

## APPLICATION BULLETIN

### BACKGROUND/ CHALLENGE

In order to achieve narrower particle size distribution of their product, a zirconia manufacturer needed an upgrade from their mechanical milling so that their finished result could be used in structural ceramics, color pigments, and more. Their current milling option could not produce the necessary particle size distribution or properly control the resulting particle size which translated into lower quality products and wasted resources.



### STURTEVANT PERFORMANCE

The manufacturer consulted with Sturtevant, Inc., a company with more than 60 years of experience in fluid energy milling. To analyze each customer’s stringent material requirements, Sturtevant operates a full-service testing facility to verify results and to aid in the specification of the right milling machine. As the inventor of the Micronizer Jet Mill, Sturtevant offers a complete line of jet mills in variety of sizes to suit any potential application.

Following meticulous testing, Sturtevant recommended a 20-inch Micronizer Jet Mill to best meet the manufacturer’s specific formula requirements. Importantly, Sturtevant engineers were able to demonstrate the Micronizer’s ability to produce a narrow PSD that could be precisely adjusted as needed. The manufacturer would find that effective micronization would create particles with a higher surface area, a uniform size, and optimum light scattering for pigment applications. Additionally, the Micronizer Jet Mill allowed for faster batch processing and the allowance for 100% collection of processed product.

### EQUIPMENT RECOMMENDATIONS

#### MICRONIZER<sup>®</sup>

MILL	ENERGY Requirements / Compressed Air /Gas SCFM (SCMH)	<sup>2</sup> bHP	CAPACITY LBS/HR (KG/HR)
2"	20 (34)	5	1/2 – 2 (.2 – .9)
4"	55 (93.5)	13	2 - 40 (.9 - 18)
8"	130 (221)	31	10 - 100 (4 - 45)
12"	260 (442)	62	3 - 250 (13 - 113)
15"	350 (595)	83	50 - 300 (22 - 136)
20"	550 (934)	130	100 - 1000 (45 - 453)
24"	1000 (1699)	236	250 - 1400 (113 - 635)
30"	1500 (2549)	354	600 - 3000 (272 - 1360)
36"	2250 (3822)	531	1000 - 6000 (453 - 2721)
42"	3300 (5607)	779	2000 - 10,000 (907 - 4550)

<sup>1</sup>-Volume of free air at 60°F (16°C), 14.7 psi compressed to 100 PSIG. Includes air consumed by feed injector nozzle.

<sup>2</sup>-Approximate HP necessary to generate 100 PSIG compressed air.

### SUMMARY

Several months after installing the 20-inch Micronizer Jet Mill, the performance ceramic producer had a higher quality product due to the ability to better control over the particle size distribution. The higher quality product paired with quicker batch processing and a higher collection percentage of the micronized product resulted in a higher profit margin with significantly less wasted materials.