

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 ROs 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
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
EON	1.5 ft ³	1.5 ft ³

The reference chart below lists minimum GAC volumes (ft.³) required to meet the specific EBCT conditions for the ROs 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>
23G 3000	50	5.6 ft ³	-	-
23G 4500	50	8.4 ft ³	-	-
23G 6000	50	11.2 ft ³	75	7.5 ft ³
23G 7500	50	14.0 ft ³	75	9.3 ft ³
23G 9000	50	16.8 ft ³	75	11.2 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
23G 13500	50	25.1 ft ³	75	16.8 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/4000	50	7.5 ft ³	75	4.9 ft ³
4400M/8000	50	14.9 ft ³	75	9.9 ft ³
4400M/12000	50	22.2 ft ³	75	14.9 ft ³
4400M/16000	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.