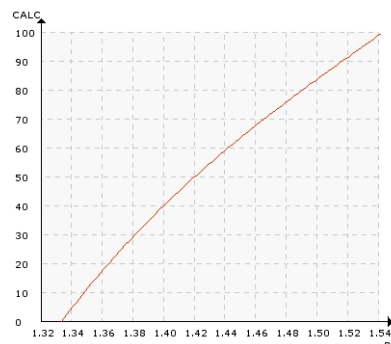


CARBONATED SOFT AND ALCOHOLIC DRINK MIX (CHUHAI)

Typical end products

Soft drink mix with whiskey, vodka or other alcoholic beverage, water and juice (grapefruit, lime, apple, orange, pineapple, grape, kiwi, peach, strawberry cream, cream soda), Chuhai.

Chemical curve: R.I. per BRIX at Ref. Temp. of 2-6°C



Introduction

Alcoholic and soft drink mix, e.g. Chuhai (an alcoholic drink originating from Japan) is prepared by mixing carbonated water flavored for example with grapefruit juice, and alcoholic beverage, such as

whiskey, vodka or shōchū (a Japanese distilled beverage).

Quality assurance using in-line process refractometer for fast and reliable product identification and set-point detection is important. Combining refractometer with automatic controls can minimize transmix of products, reduce waste, reduce the filling times, decrease safety risks, reduce sampling and minimize operator errors. A highly automated process is essential for achieving precise in-line alcoholic soft drink mix.

Application

Water, juice and alcoholic beverage, such as whiskey, enter the system via balance tanks. The ratio of the three streams is controlled by flow meters and a process controller. Immediately after this, final blending to a pre-set Brix value is achieved by adding a small amount of water by way of a separate line. Then, the juice is passed through a circulation line, located just prior to the K-Patents Sanitary Process Refractometer PR-43-AC.

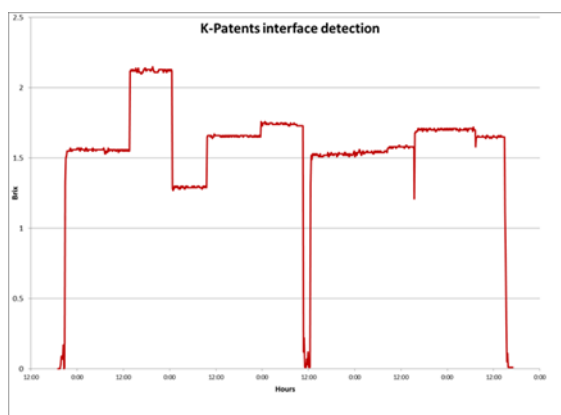
After the first batch is run through a pipeline to packaging, the pipes are flushed with CIP cleaning chemicals and water. In order to save valuable production time, the second batch is pumped through the pipeline right after the wash cycle. The K-Patents Sanitary Process Refractometer PR-43-AC instantly detects the product-to-product and product-to-CIP cleaning interfaces. The K-Patents PR-43-AC output signal is also used for quality control monitoring, ensuring a correct product and can or bottle combinations, and that the end product complies with specifications.

Installation

The refractometer can be installed in two process points:

1. Concentration control in the blending unit, where an accurate measurement of total concentration after adding all ingredients is important. Continuous in-line measurement provides important information that final product is within specifications
2. Product interface and product identification measurement in the pasteurizer to eliminate accidental mixing of the liquids. The product identification is based on Brix measurement. Each product has specific Brix with set limits. Refractive index and Brix is a reliable method for identifying products since each liquid has a different and distinct refractive index. This refractive index is a property inherent to the liquid, and can be used to "fingerprint" the product for identification. The K-Patents

Refractometer PR-43-AC is installed in the circulation line. It is angle mounted on the outer radius of a pipe bend, either directly or through a flow cell, a Sanitary clamp or a Varivent® connection. The typical measurement range is 0-15 Brix at a temperature of 2-20°C (35.6 - 68°F).



With the K-Patents PR-43-AC, a highly accurate concentration measurement can be achieved. Thus, re-blending or penalties due to lower than specified Brix levels are avoided and loss of concentrate due to an overly high Brix level are minimized.

The K-Patents PR-43-AC is 3-A and EHEDG certified to meet the highest hygiene requirements for beverage production. The K-Patents refractometer monitoring of product Brix allows for instantaneous and real-time filling station quality control.

Instrumentation



Description

K-Patents Sanitary Compact Refractometer PR-43-AC for small pipe line sizes of 2.5 inch and smaller.

The PR-43-AC sensor is installed in the pipe bend. It is angle mounted on the outer corner of the pipe bend directly, or by a flow cell using a 3A Sanitary clamp or Varivent® connection.

Measurement range:

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