

## A typical system for blending SBS

**polymer** with liquid asphalt cement includes a box-dumping hopper, two mixing tanks mounted on load cells, a grinding mill to reduce the pellets in size and hasten the dissolving process and a pair of holding tanks for diluting to the final desired concentration.

The process requires elevated AC temperatures and finite control over the ratio of asphalt cement to SBS on a weight basis. The control panel is PLC-based to simplify the operation.

Due to the viscosity of the product, a large-diameter pumping system is desired to maintain production rates. Vertical tanks with mixers installed should be used for all polymer-handling applications.

**An Auger** is used to transport the SBS pellets from the hopper and into the mixing tank. Asphalt cement is metered into the mixing tank until a concentration of 12-15% is achieved. The mixing tank is mounted on load cells to obtain an accurate measurement of each constituent.

**The mixer** helps pull the pellets down into the liquid AC. This action "wets" the pellets and aids in dispersion prior to being circulated through the grinding mill at the bottom of the tank. The concentration level is maintained at a higher-than-use level to enhance the grinding efficiency.

**The grinding mill** shears the pellets into smaller pieces as they make multiple passes in a circulation loop. This speeds up the blending and dissolving process. The temperature of the mixture is normally 170 degrees C (340 degrees F) in the mixing tank.



**Each batch of concentrate** requires about 3 to 4 hours for processing. Therefore, it is normal to have two parallel mixing tanks in the process to increase the system's production rate. The two-batch process also lends itself to higher quality control.

**The grinding mill provides three functions.** First of all, it reduces the size of the pellets. In the grinding process, it adds heat to the mixture. Finally, it is used as the transfer pump to empty the mixing tank into one of the holding tanks.

**The holding tank,** or use tank, is fitted with a mixer to ensure that the polymer stays suspended. Virgin asphalt cement is metered into the holding tank to obtain a final mixture concentration of 3 to 4 percent polymer by weight. The holding tank is maintained at 170 degrees C (340 degrees F) for 45 to 60 minutes prior to being ready for use.

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