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Influence of process parameters on tablet bed micro environmental factors during pan coating

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Recent studies have shown the importance of monitoring microenvironmental conditions (temperature, relative humidity) experienced by the tablet bed during a pan coating process, thereby necessitating the need to understand how various process parameters influence these microenvironmental conditions. The process parameters studied in this work include exhaust air temperature, spray rate, inlet air flow rate, gun-to-bed distance, coating suspension percent solids, and atomization and pattern air pressure. Each of these process parameters was found to have an impact on the tablet bed relative humidity (RH), as measured using PyroButton data logging devices. A higher tablet bed RH was obtained with an increase in spray rate and atomization air pressure and with a decrease in exhaust air temperature, inlet airflow rate, gun-to-bed distance, suspension percent solids, and pattern air pressure. Based on this work, it can be concluded that the tablet bed thermodynamic conditions are a cumulative effect of the various process conditions. A strong correlation between the tablet bed RH and the frequency of tablet coating defect (logo bridging) was established, with increasing RH resulting in a higher percent of logo bridging events.

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