



Redefining Sugar Refining

- > Environmentally
Responsible Production
- > Customized Products
- > Customer Savings



CSC Sugar, a leading North American sugar refiner and distributor, introduces a whole new paradigm in sugar. Our innovative approach starts with the finest raw cane sugar, streamlines the refining process to save water and energy while retaining natural antioxidants, and features strategically located micro-refineries to reliably deliver the highest quality sugar in a range of ready-to-use liquid forms. It's a model that delivers premium sugar with maximum efficiency, and the savings are passed along to you. **It's sugar made right!**

Today's changing world demands that sugar producers take a careful look at how their production methods contribute to energy use and wastewater. As an industry leader, CSC Sugar is implementing an important multi-pronged production and distribution strategy. Our innovative approach answers environmental and energy issues by supporting your company's environmental commitment as we take new steps to modernize the sugar industry.

CSC Sugar's new line of Sugarright™ liquid sugar products are manufactured in superior, modern micro-refineries close to your production operations. They are color indexed and pH adjusted to meet your specifications. Our selective separation process saves energy and reduces wastewater effluents.

- > Phosphatation, activated carbon and press filtration remove heavy metals, microbes and polysaccharides.
- > Extent of color removal can be adjusted to meet your unique requirements and to offer potential cost savings with our darker color products.
- > 1 micron polishing filter and UV lights guarantee a safe, clear, finished product.

Time to update your specifications

Our liquid sugar product offerings are expanding, giving you new choices. Keep in mind, many customers' liquid sugar specifications date back to a time when sugar supply

choices were very limited, energy was inexpensive, and the risks to our environment were largely ignored or unknown.

To reap the financial benefits of Sugarright liquid sugar products, some customers may need to rethink the total contributions that liquid sugar can make to their formulations.

CSC Sugar Selective Separation Method: A Reduced Carbon Footprint

It is difficult to find a major corporation in the United States that has not made a statement about its commitment to environmental sustainability. With the fluctuation in energy prices, a focus on global warming, and government tax incentives to "go green," CSC Sugar helps our customers to fulfill their stated environmental commitments.

For these reasons, CSC Sugar is implementing a highly refined selective separation production method to produce high quality liquid sugar products. This method provides:

1. Reduced energy costs by eliminating the evaporation and crystallization steps.
2. Reduced wastewater by eliminating the ion-exchange columns.

Elimination of Crystallization Step

Data from different refineries indicate that almost 50% of the energy in a refinery is used in the boiling and crystallization of the liquid sugar into granulated sugar. CSC Sugar has eliminated the crystallization step to significantly decrease the energy per ton needed to refine sugar.

Reduced Wastewater by Eliminating Ion-exchange Columns*

Typically, an ion-exchange decolorization plant, handling 1,000 tons of melt per day, will generate a total of 250-300 cubic meters of regeneration and rinsing effluents.

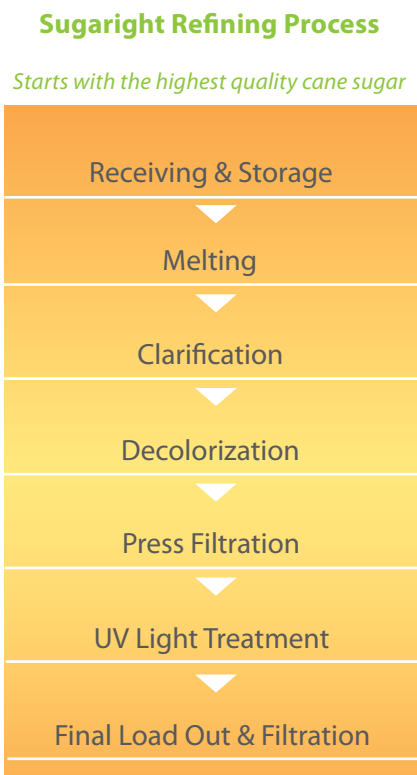
Both the resulting high color and high chemical oxygen demand (COD) usually prevent straightforward disposal of process effluent.

Even if a nanofiltration system is used to recycle the effluent, the concentrated, highly colored effluent stream is not easily disposed of into a public water system.

Additionally, the evaporators and vacuum pans needed to increase sugar concentrations from 62 to 68 degrees Brix require a significant amount of condenser water and more energy. The CSC Sugar process eliminates all of these steps associated with extra wastewater and energy.

* Chou, Chung Chi. Handbook of Sugar Refining 2000 John and Wiley, pg. 149

Comparison of Liquid Sugar Refining Methods



- ▼ Fewer processing steps.
- Less energy use.
- Lower water consumption.

Your Sugaright benefits!



Strategically located Micro-refineries

To fulfill our commitment to be more environmentally and energy conscious, CSC Sugar is implementing a regional micro-refinery strategy. Current and planned CSC Sugar liquid sugar plants are to be located in strategic regions, close to food manufacturing centers. Our micro-refineries put liquid sugar supply close to our customers' facilities.

