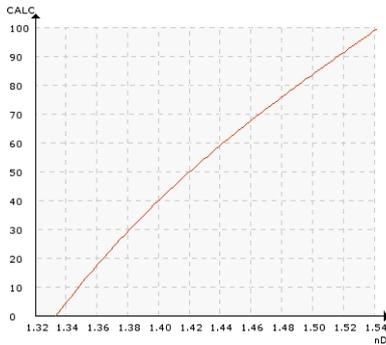


TEA EXTRACT

Typical end products

Instant tea, ready-to-drink tea

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



Introduction

Instant teas are becoming more and more popular due to their convenience in use and variety of tastes.

Application

In order to produce instant tea, active substances of tea leaves must be extracted from the tea leaf cells by means of aqueous extraction. It is important to preserve the soluble components since they are responsible for the taste, aroma and effect. There are also undesired insoluble components responsible for turbidity, thus they have to be removed from the tea extract by means of separators or decanters. After extraction and separation stages the 2-3 Brix extract proceeds to the concentration.

Tea extracts are heat-sensitive. When exposed to high temperatures, extracts may lose colour, flavour and active components. Thus, as an alternative to traditional thermal concentration reverse osmosis

(RO) membrane filtration of tea extracts has been introduced. Reverse osmosis, a membrane filtration process, is used to concentrate tea extracts at temperature of 25°C - 30°C (77°F - 86°F), thus causing no changes in the physical structure of water. Moreover, concentration by RO ensures high quality of products due to the maintenance of the extract aroma and flavour, as well as its nutritional characteristics.

Osmosis is a movement of pure water through a semi permeable membrane from a low to a high concentration solution. Reverse osmosis occurs when pressure greater than the osmotic pressure is applied to the concentrated solution. Water is then forced to flow from the concentrated to the diluted side, and solutes are retained by the membrane.

By means of the RO membrane filtration the tea extract is concentrated to 15-18 Brix. In order to comply with the stringent product requirements, the extract concentration control is performed with K-Patents Sanitary Refractometer PR-23-AC. If in compliance, the tea extract proceeds to spray drying after which it is refined with ingredients and sent to packaging as instant tea, or it is blended to ready-to-drink tea.

Installation

The K-Patents Sanitary Refractometer PR-23-AC is used to measure concentration efficiency. Typical measurement range is 0-20 Brix and the normal process temperature is 25°C - 30°C (77°F - 86°F). Process pressure is 20-30 bar. The K-Patents Sanitary Compact Refractometer PR-23-AC is installed in the pipe bent after the RO membrane unit

and before the tea extract is forwarded to the finalizing stage of the end product.

A prism cleaning system, using high pressure water may be recommended.

Instrumentation	Description
	<p>K-Patents Sanitary Compact Refractometer PR-23-AC for small pipe line sizes of 2.5 inch and smaller.</p> <p>The PR-23-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.</p>
Automatic prism wash:	Prism wash with high pressure water: The components of a high pressure water system are a sensor with integral water nozzle mounted at the sensor head, a high pressure pump together with a power relay unit and an indicating transmitter equipped with relays.
Measurement range:	Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 Brix.