

APPLICATION BULLETIN

BACKGROUND/ CHALLENGE

A large, very well-known chemical company was seeking a machine that could get their insecticide to a specific target Particle Size Distribution (PSD). The insecticidal action of a chemical compound is related to the size of its particles. Controlling the particle size of the insecticide allows the chemical company to target specific types of insects and in some formulas the management of PSD can protect unintended species. In this case, in order for this particular formula to be effective it was crucial to achieve a 40 micron particle size, too large to be absorbed by the protected insect, but successfully eliminate the target insect.

The considerations when developing pesticide products are both biological and physical. Most chemical companies will have a particle size distribution in the 5 to 15 micron range, but varies by formula.



STURTEVANT[®] PERFORMANCE

The chemical company consulted with Sturtevant, the company that invented the Micronizer[®], having over 60 years of experience with fluid energy milling. Sturtevant's Micronizer[®] jet mill was their top choice due to the company's experience, engineering and communication skills, along with their ability to test product specifications in their own lab. Sturtevant performed various tests with the customer ensuring that the 24-inch Micronizer[®] jet mill would meet their specific formula requirements. Sturtevant lab engineers were able to demonstrate the Micronizers[®] ability to produce a narrow PSD that could be precisely adjusted as needed.

EQUIPMENT RECOMMENDATIONS

MICRONIZER[®]

MILL	ENERGY Requirements / ¹ Compressed Air /Gas SCFM (SCMH)	² 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)

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

²-Approximate HP necessary to generate 100 PSIG compressed air.

SUMMARY

The Micronizer[®] creates fast acting formulas, where finer particles will produce more uniform and homogeneous mixtures that are easy to spread and will not clog spray nozzles. The powders will go into the solution in seconds and will not settle out over time. These products are very easy to handle and apply, and will target specific species of insects while still protecting the environment.