

The many faces of powder

An expert interview

WHY PROPERTIES MATTER

If we place different food powders next to each other, most people will think of them as – powders. But with their different contents and processing, we see those piles as the highly specialised products they are. We talked to our Technology Manager, Cris Beekman, about powder properties and why they matter.

Cris, many of our customers want a certain bulk density of their powders. What is it, and why is it important?

“Getting density right is a top priority for every producer. For example, we must balance a scoop of infant formula powder, so it contains an exact amount of nutrition. If the density is off, the baby can get too much or too little of something, which is the last thing anyone would want. On the other hand, if a producer makes industrial powders, they usually want higher bulk density to store larger volumes of powder in less space, which leads to more effective and cheaper transportation.”

Speaking of infant formula powders, consumers mix it with water. But almost all powders interact with liquids in one way or the other. What can you tell us about powders and liquids?

“Yes, that’s true. No one wants a powder that does not dissolve in water or other liquids. But some ingredients make powders hydrophobic, meaning they do not mix well with liquids.

What usually happens with those powders is that they fail to penetrate the surface and absorb water. In that case, we must increase the wettability of the powder to increase its reconstitution properties so it dissolves well. We can, for example, add lecithin to achieve that.”



The four main powder properties relating to liquid are:

- SINKABILITY
- WETTABILITY
- DISPERSIBILITY
- SOLUBILITY



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Another thing relevant to every powder is a smooth flow. How does flowability matter to different powders?

"For consumers, flowability is all about the experience. It just feels nice to look at a powder that flows easily. But it also makes it easy to get everything out of the package, meaning no powder sticking to the inside. From a processing perspective, we want the same thing. A poor powder flow can lead to clogging of pipes and powders not getting out of driers and silos. In general, it is trickier to improve flowability in fine powders. But by changing the nozzle gear or lance positions, we can make particle sizes smaller or bigger and work with agglomeration. That is one way to improve flowability."

So, the problem with clogged pipes is easy to picture. But why do we want to avoid powder getting stuck in driers?

"That leads us to scorched particles. Powder that sticks in driers can heat up and get burned. If they fall off and make it further down the production, it can discolour the powder. But they can also be a sign of a damaged nozzle leaking. The worst possible scenario is that scorched particles lead to explosions, something powder producers know is a top safety concern. So, it is important to monitor lances and their tips, and we use cameras for it."



Let's talk powder!

Powders are complex. The properties Cris got into here are just a fraction of what our technologists measure and adjust to arrive at powders optimised for their intended use. And when the powder formulation is in place, we have the expertise and equipment to scale up production. In other words – a complete powder offering. Keep exploring how we can make reality out of your powder ambitions through these links.

THE INTEGRATED EDGE

EXPANDING POWDER POTENTIAL.