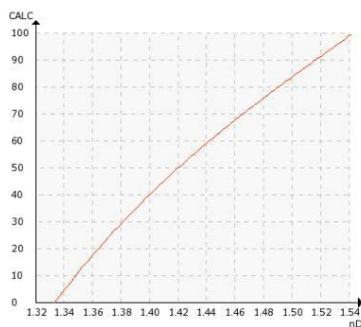


CANE SUGAR SYRUP, MOLASSES

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

Sugar is recovered from the syrup by repeated crystallization in vacuum boiling pans. The resulting mixture of crystal and liquor is known as the *massecuite*. The white sugar crystals are separated from the liquor in centrifuges and then dried in drum dryers. The residual liquor or syrup moves on to the next crystallization step.

At the last crystallization step, the low-quality sugar is circulated back for remelting and reuse, and the final syrup known as the *final molasses* is sent to recovery.

This residual product still contains a high amount of soluble sucrose. Sugar factories aim to maximize productivity by recovering the sucrose from the

molasses. Control of this process is of outmost importance as it is crucial factor in the economic viability of the factory.

Application

The final molasses is a heavy, viscous liquid with a high content of sucrose, but from which sugar can no longer be crystallized.

Some refineries sell the molasses as a valuable by-product for cattle feed or fermentation. However, because of its sucrose content, molasses can also be further treated with different techniques to recover more sugar, e.g. by ion exclusion or liquid chromatography.

Instrumentation and installation


Vaisala Polaris™ PR53 Process Refractometer is installed at various stages for monitoring and controlling the recovery operations. The refractometer measures sugar content in the entire range from 0-100 Brix, making it suitable for different applications such as:

1. Together with the SeedMaster SM-3, determining the seeding point and monitoring the drop of mother liquor concentration after seeding in the recovery pan.
2. Monitoring the final molasses to ensure that the concentration complies with the buyers' specification. Typical measurement range is 60-90 Brix.

3. Dilution control to maintain the concentration at a constant level and the control of separation for the molasses.

4. Monitoring the waste water line of a sugar cane refinery to detect inadvertent leakage of sugar into the waste water stream. Typical measurement range is 0-5 Brix.

The refractometer provides Ethernet and 4-20 mA output signals that can be integrated to the factory's control system for real-time process control. Accurate and reliable measurements help to maximize the recovery of sucrose and to maintain the economic viability of the factory.

Instrumentation	Description
	<p>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.</p>
<p>User Interface</p>	<p>Vaisala Polaris process refractometers are Indigo compatible. Expand features with Indigo, including data logging, wash control and settings, measurement parameters, diagnostics and service updates.</p>
<p>Measurement range</p>	<p>Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 Brix.</p>

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