



PENNSYLVANIA LUMBERMENS MUTUAL
INSURANCE COMPANY

HAZARDS & PRECAUTIONS FOR WOOD DUST

Each year wood dust fires and explosions damage and destroy premises and plant operations. The mixture of small wood dust particles with air can form mixtures that become explosive in the presence of an ignition source. Such conditions usually occur within the dust removal equipment that can suffer the majority of damage in the event of an explosion or fire.

Wood dust is considered to be explosive if ignition of part of a cloud of wood dust results in the propagation of flame through the rest of the cloud. The vigor of flame propagation will vary from dust to dust and not all flammable dusts in a given concentration are explosive. The burning of an unconfined wood dust cloud produces a flash fire. If the wood dust is contained within a full or partial enclosure, the pressure buildup can create a destructive explosion. Such explosions can also result in dislodging the accumulation of wood dust that is present within building walls, ceilings, floors, and ledges. This dislodged dust can create a secondary explosion.

Additionally, wood dust will readily burn if ignited. Sources for ignition of wood dust include poorly maintained heating systems, overheated electrical motors, welding sparks, open wood burning, and discarded cigarettes.

It is safe to assume that all wood dust is potentially explosive and precautions need to be taken to reduce or eliminate the hazard. The most common sources for ignition of wood dust include naked flames, faulty or unsuitable electrical equipment and devices, and impact sparks. Ways to control these loss sources are briefly outlined as follows.

Sanding or hogging of cut-offs containing metal inclusions may produce friction sparks, which can cause saw dust to smolder and be subsequently fanned into fires or explosions. Dedicated collection systems for these operations should be used. Consider spark detection equipment and extinguishing devices where significant exposure to this loss source exists.

Hot work including careless use of welding or the use of flame cutting equipment is the source cause for many fires. PLM's welding and cutting program should be used for all cutting and welding operations.

Locate electrical equipment as far away from dusty areas as possible. If it is not practical to remotely locate the electrical equipment, make sure that it is adequately protected from physical damage and the buildup of sawdust around the equipment.

Provide dust control equipment to all dust producing operations to stop airborne dust from entering the workroom or plant areas. Review the design of the equipment to be certain that it incorporates explosion precautions. In particular look at the location of the collection equipment and the need for an enclosure or explosion relief.

Make sure that all plant equipment is properly serviced and maintained through a scheduled preventive maintenance program. Of particular importance is to keep ventilation ducts free from blockages and repair broken or damaged ductwork. Maintain filter units and other plant equipment regularly in accordance with the manufacturers recommendations.

Keep floor areas free from the accumulation of dust and wood chips. Pay particular attention to the areas around machines and on or near heating equipment. Clean building interior walls, ceilings, ledges, and other surfaces on a regular basis to prevent the buildup of sawdust. Use a vacuum cleaning system to clean with. Do not use compressed air for cleaning, this will create dust clouds and redistribute the dust.

If you have any questions regarding dust control techniques, please contact the Loss Control Department at 1.800.752.1895 or via email at CustServ@plmins.com.