



# Precise size reduction technique processes paste 10 times faster

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*Size reduction mill in paste production operation*

### New Solutions to Plant Problems

**Problem:** The major blockage in the production of a veterinary pharmaceutical paste at Bayvet Div., Cutter Laboratories centered around the size reduction stage. After primary mixing of the formulation had been accomplished, the deagglomeration and homogenization processes were taking far too long to complete.

Rising demand for the product required speeding the process up. The size reduction function had to be accomplished quicker in order to deliver sufficient quantities of the product to the filling and packaging equipment. A three roll mill had been considered, but that did not provide the required size reduction action.

**Solution:** A size reduction unit was selected that uses centrifugal force to affect size reduction rather than a hammering or smashing action. Precision cutting is accomplished by high rotational speeds creating centrifugal forces that hold the product tightly against impelling faces. This allows the product to move into the cutting elements in precise increments. For the production of a paste, this was found to be more appropriate.

At the heart of the unit is a circular cutting head that contains closely spaced tungsten carbide blades. When the product to be reduced is spun about inside this circle of blades at speeds up to 13,500 rpm, centrifugal force causes the product to be pressed against the blades at several hundred times the weight of the product. Thus size reduction is accomplished.

The absence of random particle movement insures controlled, highly

efficient comminution. Using the principle of incremental shear, the size reduction unit controls particle size precisely. The number and angle of blades used in the cutting head can be adjusted to produce uniform particles through wide ranges of sizes down to micro-dimensions.

The sanitary stainless steel design of the unit makes it very easy to clean. Due to its one-pass nature, the process can be run without interruption and without requiring operator adjustment. The unit's small size and portability make it ideal for movement from one process to another based upon production requirements.

**Results:** The centrifugal force mill is 10 times faster than a three roll mill. Speed is important to Bayvet, not only to increase production of the product, but also to increase yield. Because the paste is a water-based product, the decrease in processing time cuts moisture loss from evaporation and therefore increases yield.

The results achieved with the centrifugal force size reduction equipment have been highly satisfactory. The deagglomeration and homogenizing processes have been greatly speeded up thereby increasing the output of the entire paste processing line. Bayvet is now investigating other applications where the centrifugal size reduction unit might prove advantageous. ■

*For additional information about the Comitrol® mill described above contact: Urschel Laboratories, Inc., P.O. Box 2200, Valparaiso, Indiana 46384-2200, USA. Telephone: (219) 464-4811, Fax: (219) 462-3879*