



**PROCESSALL**

# Ceramics

**As the electronics industry grows so does the need to develop better ceramic substrates for capacitors, RF filters, and other electronic components.**

As the electronics industry grew and continues to grow, so does the need to develop better ceramic substrates for capacitors, RF filters and other electronic components. The problem with producing these complex extrusions lies in the need to accurately mix a number of very fine powders, precision coat these particles with the correct liquid or polymer, then knead these together to the correct consistency prior to extruding.

Mechanically fluidized bed mixing technology aligns itself very well with this type of process. Originally developed around the pharmaceutical industry, this mixer evolved where accurate mixes of different densities are necessary. The advantages supplied by a ploughshare mixer align well with complex applications like ceramic substrates, due to:

1. Precise mixes of different powders
2. Accurate mixing of very small components
3. The ability to accurately coat particles with liquids
4. Very short mix times

5. Superior ability to knead the product to final consistency
6. The ability to produce the complete product in a single vessel
7. The capacity to make multiple batches with exacting repeatability
8. High vacuum deaerating prior to extruding to provide solid, high quality extrusions

The fluidized bed action is a three-directional mixing action where the particle is "suspended" via mechanical energy, rather than vapor pressure. Mixing is quick and precise, as segregation cannot occur in active suspension. The inclusion of high shear mills and spray nozzles allow spraying liquids into high shear "coating areas". Particle coating happens quickly and efficiently, utilizing less liquid than with other methods. Due to suspension while being coated, particles stay coated after the mix. Deaerating happens by fluidizing the bed under very high vacuum. Within minutes, most to all vapors detach to provide a high consistency feed to the extruder.

These mixers can be equipped to dry off moistures under high vacuum before or after coating. The vessel jackets allow a heating media to circulate, warming the product to encourage liquid vaporization. Volatiles are then carried off through a filter in the vacuum system.

Material of construction includes stainless and nickel alloys, as well as non-metallic coatings. If you have any questions about ceramic substrates, please feel

free to contact one of our experts. Processall is a leading provider of chemical processing horizontal plow mixers, reactors, dryers,

Processall maintains a fully equipped testing facility in Cincinnati, Ohio designed to provide customers with the data they need to develop their process, evaluate equipment, scale-up and identify the necessary equipment to maintain desired production volumes. We extend an open invitation to all potential customers

to bring their product to our test center and get a "hands on" experience with our Technology and capabilities.



**Contact us today**

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