PRODUCT DATA SHEET

ASHAION-C 250

CHARACTERISTICS

PHYSICAL

Form	:	Moist Spherical Beads
Supply Form	:	H^+ / Na^+
Bead Size	:	0.3 - 1.2 mm
Bulk Density	:	800 gm. / lit. - 840 gm. / lit.
Volume Change	:	8% (Na^+ to H^+)
Voids	:	40%
Osmotic Strength	:	Excellent
Mechanical Strength	:	Excellent

CHEMICAL

Matrix Structure	:	Cross linked polystyrene
pH Range	:	0 - 14
Operating Temperature	:	120°C max.
Total Exchange Capacity	:	2000 meq / lit. min.
Resistance to oxidising / reducing agent	:	Generally good, strong oxidising agents like Chlorine, Hydrogen Peroxide, Nitric Acid with higher concentration and long contact time should be avoided.
Solubility	:	Insoluble in all common solvent.

TYPICAL OPERATING DATA

CO-CURRENT FLOW

Minimum bed depth	:	700 mm
Treatment flow rate	:	60 m^3 / hr / m^3
Backwash expansion	:	40-70 %
Backwash flow rate	:	9-15 m^3 / hr / m^3
Regenerant	:	Hcl / NaCl
Regeneration level	:	(i) 40 - 200 gm/lit. HCl (ii) 60 - 150 gm / lit. NaCl
Regenerant concentration	:	(i) 4 - 7 % for HCl (ii) 5 - 15 % for NaCl
Regeneration flow rate	:	1 - 4 m^3 / hr / m^3
Regeneration time	:	30 min (average)
Rinse flow rate	:	1 - 4 m^3 / hr / m^3 60 m^3 / hr / m^3 (fast)
Rinse volume	:	3 - 5 m^3 / m^3

STORAGE

The resin must not be allowed to dry. A periodic inspection of resin is very important when in storage. If found dry enough clean demineralised water should be added to keep the resin in moist condition. Resin should be stored in shade having temperature between 20°C to 40°C.

PACKING

ASHAION-C 250 is supplied in Polyethylene lined HDPE bags of 30 & 50 ltr.

PO Box 38906 Ras Al Khaimah, UAE contact: +971 55 5567908 / +971 50 1646263
Email: info@stepuptech.ae Website: www.stepuptech.ae

ASHAION-C 250

Operating Capacity

Co-flow regeneration

The operating capacity of ASHAION C 250 in water softening is obtained by multiplying the basic capacity value from Fig. 1/Table 1 by the correction factors A b C from Figs. 2 to 4/Tables 2 to 4.

Countercurrent regeneration (CCR)

The operating capacity of ASHAION C 250 in water softening is obtained by multiplying the basic capacity value from Fig. 5/Table 5 by the correction factors D to F from Fig. 6 to 8/Tables 6 to 8.

The exchange capacity indicated in the above-mentioned figures/tables is for an injection time of 20 minutes. Higher capacity is realized with longer injection periods. A capacity gain of 10% is attained when salt solution is injected for one hour.

Treated Water Quality

The leakage of calcium and magnesium salts from ASHAION C-250 Na operating as a sodium exchanger is independent of influent hardness up to 1200 mg/l $CaCO_3$ and influent sodium.

The hardness leakage from ASHAION C 250 is a follow: Co-flow regeneration < 5 mg/l $CaCO_3$

Countercurrent regeneration < 1 mg/l $CaCO_3$

When operating on waters beyond the conditions specified, it is recommended to establish accurate leakage data by practical experiment

PO Box 38906 Ras Al Khaimah, UAE contact: +971 55 5567908 / +971 50 1646263
Email: info@stepuptech.ae Website: www.stepuptech.ae

PRODUCT DATA SHEET

ASHAION C250Na Co-flow - Softening Data

Determination of Operating Exchange Capacity (Cap)

$$Cap = Cap^{\circ} \times A \times B \times C$$

Table 1
Basic Exchange Capacity (Cap°) at Different Regeneration Levels

Regeneration Level kg NaCl/m³	Cap° kg $CaCO_3$/m
80	52.0
100	58.6
130	66.5
160	72.7

