

## SEPARATION TECHNOLOGIES

### ION EXCHANGE RESINS

# DUOLITE A 113

## PRODUCT DATA SHEET.



### DESCRIPTION

Duolite A 113 is a premium grade type 1 strong base Anion Exchange Resin with a clear gel structure. It is based on crosslinked polystyrene and has a very high bead integrity, good regeneration efficiency and excellent rinse performance.

Due to a latest manufacturing technology, Duolite A 113 has an outstanding physical stability, illustrated by its resistance to osmotic shock and to mechanical stress. The physical & chemical properties are tested by the method specified in IS : 7330-1988.

Suitable grades are available for use :

- in co and counter flow regeneration systems,
- in fixed and floating beds,
- for mixed bed or TRIOBED operation.

### PROPERTIES

Matrix _____	Styrene - divinylbenzene copolymer.
Functional groups _____	$-\text{N}(\text{CH}_3)_3^+$ Min 95% of TEC
Physical form _____	Pale yellow translucent beads
Ionic form as supplied _____	Chloride.
Total exchange capacity _____	Minimum 1.3 eq / L ( $\text{Cl}^-$ form )
Moisture holding capacity _____	50 - 55% ( $\text{Cl}^-$ form )
Specific gravity _____	1.05 to 1.11 ( $\text{Cl}^-$ form )
Packing density _____	About 700 g / L ( $\text{Cl}^-$ form )
Particle size _____	See [ Available grades ]
Maximum reversible swelling _____	$\text{Cl}^- \text{ @ } \text{OH}^- : 20 \%$
Operating pH range _____	0 TO 14
Chemical stability _____	Insoluble in water, dilute solutions of acids or bases and common solvents.

Please refer our Technical Data Sheet on Duolite storage and handling instructions for storage of resin.

### SUGGESTED OPERATING CONDITIONS

Maximum operating temperature _____	60 °C ( $\text{OH}^-$ ), 100°C ( $\text{Cl}^-$ )
Minimum bed depth _____	700 mm
Service flow rate _____	5 to 40 BV* / hr
Linear velocity( Max ) _____	50 m / hr
Regenerant _____	Na OH (Rayon grade as specified in BS spec no. IS 252)
Level _____	30 to 160 g / L
Concentration _____	3% to 5 %
Flow rate _____	2 to 8 BV / hr (minimum contact time 30 minutes)
Slow rinse _____	Min 2 BV at regeneration flow rate
Fast rinse _____	Same as service flow rate

\* 1 BV ( Bed Volume ) = 1 m<sup>3</sup> solution per m<sup>3</sup> resin

Please refer the check list provided for safe operation and longer durability of resin.

Regarding operating conditions for Duolite A 113 condensate polishing unit consult Auchtel technical representative

**AVOID EXCESSIVE ORGANICS ENTERING DUOLITE IER FOR LONG & HEALTHY LIFE**

## AVAILABLE GRADES

Name	Ionic form	Particle size range* ( mm )	Effective size ( mm )	Max Uniformity Coefficient	Applications
DUOLITE A 113	Cl <sup>-</sup>	0.3 - 1.2	0.45 - 0.55	1.80	General use
DUOLITE A 113 LF	Cl <sup>-</sup>	0.5 - 1.1	0.6 - 0.7	1.40	Floating & Packed bed operation.
DUOLITE A 113 MB	OH <sup>-</sup>	0.35 - 1.1	0.5 - 0.6	1.80	Mixed bed operation.
DUOLITE A 113 TR	SO <sub>4</sub> <sup>- -</sup>	0.4 - 0.85	0.55 - 0.65	1.40	TRIOBED
DUOLITE A 113 MONOSPHERE	Cl <sup>-</sup>	0.6 - 0.8	0.74	1.20	High performance MB
DUOLITE A 113 PLUS	Cl <sup>-</sup>	0.4 - 1.2	0.5 - 0.6	1.80	High flow rate / Mixed bed

\*90% OF THE BEADS WITHIN THE SPECIFIED RANGE.

## APPLICATIONS

Combined with a strong acid cation exchanger, Duolite A 113 reduces both strong and weak acid concentrations to extremely low levels. Its main use is therefore water demineralisation.

Due to its high basicity, Duolite A 113 has a very good affinity for weak acids so that extremely low silica leakage values in the unit ppb range are obtained with counter flow regeneration. In general, Duolite A 113 is the recommended resin for all applications requiring a gel, type 1, high capacity resin with high physical stability, including layered, fluidised and packed bed processes.

Other fields of application include the purification of uranium liquors, the treatment of electroplating waste and the isolation of anionic metal complexes.

## PERFORMANCE

Operating exchange capacity and silica leakage of Duolite A 113 depend on several factors.

