PUROLITE®
ION EXCHANGE RESINS

Case History

Beet Sugar Decolorization

A new Strong Base Anion-Type I macroporous resin, Purolite® D5168, for improved decolorization in a Japanese beet sugar company

Challenge

A Japanese beet sugar company had historically used our competitor's Strong Base Anion (SBA) resins for beet sugar decolorization in all of their plants. These products had worked satisfactorily, however the customer desired a new resin which could combine higher capacity for color removal and provide better economics.

The problem for this customer was that the already high sugar quality demands were becoming increasingly severe, while at the same time, economics declined. Another problem for them was that the crop yield and quality of beet raw juice were strongly affected by the weather each year. Warmer weather conditions in Japan in recent years have resulted in fewer crops and more impurities in the beet juice.

Solution

Purolite worked extensively with the customer to understand the problem and, as a result, developed a new strong base anion – type I macroporous resin **Purolite D5168,** with higher color removal capacity, specifically to meet the customer's objectives.

The customer conducted final confirmation tests on **Purolite D5168** in comparison with two major competitor's resins. Of importance, was the ability to use **Purolite D5168** not only for thick juice but also for thin juice decolorization.

Laboratory Test Conditions

- Resin volume: 60ml
- Regeneration: NaCl 215g/l + NaOH 10g/l at 2BV/hour, then rinse down by demineralized water at the same flux rate.
- Feed Syrup: 16 º Bx, 2600 ICUMSA, beet juice after softening
- Feed temperature: 80 ºC jacketed column, syrup fed at 6 BV/hr from the feed-tube which is soaked in an 80 ºC hot bath.

