

Industry: Mining

Application: Dust Control

Product Descriptions: Spray Nozzles for Dust Control

Situation: Dust is a chronic problem at many stone or dirt quarries or mines. It can cause health problems, and damage equipment. In addition, it reduces visibility and makes working difficult. Bulk visibility is one of the measurements OSHA uses to determine if dust is not being adequately controlled.

BETE's solution: Controlling dust is a common application in which BETE nozzles are used. Dust control can take many forms. The two main categories are preventative and symptomatic:

Preventative dust control stops dust before it becomes a problem. Wetting piles and roads would be considered preventative dust control. Another often-overlooked method of prevention is controlling dust in process. This can be done by adding a small amount of water to aggregate or whatever material is likely to produce dust as it moves through a process.

Symptomatic dust control is dealing with dust once it is already airborne. This is usually only done when it is not practical to control dust preventatively. One example would be filling dump trucks from a pile with a loader. It is not practical to soak the pile such that the entire pile is damp, but a few well-placed nozzles around a filling point can reduce dust production significantly.

BETE Applications Engineers and sales representatives have visited many plants and mines where this is a problem, and have been able to offer successful solutions for various situations. With this experience, we have come up with the following guidelines to aid in the selection of appropriate nozzles:

Conveyor Transport:

NF Series

Adding 3.6 gallons water per ton of crushed stone (1.5% by weight) can greatly reduce the amount of dust generated during a process. This ratio seems to produce ideal results, controlling dust without creating mud or soaking the conveyors. This is best accomplished by using an appropriately sized 90° flat fan nozzle from our NF Series.



Technical Questions?

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Example of dust build-up on a drill

Symptomatic Control:

TF Series

BETE's TF Series is an excellent nozzle for airborne dust suppression. Generally, the TF6, TF8, or the TF10 is used for the best effectiveness. If spacing must be wider, or significant winds are anticipated, larger sizes may be used. There is some compromise between effectiveness and wind sensitivity, as finer droplets perform better, but are more sensitive to the wind. The table below outlines the performance characteristics of several common TF nozzles for dust suppression. There is no substantial difference between the maximum diameter generated from the 90° and 120°, although the 120° reaches its maximum sooner than the 90° pattern.



Nozzles	40 psi diameter	100 psi diameter	Maximum allowable wind speed
TF6	5'	4'	3 mph
TF8	6'	5'	7 mph
TF10	8'	6'	10 mph
TF12	10'	8'	15 mph
TF14	12'	10'	15 mph

Water Truck:

FF, SC Series

Our FF Series fan nozzles are quite popular for water trucks when coverage of a very wide area is necessary. In this type of application two ¾" FF 500 nozzles on either corner of the truck can make quick work of very large areas



(50' wide or more). For single lane wetting or smaller areas, appropriately sized smaller FF or NF nozzles do well.

Another effective use of a water truck is for wetting dirt or rock piles, which may produce dust. This can be done with a larger SC Series nozzle. This nozzle can spray an area to a height of approximately 25 feet.