- Type and size of column
- Regeneration level
- Sulphate to total anion ratio
- SiO<sub>2</sub> to total anion ratio,
- CO<sub>2</sub> to total anion ratio,
- Regenerant temperature.
- Accepted SiO<sub>2</sub> leakage,

## FOOD PROCESSING

Auchtel manufactures special resins for food processing and potable water applications. As governmental regulations vary from country to country, it is recommended that all potential users seek advice from their Auchtel representative in order to determine the best resin choice and optimum operating conditions.

## HYDRAULIC CHARACTERISTICS

Figure 1 shows the bed expansion of standard Duolite A 113, as a function of backwash flow rate and temperature.

Figure 2 shows the pressure drop data for standard grade Duolite A 113, as a function of service flow rate and water temperature. Pressure drop data are valid at the start of the service run with a clear water influent and a correctly classified bed.

Figure 1

### BED EXPANSION

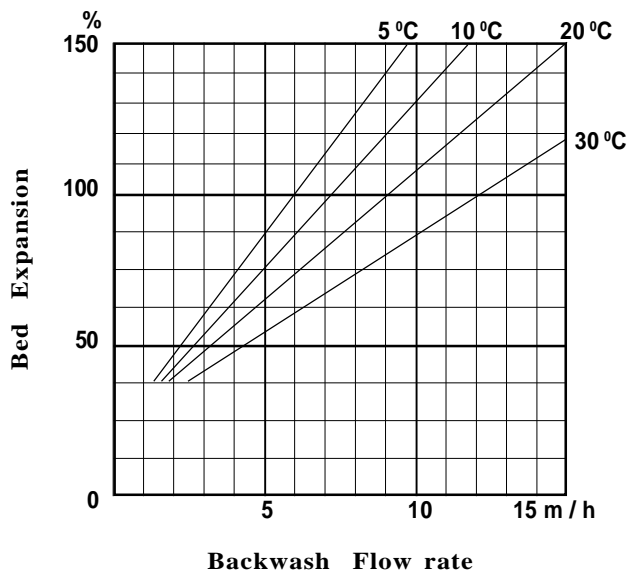
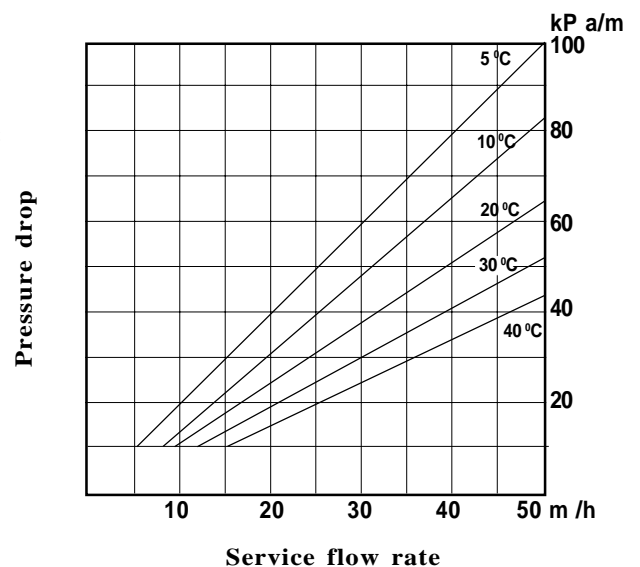


Figure 2

### PRESSURE DROP\*



\* Under identical conditions, Duolite A 113 LF will give 15% lower pressure drop.

# DUOLITE A 113

## PRODUCT DATA SHEET.

### **BRANCH OFFICES**

14, Shrinivas Society, Ashish Banglow,  
New Sharada Mandir Road,  
**Ahmedabad** - 380 007  
Ph.No.(079) 6620003, Tele fax -6640076.

Shantiniketan Building,  
9<sup>th</sup> Floor, 8, Camac Street,  
**Calcutta** - 700 017  
Ph.No.(033) 2424517, 2820183  
E-mail - auchtel@cal2.vsnl.net.in

No. 3, Aarti Arcade, 86,  
86, Dr. Radhakrishnan Road, Mylapore,  
**Chennai** - 600 004.  
Ph.No.(044) 8278352.

Post Box No.12,3/ 64,  
Vishnupuri, Nawab Gunj,  
**Kanpur** - 208 002.  
Ph.No.(0512) 561540, 561012  
E-mail - auchtel@lw.l.vsnl.net.in

K-48, Connaught Circus,  
**New Delhi** - 110 001.  
Ph.No.(011) 3328208, 3322116  
E-mail - auchtel@del6.vsnl.net.in

### **SAFE HANDLING INFORMATION**

A Material Safety Data Sheet is available for each product. To obtain a copy contact your Auchtel representative.

### **CAUTION**

Acidic and basic regenerant solutions are corrosive and should be handled in a 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.*

**Auchtel Products Ltd., 142 C, Victor House, N.M. Joshi Marg, Lower Parel(w), Mumbai-400 013**  
**Tel. 91-22-493 3975, Fax. 91-22-493 9755, 497 4211 E-mail -auchtel@vsnl.com**