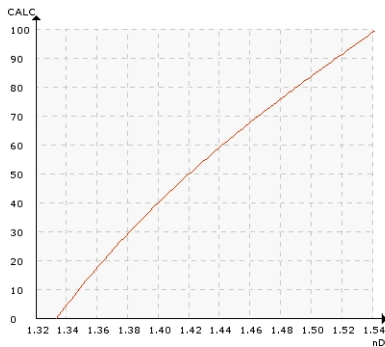


CANE SUGAR

Typical end products

Syrup, soft drinks, beer brewing, preserves, beverage, sweets, liqueurs, ethanol, etc.

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



Introduction

The thin juice (light colored syrup) is heated and pumped in to the multiple stage evaporators. The dissolved solids concentration is raised from an initial concentration of 10-15 Brix to 50-65 Brix. The concentrated solution is known as "thick juice".

Application

Normally the refractometer signal is used to adapt the feed of the thin juice to the capacity of the evaporation plant (using feed-forward control).

It is also possible to use the signal to regulate the quantity of thick juice added to the thin juice, thus keeping the feed concentration to the evaporation plant constant.

Evaporation in the multiple effect evaporation plant is more cost effective than in the crystallizer, which economically justifies an evaporation control system.

Instrumentation and Installation

The K-Patents Process Refractometer is not only used to monitor the final stage evaporator output, but also the intermediate stages. The K-Patents refractometer is used in a control loop that keeps the thick juice concentration constant by regulating the steam flow, or by regulating the amount of thick juice returned to the evaporator.

The K-Patents refractometer also helps to maximize the storage capacity by keeping the thick juice at as high a level as possible.


Some components or additives in the juice may coat the prism and an automatic steam wash is recommended for thin juice applications. Typical measurement range is 0-25 Brix.

In some plants, the thick juice contains supersaturated impurities (e.g. oxalic acid), which may crystallize on the prism. Therefore, an automatic steam wash is necessary. In some extreme cases, it is preferable to mount the K-Patents refractometer in

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a narrow by-pass line downstream of a small cooling heat-exchanger, where the impurities crystallize. Typical measurement range is 50-80 Brix.

Because of the digital sensing technology, the K-Patents refractometer is able to measure dissolved sugar and be unaffected by the presence of undissolved particles or crystals.

Instrumentation	Description
	<p>K-Patents Process Refractometer PR-23-GP is an industrial refractometer for large pipe sizes and tanks, cookers, crystallizers and kettles. Installation through a flange or clamp connection.</p>
Automatic prism wash:	<p>Prism wash with steam: The components of a steam wash system are a sensor with integral steam nozzle mounted at the sensor head, a shut-off valve for steam line and an indicating transmitter equipped with relays to drive the wash valves.</p> <p>Prism wash with high pressure water: The components of a high pressure water system are a sensor with integral water nozzle mounted at the sensor head, a high pressure pump together with a power relay unit and an indicating transmitter equipped with relays.</p>
Measurement range:	Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 Brix.