



CHEMSYS

Purolex PRC-107E

Gel Strong Acid Cation Exchange Resin
(For use in water softening applications)

Technical Data

Purolex PRC-107E is a high capacity premium grade bead form conventional gel polystyrene sulphonate cation exchange resin designed for use in industrial or household water conditioning equipment. It removes the hardness ions, e.g. calcium and magnesium, replacing them with sodium ions. When the resin bed is exhausted and hardness ions begin to break through, capacity is restored by regeneration with common salt.

The capacity obtained depends largely on the amount of salt used in the regeneration. Purolex PRC-107E is also capable of removing dissolved iron, manganese, and suspended matter by virtue of the filtering action of the bed.

Its high bead integrity, excellent chemical and physical stability, and very low extractibles content play a large part in its successful employment in these areas.

Equivalent: IRA120, C100E

Typical physical & chemical characteristics

Polymer Matrix Structure	Crosslinked Polystyrene Divinylbenzene (7%)
Physical Form and Appearance	Clear spherical beads
Whole Bead Count	95% min.
Functional Groups	R-SO ₃ ⁻
Ionic Form, as shipped	Na
Shipping Weight (approx.)	810 g/l (51 lb/ft ³)
Particle Size Range	+1.2 mm <5%, -0.3 mm <1%
Moisture Retention, Na ⁺ form	45-50%
Swelling Na ⁺ → H ⁺	10% max.
Ca ²⁺ → Na ⁺	5% max.
Specific Gravity, moist Na ⁺ Form	1.27
Total Exchange Capacity, Na ⁺ form, wet, volumetric	1.85 eq/l
Operating Temperature, Na ⁺ Form	150°C (300°F) max.
pH Range, Stability	0 - 14



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Suggested Operating Condition

Maximum Temperature Na ⁺ Form H ⁺ Form	120°C (248°F) max. 100°C (212°F) max.
Minimum Bed Depth	0.6m(24inches)
Backwash Rate	25 to 50% Bed Expansion
Regeneration Concentration Hydrogen Cycle Sodium Cycle	6% HCl or 4 to 8% H ₂ SO ₄ 4% to 6% NaCl
Regeneration Flow Rate	4 to 12 BV/h (0.5 to 1.5gpm/cu.ft.)
Regeneration Contact Time	At least 30 minutes
Regeneration Level	112 -300g/L (4 to 10 pounds/ cu.ft.)
Displacement Rinse Rate	Same as Regeneration Flow Rate
Displacement Rinse Volume	10 to 15 gallons/cu.ft.
Fast Rinse Rate	Same as Service Flow Rate
Fast Rinse Volume	35 to 60 gallons/cu.ft.
Service Flow Rate	10-25m/h (2 to 10 gpm/cu.ft.)

Hydraulic Properties

A. Pressure Drop: The pressure drop (headloss) across a properly classified bed of ion-exchange resin depends on the particle size distribution, bed depth, and void volume of the exchanger; and on the flowrate and viscosity (and hence on the temperature) of the influent solution. Anything affecting any of these parameters, for example the presence of particulate matter filtered out by the bed, abnormal compaction of the resin bed, or the incomplete classification of the resin will have an adverse effect, and result in an increased headloss. Typical values of pressure drop across a bed of Akualite C-107E are given for a range of operating flow rates in Fig. 1.

B. Backwash : During upflow backwash, the resin bed should be expanded in volume by between 50 and 75%, in order to free it from any particulate matter from the influent solution, to clear the bed of bubbles and voids, and to reclassify the resin particles as much as possible, ensuring minimum resistance to flow. Backwash should be commenced gradually to avoid an initial surge with consequent carryover of resin particles. Bed expansion increases with flow rate and decreases with temperature, as shown in Fig. 2, above. Care should always be taken to avoid resin loss by accidental overexpansion of the bed.

Fig. 1 PRESSURE DROP VS FLOW RATE

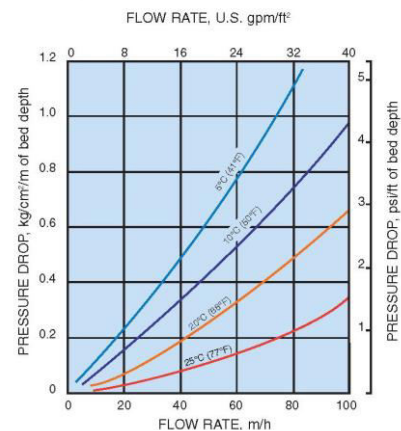


Fig. 2 BACKWASH EXPANSION