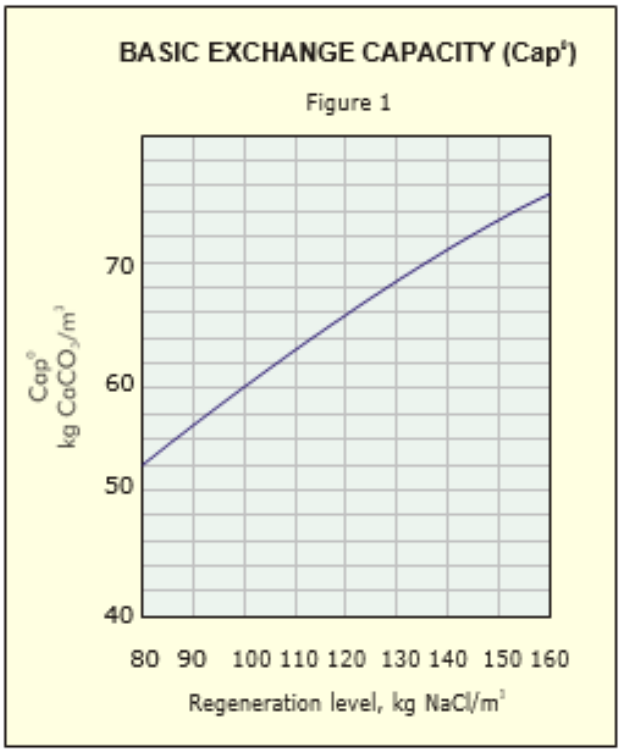
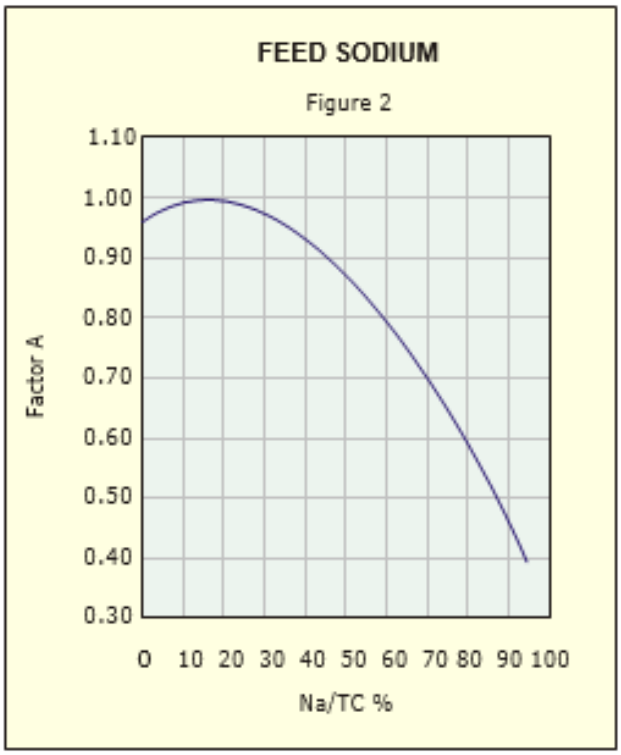


Table 2
Capacity Correction Factor A For Feed Sodium

Na/TC (%)	Factor A
0	0.96
20	1.00
40	0.92
60	0.80
80	0.61
95	0.39



PO Box 38906 Ras Al Khaimah, UAE contact: +971 55 5567908 / +971 50 1646263
Email: info@stepuptech.ae Website: www.stepuptech.ae

ASHAION C250 Na Co-flow - Softening Data

Determination of Operating Exchange Capacity (Cap)

