Fluid Bed Powder Coatings

In its simplest form, fluid bed powder coating consists of immersing a hot part into a bed of powder, allowing the powder to melt onthe part and build a film, and subsequently providing enough time and heat for this film to flow into a continuous coating. The following write up breaks this process down into its fundamental steps and also offers comments on generally accepted parameters.

Preheating

After proper metal preparation and cleaning, the part must be preheated enough to melt the coating and build a film. Most any method can be used such as convection, conduction, radiant, and induction heating. Forced air convection ovens generally have the greatest versatility when dealing with multiple part geometries. Other heating methods may be more practical for a specific part.

In determining preheating time and temperature, keep in mind that the fluid bed coating process depends upon obtaining and maintaining adequate part temperature. Keep the preheat time as short as possible to permit maximum production rates. Once a preheat temperature isselected, it is important to maintainthe time and temperature in the oven within a narrow range to achieve the same coating thickness on all parts.

Fluid Bed Coating Application

The part should be immersed inthe fluidized bed as quickly as possible after removing it from the preheat ovento keep heat lossat a minimum. A time cycle should be established to keep this time interval constant. While in the powder,the part should be kept in motionto keep powder moving over the hot part. The motion for a particular part depends on its configuration.

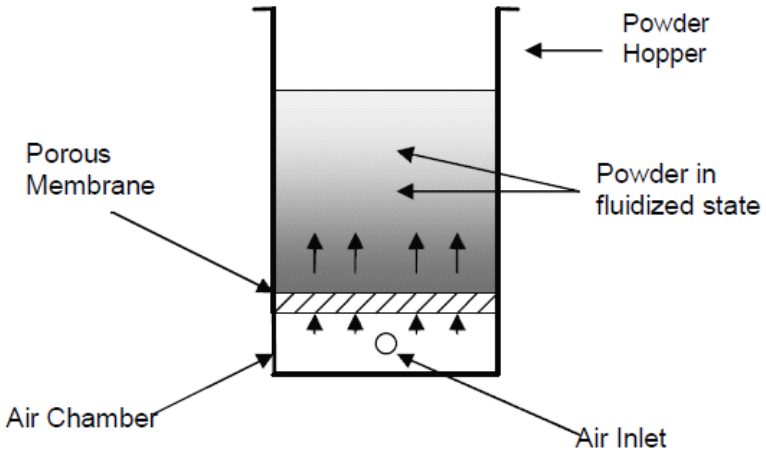
Improper or inadequate motion can be the cause ofseveral problems: pinholes, especially on the underside of flat horizontalsurfaces and at wire intersections. “orange peel” appearance. and inadequate coverage of corners or crevices. Improper motion also can lead to non-uniform coating thickness, such as an oval coating on round wires. Normal immersion time in a fluidized powder is three to 20 seconds.

Post Dip/Heat

Excess powder must be removed immediately after coating to prevent excessive build-up. This can be done with a blast of air from a regulated air jet, tapping or vibrating the part, or tilting it to dump off the excess. If the excess powder is not contaminated with other powder or dirt, it can be reused.

If the part has sufficient residual heat, the coating may flow out to acceptable levels without post heating. On thinner parts, or heat sensitive parts, a post heat maybe required. For most thermoplastic coatings,once the coating surface has achieved an acceptable flow out or “orange peel”, sufficient post heating has been completed. Longer post heat dwells waste time and energy and tend to reduceedge coverage. Many combinations of post heat time and temperature can be used to achieve good results. A high temperature for a short time might be equivalent to a lower temperature for a longer time. Higher temperatures have the advantage of being more economical due to the short dwell time inthe oven. Once out ofthe post heat, allow the parts to cool below the hardening temperature of the coating.

Fluid Bed Design



To avoid contamination, keep the fluidized bed covered when not in use. Cartons or drums should be covered when powder is stored. Using the fluid bed in an air filtered coating booth can help avoid contamination to the coating area.

For more information contact Anber Machine at (+86)-510-88239310, 13665199541 or email at lixiaoyan@china-anbermachine.com.