RECOMMENDED MIXING EQUIPMENT FOR
Wood Putties and Fillers

APPLICATION SUMMARY:

Wood putties and fillers are compounds used to hide woodworking imperfections such as holes, scratches and gouges. Many types are available in solvent-based, water-based and two-part formulations which vary in terms of stainability, drying rate, adhesion quality, shrinkage, texture, color, shelf-life and other characteristics.

Despite differences in composition, wood putties and fillers are essentially dispersions of various solids like fine sawdust, wood flour, clay, silica, calcium carbonate and pigments in liquid. During production, dispersing these ingredients and homogenizing the mixture is necessary to achieve the desired product properties and batch-to-batch consistency. Mixer selection is based on a number of factors but primarily viscosity profile, shear input and order of raw material addition.

Ross Multi-Shaft Mixers and Planetary Mixers

Ross Multi-Shaft Mixers are well proven in the manufacture of different types of wood putties and fillers. Equipped with two or more independently-driven agitators working in tandem, Multi-Shaft Mixers deliver a robust combination of high shear agitation and laminar bulk flow over a wide viscosity range. These systems routinely handle multiple recipes with great flexibility as the agitators can be engaged in any combination and at any speed for any interval.

The most economical design is the Dual-Shaft Mixer which features an anchor agitator and a high-speed disperser. Running at tip speeds around 5,000 ft/min, the saw-tooth disperser blade creates vigorous flow and imparts greater shear compared to conventional propellers and turbines. On its own, the disperser produces acceptable flow patterns for products up to around 50,000 centipoise (cP). The sweeping action of the low-speed anchor agitator extends the Dual-Shaft Mixer’s viscosity limit to several hundred thousand centipoise. Scrapers attached to the anchor help promote uniform batch temperature by enhancing heat transfer across the jacketed sidewalls and bottom of the mix can.

Finished product is commonly pressed out of the vessel by a platen-style Discharge System. This method allows for fast and efficient transfer of viscous and sticky materials while reducing waste. In the production of wood putties, utilizing a Discharge System effectively simplifies clean-up and helps prevent color contamination between batches.
Formulations that undergo very high viscosity peaks (above 1 million cP) are better prepared in Planetary Dispersers and Double Planetary Mixers. These machines consist of two or more blades which rotate on their respective axes as they revolve around the mix vessel. Unlike the agitators in a Multi-Shaft Mixer which rotate from a fixed axis, planetary-style blades continually advance into the batch and contact fresh product from different areas of the vessel all the time.

Combining slow-speed planetary agitation with an orbiting high-speed disperser, the Ross PowerMix Planetary Disperser quickly incorporates large amounts of solids into a liquid binder. Each agitator is independently controlled so flow patterns and shear rates are easily fine-tuned with every change in product rheology. The classic Double Planetary Mixer, on the other hand, is ideal for kneading highly viscous putty-like materials. Moving at relatively low rpms, the identical planetary stirrers impart increasing levels of shear as the batch gains considerable viscosity. A typical processing method in the Double Planetary Mixer is mostly high viscosity mixing followed by a let-down step towards the end of the cycle. Testing is recommended to confirm the best mixing strategy and equipment for a particular wood filler formulation.

For more information on Ross Mixers
visit www.mixers.com or click here to download a brochure.