TIP 0304-15

ISSUED – 1988
REAFFIRMED – 1992
REVISED – 1997
REVISED – 2002

TIP Category: Data and Calculations
TAPPI

Statistical process control of starch viscosity

Scope

Control of the viscosity of a starch-based corrugating adhesive is critical to controlling the operation of the corrugating process and to obtaining good corrugator runnability. A viscosity that is too high will be difficult to pump, will not flow properly in the pan and will not adequately penetrate the linerboard and medium surfaces. A viscosity that is too low will not be picked up properly by the applicator rolls and will penetrate the linerboard and medium surfaces too quickly. To obtain a true picture of the state of control over the starch preparation and corrugating process, statistical process control techniques should be employed.

Safety precautions

There are no safety precautions.

Content

There are many ways to set up an SPC, (Statistical Process Control), program on starch viscosity. The sampling procedures and SPC techniques suggested below are examples of how you might start.

Test methods

Many test methods are available to measure viscosity, but the method commonly used in corrugator plants is the Stein Hall Cup method. A thorough discussion of viscosity and a detailed description of this test method are given in pages 37 - 39 of “Corrugating Adhesives Preparation,” a TAPPI PRESS publication (2001). Briefly, this method consists of:

Equipment: Stein Hall Cup
Kitchen Strainer
Thermometer
Stopwatch

Procedures:

(1) Fill the Stein Hall Cup with adhesive through the strainer to bring the cup to the temperature of the adhesive. Pour the adhesive back into the tank.
(2) Fill the cup with the adhesive through the strainer again to overflowing to flush out the foam. Hold a finger over the orifice until the cup is full.
(3) Remove finger from the orifice.
(4) As the top pin in the cup becomes visible, start the stopwatch.