AMBERLITE® IRA458RF Cl

ENGINEERING DATA SHEET
(Reverse flow regeneration)

These data provide information to calculate the silica leakage and operating capacity of Amberlite IRA458RF Cl used for water demineralisation with reverse flow (counterflow) regeneration.The properties of Amberlite IRA458RF Cl are described in the Product Data Sheet PDS 0428 A.

SILICA LEAKAGE

The average silica leakage is obtained by multiplying the basic leakage value from Table 1 by the correction factors A, B, C and K* from Tables 2 to 4.

$$\mathbf{Leak = Leak_0 \times A \times B \times C \times K}$$

*K (the influence of sodium leakage) can be determined from the graph given in the EDS 0299 A.

Table 1 : Basic Silica Leakage versus NaOH Regenerant Level

NaOH g/L	Leakage ppm SiO_2 ($Leak_0$)
30	0.035
40	0.020
50	0.014
60	0.011
80	0.007

Table 2 : Leakage Correction Factor A vs Silica to Total Anions Ratio

SiO_2	Factor A
1	0.2
5	1.0
10	2.0
20	4.0
30	6.0

Table 3 : Leakage Correction Factor B versus Water Temperature

Water °C	Factor B
5	0.7
10	0.8
15	1.0
20	1.2
25	1.5
30	2.2

Table 4 : Leakage Correction Factor C versus Regenerant Temperature

NaOH °C	Factor C
10	1.65
15	1.37
20	1.16
25	1.00
30	0.87

Table 5 : Suggested Operating Conditions

Maximum operating temperature	35°C
Minimum bed depth	1000 mm (preferably > 1400 mm)
Service flow rate	5 to 40 BV*/h
Maximum linear velocity	40 m/h
Regenerant	NaOH
Level	30 to 80 g/L
Flow rate	2 to 8 BV/h (minimum contact time : 30 minutes)
Concentration	2 to 4 %
Slow rinse	2 BV at regeneration flow rate
Fast rinse	4 to 8 BV at service flow rate

** 1 BV (Bed volume) = 1 m^3 solution per m^3 resin*

OPERATING CAPACITY

The operating capacity of Amberlite IRA458RF Cl is obtained by multiplying the basic capacity value from table 6 by the correction factors D to G from tables 7 to 10.

$$\mathbf{Cap = Cap_0 \times D \times E \times F \times G}$$

Table 6 : Basic Capacity versus NaOH Regenerant Level (reverse flow regeneration)

NaOH g/L	Capacity eq/L (Cap_0)
30	0.50
40	0.61
50	0.66
60	0.70
70	0.73
80	0.75

Table 7 : Capacity Correction Factor D versus Sulphate to Total Anions Ratio

SO_4 %	Factor D
0	0.94
25	0.97
50	1.00
75	1.03
99	1.06

Table 8 : Capacity Correction Factor E versus CO_2 to Total Anions Ratio

CO_2 %	Factor E
0	0.97
20	1.00
30	1.02
50	1.05
75	1.08
99	1.12

Table 9 : Capacity Correction Factor F versus Silica to Total Anions Ratio and NaOH Temperature (°C)

	5	10	20	30 % SiO_2
5°C	0.96	0.93	0.87	0.83
10	0.97	0.94	0.89	0.85
15	0.98	0.95	0.91	0.87
20	0.99	0.96	0.92	0.89
25	1.00	0.98	0.94	0.90
30	1.01	0.99	0.96	0.92

Table 10 : Capacity Correction Factor G vs Silica Endpoint **(ΔSiO_2 = difference between average leakage and endpoint)**

ΔSiO_2 (ppb)	Factor G
50	0.90
100	0.95
200	1.00
300	1.04

Rohm and Haas/Ion Exchange Resins - Philadelphia, PA - Tel. (800) RH AMBER - Fax: (215) 537-4157
Rohm and Haas/Ion Exchange Resins - 75579 Paris Cedex 12 - Tel. (33) 1 40 02 50 00 - Fax : 1 43 45 28 19

WEB SITE: http:// www.rohmhaas.com/ ionexchange