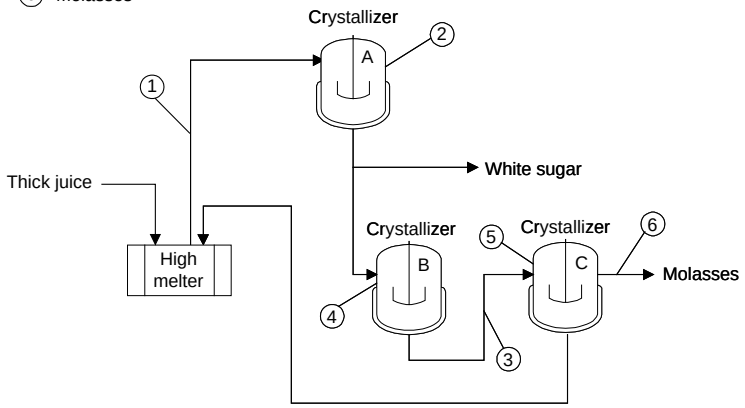
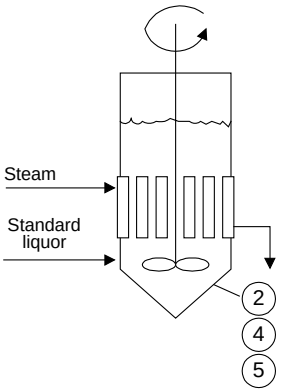
Beet Sugar Crystallization Control

Positions where K-Patents PR-01-S is used:

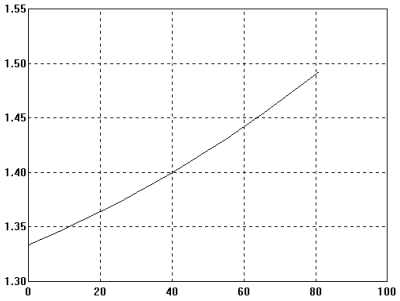
1. Standard liquor
2. White pan
3. Green syrup
4. Intermediate pan
5. Raw pan
6. Molasses





Beet Sugar

Chemical curve: R.I. by Brix



R.I. Ref. temp. 20°C

See also

Beet Sugar Production 1.01.00
Beet Sugar Extraction 1.01.01
Beet Sugar Evaporator Control 1.01.02
Beet Sugar Crystallization 1.01.04
Beet Sugar Green Syrup and Molasses 1.01.05
Desugarisation of Molasses by Chromatographic Separation 1.01.06

Introduction

Crystalline sugars are dissolved in the thick juice followed by filtrations in "thick juice presses". The filtrate is known as "standard liquor". The next step consists of crystallizing sugar from the standard liquor by pan boiling or in vacuum pans.

It is essential to use relatively low temperatures in this process to avoid sucrose inversion on caramelization. Crystallization continues until the crystals have reached the required size. This mixture of crystals and mother liquor is known as massecuite. This product then moves to a mixer and from there to centrifuges for removing the liquid phase. The crystalline material, after brief washings, is sent to a dryer and finally to the cooler.

Application

To achieve a uniform and repeatable crystallization the concentration of the standard liquor should be kept constant. K-Patents Process Refractometer, PR-01-S is used for this purpose to automatically control the addition of thin juice to the high melter. In the melter a lot of air is mixed into the liquid. For that reason K-Patents PR-01-S is the only way to measure standard liquor concentration.

K-Patents PR-01-S is also used in A-, B- and C-pans and in continuous crystallizers. The refractometer also determines the seeding point and monitors the drop of mother liquor concentration after the seeding.

Installation

K-Patents PR-01-S prism has to be swept by a flow. Several installation points are possible depending on the pan design. The probe has to be inserted into the main body of the massecuite, not into any sideline.

The ambient temperature may be high (>45ºC/113ºF) under the pan. In this case we recommend blowing ventilation air on the sensor head. It is also possible to circulate water in a coil around the sensor head.

The prism keeps clean due to the rubbing action of the crystals. The process liquid is supersaturated, but K-Patents PR-01-S probe is in the same temperature as the liquid so there is no problem with

incrustation. Typical range is 65-90 Brix, 80ºC (176ºF).