

Tablet Coating Basics – Part 2



For quality output consider:

- ✓ Core tablet properties
- ✓ Spray solution prep
- ✓ Atomizing air pressure
- ✓ Suspension flow Rate
- ✓ Spray distance
- ✓ Pan air temperature
- ✓ Pan speed

Establishing critical process parameters for a coating process can be a little tricky as in some ways, the coating process is considered an “artform” but using science we can minimize the variables and the defects wherever possible by understanding the various parameters and how they impact the process and ultimately the quality of the final product.

This part aims to explore how *some* of the process parameters impact the product quality. As a precursor, refer to Tablet Coating Basics – Part 1 for an introduction to tablet coating basics.

Core Tablet

A good outcome is only possible if the physical and chemical properties of the core tablet are suitable for coating. Physically, this means appropriate hardness and low friability. Further to that, the tablet formulation must be stable and robust enough to allow adhesion of the coat to the tablet surface.

The aim of each of the setpoints below being to establish the appropriate balance between [wetting](#) and [drying](#) to ensure a smooth and uniform result.

Parameter	Examples of Common Defects Observed	
	Too High!	Too Low!
Atomizing air pressure	Logo bridging	Rough appearance Cracking film
Suspension Flow Rate	Rough appearance Picking and sticking Logo bridging	Surface/edge erosion
Spray distance	Rough appearance Colour variance	Picking and sticking Twinning
Pan Air Temperature	Rough appearance Picking and sticking	Peeling Logo bridging
Pan Speed	Cracking Surface/edge erosion Breakage	Picking and sticking Colour variance Twinning

Spray solution preparation method

The percentage of solids in the film coating solution and a consistent reconstitution method are critical to the spray process.

Atomizing air pressure

The atomizing air disperses the coating solution into droplets which effects the droplet size and distribution of the spray on the tablet surface.

For an adequate coat the droplets need to spread completely over the tablet surface. The correct atomizing air pressure creates smaller droplets which then decreases the surface roughness, better coalescence and smoother films.

Suspension Flow Rate

The rate at which the film coating suspension is pumped through the spray manifold is a critical parameter as it impacts the moisture content of the bed and the quality and uniformity of the film. If too fast the tablet over wets causing picking and sticking.

Spray distance

The distance between the spray nozzles and the tablet bed affects the efficiency of the application of the solution onto the tablets as the number of droplets spread and the droplet size at the tablet bed

Pan Air Temperature

The temperature of the air through the coating pan impacts drying efficiency of the tablets during the coating process.

Pan Speed

The pan speed in revolutions per minute that the coating pan rotates during the coating process influences the condition of the tablets in the coating pan by impacting the homogeneity of the tablets, the dwell time in the spray zone, coating thickness uniformity and tablet attrition