Table 3
Capacity Correction Factor B For Feed Total Hardness

Feed Total Hardness mg/l $CaCO_3$	Factor B
500	1.00
800	0.96
1000	0.93
1200	0.89

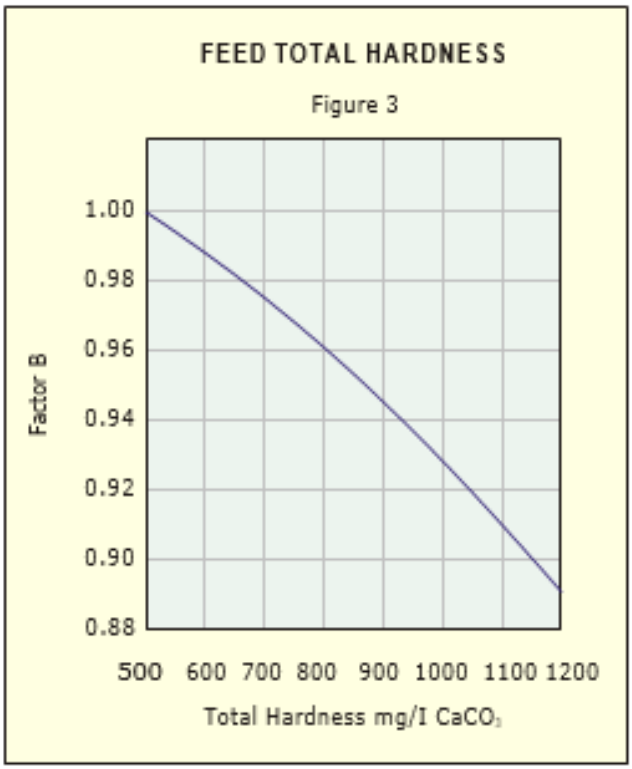
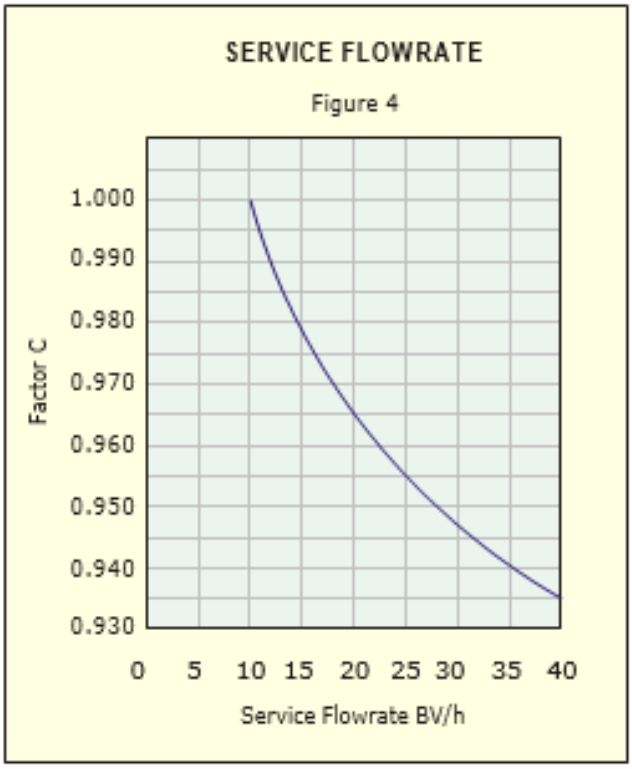


Table 4
Capacity Correction Factor C For Service Flowrate

Service Flowrate BV/h	Factor C
10	1.000
15	0.980
20	0.965
25	0.955
40	0.935



PO Box 38906 Ras Al Khaimah, UAE contact: +971 55 5567908 / +971 50 1646263
Email: info@stepuptech.ae Website: www.stepuptech.ae

ASHAION C250Na CCR- Softening Data

Determination of Operating Exchange Capacity (Cap)

$$Cap = Cap^{0} \times D \times E \times F$$

Table5
Basic Exchange Capacity (Cap^{0}) at Different Regeneration Levels

Regeneration Level kg NaCl/m^3	Cap^{0} kg $CaCO_3/m^3$
80	56.0
100	63.0
130	68.5
160	75.0

