# Cover Your Bases When Combating Combustible Dust

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Combustible dust is fine particulate generated from products such as wood, metals, grains, chemicals, plastics, paper, and more. Manufacturers often pulverize, mill, grind, crush, macerate, and cut this bulk product, which in turn generates dust that settles on equipment and facility structure surfaces. If fire ignites in a contained area where combustible dust particles have accumulated, such as a duct system or overhead beam, the formula for an explosion is complete. While an initial blast can be devastating, it often stirs up additional dust that can ignite, leading to a secondary blast that can destroy an entire facility.

Fortunately, manufacturers can minimize their risk of injury and related costs as a result of combustible dust by implementing best engineering practices—practices which include a comprehensive maintenance plan. A solid first step in preventing a combustible-dust related accident, proper housekeeping, can also greatly reduce

the tragic effects of a secondary blast.

**Real Explosion-Proof Equipment**

Unfortunately, combustible dust is a loaded term, and no one cleaning method will work for all facilities. While many types of dust have the potential to ignite under the right conditions and in the right environment, certain particulates weigh higher on the combustibility scale than others. Facilities should be aware of the ignition sensitivity and explosion severity of their product. This information can be found by having the dust particulate tested by a private lab and also referencing a MSDS sheet. Combined, the results will determine the best way to tackle combustible dust and ensure that the proper safety procedures are used.

Traditional methods like sweeping and compressed air hardly combat fine dust. Not only are these processes time-consuming, they also create dust clouds and are limited in what they can clean. Instead, many manufacturing facilities often opt for low cost shop-style vacuums, sold on the shelves of local hardware stores. Although these vacuums might be useful for general cleaning of dust and debris in non-hazardous areas, using them to collect combustible dust can be deadly. The use of these shop-style vacuums may also violate the requirements set forth in OSHA’s Combustible Dust NEP, which calls for electrical vacuums used in dusty areas to be approved for the hazard classified location, as required under OSHA standard 1910.307(b). Naturally, most plant supervisors assume the machinery in their plants is explosion-proof, including industrial vacuums, but as seen in multiple tragedies, this often isn’t the case. In fact, using a vacuum that is not certified explosion-proof to collect materials classified explosive by the National Fire Protection Agency, actually adds to the risk of explosion.

An “explosion-proof” vacuum (EXP) is explosion-proof to the core. This means that everything from the outer shell to the internal mechanics including the motor, switches, filters, and inner chambers are grounded and constructed of non-sparking materials like stainless steel.

Purchasing an explosion-proof vacuum approved by a nationally recognized testing laboratory (NRTL) such as the Canadian Safety Association (CSA) or Underwriters Laboratories (UL) will protect buyers from purchasing a knock-off. NRTL approval provides legal certification that the vacuum can be used in a particular NFPA-classified environment, and ensures every component in the vacuum from the ground up meets strict standards for preventing shock and fire hazards.

**The Right Kind Of Clean**

Aside from purchasing the proper equipment, it is also critical that manufacturers are educated in all aspects of combustible dust preventative maintenance. For this reason, facilities may want to hire a contract cleaner.

Internal general housekeeping departments may not have the best resources to clean combustible dust, and many workers are unaware of the proper techniques to safely clean combustible dust and may even lack certification to operate critical machinery, such as high reach equipment.

When hiring an outside cleaning contractor, there are several things a facility manager should look for. Reputable cleaning contractors capable of cleaning combustible dust have undergone comprehensive training and are educated on the proper cleaning techniques set forth by NFPA and OSHA standards. Additionally, the certified cleaning contractor should have the proper industrial- and commercial-grade explosion-proof cleaning equipment. Since high reach and lift equipment will be utilized, the cleaning contractor must also have knowledge of the OSHA General Industry (29CFR1910) regulations, which address areas such as fall protection, hazardous communications, hearing protection, respiratory protection, and lock-out/tag-out protection.

High ceiling and surface cleaning, air conveyance cleaning, dust collector cleaning, conveyor belt cleaning, silo tank cleaning, lab fume hood cleaning, and dust control vacuuming are just some of the services that may be required to maintain combustible dust. These services help prevent airborne dust and particulates from accumulating in the manufacturing and production facilities. They may also help promote equipment longevity, decrease utility costs for operating equipment, increase the brightness of lighting, stabilize insurance rates, and allow a greater ROI on manufacturing equipment.

Facility owners should ask the prospective vendor to provide liability insurance and workmen’s compensation certificates and references. Also, once hired, facility managers will want to document the work by asking for “before and after” pictures

that display the quality of work, as well as a certificate of completion to present to insurance companies.

**Conclusion**

Investing in the proper cleaning equipment, combined with a reputable contract cleaner with the expertise to effectively combat combustible dust are solid steps in the right direction to prevent or minimize the effects of a combustible dust incident. Plant and facility managers should also keep in mind that housekeeping is just one part of the equation, and maintenance alone will not decrease the risk of occurrence. For this reason it is critical that employees and managers take all the proper steps to educate themselves, decrease their risks, and be adequately prepared should a combustible dust accident occur. For more information, visit www.explosionproof-vacuum.com [1] and www.imc.cc [2].

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