Color is Good in Liquid Sugar

Natural cane sugar isn't white. During the traditional refining process, raw sugar color is reduced from over 2000 IU to as low as 10. Extremely low RBU liquid sugar is the result of energy-intensive sugar production methods, but not a measure of quality itself. As with white flour, lack of color can actually indicate over processing and reduced antioxidant content.

If your color specification is below 80 RBU, it could pay to investigate the origin of that requirement. Manufacturers are quickly discovering that higher RBU liquid sugar offers significant financial, nutritional and environmental benefits with essentially no downside.

As an example, a manufacturer of two very similar products discovered a wide diversity in their color specifications for liquid sugar of 35 RBU and 1,000 RBU. The color and flavor of the final products were actually controlled by other ingredients. After careful research and review, the customer determined there was no distinguishable difference when

using the higher RBU liquid sugar. The 35 RBU requirement had simply added extra cost to the formulation, and the specification was changed.

Aside from clear beverages and white or near-white foods, most food applications can easily accept a liquid sugar of much higher color with no detectable impact on the color or flavor of the finished product. CSC Sugar's selective separation process produces high quality liquid sugar with a range of color specifications. CSC Sugar can work with you to help select a color specification that is right for your finished product.

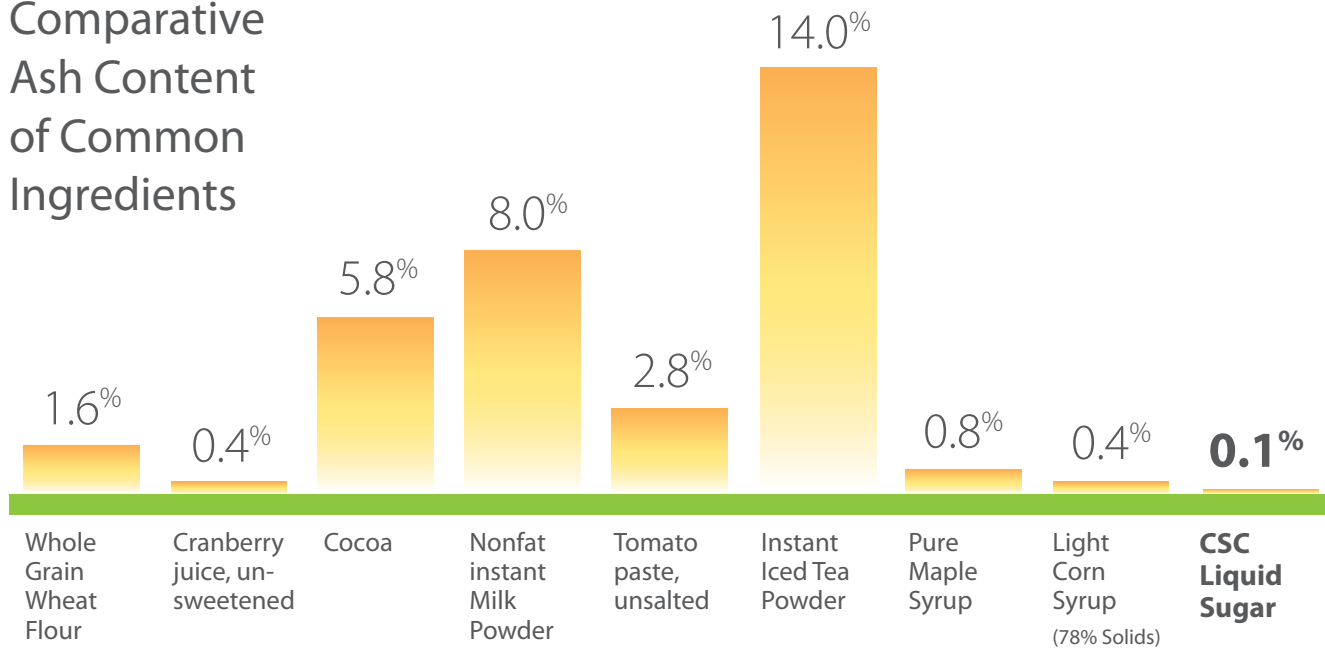
CSC Sugar can produce a wide range of liquid sugar from a low color, water white product, to a high color liquid depending on the product attributes required by the customer.



In most cases, the color of liquid sugar has no detectable impact on formulations. This is especially true if other highly colored ingredients are in the formulation.

However, the cost penalty of an unnecessarily low color value can be significant.

Comparative Ash Content of Common Ingredients



Minimal Ash in Liquid Sugar

Ash refers to the inorganic salts (mainly potassium, calcium, and magnesium) found in natural plants. These components come from the soil and are an inherent part of raw sugar. Tea, fruit, and chocolate all contain ash which is indistinguishable from the ash that occurs naturally in cane sugar. Some ash is removed during the milling process when sugar cane is processed. Sugaright liquid sugar contains comparatively low ash levels, as shown in the table above.

