

Dust Collectors – Fire Protection for Woodworkers

From 2017 to 2019, there were 450 fires and 102 explosions involving combustible dust in the United States. These incidents led to 134 injuries and 9 fatalities.

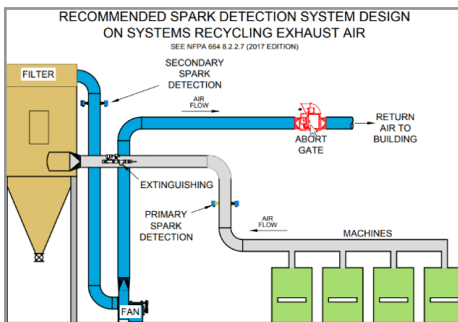
An NFPA compliant dust collection system, combined with an effective housekeeping program, is the most effective way to control dust and explosion hazards within your facility.

There are many types of dust collectors for woodworking facilities. These include cartridge dust collectors, baghouse dust collectors, cyclone separators, enclosure-less dust collectors, and portable dust collectors. These dust collectors must meet NFPA 664: Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities.

The basic requirements for dust collection systems are outlined below, however, the requirements for each type of system vary greatly. The best way to ensure your system is properly designed, meets all applicable standard requirements, and will be truly effective at minimizing your fire/explosion hazard is to work with a qualified dust collection engineer.

Dust collector must be located outside the building unless:

- It's deemed to have no fire or deflagration hazard.
- It's equipped with a listed deflagration suppression system.
- It has a capacity less than or equal to 2.36 m³/sec (5000 CFM).
- It's an enclosure-less dust collector that meets the standards of NFPA 664 9.3.4.7.



Spark Detection – Flame Suppression

- Dust collectors must be equipped with listed spark detection.
- Spark detection must be designed and installed in conformance with NFPA 72.
- It must be located on the duct upstream from the dust collector and downstream from the last material entry point.



Abort Gates

- Exhaust air ducts conveying recycled air back into a building must be equipped with high-speed abort gates to prevent hazard from entering the building.
- It must include a high-speed damper to divert sparks, flames, burning material, smoke, and combustion gases out of the system to a safe location.
- The gates must be activated by a spark detector.
- Reaction time varies, depending on the size of the duct.



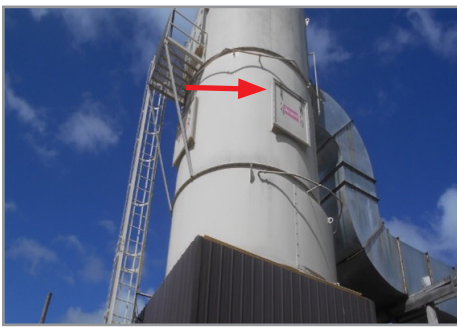
Back Draft Damper

- It's activated automatically in the event of an explosion to prevent the backflow of fire-laden air into the system.
- It's equipped with pressure-sensitive equipment to rupture when pre-determined pressure increases.
- It vents pressurized air into the atmosphere.



Chemical Isolation Systems

- This system is used to detect and suppress an explosion within the ducting.
- It protects the dust collector itself.
- It detects an explosion hazard within milliseconds and releases a chemical agent to extinguish the flame before an explosion occurs.
- It requires an annual inspection from a licensed technician.



Explosion Vents

- The vent opens when a predetermined pressure is reached within the collector.
- It allows excess pressure and flame to exit to a safe location.
- It's designed to minimize damage to the collector and to avoid injury to personnel by preventing it from exploding.



Rotary Air Lock

- This is a way to dispense materials, which include pellets, nuggets, dust, shavings, cuttings, etc., into an adjacent operation (for example, a bin, silo, hopper, conveyor).
- It allows the system to maintain pressurization.
- It Prevents the spread of deflagration to an additional fuel source in the dust container or process conveyor.

Housekeeping

- Clean surfaces of accumulated dust, such as rafters, top of equipment, hanging lights, ductwork, etc.
- Use only UL or FM listed anti-static vacuum.
- Wet sweeping is encouraged.
- A daily housekeeping log should be maintained.
- The use of floor sweeps is discouraged because metal could be sucked up and cause a spark in the dust collector.

Please contact your local West Bend loss control consultant with questions or for help identifying a qualified dust collection contractor.

