

APPLICATION BULLETIN

BACKGROUND/ CHALLENGE

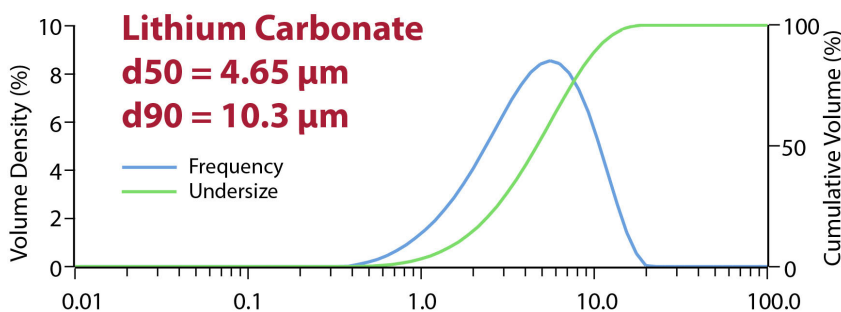
Lithium carbonate is used in a variety of applications including in the pharmaceutical industry as a treatment for bi-polar disorder, in glasses for ovenware and in the ceramic industry for glazes. It can be used in the production of cement, tile adhesives and in the processing of aluminum. It is also used commonly in most lithium-ion battery cathodes.



One of the recent growth markets of lithium carbonate is in electric car batteries. The production of electric cars is projected to rise to 9.4% of 102 million new vehicles in 2025. Analysts predict that by 2050, 81% of 132 million new auto sales will be electric. So in this burgeoning industry, high quality battery grade lithium carbonate will be extremely profitable for producers.

STURTEVANT® PERFORMANCE

For a lithium carbonate company in Argentina, Sturtevant supplied a FCM Classifier Mill to effectively produce an ultra-fine battery grade micronized product with a minimum d90 of 12 microns and a minimum d50 of 5-6 microns.



EQUIPMENT RECOMMENDATIONS

FCM AIR CLASSIFYING MILL

MILL SIZE	MILL CHAMBER		ROTOR DRIVE		CLASSIFIER DRIVE		ROTOR SPEED (RPM)	TYPICAL AIRFLOW	
	(MM)	(IN)	(KW)	(HP)	(KW)	(HP)		(m³/h)	(CFM)
FCM 100	100	4"	1.1-1.5	1.5-2.0	0.37-0.55	0.5-0.75	10000-24000	150	80
FCM 200	200	8"	2.2-3.8	3-5	0.75-1.1	1.0-1.5	6000-12500	400	250
FCM 350	350	14"	15-22	20-30	2.2-3.0	3-4	3000-8500	1400	800
FCM 500	500	20"	30-45	40-60	5.5-7.5	7.5-10	2500-5000	2600	1500
FCM 650	650	25"	45-75	60-100	7.5-11	10-15	2000-4200	4500	2700
FCM 800	800	31"	75-122	100-150	11-15	15-20	1500-3200	6500	3800
FCM 1000	1000	39"	122-218	150-300	15-22	20-30	1000-2600	12000	7000
FCM 1400	1400	55"	228-375	300-500	30-55	40-75	1000-1850	22000	13000

SUMMARY

The Sturtevant FCM Classifier Mill is the perfect solution for milling lithium carbonate to high value battery grade products. If the lithium carbonate is already in powder form and the dryer generates excess fines, a Sturtevant Superfine Air Classifier can successfully remove 30-40% of the powder as battery grade product before milling. In this case, a smaller FCM mill can then be used to produce similar battery grade product from the remaining air classified coarse lithium carbonate. By pre-classifying the lithium carbonate there is less capital cost and up to 50% less energy (HP) usage.

Another way to improve the milling efficiency of powdered lithium carbonate is by densifying it into granules with a Komarek roll compactor using only compression and no water or chemicals. This results in 15-20% less energy (HP) or higher mill capacity.