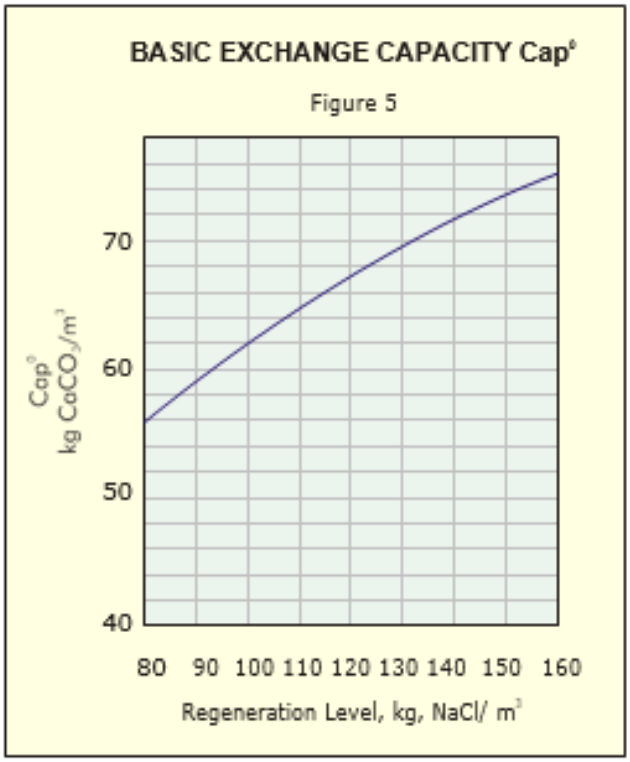
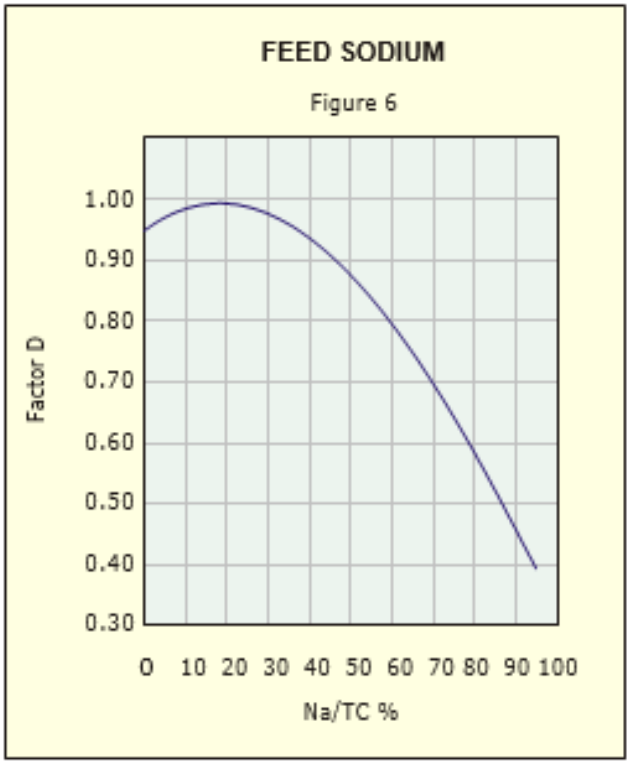


Table 6
Capacity Correction Factor D For Feed Sodium

Na/TC (%)	Factor D
0	0.96
20	1.00
40	0.92
60	0.80
80	0.61
95	0.39



PO Box 38906 Ras Al Khaimah, UAE contact: +971 55 5567908 / +971 50 1646263
Email: info@stepuptech.ae Website: www.stepuptech.ae

PRODUCT DATA SHEET

ASHAION C250Na CCR- Softening Data

Determination of Operating Exchange Capacity (Cap)

Table 7
Capacity Correction Factor E For Feed Total Hardness

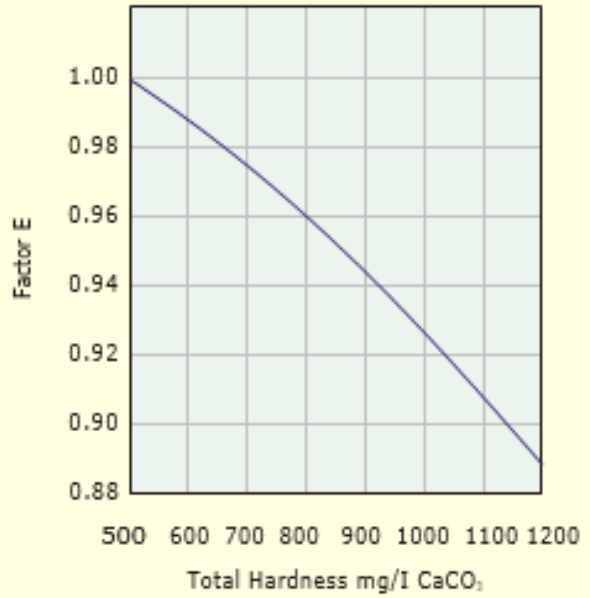
Feed Total Hardness mg/l $CaCO_3$	Factor E
500	1.00
800	0.96
1000	0.93
1200	0.89

