

## Quality Sealer Production – Colloid Mill vs. Batch Processing

One of the most important measures of quality for any emulsion based pavement sealer is the size and distribution of resin particles. This is true for refined tar, petroleum resin or asphalt based sealers. Ideally, resin particles should be between 3 and 10 microns in size and evenly distributed throughout the emulsion. The individual particles of resin should not coalesce (stick together) until water begins evaporating after application.

Small size and even distribution of these particles assures the applicator consistent viscosity (thickness) during dilution and application, especially with latex additives. Small, evenly dispersed resin particles also assures that the coating is most effectively able to adhere to the pavement surface, uniformly coat the aggregate and form a dense, waterproof film. These characteristics are critical to wear resistance, particularly when the surface is wet. Optimal particle size for resins in clay stabilized emulsion systems like pavement sealer is 3 to 10 microns.

It takes both mechanical and chemical energy to tear hard, sticky resins into such small particles and to keep them from sticking together before application. Chemical emulsifiers are used in both batch mixing and continuous process colloid mill production methods. Emulsifiers do aid, somewhat, in breaking down resin particle size, but their primary function is to keep the particles separated from one another in the finished emulsion.

The manufacturing method, and the mechanical energy it generates, is the greatest factor in achieving small, evenly distributed resin particle size. A colloid mill consists of a series of stationary, grooved chambers called stators. A series of heavy, sharp edged rotors turn within the stators at very close tolerance and very high speed, typically close to 2,000 rpm. The resin and other components of emulsion sealer are forced through the mill under pressure. This imparts tremendous mechanical energy, resulting continuously in a finished product with 100% of resin particles evenly dispersed and well within the 3 to 10 micron desired range for size. Batch mixing utilizes sets of paddles which stir the contents of a vertical or horizontal mixing tank at relatively low speed. It is a low shear process which does not generate sufficient mechanical energy to achieve the same result.

The Brewer Company uses only colloid mills to produce all of our pavement sealers. These mills are inspected, serviced and rebuilt on a regular basis. Combined with strict standards for quality assurance, rigidly adhered to, you can count on Brewer for the highest possible quality pavement sealer.