



# Z G A 313

## Strong Base Type I Acrylic Anion Exchange Resin

### DESCRIPTION

“Zheng Guang” Brand ZGA 313 is a gel strong-base Type I anion exchange resin with an acrylic matrix. The acrylic matrix provides excellent removal of organic matter from incoming water and reversible removal during regeneration to protect from organic fouling. The resin is used in preparation of pure and ultra-pure water instead of polystyrene based type I resin. It is especially suitable for high levels organics influent.

ZGA 313 series consists of two products: ZGA 313 is suitable for fixed bed system; ZGA 313 FC for double compartment bed and floating bed system.

### FEATURES & BENEFITS

- **UNIFORM PARTICLE SIZE**

95% of beads are in the assignation range; giving a lower pressure drop and superior kinetics.

- **SUPERIOR PHYSICAL STABILITY**

Over 93% sphericity combined with high crush strengths and uniform particle size provide greater resistance to bead breakage due to mechanical, thermal or osmotic stresses.

- **HIGH CAPACITY FOR ORGANICS**

The acrylic structure allows great capacity in applications for high levels organics surface water. This results in excellent resistance to organic fouling.

- **EXCELLENT REGENERATION EFFICIENCY**

Superior kinetics and low chloride selectivity give a high regeneration efficiency.

### ZGA 313 PROPERTIES

Item	ZGA 313	ZGA 313 FC
Polymer Matrix Structure	Acrylic	
Type	Strong base Type I	
Appearance	Milky translucent spherical beads	
Functional Group	R-N <sup>+</sup> (CH <sub>3</sub> ) <sub>3</sub> X <sup>-</sup>	
Moisture Content%	54~64 (CI)	
Total Capacity meq/g	≥ 4.2 (CI)	
meq/ml	≥ 1.2 (CI)	
Strong Base Capacity meq/g	≥ 3.4 (CI)	
Screen Size Range	55~16	40~16
(U.S. standard screen)	≥ 95	≥ 95
Sphericity %	≥ 93	
Uniformity Coefficient, Approx.	≤ 1.6	≤ 1.5
Shipping Weight, Approx. lb/ft <sup>3</sup>	42~45	
Swelling, Cl <sup>-</sup> → OH <sup>-</sup> %	≤ 18	

