



PICOPURE®

Ion Exchange Resins for Ultra Pure Water

Purolite PICOPURE resins are manufactured by a proprietary process that achieves the ultimate purity for critical demineralized water applications including wafer rinsing, semiconductor manufacturing and other applications where ultra pure water is necessary. The cation and anion components used to manufacture Purolite PICOPURE products are gel resins that feature uniform particle size (UPS) bead distribution. They are polymerized with a styrene-divinylbenzene matrix and functionalized. The beads produced are highly durable and resist fragmentation that can result in particle release in the treated water.

Product Summary

PICOPURE 650	UPS Strong acid 10% DVB cation
PICOPURE 550	UPS Type I strong base anion resin
PICOPURE 1200	650/550 working mixed bed resin
PICOPURE 56	Cation/anion blend for non regenerating mixed bed

Purolite PICOPURE 650 is a strong acid (Super Gel) cation exchange resin with high resistance to bead fracture from both attrition and osmotic shock. Because of its specially tailored narrow particle size distribution, it has superior kinetics, higher operating capacity and produces treated water with a substantially lower sodium leakage than most other gel resins. These significant advantages are more apparent at lower regeneration levels where the effect of Superior Regeneration Efficiency is more marked. It is also relatively less susceptible to fouling by heavy metals such as iron and copper. These factors combine to produce water of a superior quality, offering special advantages when operating at high flow rates.

Purolite PICOPURE 550 is a type I strong base (Super Gel) anion exchange resin with a narrow particle size distribution that offers higher operating capacities than standard resin. The higher operating capacity is particularly observed at lower regeneration levels where the effect of its superior regeneration efficiency is most noticeable. **PICOPURE 550** is also relatively less susceptible to organic fouling than standard gel-type strong base anion resins. These factors combined to produce water of consistent ultrapure quality, offering special advantages when operating at high flow rates.

PICOPURE mixed bed resins are ready to use 1:1 chemical equivalent that are highly regenerated in the H⁺ and OH⁻ forms. They can be installed in primary or secondary recirculating loops for ultra pure water production. Additional applications include the production of pharmaceutical quality water meeting United States Pharmacopoeia (USP) 23 and other industries where the slightest impurities can interfere with product quality.

Purolite PICOPURE 1200 mixed bed resin is ready to use, 1:1 chemical equivalent of **PICOPURE 650** and **PICOPURE 550**, which are highly regenerated in the H and OH forms. In regenerable mixed beds, separation of cation-anion during backwashing is critical to prevent cross contamination of the resin with the wrong regenerant. Air mixing and, in some cases, resin transfer for external regeneration could also be tedious operations, if the wrong resin selection is made. **PICOPURE 1200** is specifically designed to meet these challenges, every time it is regenerated. Use of **PICOPURE 1200** also negates the need for an inert, providing more operating capacity to your working mixed bed.



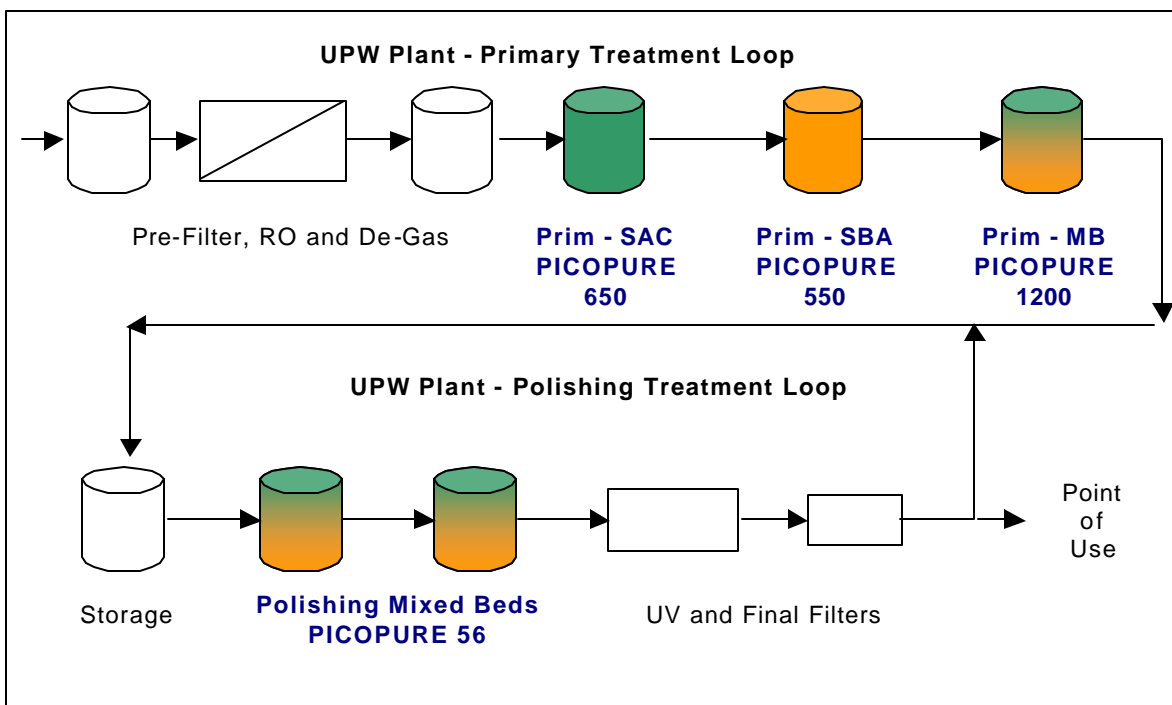
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Purolite PICOPURE 56 has the unique ability of not separating during vessel loading, which makes it the ideal choice for polishing mixed beds in ultra pure water production. Additional applications include the production of pharmaceutical quality water meeting United States Pharmacopoeia (USP) 23, rad-waste systems, and stator coolers. The cation and anion components used in **PICOPURE 56**

