

# SPECIALTY RESIN



## PROBLEND™ SEMICONDUCTOR HIGH CAPACITY MIXED-BED RESIN

**ProBlend SC-HC (P/N ER30004)** is a premium grade mixed-bed made to reduce leachable TOC levels and ensure its ability to produce 18 megohm resistivity. The product is fully tested to ensure its ability to achieve 18 megohm resistivity. Each batch is tested to ensure it will rinse to below 50 ppb of leachable TOC in less than 50 bed volumes from start of service.

### FEATURES

- Conforms to paragraph 21 CFR173.25 of the Food Additives Regulations of the FDA
- Designed to provide ultra-high purity water
- Highest operating capacity
- Low effluent TOC values
- Superior thermal and physical stability
- Best choice for single use applications, cartridges, and for severe operating conditions

### Physical Properties

#### Functional Structure

Cation .....	RSO <sub>3</sub> <sup>-</sup> H <sup>+</sup> (Hydrogen form gelular sulfonated polystyrene copolymer)
Anion .....	R <sub>4</sub> N <sup>+</sup> OH <sup>-</sup> (Hydroxyl form Type 1 porous gel strong base alkyl quarternary ammonium polystyrene copolymer)

Physical Form..... Spherical beads

#### Screen Size Distribution

+16 mesh (U.S. Std.) .....	2% maximum
-45 mesh (U.S. Std.) .....	2% maximum

Moisture Content (as shipped) .... 60% maximum

#### Volume Ratio (as shipped)

Cation (Na <sup>+</sup> form) .....	40%
Anion (Cl <sup>-</sup> form).....	60%

#### Total Capacity

Cation (Na <sup>+</sup> form) .....	1.95 meq/mL minimum
Cation (H <sup>+</sup> form) .....	1.85 meq/mL minimum
Anion (Cl <sup>-</sup> form).....	1.40 meq/mL minimum
Anion (OH <sup>-</sup> form) .....	1.12 meq/mL minimum

Approximate Shipping Weight..... 43 lb/cu.ft. (720g/l)

Standard Packaging..... 5 or 7 cu.ft. plastic lined fiber drums

### Suggested Operating Conditions

#### Maximum Temperature

Non-regenerable \* ..... 175°F (80°C)

Regenerable ..... 140°F (60°C)

Operating Flow Rate (Typical) ..... 2 to 10 gpm/cu.ft.

pH Range..... 0 to 14

Backwash Rate (See graph on next page)

Pressure Drop (See graph on next page)

#### Metals Content (Typical ppm dry weight)

Iron (Fe)..... 100 ppm maximum

Copper (Cu)..... 50 ppm maximum

Lead (Pb) ..... 50 ppm maximum

#### Percent Conversions to Ionic Form

Cation H..... 99% minimum

Anion OH ..... 95% minimum \*\*

Anion Cl + SO<sub>4</sub>..... 5% maximum

Anion CO<sub>3</sub> ..... \*\* (See note below)

### Column Operating Capacity

0.60 meq/mL (13 Kgrs/cu.ft.) minimum to electrolyte breakthrough during initial cycle.

### Limitations

Extended exposure to strong oxidizers, such as chlorine, hydrogen peroxide, and concentrated nitric acid, degrade the structural backbone of the resin and should be avoided.

\* 6 month typical resin life at 175°F (80°C).

\*\* Hydroxides and CO<sub>3</sub> levels measured immediately after production and may change during storage and shipment due to adsorption of CO<sub>2</sub> from the atmosphere.

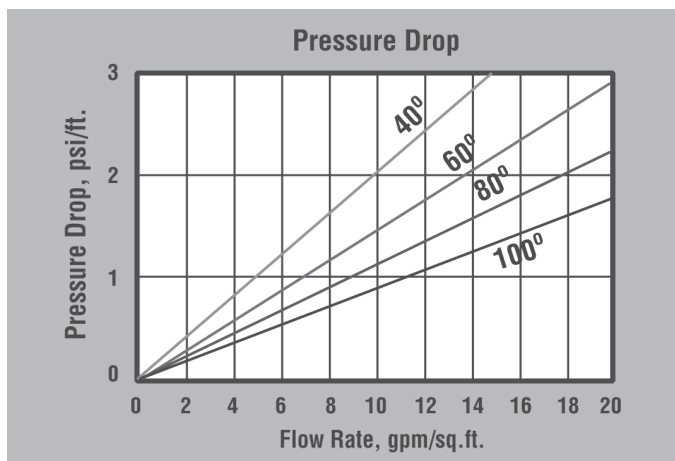
**CAUTION: DO NOT MIX ION EXCHANGE RESINS WITH STRONG OXIDIZING AGENTS.** Nitric acid and other strong oxidizing agents can cause explosive reactions when mixed with organic materials such as ion exchange resins.

Note: These suggestions and data are based on information we believe to be reliable. However, we do not make any guarantee or warranty. We caution against using these products in any unsafe manner or in violation of any patents. Further, we assume no liability for the consequences of any such actions.

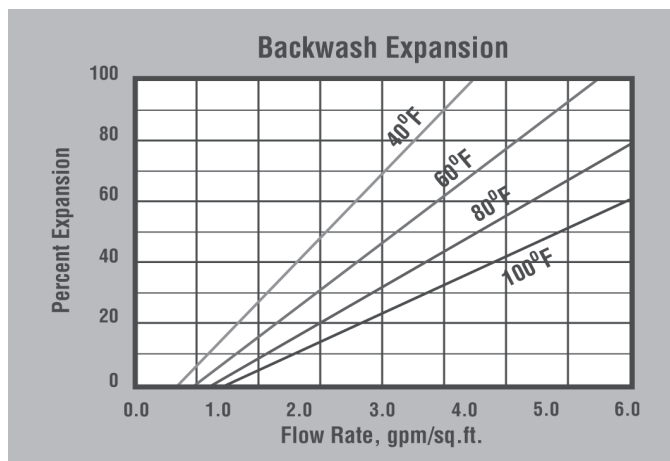
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**PRESSURE DROP** — The graph above shows the expected pressure loss per foot of bed depth as a function of flow rate at various temperatures.



**BACKWASH** — The backwash step is used to separate the components prior to regeneration and to remove particles. The separation is optimized at a bed expansion of 50 to 75 percent.

### ProBlend High Capacity Resins Comparison Table

Specifications	Nuclear Grade (P/N ER30008)	Semi-Conductor (P/N ER30004)	Low TOC Throw (P/N ER30005)	Ultra Low TOC Throw (P/N ER30009)
Resistivity in polishing 18 megohm water @ 60 bed volumes per hour (megohm)	> 15 **	> 18	> 18	> 18
Leachable TOC @ 25 bed volumes from start up (ppb as C) *	No Spec	No Spec	< 25	< 25
Leachable TOC @ 50 bed volumes from start up (ppb as C) *	No Spec	< 50	< 10	< 5
Leachable TOC @ 100 bed volumes from start up (ppb as C) *	No Spec	No Spec	No Spec	< 1

\* Leachable TOC measured at 0.5 bed volumes per minute at 175°F (80°C).

\*\* Influent greater than 1 megohm.