SWEETENERS: DEXTROSE, FRUCTOSE, GLUCOSE SYRUP, SORBITOL

Typical end products
Sweeteners for beverage, beer brewing, jams, preserves, sweets, confectionery, ice cream, liqueurs, pharmaceuticals, etc.

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

Introduction

The starch industry can produce sweeteners as a syrup or as a crystalline product.

Crystalline starch sweeteners are used in the pharmaceutical as well as food and beverage industries because of their unique sweetness and physical and functional properties.

Application

Cooling crystallizers are mainly used for the glucose and fructose syrups crystallization.

The solid level and temperature of crystallization depends on the type of carbohydrate. For example, fructose will only crystallize at 90 % dissolved solids.

The saturated syrup reaches supersaturation as the temperature slowly decreases. At this stage, the crystals start to form and grow. As the crystals grow bigger, the concentration of the mother liquid decreases because of the transfer of sweetener to the crystals. For optimal crystallization, the supersaturation condition must be maintained by addition of fresh syrup into the crystallizer.

Instrumentation and installation

Vaisala K-PATENTS® Process Refractometer PR-43 can be installed directly in the crystallizing pan for real-time control and monitoring of the liquid concentration.

The refractometer provides important information for keeping the supersaturation constant at its optimal level. If the supersaturation drops below its limits, crystallization will stop, if the supersaturation rises at a high-level, crystals outside the specifications will form. The refractometer ensures high quality crystals for improved productivity and decreased operation costs.

The refractometer is ideal for controlling and optimizing sweeteners crystallization as the measurement is not affected by the crystals or bubbles and is selective to the liquid phase.
Sanitary Probe Refractometer PR-43-AP for hygienic installations in large pipes, tanks, cookers, crystallizers and kettles and for higher temperatures up to 150°C (300 °F). The PR-43-AP refractometer is installed in the pipe line or vessel through a 2.5 inch or 4 inch Sanitary clamp, I-clamp, APV Tank bottom flange or Varinline® connection.

Process Refractometer PR-43-GP is a general industrial refractometer for pipes and vessel installations. The PR-43-GP can be installed with 2, 3 and 4 inch flange and 3 inch Sandvik L coupling process connections and a variety of flow cells for pipe sizes of 1 inch and larger.

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| User Interface | Selectable multichannel MI, compact CI or a web-based WI user interface options allow the user to select the most preferred way to access and use the refractometer measurement and diagnostics data. |

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