

# Decrease Dust and Increase Productivity

In 2016, the updated standards comprising OSHA's final ruling around dust collection went into effect. The revised document directs contractors on their responsibilities to prevent exposure to their workers from hazardous dust, including respirable crystalline silica.

**When the standards were initially proposed, OSHA stated their goal:**

... that contractor compliance will reduce occurrences of lung cancer, silicosis, chronic obstructive pulmonary disease and kidney disease in their workers.

Though OSHA's initial enforcement dates differed by state, by now contractors across the country must be in compliance, or face stiff fines.

The key provision of the now current standard is the limitation of the amount of dust to which a worker may be exposed. The current standard sets the permissible exposure limit (PEL) at 50 µg/m<sup>3</sup> (micrograms of silica per cubic meter of air), averaged over an eight-hour day. This is a substantial decrease of exposure from the previous standard's permissible level.

In the ensuing introduction period, contractors often had to revise their engineering controls to remain in compliance.



Fortunately, contractors have discovered that worker exposure to silica can be drastically reduced by using the new generation of power tools with a dust attachment/accessory and dust extractors.

**These accessories are effective when matched with the filtration system.**

## **A systems approach**

The suction power of a dust extractor depends on the type of equipment your workers will be using with it. When considering the purchase of a dust collection system for their work crews, contractors have learned to match the equipment to the task at hand. Common tools such as hammer drills, angle grinders, or concrete chippers can benefit greatly from the increased suction power, measured in CFM (Cubic Feet per Minute), on the power vac systems available today.

The dust extractor is the heart of any dust collection system. The unit's capacity, efficiency and durability establishes the scope of work for all the attachments it services. Some manufacturers have upped their suction power to 300 CFM. Contractors can benefit from these more powerful systems to complete common tasks more safely and efficiently.

## **Greater grinder efficiency**

Many of the OSHA standards include strict guidelines matching CFM to the size of certain equipment options. Thus a larger capacity vacuum with increased CFM can aid in jobsite efficiency while complying with OSHA rules. A good example of this competitive advantage is when selecting a dust collection system for grinding operations.

In the current standard, OSHA states that:

The dust collection system must provide at least 25 cfm of air flow per inch of wheel diameter and have a filter that has a 99 percent or greater efficiency and either a cyclonic preseparator or a filter-cleaning mechanism.

For most vacuum systems, this limits the worker to the use of a single 7" grinder.

With the introduction of [vacuums that are rated at 300 CFM](#), the worker has more options. The increased CFM of the dust extractor allows workers to select up to a 12" grinding wheel with the 300CFM unit. The larger grinder can increase productivity and reduce operating costs.





There's an additional benefit with the larger extraction capacity. The OSHA standards do not specify that only one grinder must be dedicated to a single dust extractor. This means workers can legally use a [Y-Connector](#) that allows the use of two grinders on one 300CFM dust extractor. Talk about productive!

## Increased debris removal

Larger capacity power vacuums help increase the operating efficiency of other tools. Today's demolition and drilling tools are designed to provide high-impact and breakout power upon engagement.



A common concern with these powerful vac systems is static electricity on the suction hose. Air and debris sliding against the inner surface of the hose can create a static charge build-up. Workers may experience slight shocks when contacting the hose. Several manufacturers have developed [anti-static suction hoses](#) that eliminate the potential of shocks upon contact.

## Cleaning anchor holes

Another important application where the size of the vacuum matters is the installation of [adhesive anchors](#). In most cases these holes are drilled dry. Just prior to the anchor placement, the installer must take time to ensure that all cuttings are removed from the drilled hole. If dust or cutting debris remains on the drilled holes sides, the bond between the adhesive or chemical may not be sufficient to support the anchors load. Clean drilled holes are also important when installing [mechanical anchors](#).

Installers use brush attachments to clean the hole's surface to loosen the cutting. On vertically or horizontally-drilled holes, the size of the vacuum is important. It can be difficult to evacuate the debris and dust.



To accelerate the anchoring installation process, several manufacturers have introduced a new style of drilling bit. These [hollow-core bits](#) use a shaft bored down the center of the bit to draw the dust and debris directly into the vacuum while drilling. The challenge with these systems is some holes have ridges so all the debris is not extracted.

Hollow core bits extract debris at the point of bit impact so the cuttings are drawn into the vac as soon as they are made. The result is reported to be greater bit life, faster drilling speed, and more efficient dust collection.

## The importance of filtration

An efficient filtration system is needed when upgrading the size of your power vacuum. The most current power vacuum units include two key features.

### Double Filtration

The first feature is double filtration. This allows greater extraction efficiency and extends filter life,



especially in construction settings. HEPA-certified filters must remove at least 99.97% of fine dust particles from the air, so Double Filtration aids in protecting the HEPA filter that serves that last stage of filtration.

### **Back-Pulse Filter Cleaning**

The second feature follows the OSHA recommendation that dust extractor be equipped with a back-pulse filter cleaning cycle. This feature allows the collection bag to collapse causing any dust debris attached to the filter to dislodge. Additionally, auto-cleaning mechanisms reduce the time workers need to perform required vacuum maintenance while improving the overall efficiency of the dust collection system.

### **Summary**

At the end of the day, effective dust collection systems allow contractors to stay in compliance with OSHA guidelines. By upgrading CFM rating, new tool design, and extraction attachments contractors can anticipate greater efficiency and improved quality performance on demanding tasks.

### ***digging deeper***

**See page 19** of OSHA's "Small Entity Compliance Guide"

<https://www.osha.gov/Publications/OSHA3902.pdf>