## SUGGESTED OPERATING CONDITIONS

### Maximum Temperature

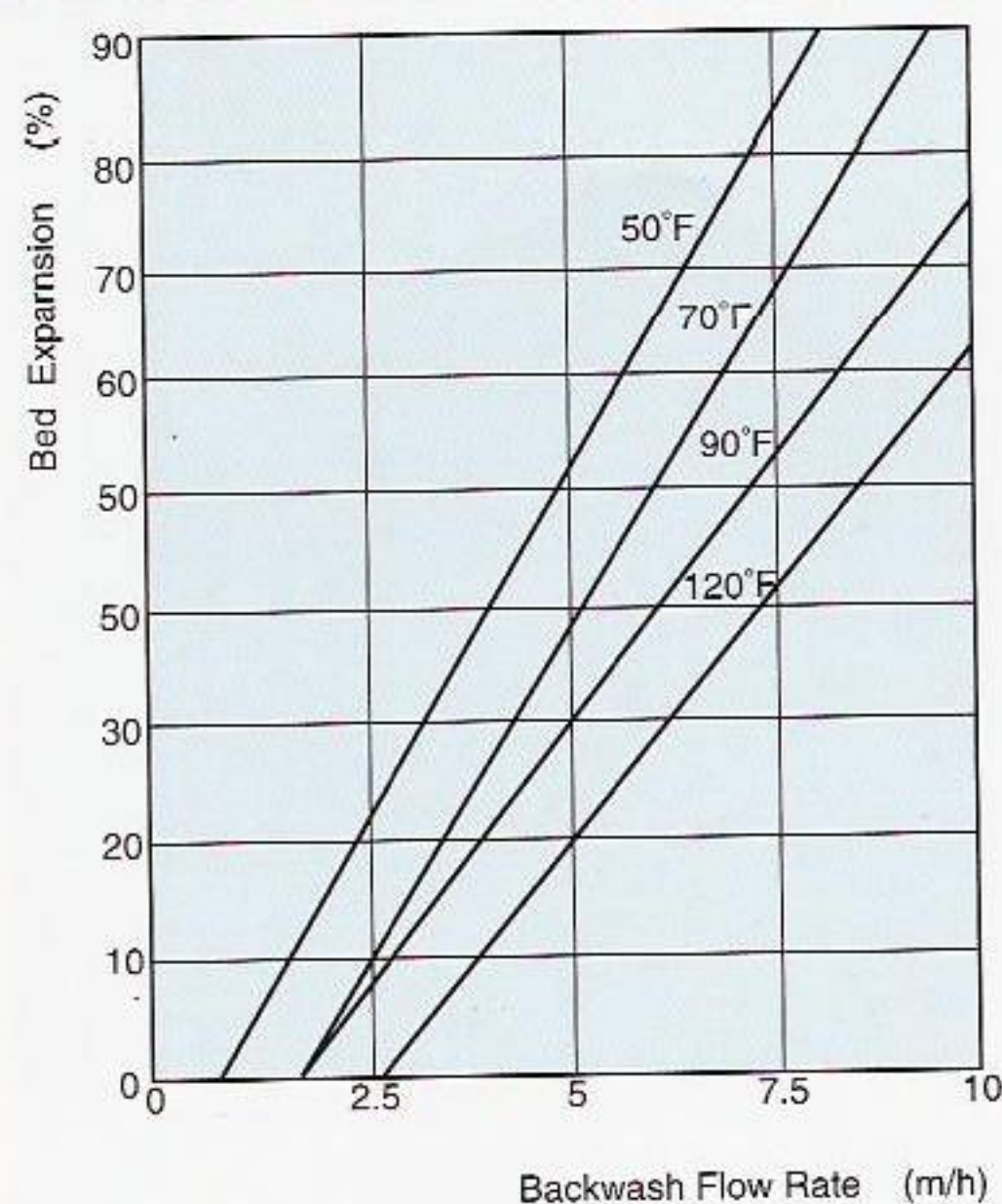
Chloride Form	104 °F
Hydroxide Form	150 °F
Backwash Rate	50~75% Bed Expansion
pH range	1~14
Swelling, Cl <sup>-</sup> → OH <sup>-</sup>	≤ 18 %
Bed Depth(Industry)	0.7~3 m
Regenerant	NaOH
Regenerant Flow Rate	4~6
Counter Regeneration	3~5 m/h
Regenerant Contact Time	> 30 min
Regenerant Level	90~110 g/eq
Counter Regeneration	50~65 g/eq
Displacement Rinse Rate	3~6 m/h
Service Flow Rate	10~25 m/h
ZGA 313 FC	20~40 m/h

## HYDRAULIC PROPERTIES

### BACKWASH BED EXPANSION

After each cycle, the resin bed should be backwashed in volume by between 50 and 70%. This operation will remove it from any insoluble matter, clear the free bed from bubbles and voids, and reclassify the resin particles, ensuring minimum resistance to flow. Bed expansion increases with flow rate and decreases with temperature.

