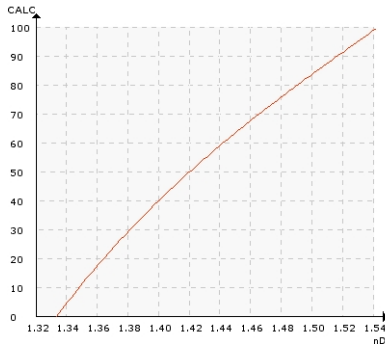


## CANE SUGAR

### 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 final stage in a cane sugar mill is transforming the concentrated syrup into crystals by using vacuum boiling pans. To manage this liquid-solid transformation process energy efficiently, it should be performed in stages. The final stage of the crystallization process is the C or D –pan, where saccharose can be extracted from the massecuite solution. The efficiency and control of this extraction is the priority.

Crystallization is initiated by seeding the concentrated liquor with very fine crystals. The

process is continued until the crystals reach the specified size.

The resultant mixture of crystals and mother liquor is fed in centrifugal separators and the sugar crystals are washed with hot water to remove any adhering syrup.

### Application

There are many variables in the crystallizer, which must be under constant monitoring and control (e.g. temperature, pressure, crystal size and supersaturation). To achieve a uniform and repeatable crystallization, the concentration of the standard liquor should be kept constant.

After seeding, the concentration of the mother liquor drops. A partial reason for this is that sugar is taken from the mother liquor to the crystals, and partly because some juice may be added to prevent spontaneous crystallization.

In this phase, control of supersaturation is critical to the final outcome of the stroke. The number of crystals should remain constant from the seeding during the crystal growing phase till the end of the stroke. If the supersaturation drop is too large, the crystals will stop growing and might even melt. If the supersaturation remains too high, new crystals will form spontaneously. Also too high a supersaturation will cause the crystals to grow in irregular shapes.

<b>SUGAR AND SWEETENERS</b>	
<b>APPLICATION NOTE</b>	<b>1.02.04</b>
<b>CANE SUGAR CRYSTALLIZATION</b>	

## Installation

The K-Patents Process Refractometers are used to determine the seeding point and to monitor the drop of mother liquor concentration after the seeding in the vacuum boiling pans.

The K-Patents refractometer is the only refractometer, which can measure the concentration of the liquid part without interference from the crystals.

The K-Patents refractometer sensor is installed directly into a crystallizer. The prism remains clean as a result of crystal friction. Typical measurement range is 65-90 Brix.

## Instrumentation



## Description

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.

Measurement range:

Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 Brix.