Steam Micronizer®
Titanium Dioxide (TiO_2)

APPLICATION BULLETIN

BACKGROUND/ CHALLENGE

A global supplier of Titanium Dioxide (TiO_2) was seeking a jet mill that could disperse and deagglomerate their TiO_2 while expending the least amount of energy. Most importantly, the jet mill could not affect the color of the bright white pigment. The abrasive nature of TiO_2 wears parts down quickly causing the jet mill itself to contaminate the product by turning it grey or yellow depending on the materials of construction. Contamination can ruin whole batches of TiO_2 increasing maintenance and operating costs.

STURTEVANT® PERFORMANCE

Sturtevant operates a full-service testing facility to analyze material characteristics, verify results, and to aid in specifying the right equipment solutions. During testing the Steam Micronizer® had to operate with high feed rates and 20 times atmospheric pressure to perfectly deagglomerate the clumps. After thorough testing, Sturtevant recommended the 42-inch Steam Micronizer as tests indicated that the machine would cost-efficiently mill the material at the required capacity.

The customer took the testing a step further and compared the Steam Micronizer side-by-side with other jet mill manufacturers and the Steam Micronizer came out on top with the best dispersion and deaglommeration while using the least amount of steam energy.

EQUIPMENT RECOMMENDATIONS

STEAM MICRONIZER®

MILL SIZE	SUPER-HEATED STEAM at 550°F (288°C) and minimum 150 PSIG.	CAPACITY LBS/HR (KG/HR)
4”	140	2 - 10 (.9 - 4)
8”	325	10 - 50 (4 - 23)
15”	900	50 - 100 (23 - 45)
20”	1250	100 - 250 (45 - 113)
24”	2500	250 - 600 (113 - 272)
30”	4000	600 - 1000 (272 - 453)
36”	6000	1000 - 3000 (453 - 1360)
42”	8000	3000 - 5000 (1360 - 2267)

SUMMARY

The Steam Micronizer processed the customer’s TiO_2 without any moisture, allowing for a dry final product and the ability to process higher capacities per hour. Additionally, since steam comprises more density than compressed air, the machine milled the powder with greater velocity and increased throughput. The Steam Micronizer has several liner options, one being silicon carbide, a wear resistant ceramic, which handles the abrasiveness of the TiO_2 with minimal color pick-up, reducing maintenance costs. The Steam Micronizer preserved the natural whiteness and opacity of the TiO_2 for use in the customer’s end products, i.e. cosmetics, paints, coatings, plastics and paper.

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