

MINIMUM GRANULAR ACTIVATED CARBON (GAC) VOLUMES NEEDED FOR EBCT

The reference chart below lists **minimum** GAC volumes (ft.³) required to meet the specific EBCT (Empty Bed Contact Time) conditions for the portable RO's, when the equipment is operating with the specific dialysis flow rating.

Minimum GAC Volume Required To Meet: 10 Min EBCT

<u>RO System Model</u>	<u>500 ml/min dialysis flow</u>	<u>800 ml/min dialysis flow</u>
Series 700 (ALL)	1.4 ft ³	1.5 ft ³
F-800	0.9 ft ³	1.1 ft ³
F-801	0.9 ft ³	1.1 ft ³
Millenium 500	1.4 ft ³	1.5 ft ³
Millenium 750	1.4 ft ³	1.5 ft ³
Millenium HX	1.5 ft ³	1.5 ft ³
WRO 300*	1.1 ft ³	1.1 ft ³
WRO 300 H*	1.1 ft ³	1.1 ft ³

The reference chart below lists **minimum** GAC volumes (ft.³) required to meet the specific EBCT (Empty Bed Contact Time) conditions for the RO's, when the equipment is in normal operating and recovery mode and at the maximum product flow rating.

<u>RO System Model</u>	<u>Recovery %**</u>	<u>10 Min EBCT</u>	<u>Recovery %**</u>	<u>10 Min EBCT</u>
V 2000	50	3.8 ft ³	-	-
V 2400	50	4.5 ft ³	-	-
23G 3000	50	5.6 ft ³	-	-
V 4000	50	7.5 ft ³	-	-
23G 4500	50	8.4 ft ³	-	-
V 4800	50	8.9 ft ³	75	6.0 ft ³
23G 6000	50	11.2 ft ³	75	7.5 ft ³
V 6000	50	11.2 ft ³	-	-
V 7200	50	13.4 ft ³	75	9.0 ft ³
23G 7500	50	14.0 ft ³	75	9.3 ft ³
Z 8000	50	14.9 ft ³	-	-
23G 9000	50	16.8 ft ³	75	11.2 ft ³
Z 9600	50	17.9 ft ³	75	11.9 ft ³
Z 10000	50	18.6 ft ³	-	-
23G 10500	50	20.0 ft ³	75	13.0 ft ³
23G 12000	50	22.3 ft ³	75	14.9 ft ³
Z 12000	50	22.3 ft ³	75	14.9 ft ³
23G 13500	50	25.1 ft ³	75	16.8 ft ³
Z 14400	50	26.8 ft ³	-	-
23G 15000	50	27.8 ft ³	75	18.6 ft ³
23G 16500	50	30.5 ft ³	75	20.4 ft ³
4400M/HX4000	50	7.5 ft ³	75	4.9 ft ³
4400M/HX8000	50	14.9 ft ³	75	9.9 ft ³
4400M/HX12000	50	22.2 ft ³	75	14.9 ft ³
4400M/HX16000	50	29.4 ft ³	75	19.6 ft ³

<u>RO System Model</u>	<u>Recovery %^{**}</u>	<u>10 Min EBCT</u>	<u>Recovery %^{**}</u>	<u>10 Min EBCT</u>
CWP 101	67	8 ft ³	-	-
CWP 102	67	12 ft ³	-	-
CWP 104	67	16 ft ³	-	-
CWP 106	67	20 ft ³	-	-

* WRO flow rate based on 3 LPM minimum intake flow rate

** Recovery will vary as product flow varies depending on feed temperature, operating pressure and actual individual membrane performance up to 30% increase in flux. These factors should also be considered to determine the actual volume of carbon to be used.

NOTE: Percent recovery and volumes are based on the manufactures spec flow rates for thin film membranes.