

# Novel Dry Powder Application of Anti-tack Agent Utilizing a Modified Wurster Spray Gun System

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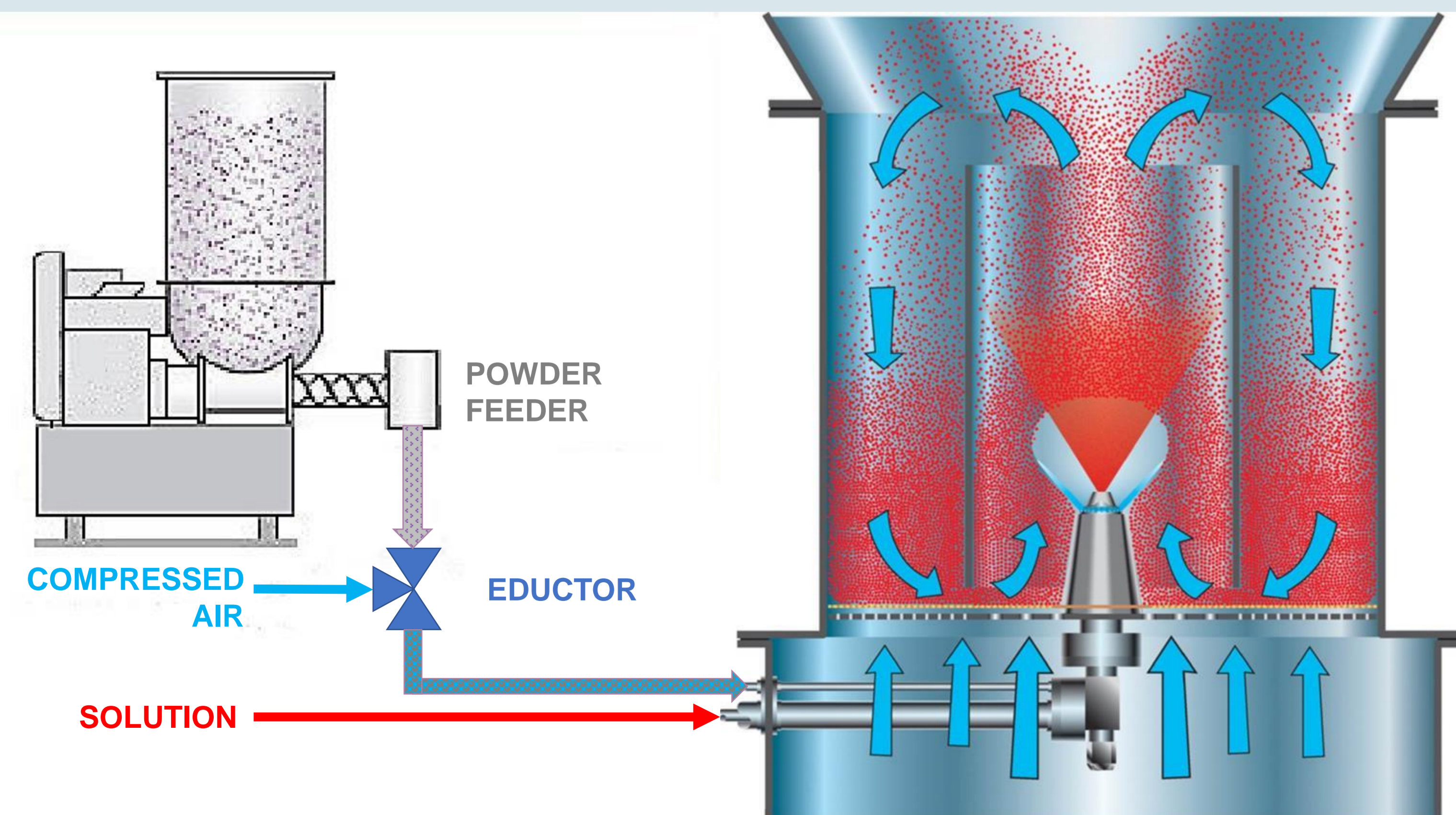
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## PURPOSE

Bottom Spray Wurster technology is commonly used as a method for applying functional coatings to multi-particulate substrates. Typically, anti-tack agents are added to dilute solutions or suspensions of polymer to reduce blocking during the drying of the polymer coat. Having to add anti-tack agents to the solution can create sedimentation and plugging in the solution lines. This study focuses on the scaling ability of a modified Wurster gun process to efficiently coat multi-particulate cores utilizing a polymer solution without anti-tack agents in solution, but with the anti-tack agents added via dry powder application through the modified Wurster spray gun.