are gel resins that are polymerized with a styrene-divinylbenzene matrix and functionalized. The resin beads are highly durable and resist fragmentation that can result in particle release in the treated water. The cation resin, in **PICOPURE 56** is regenerated to 99.9% plus in the hydrogen form. The anion resin is regenerated to 95% or more in the hydroxide form, and has a maximum of 0.1 % chloride.

Applications



PICOPURE 650 in the hydrogen form can be used as the cation component a demineralizer or a working mixed bed together with **PICOPURE 550** as the anion component.

PICOPURE 550 in the hydroxide form is used as the anion component a demineralizer or a working mixed bed

together with **PICOPURE 650** as cation component.

PICOPURE 1200 is used for regenerable mixed beds providing excellent separation of cation-anion during backwashing

PICOPURE 56 is used for non-separating polishing mixed beds.



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Specifications

PICOPURE 650 Typical Physical and Chemical Characteristics	
Polymer matrix structure	Crosslinked Styrene-DVB gel
Ionic form	H ⁺
Functional groups	Sulfonic acid
Exchange capacity H ⁺ form	>2.0 meq/ml
Conversion (%)	> 99.9 H ⁺ form
Particle size (micron)	650
Uniformity coefficient	1.15
Water content (%) H ⁺ form	40- 50
Operating temperature	130°C
Shipping density (approx.)	770 - 790 g/l
Rinsing conditions	@ 30 BV/hr, Influent is minimum of 15 Megohms
Delta TOC (ppb)	< 20 within 8 hours
Na ⁺ (ppt)	< 0.5
Standard operating conditions	Bed depth 90 cm, service flow rate 20-50 BV/hr, feed water temperature 15 – 30 °C

PICOPURE 550 Typical Physical and Chemical Characteristics	
Polymer matrix structure	Crosslinked Styrene-DVB gel
Ionic form	OH ⁻
Functional groups	Quaternary Amine
Exchange capacity, OH ⁻ form	>1.1 meq/ml
Conversion (%)	> 95 OH ⁻ form, (Cl ⁻ < 0.1%)
Particle size (micron)	550
Uniformity coefficient	1.15
Water content (%) OH ⁻ form	55 – 65
Operating temperature	60°C
Shipping density (approx.)	670 - 700 g/l
Rinsing conditions	@ 30 BV/hr, Influent is minimum of 15 Megohms
Delta TOC (PPB)	< 50 within 8 hours
Cl ⁻ (ppt)	< 0.5
Standard operating conditions	Bed depth 90 cm, service flow rate 20-50 BV/hr, feed water temperature 15 – 30 °C

The Purolite Company, 150 Monument Rd., Bala Cynwyd, PA 19004, USA
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PICOPURE 1200 Typical Physical and Chemical Characteristics		
Resins	PICOPURE 650	PICOPURE 550
Ionic form	H ⁺	OH ⁻
Ion exchange capacity	2.0 meq/ml	1.1 meq/ml
Conversion (%)	> 99.9	>95 (Cl ⁻ < 0.1)
Particle size (micron)	650	550
Uniformity coefficient	1.15	1.15
Water content (%)	40- 50	55 – 65
Cation: Anion ratio	1:1 chemical equivalent	
Operating temperature	60°C	
Shipping density	Approximately 740 g/l	
Rinsing conditions	@ 30 BV/hr, Influent is min, 18 Megohms, and TOC 1 PPB max	
Resistivity	> 18 Megohms within 30 minutes	
Delta TOC (PPB)	< 1 within 4 hours	
Particles < 0.05 micron	10 particles/ml within 12 hours	
Standard operating conditions	Bed depth 90 cm, service flow rate 20-50 BV/hr, feed water temperature 15 – 30 ° C	

PICOPURE 56 Typical Physical and Chemical Characteristics		
Resins	10% gel SAC	Gel-Type I SBA
Ionic form	H ⁺	OH ⁻
Ion exchange capacity	2.0 meq/ml	0.9 meq/ml
Conversion (%)	> 99.9	>95 (Cl ⁻ < 1)
Water content (%)	40- 50	55 - 65
Cation: Anion ratio	1:1 chemical equivalent	
Operating temperature	60°C	
Particle size (micron)	700 to 300	
Uniformity coefficient	1.4	
Shipping density	Approximately 740 g/l	
Rinsing conditions	@ 30 BV/hr, Influent is min, 18 Megohms, and TOC 1 PPB max	
Resistivity	> 18 Megohms within 30 minutes	
Delta TOC (PPB)	< 1 within 4 hours	
Particles < 0.05 micron	10 particles/ml within 12 hours	
Standard operating conditions	Bed depth 90 cm, service flow rate 20-50 BV/hr, feed water temperature 15 – 30 ° C	

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