

Dust Control Studies with DustNot SYN on Pelletized Calcitic Limestone



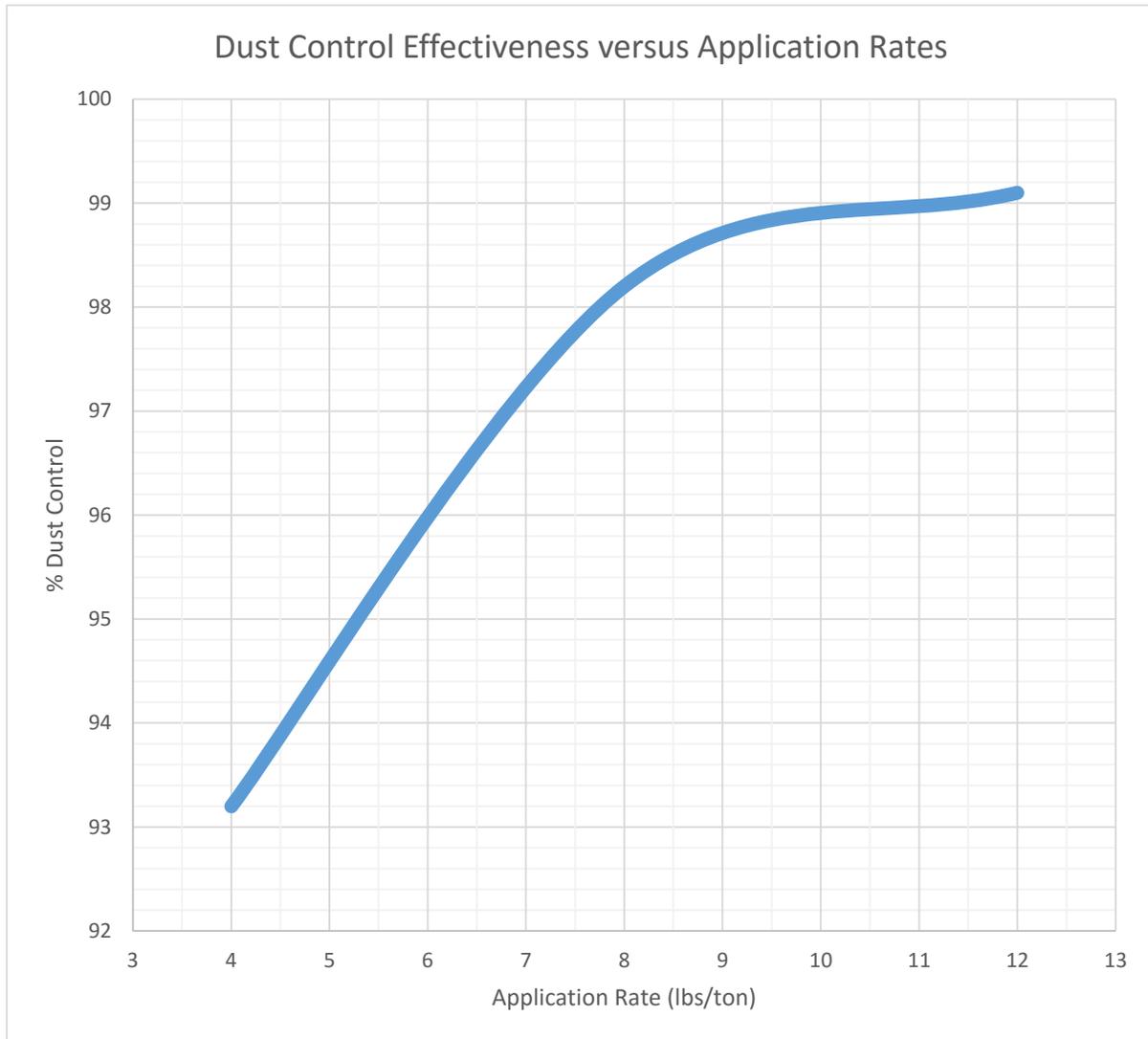
Problem: In this study, the customer is looking for an effective dust control solution to prevent fugitive dust during manufacturing, packaging, and consumer applications. Respirable fugitive dust control was valuable to the customer so that when consumer's received shipment of customer's products, it did not release airborne, respirable dust.