Table 8
Capacity Correction Factor F For Service Flowrate

Service Flowrate BV/h	Factor F
10	1.000
15	0.980
20	0.965
25	0.955
40	0.935

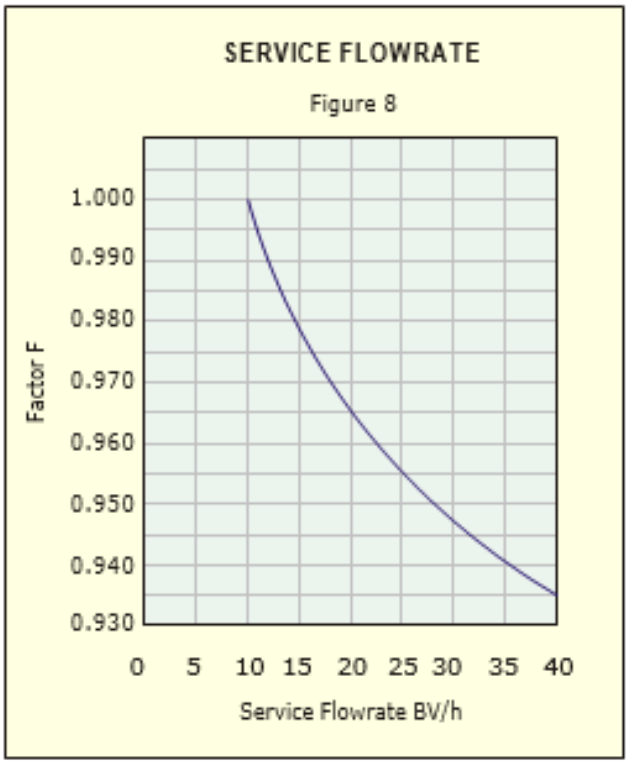
FEED TOTAL HARDNESS

Figure 7



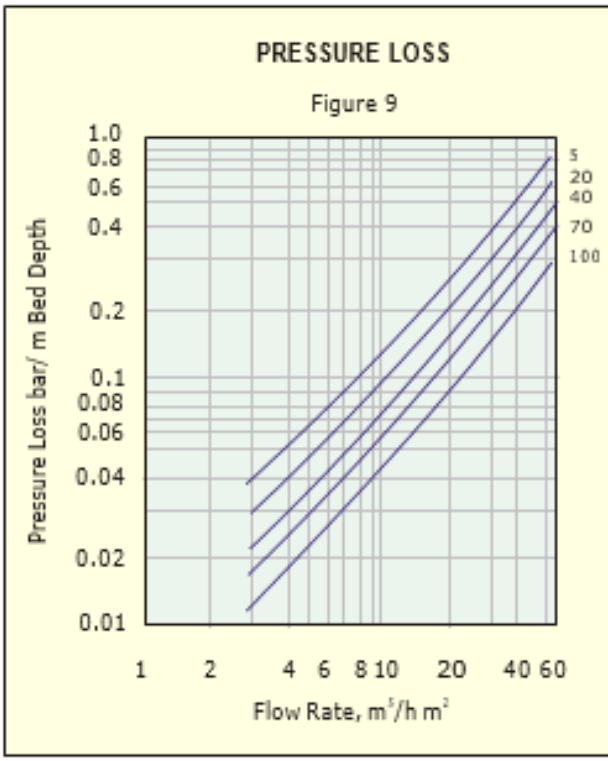
SERVICE FLOWRATE

Figure 8



PRESSURE LOSS

Figure 9



PO Box 38906 Ras Al Khaimah, UAE contact: +971 55 5567908 / +971 50 1646263
Email: info@stepuptech.ae Website: www.stepuptech.ae

Salt Recycle

Operating conditions

Table 9 shows the effect of regeneration level on the operating exchange capacity. Table 10 gives the correction factors to be applied for feed sodium. These capacities refer to a hardness breakthrough of 5 mg/1 $CaCO_3$.