**Fig.1 BACKWASH BED EXPANSION**



## APPLICATIONS

### DEMINERALIZATION

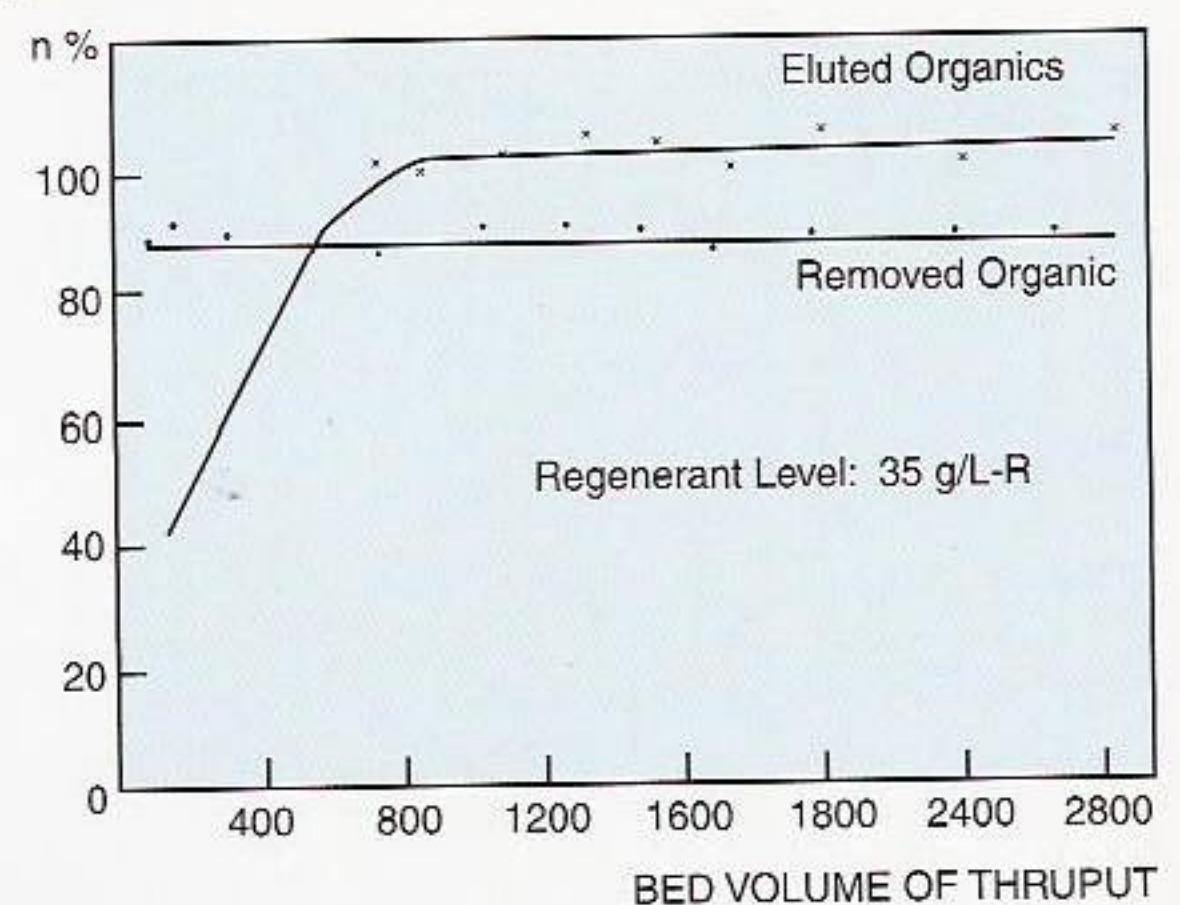
The main use of ZGA 313 is in the demineralization of water high level of organic matter when it is placed following a strong acid cation resin. The resin is often possible to dispense with an organic trap resin as a pretreatment because of its high operating capacity and high regeneration efficiency. Its acrylic structure provides an increased resistance to organic fouling compared with styrene based Type I anion resins. ZGA 313 is used in multiple and mixed bed demineralizers.

Another benefit of ZGA 313 is its efficiency for silica removal comparing to a conventional Type I strong base anion resin. Hence low leakage levels can be combined with high operating capacity.

### ORGANIC REMOVAL

Acrylic matrix and its higher porosity provide an increased resistance to organic fouling, regeneration efficiency and give it fast kinetics. Therefore, in waters high in organics, ZGA 313 may become the resin of choice.

**Fig.2 PERFORMANCE OF ZGA 313**



The graph above shows the net mass of organic material loaded on the resin is nearly equal to the net mass removed from the resin. This means that the resin has high ability for resistance to organic fouling.