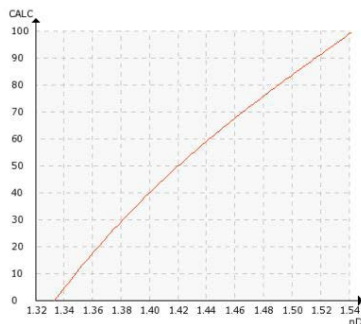


CANE SUGAR SYRUP, SWEET WATER

Typical end products

Sugar and syrup for sweetening soft drinks, beer brewing, preserves, beverage, sweets, liqueurs, ethanol, etc.

Chemical curve: R.I. per BRIX at Ref. Temp. of 20 °C



Introduction

Color is an important parameter in the sugar refineries. It is an important specification for raw sugar as well as for the refined products.

The decolorization process removes organic impurities, which impart color to the sugar liquor. These colorants are soluble impurities which are removed by adsorption processes. Typical adsorbents are granular activated carbon, powdered carbon and ion-exchange resins.

Ion-exchange resins are preferred as they can be regenerated chemically and wet, which reduces fuel consumption considerably, thus providing a significant economic benefit.

Application

The clear brown syrup passes through a series of columns, known as *ion-exchange columns*. The adsorbents can be for example, acrylic and styrene resin and granular activated carbon, but other resins and/or resin combinations can be used depending on the liquor quality.


The resulting light-colored syrup or fine liquor is used for white sugar crystallization or to produce bulk liquid sugar once it has been further purified.

The resins in the columns require periodical *backwashing* for their regeneration. After decolorization, hot water is pumped into the column and the discharge flow is directed to the sweet water line. Once regeneration is completed, the sweet water line is closed and decolorization continues.

Instrumentation and installation

Vaisala Polaris™ PR53 Process Refractometer is installed in the sweet water line for washing control. The refractometer accurately measures in real-time the concentration of the liquid to detect instantly the interface between the syrup and the washing water. Typical measurement range is 0-20 Brix and typical process temperature is about 60 °C (140 °F).

The refractometer's output signal can be used to control the operation of the discharge valve in response to the process. This allows automated control of the regeneration process, increasing yield and avoiding production losses.

Instrumentation	Description
	The Vaisala Polaris PR53GP Process Refractometer is a heavy-duty instrument with non-weld body construction for diverse applications. The optional flange-mounted pipe flow cell installation accessory allows flange-mounted installation in a wide variety of pipe sizes.
User Interface	Vaisala Polaris process refractometers are Indigo compatible. Expand features with Indigo, including data logging, wash control and settings, measurement parameters, diagnostics and service updates.
Measurement range	Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 Brix.

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