For most food manufacturers, this parameter has no correlation to the quality of their finished products. Nevertheless, the myth of low ash sugar has been perpetuated despite the fact that the ash content of other common ingredients far outweighs that of liquid sugar.

Source of Antioxidants

The color components of natural sugar cane are rich in antioxidants such as flavonoids and polyphenols. In fact, raw sugar contains ten times the amount of antioxidants found in refined white sugar*. Unfortunately, these healthful components are stripped away by traditional sugar refining processes. Many beverage manufacturers are now reformulating their products with antioxidants that add ash.

We believe that food producers can benefit from the natural antioxidants in sugar just as whole grain formulations have become increasingly desirable among consumers.

To fulfill our mission to offer healthier alternatives to our customers, we make a higher color/higher antioxidant liquid sugar for those applications where a darker color is acceptable and a healthier alternative is desired.

*Journal of American Dietetic Association, January 2009

Guaranteed No Acid Beverage Floc (ABF)

CSC Sugar guarantees no acid beverage floc will result from using our liquid sugar products. Research confirms that acid beverage floc occurs very rarely with cane sugar. Our production method removes any potential components that cause ABF and turbidity, while retaining beneficial cations and anions that do not have any adverse impact on the final product.

Food Safety and Quality

CSC Sugar is committed to food safety and quality. You can have confidence that these high quality and safety standards represent the core values of our business.

Supply and Control of Raw Materials

CSC Sugar works closely with our raw material suppliers to ensure they meet our specifications for quality and safety. All our operations, both domestic and international, are equipped with dedicated testing laboratories. The results are monitored online in our corporate office. This allows us to select the highest quality raw sugar for CSC Sugaright liquid sugar products.

Control of Finished Products

Besides continuous analytical testing of production samples to meet customer specifications for color, Brix, etc., retention samples are selected and analyzed at random for the following: heavy metals, pesticides and microbiological parameters.

SQF and AIB Standards

SQF and AIB are the basis of our methodology for developing standards and procedures, adoption and implementation. CSC Corporate Quality Management permeates the entire organization. All employees are empowered to constantly suggest ways to improve quality, safety, and customer satisfaction.

Our plants continually achieve AIB Superior ratings.

Hazard Analysis Critical Control Points (HACCP)

Our Hazard Analysis Critical Control Points map out the potential danger of chemical, physical, microbiological and allergen contamination for each type of processing or production process.

Good Manufacturing Practice (GMP)

All factory and storage space and equipment are designed or adapted according to Good Manufacturing Practice standards. The installation and design of new equipment must follow well-established procedures. Wood is avoided in all production areas. Cleaning schedules and cleaning products are strictly defined.

Identification and Traceability

CSC Sugar developed an automated, centrally managed identification system to guarantee the traceability of raw materials and processed liquid sugar.

Allergen Management

Because we rarely have any allergens in our production, the risk of unintended contamination is extremely low. Our liquid sugar contains no allergens.

Genetically Modified Organisms (GMO)

CSC Sugar uses only ingredients of non-GMO origin.

Kosher Certification

CSC Liquid Sugar is Kosher certified.

Transport

Strict rules and procedures are applied for the loading, transport, and discharge of our products.

Sugaright™ Liquid Sugar Products

Product	Description	Appearance	RBU	Brix	pH*	Ash
L450	Liquid Sucrose	Amber	< 450	67.5 +/- .3	6.0–8.5	< .10
L300	Liquid Sucrose	Light amber	< 300	67.5 +/- .3	6.0–8.5	< .10
L150	Liquid Sucrose	Dark straw	< 150	67.5 +/- .3	6.0–8.5	< .10
L100	Liquid Sucrose	Straw	< 100	67.5 +/- .3	6.0–8.5	< .10
L80	Liquid Sucrose	Light straw	< 80	67.5 +/- .3	6.0–8.5	< .10
L60	Liquid Sucrose	Light straw	< 60	67.5 +/- .3	6.0–8.5	< .10
L35	Liquid Sucrose	Near water white	< 35	67.5 +/- .3	6.0–8.5	< .10
MIS-L80	Medium Invert Syrup	Straw	< 80	77.0 +/- .3	4.0–6.0	< .10
MIS-L45	Medium Invert Syrup	Light straw	< 45	77.0 +/- .3	4.0–6.0	< .10

* pH can be adjusted to individual customer's needs.

About CSC Sugar LLC

CSC Sugar LLC is a leading importer of raw and refined sugar. We have substantial operations in both Mexico and the USA, providing high quality dry and liquid sugar products to our customers. We currently have dry transfer and liquid sugar operations in Texas, Missouri, and New Jersey, with more new micro-refineries planned for Pennsylvania, Illinois, and Texas. CSC Sugar is committed to producing the highest quality liquid sugar and invert syrup products.

For more information and product samples:

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