## METHODS

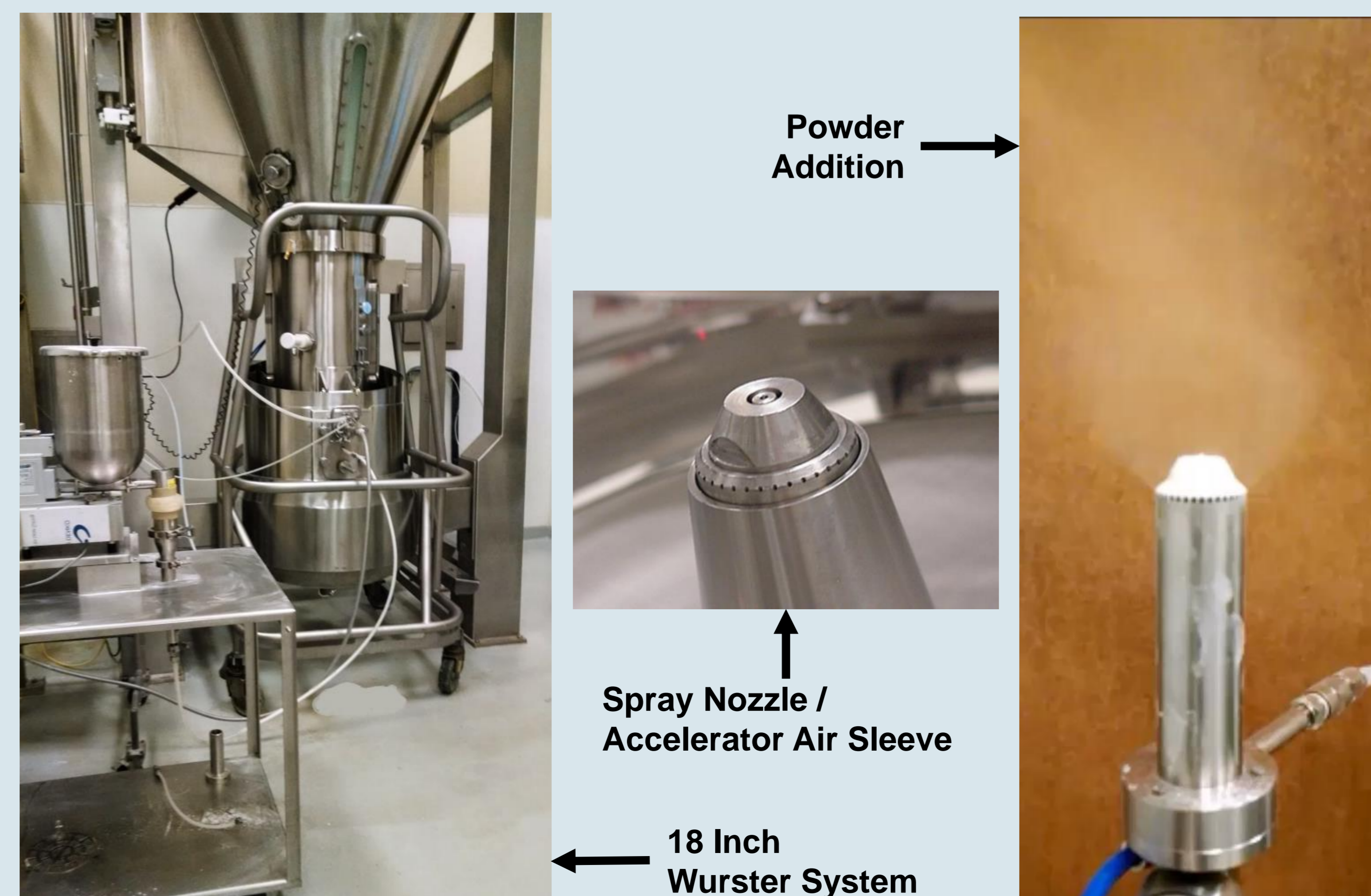
Multi-particulate cores used were 150-300 micron salts. An aqueous coating solution formulation of polyvinylidene chloride (PVDC) at 58% dry solids concentration was used. Batch sizes of 4, 40, and 250 Kg were processed in 8, 18, and 32 inch Wurster fluid bed systems (Freund-Vector). PVDC was applied to 20% coating weight levels. Talc (Spectrum) with a nominal size of 10-40 micron was applied at the lowest possible addition rate as the anti-tack agent. Application of the talc was done using a Wurster Accelerator Dry Powder Application System comprised of a powder feeder (KT-20, K-Tron), air eductor, and a modified accelerator air sleeve in the Wurster spray gun assembly. Process parameters are shown in Table 1. Samples from each scale-up trial were evaluated for salt release times.



