄ -N removal - Biologically	20	

BOD loading per day	1744.1	lb. of BOD / day
	791,824	grams/day

NH ₄ -N loading per day	18	lb. of Nh3-N / day
	7,998	grams/day

MBBR Tank 1

Surface area required	131,971	m ² - BOD Oxidation
Media volume	110	m ³
Tank volume m ³	314	media Fill-in 35.0%

MBBR TANK2

Surface area required	7,998	m ² - Nitrification
Media volume	7	m ³
Tank volume m ³	19	media Fill-in 35.00%

Total media volume	116.64	m ³
Tank Volume	333.26	m ³

Typical Design Values for MBBR reactors at 15°C

Purpose	Treatment Target % Removal	Design SALR g/m ² -d
BOD removal stage	90 - 95 (BOD ₇)	6.0 (BOD ₇)
Nitrification		
Effl. NH ₃ -N > 3 mg/L ²	90 (NH ₃ -N)	1.00 (NH ₃ -N)
Effl. NH ₃ -N < 3 mg/L ²	90 (NH ₃ -N)	0.45 (NH ₃ -N)

AQUASUST MBBR MEDIA TYPE CHOOSE

				
AS-MBBR37, Φ25*12mm Material: 100% White Virgin HDPE Density:0.96-0.98g/cm3 Surface Area:>800m2/m3	AS-MBBR78, Φ25*4mm Material: 100% White Virgin HDPE Density:0.96-0.98g/cm3 Surface Area: >1600m2/m3	AS-MBBR19, Φ25*12mm Material: 100% White Virgin HDPE Density:0.96-0.98g/cm3 Surface Area:>650m2/m3	AS-MBBR64, Φ25*4mm Material: 100% White Virgin HDPE Density:0.96-0.98g/cm3 Surface Area: >1200m2/m3	AS-MBBR38, Φ25*10mm Material: 100% White Virgin HDPE Density:0.96-0.98g/cm3 Surface Area:>800m2/m3
				
AS-MBBR04, Φ11*7mm Material: 100% White Virgin HDPE Density:0.96-0.98g/cm3 Surface Area:>900m2/m3	AS-MBBR05, Φ11*7mm Material: 100% White Virgin HDPE Density:0.96-0.98g/cm3 Surface Area:>1000m2/m3	AS-MBBR06, Φ16*10mm Material: 100% White Virgin HDPE Density:0.96-0.98g/cm3 Surface Area:>800m2/m3	AS-MBBR40, Φ15*15mm Material: 100% White Virgin HDPE Density:0.96-0.98g/cm3 Surface Area:>900m2/m3	AS-MBBR92, Φ30*5mm Material: 100% White Virgin HDPE Density:0.96-0.98g/cm3 Surface Area:>1700m2/m3