Table 9
Regeneration level V/s. Operating Exchange Capacity Initial Regeneration Level 130 Kg NaCl/m^3

Fresh Regeneration Level kg. NaCl/m^3	Operating Exchange Capacity kg. $CaCO_3$/m^3
60	42.0
77	53.9
90	60.2

Table 10
Capacity Correction Factor for Feed Sodium

Na/TC (%)	Correction factor
20	1.05
40	1.00
60	0.85
80	0.80

Table 11 give the recommended operating conditions for using ASHAION C 250 in sodium cycle with salt recycle. The technique of salt recycling is employed primarily to improve the regeneration efficiency. Efficiency of up to 80% is easily achieved. The data presented are based on extensive tests using feed water having a total hardness of 275 mg/1 $CaCO_3$ and Na/TC of 40%. The runs were conducted at a flowrate of 12 by/h.

Table 11
Recommended Operating Conditions

Bed depth	0.70 m, minimum
Treatment flowrate	45 -60m^3/h m^2, maximum
Pressure loss	Refer Figure 9
Bed expansion	Refer Figure 10
Backwash	9-15 m^3/h $m^2$for 5 minutes till effluent is clear
Regenerant	Sodium Chloride
Regenerant flowrate	2 to 4 m^3/h/ m^3
Rinse	3 -5 m^3/h/ m^3

Recommended regeneration procedure

In order to obtain optimum results, it is suggested thatthe following steps be followed: -

a) On exhaustion, backwash the unit with filtered water as indicated.

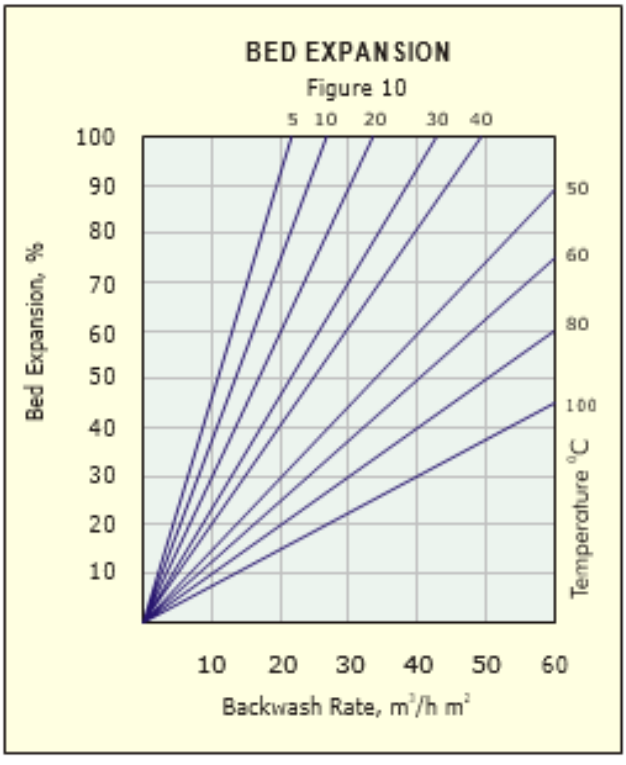
b) Inject the spent brine (collected during the previous regeneration in the spent brine tank) at a flow rate sufficient to give a minimum contact time of 20minutes. The entire volume is drained.

c) Inject fresh salt sodium (at 10 to 15% w/v NaCl) at a flowrate sufficient to give a minimum contact time of 20 minutes. The initial 0.5 by containing a low concentration of NaCl and a high concentration of hardness is drained.

d) Collect the balance quantity of regenerant effluent in the spent brine tank.

e) Rinse the unit with filtered water and collect the initial 0.5 by of the rinse water in the spent brine tank. Drain the balance portion of rinse.

f) The unit is an ow ready for the next service run.



PO Box 38906 Ras Al Khaimah, UAE contact: +971 55 5567908 / +971 50 1646263
Email: info@stepuptech.ae Website: www.stepuptech.ae