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Ref CH_D5168_15 March 11

Results

Note-1: Color (ICUMSA) of the treated solution

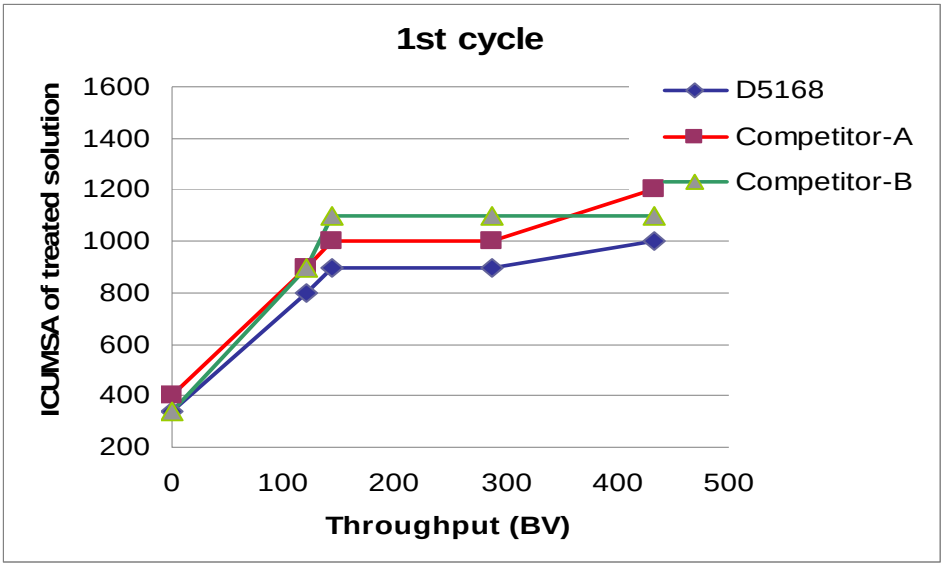

Fig-1: First cycle

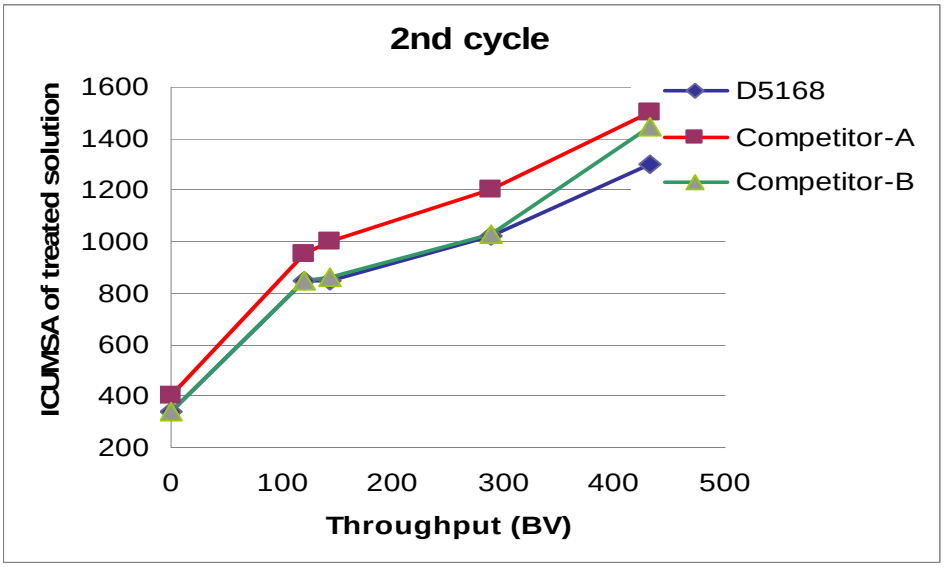

Fig-2: Second cycle

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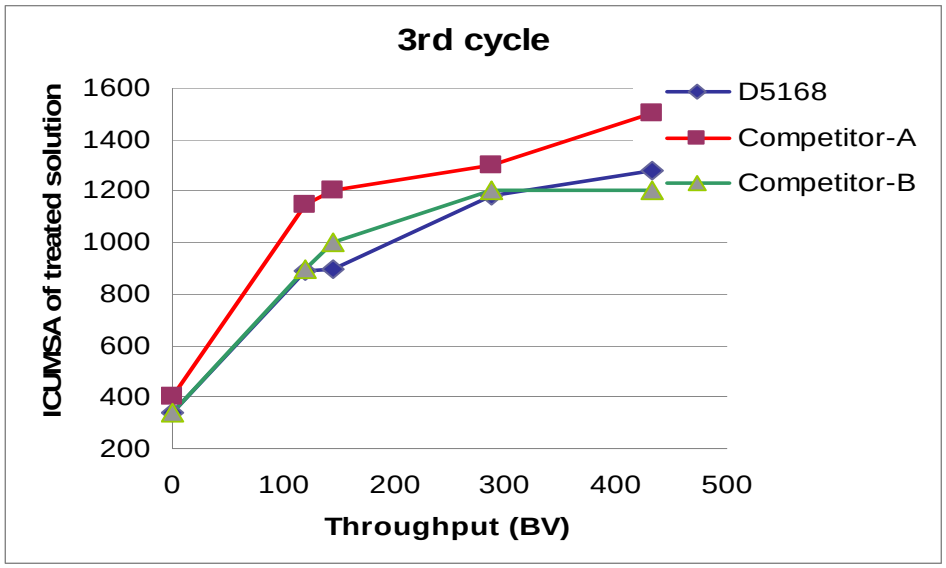

Fig-3: Third cycle

Note-2: Color removal % at each point through one cycle (3 cycles average)

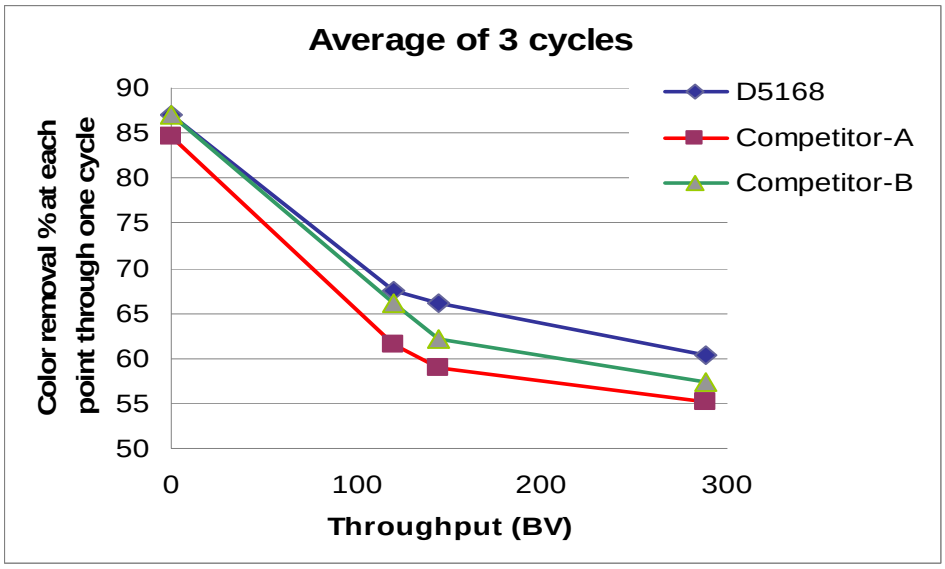

Fig-4: Color removal % at each point through one cycle (3 cycles average)

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Conclusion

Purolite D5168 was qualified for decolorization for this application by the customer. This new product was preferred because it demonstrated higher color removal capacity and durability than any of the competing resins. **Purolite D5168** was installed in this customers' plant and has been in successful operation since 2010.

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