Solution: Full-body treatment of pelletized calcitic limestone with DustNot SYN. This product was chosen for characteristics such as reworkability, does not cause clumping/caking, effective at controlling dust, is colorless, will not affect the integrity of the pellet, is non-evaporative, and is biodegradable.

Results:

Dust Suppression Study Application Rates Used: Control, 4#/ton, 8#/ton, 12#/ton

Pelletized Limestone	Untreated (no dust control additive)	Treated at 4#/ton with DustNot SYN	Treated at 8#/ton with DustNot SYN	Treated at 12#/ton with DustNot SYN
Filter Paper Weight Before (in grams)	0.8584	0.8748	0.8647	0.8514
Filter Paper Weight After (in grams)	1.1820	0.8969	0.8706	0.8543
Fugitive Dust Collected on Filter Paper (in grams)	0.3236	0.0221	0.0059	0.0029
Dust Control (in %)	-----	93.2	98.2	99.1
Pictures from Dust Collector				



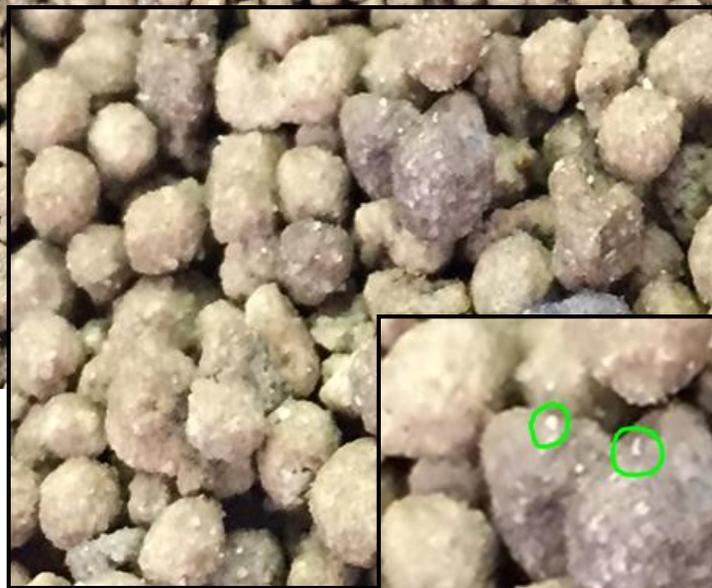
Dust control effectiveness was plotted versus application rates to determine how much DustNot SYN will have to be added to the material to provide a percent reduction in fugitive dust. To achieve at least 98% dust control, a minimum of 8 lbs. per ton should be applied to the material. At this application rate, very little fugitive dust was generated during material handling providing very effective dust control.

Observations



Untreated calcitic limestone produces a large amount of respirable fugitive dust. Notice the amount of dust accumulation on the sidewalls of the container. The limestone was passed through a dust tower where the amount of fugitive dust generated was collected. It was equivalent to generating 323.6 grams of dust per ton of limestone.

Very Little Dust on Sidewalls of Container



When calcitic limestone was treated with only 4 lbs. of DustNot SYN, the measurable amount of fugitive dust dropped drastically from 323.6 grams of dust per ton to only 22.1 grams of dust per ton. This equates to 93.2% dust control. Notice the accumulation of fine dust particles on the surface of the pellets.

Almost Zero Dust on Sidewalls of Container



When calcitic limestone was treated with only 8 lbs. of DustNot SYN, the measurable amount of fugitive dust dropped drastically from 323.6 grams of dust per ton to only 5.9 grams of dust per ton. This equates to 98.2% dust control. Notice the accumulation of fine dust particles on the surface of the pellets.



When calcitic limestone was treated with just 12 lbs. of DustNot SYN, the measurable amount of fugitive dust dropped drastically from 323.6 grams of dust per ton to only 2.9 grams of dust per ton. This equates to 99.1% dust control. Notice the drastic accumulation of fine dust particles on the surface of the pellets.

Conclusions and Recommendations:

DustNot SYN was evaluated as a possible dust control solution for pelletized calcitic limestone. To limit fugitive dust during manufacturing, packaging, and consumer applications, it is recommended that 8 lbs. of DustNot SYN be applied per ton (2000 pounds) of limestone. DustNot SYN, at this application rate, attracts limestone dust and causes it to cling to itself eliminating respirable fugitive dust at least 98.1%. DustNot SYN also does not affect the integrity of the pellet nor does it cause the limestone to clump/cake.

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