

SEPARATION TECHNOLOGIES

ION EXCHANGE RESINS

DUOLITE C 20 C

ENGINEERING DATA SHEET

(HCl, Counter- current regeneration)



Duolite C 20 C is strong acid Cation Exchange Resin. These data provide information to calculate the sodium leakage and operating capacity of Duolite C 20 C used with reverse flow (counter current) regeneration with hydrochloric acid. The properties of Duolite C 20 C are described in the Product Data Sheet.

$$Cap = Cap_0 \times A \times B \times C \times D \times E$$

SODIUM LEAKAGE

With counter current regeneration, the average sodium leakage is always very low (less than 100 ppb as Na when regenerated with HCl) so that in industrial applications a treated water conductivity of about 1 mS / cm or lower can be obtained in most cases.

OPERATING CAPACITY

The operating capacity of Duolite C 20 C with hydrochloric acid regeneration is obtained by multiplying the basic capacity value from Table 1 by the correction factors A to E from Tables 3 to 7 overleaf.

TABLE 1 : Basic Capacity versus HCl Regenerant Level (Reverse Flow Regeneration)

HCl g/L	Capacity eq / L (Cap ₀)
30	0.80
40	1.03
50	1.15
60	1.24
70	1.32
80	1.39
90	1.44
100	1.49
120	1.57

TABLE 2 : Suggested Operating Conditions

Maximum operating temperature.....	120 ^o c
Minimum bed depth	1000 mm **
Service flow rate	5 to 40 BV* / hr
Maximum linear velocity	50 m / hr
Regenerant	HCl
Level	30 to 120 g /L
Flow rate	2 to 5 BV/ hr (minimum contact time 30 minutes)
Concentration	4% to 8 %
Slow rinse	Minimum 2 BV at regeneration flow rate
Fast rinse	Same as service flow rate.

* 1 BV (Bed Volume) = 1 m³ solution per m³ resin

** For selection of lower bed depth contact Auchtel representative

Influent Limitations

Free chlorine - Nil

TABLE 3 : Capacity Correction Factor A Versus Sodium to Total Cations ratio.

%Na	Factor A
0	0.92
10	0.93
20	0.94
30	0.95
40	0.96
50	0.98
60	0.99
70	1.00
80	1.01
90	1.03
100	1.04

TABLE 6 : Capacity Correction Factor D versus water Temperature

°C	0	50	99% Na
5	0.95	0.89	0.84
10	0.98	0.96	0.94
15	1.00	1.00	1.00
20	1.02	1.03	1.04
25	1.03	1.05	1.08
>30	1.04	1.07	1.11

TABLE 4 : Capacity Correction Factor B versus Alkalinity to Total Anions Ratio.

% Alk	Factor B
0	0.94
25	0.97
50	1.00
75	1.02
99	1.03

TABLE 5 : Capacity Correction Factor C versus Resin Bed Depth.

Bed Depth mm	Factor C
900	0.94
1200	0.96
1500	1.00
1800	1.04
2000	1.07
2500	1.10

TABLE 7 : Capacity Correction Factor E versus Run Length (Production Time)

Run Time (hours)	0	50	99% Alk
5	0.92	0.95	0.97
8	0.94	0.96	0.98
10	0.96	0.97	0.99
20	0.98	0.99	1.00
> 25	0.99	1.00	1.00

SAFE USE INFORMATION

A material Safety Data Sheet is available for each product. To obtain a copy contact your Auchtel representative. Ion exchange resins and polymeric adsorbants, as produced, contain manufacturing by-products. The user must determine the extent to which these by-products must be removed for any particular use and to establish methods to ensure that the appropriate level of purity is achieved for that use. The user must ensure compliance with all prudent safety standards and regulatory requirements governing the application. Except where otherwise stated, Auchtel does not recommend its ion exchange resins or polymeric adsorbants as suitable or appropriately pure for any particular use. Consult your Auchtel technical representative for further information.

CAUTION

Acidic and basic regenerant solutions are corrosive and should be handled in manner that will prevent eye and skin contact. Nitric acid and other strong oxidizing agents can cause explosive type reactions when mixed with Ion Exchange Resins. Proper design of process equipment to prevent rapid buildup of pressure is necessary if use of an oxidizing agent such as nitric acid is contemplated. Before using strong oxidizing agents in contact with Ion Exchange Resins, consult sources knowledgeable in the handling of these materials.

The suggestions and data in this bulletin are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale. The Company maintains a policy of continuous development and reserve the right to amend any specification without notice. DUOLITE is a trademark of Rohm and Hass Company, Philadelphia, U.S.A. and Auchtel Products Ltd. are users of the same in India.

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