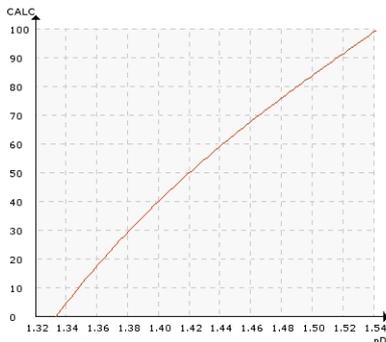


FIBERGLASS BINDER SOLUTION

Typical end products

Fiberglass

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



Introduction

Fiberglass, or glass fiber wool, is a material made from extremely fine short fibers of glass. These fibers are produced by spinning or blowing molten glass (silica).

Application

In the fiberglass wool manufacturing, an adhesive binding solution is applied to hold the fibers together. These binders are also used as a coloring agent for the product. This coloring provides brand identification in the highly competitive insulation materials market.

The fiberglass strands, which make-up the insulation “wool”, are produced at the forefront of the glass furnace by flowing a stream of molten glass vertically down through a circular ring. Then, air is blown through nozzles to atomize the molten glass into fine strands, onto which the binder is sprayed. The final bonded wool is collected and packaged to be used as insulation. The residual binder waste solution is collected and pumped back to a holding tank, where it is allowed to settle and is then filtered several times to remove particles.

Once the filtering process is complete, a dissolved solids measurement is taken to establish the quantity of the resin, ammonium sulfate, phenol and other components present, so the filtered residual binder solution can be accurately remixed into the fresh binding solution.

Installation

Spent binder solution cannot be released into the local sewage systems, due to the color agents being difficult to neutralize. Spent binder solution is therefore collected from the production lines for recycling.

The K-Patents Process Refractometer PR-23-GP is used to determine the amount of dissolved solids in the spent binder solution in order to control the quantity of fresh binder to be added. Knowing the spent solution concentrations makes it possible to

compute the appropriate amount of “new” binder in order to maintain the correct formulation. This reduces wastage, resulting in lower production costs. The binder is a water-soluble acrylic substance, which possesses a direct correlation between Refractive Index and binder concentration.

The K-Patents refractometer is mounted in the recycle line to the binder feed tank. The output signal

from the K-Patents refractometer is used to control the addition of fresh binder to the static mixer in order to maintain the final wash coat concentration at approx. 8-10% b.w. The process temperature is between 32 and 40°C (90-104°F).

An automatic high-pressure water prism wash system is recommended due the adhesive nature of the binder.

Instrumentation	Description
	<p>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.</p>
Automatic prism wash:	<p>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.</p>
Measurement range:	<p>Refractive Index (nD) 1.3200 – 1.5300, corresponding to 0-100 % by weight.</p>