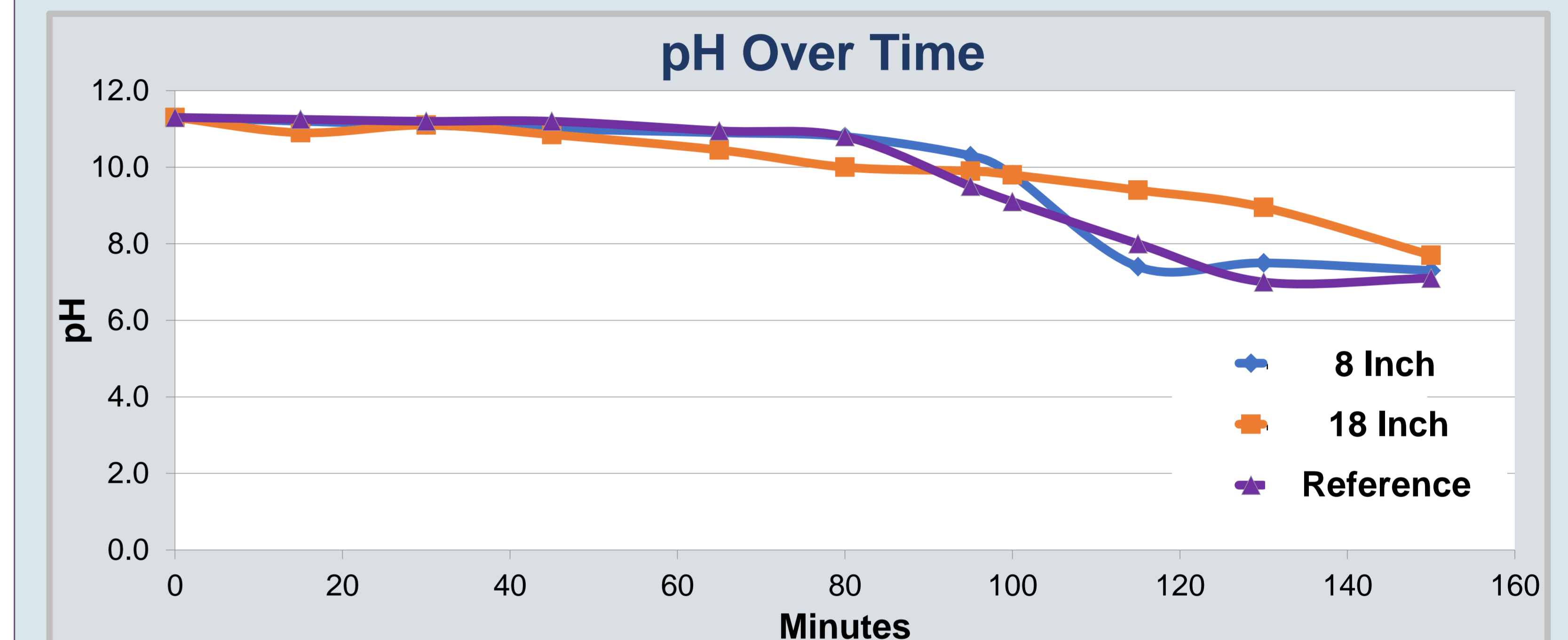
## METHODS

Table 1. Process Parameters

Parameter	8 Inch	18 Inch	32 Inch
Batch Size (kg)	4	40	250
Anti-Tack Solids Coating Solids	14 %	14 %	14 %
Product Bed Temperature (°C)	34	32	35
Inlet Air Temperature (°C)	40	60	50
Inlet Air Flow (M <sup>3</sup> /H)	135	1400	4400
Solution Spray Rate (g/min)	30	420	1100
Powder Rate (g/min)	2.5	35	130
Spray Time (min)	58	43	103



## RESULTS



- Efficiencies of 98 % were achieved on all three Wurster systems.
- Reduced level of anti-tack agent from 22–25% of coating solids in solution from previous production processes to 14% when adding anti-tack agent as dry powder.

## CONCLUSIONS

Using the modified Wurster accelerator air sleeve proved to be an effective method to apply the anti-tack agent as a dry powder for aqueous polymer solutions that require anti-tack agents. The efficiency of polymer application is as good, or better than conventional application methods in the scale-up batches tested. Increased productivity of coated multi-particulates that are equal or superior to conventional coating methods can be achieved using the Wurster Accelerator Dry Powder Application System.