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## DOW Ion Exchange Resins - Type 1 and Type 2 Strong Base Anion Resins Differences

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### What is the difference between type 1 and type 2 strong base anion resins?

Strong base anion resins are classed as type 1 and type 2.

Strong base anion type 1 resins contain a quaternized amine functional group, which is the more strongly basic functional group and has the

Greater affinity for the weak acids such as silicic acid and carbonic acid, that are commonly present during a water demineralization process.

Lower efficiency of regeneration of the resin to the hydroxide form, particularly when the resin is exhausted with monovalent anions, such as chloride and nitrate.

Particularly recommended for treating low FMA (Free Mineral Acid) water with high silica and where low silica leakage is required (~20 ppb in counter-current operation). The resin can be regenerated up to 50°C (122°F) for more effective silica removal.

Strong base anion resin type 2 functionality is obtained by the reaction of the styrene-DVB copolymer with dimethylethanolamine. This quaternary amine has lower basicity than that of the Type 1 resin, yet it is high enough to remove the weak acid anions for most applications.

The regeneration efficiency of a Type 2 resin is considerably greater than that of Type 1.

Chemical stability of the Type 2 resins is not as good as that of the Type 1 resins, the Type 1 resins being favored for high temperature applications.

Strong base anion resin type 2 is well suited for small plants, owing to its excellent regeneration efficiencies for water compositions where CO<sub>2</sub> and SiO<sub>2</sub> are <30% of the total feed anions.

Type 2 anions have a much better operating capacity and regeneration efficiency compared to Type 1,

Limited to lower temperature operation (<35°C/95°F caustic treatment) and have a higher SiO<sub>2</sub> leakage (~50 ppb in counter-current operation.)

### Additional Information:

[Fundamentals of Ion Exchange](#) (480KB PDF)

[Strong Base Anion Resins](#)

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