

## APPLICATION BULLETIN

**BACKGROUND/ CHALLENGE**

Every year, there is one scrap tire created per person in the U.S. In 2016, the U.S. Census reports there were 323 million people in the U.S., that's a lot of scrap tires. A tire's physical structure, durability and heat-retaining characteristics make scrap tires a danger to the environment. Scrap tires that are stockpiled (a common method of disposal) are prone to heat retention and can ignite, burning for months releasing toxic oils into the ground and harmful fumes into the atmosphere.



To alleviate the environmental burden of scrap tires, there are a growing number of companies that are tackling the issue of turning scrap tires into useful reusable materials. They begin at the pyrolysis process to break down scrap tires into reusable fuel oils and carbon char. One such company was at the point where they had carbon char and wanted to go further and reduce the char into finer and more usable carbon black.

Carbon black can be used in many products including the creation of new tires, other rubber products such as belts and hoses, as well as pigments, plastics and paints. This market is growing rapidly and this carbon char producer contacted Sturtevant to help them create high quality carbon black.

**STURTEVANT PERFORMANCE**

Through testing at the Sturtevant lab, the carbon char material was found to be a superior performer and was able to run high capacity on the Micronizer<sup>®</sup> jet mill. The open-manifold Micronizer was recommended after it jet milled the producers carbon char material to their target particle size of 3 microns of premium carbon black. Designed for high performance, which surpasses the fineness limit of many mechanical grinders, the Micronizer can consistently produce a narrow PSD that can be precisely adjusted as the producer needs.

**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**

By choosing the Sturtevant Micronizer, the carbon char producer was able to handle high capacity requirements with minimal downtime for cleaning and maintenance due to the jet mill's open manifold design. The resulting high quality carbon black with very low particle size and narrow PSD can now be utilized in the creation of new tires, plastics, inks and other materials. This will not only greatly increase the producers' profits, but will also help alleviate the environmental impact of scrap tires.

The demand for carbon black is expected to rise in the next 5 years. With the scrap tire recycling industry only growing, carbon char producers around the world can rely on the Sturtevant Micronizer to assist them in producing high quality carbon black.