

APPLICATION SUMMARY:

Bulk molding compounds (BMC's) are viscous, dough-like materials comprised of polymer resins blended with short reinforcing fibers, inert fillers, catalysts, stabilizers, pigments and other additives. A typical raw material for compression-molded and injection-molded composites, BMC's enable high-volume fabrication of complex shapes with dimensional stability and a variety of fine finishes.

Proper mixing is critical in achieving the desired physical properties in the final molded product. This bulletin discusses the benefits of preparing Bulk Molding Compounds in a well-designed Double Planetary Mixer.

DOUBLE PLANETARY MIXING OF Bulk Molding Compounds



Ross Double Planetary Mixers

The Ross Double Planetary Mixer (DPM) is a highly efficient machine used in the preparation of various bulk molding compound formulations. This type of mixer kneads viscous putty or dough-like materials by rotating two identical blades as they revolve around the vessel. The blades contact virtually every point of the batch, generating top-to-bottom and radial mixing even when the product is not free-flowing. Heavy-duty Ross Double Planetary Mixers equipped with High Viscosity "HV" Blades (US Patent No. 6,652,137) are particularly ideal for handling peak viscosities up to around 6 million cP.

A common procedure on the DPM begins with heating the resin and establishing vacuum on the mix chamber to remove entrapped air. Once the resin is at the proper temperature and fully melted (if starting as flakes or pellets), minor liquid and solid ingredients are added into the batch. Chopped fibers and inert fillers are normally charged in increments. This may involve pulling vacuum before restarting the agitators to eliminate any remaining air bubbles that could show up as voids in the molded part.

The DPM blades impart a very thorough but gentle blending action which helps prevent damage to the fibers. Each blade is easily removable by a quick disconnect pin and the mixer can run with only one stirrer. This feature is useful for wetting out fibers that are relatively long (1-2 inches). Such bulk molding materials benefit from low-speed mixing with just a single planetary blade.

Other Typical Applications of Ross Double Planetary Mixers:

- Abrasives
- Adhesives
- Battery Pastes
- Bone Graft Substitutes
- Conductive Inks
- Dental Composites
- Dilatant Materials
- Fiber Dispersions
- Filled Epoxies
- Granulations
- Heat Sink Compounds
- Lightweight Composites
- Lubricants
- Medical Pastes
- Metal Powders
- Pharmaceutical Gels
- Plastics
- Potting Compounds
- Refractory Cements
- Sealants
- Silicones
- Syntactic Foams
- Toothpaste
- Viscous Foods

**For more information
on Ross Planetary Mixers**

Visit www.planetarymixers.com
or click [here](#) to download a
brochure.



Some Advantages of Ross Double Planetary Mixers with High Viscosity “HV” Blades

- **Robust mixing power.** The Ross Double Planetary Mixer can handle many ultra-high viscosity materials that previously required a double-arm kneader. It provides an alternative that is much less expensive and requires less maintenance. The helical curve and graduated down-thrust cross-section of the HV Blades prevent batch materials from “climbing” up into the mixer cover and charging ports. The smooth mixing action of the HV Blades also eliminates the torque spikes experienced in other planetary mixers equipped with conventional rectangular stirrers.
- **Cleanability.** There are no shaft seals, bearings, packing glands and stuffing boxes submerged in the product zone of the Double Planetary Mixer. Agitators are raised and lowered by a hydraulic lift allowing easy and complete access for cleaning.
- **Change can design.** This feature further reduces the risk of cross-contamination between batches while allowing for semi-continuous operation when one mixer is used with multiple vessels.
- **Fast and easy discharge of highly viscous products.** A Discharge System supplied with the mixer simplifies and accelerates the transfer of a non-flowable product after the mixing cycle. With the mix can positioned beneath the Discharge System, a platen is lowered hydraulically into the vessel. A specially-fitted O-ring rides against the vessel, virtually wiping the sidewall surfaces clean. Product is forced out through a valve on the bottom of the vessel, or through the top of the platen.

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