Combustible Dust Requirements



Combustible or explosive dust from wood, metal, plaster, sugar or other sources is a serious safety hazard in many workplaces. As the name suggests, in sufficient concentrations, such dust can catch fire and even explode. For example, the ignition of combustible dust is believed to have been the cause of fatal fires and explosions in two BC sawmills. And a room filled with metal dust exploded at an auto parts factory in China, killing 75 workers and injuring 185. As a result, the OHS regulations in most jurisdictions contain specific requirements for addressing the hazards posed by combustible dust. Here's a look at those requirements. (Note that this chart contains the requirements that are specific to combustible dust, although other requirements, such as those that apply to fire hazards or flammable substances in general, may also apply to combustible dust. It also doesn't include requirements that apply to mines and mining only.)

KNOW THE LAWS: Combustible Dust Requirements

FED	*Canada OHS Regulations*: Where it isn't reasonably practicable to avoid performing work involving the use of any equipment, machinery or tool that may provide a source of ignition in an area that has an atmosphere that contains or is likely to contain explosive concentrations of combustible dust or in an area where combustible dust has accumulated in a sufficient quantity to be a fire hazard, the following shall apply: 1. the atmosphere and surfaces in the area where the work is to be performed and within that portion of the surrounding area that's accessible to sparks or pieces of hot metal produced by the work must be substantially free of combustible dust; 2. where any equipment, machinery or tool produces combustible dust that may reach the areas referred to above, the equipment, machinery or tool must be made inoperative prior to and during the time the work is being performed; 3. in so far as is practicable, the area where the work is to be performed must be enclosed to prevent the escape of sparks or pieces of hot metal produced by the work; 4. all openings in floors and walls through which sparks or pieces of hot metal produced by the work may pass must be sealed or covered to prevent such passage; 5. any combustible materials within the areas referred to above must be removed or, if this isn't reasonably practicable, must be covered with a non-combustible protective covering; 6. floors and walls of combustible material within the areas referred to above must be protected from the fire hazard by: a. drenching the surfaces of the floors and walls with water, or b. covering the floors and walls with a non-combustible protective covering; 7. the work must be performed under the supervision of a qualified person, who must remain in the work area while the work is performed and for 30 minutes thereafter; and 8. there must be readily available in the work area at least one hand-held portable fire extinguisher and: a. a water hose at least 25 mm in diameter that's connected to a water supply line, or b. a supply of not less than 200 L of water and a bucket [Sec. 17.11(2)].
AB	*OHS Code 2009*: 1. An employer must ensure that hot work isn't begun until testing shows that the atmosphere doesn't contain the minimum ignitable concentration for dust [Sec. 169(2)(d)(ii)]. 2. An employer must ensure that, before a welding or allied process is commenced, the area surrounding the operation is inspected and all combustible dust is removed [Sec. 171.1(3)(a)].
BC	*OHS Regs.*: 1. A dust collector having an internal volume greater than 0.6 m^3 (20 ft^3) and being used to control combustible dusts must be located and constructed so that no worker will be endangered in the event of an explosion inside the collector [Sec. 5.71(3)]. 2. If combustible dust collects in a building or structure or on machinery or equipment, it must be safely removed before accumulation of the dust could cause a fire or explosion [Sec. 5.81]. 3. A hazard assessment for a confined space or work activity to be performed inside a confined space must consider the potential for combustible dust [Sec. 9.9(2)(b)].
MB	OHS regulations don't contain specific combustible dust requirements (only requirements for flammable substances in general).
NB	*General Reg.*: 1. An employer must ensure that an industrial lift truck isn't operated, where propelled by an internal combustion engine, near areas containing explosive dusts [Sec. 216(2)(a)]. 2. No employee shall commence a welding, cutting, burning or soldering operation unless the employee has thoroughly inspected the entire area surrounding the area around the operation to ensure that all combustible dust has been removed from the area, if possible, or that adequate precautions have been taken to prevent fire or explosion [Sec. 275(1)].
NL	*OHS Regs. 2012*: 1. Where a work process releases finely-divided combustible dust within an enclosed area where workers are employed, effective dust control equipment must be used [Sec. 446(1)]. 2. A collector of combustible dusts, other than that of the liquid spray type, must be: a. located outside or in isolated enclosures removed from or protected against sources of ignition; and b. provided with explosion relief vents [Sec. 446(2)]. 3. Electrical wiring and equipment in a combustible dust collector and associated rooms or enclosures must be of the explosion-proof type [Sec. 446(3)]. 4. Where combustible dust collects in a building, structure, machinery or equipment, it must be removed before accumulation of the dust creates a fire or explosion hazard [Sec. 446(4)].
NS	*OHS General Reg.*: An employer must ensure that, before a welding or allied process is commenced, the person who's to operate the equipment has inspected the area surrounding the operation to ensure that adequate precautions have been taken to remove from the area all hazardous material or processes that produce combustible dust [Sec. 111(1)(a)].

NT	*OHS Regs*.: 1. If flammable or explosive dusts are or could be present in a hazardous confined space, an employer must ensure that all sources of ignition are eliminated or controlled [Sec. 281(6)]. 2. An employer must ensure that suitable procedures are developed and implemented to prevent the ignition of explosive dust that□s present at a work site [Sec. 401(a)].
NU	*OHS Regs*.: 1. If flammable or explosive dusts are or could be present in a hazardous confined space, an employer must ensure that all sources of ignition are eliminated or controlled [Sec. 281(6)]. 2. An employer must ensure that suitable procedures are developed and implemented to prevent the ignition of explosive dust that□s present at a work site [Sec. 401(a)].
ON	*Industrial Establishments Reg.*: 1. An explosive actuated fastening tool must not be used in an atmosphere containing flammable dusts [Sec. 36(1)(l)]. 2. A process that□s likely to produce a dust to such an extent as to be capable of forming an explosive mixture with air must be carried out in an area that has provision for safe disposal by burning under controlled conditions or in an area which: a. is isolated from other operations; b. has a system of ventilation adequate to ensure that the dust doesn□t reach a hazardous concentration; c. has no potential sources of ignition; d. has provision for explosion venting; and e. has, where applicable, baffles, chokes or dampers to reduce the effects of any explosion [Sec. 63]. 3. Where the hazard of a dust explosion may be created by the entry of foreign particles into equipment, the equipment must have separators that prevent such entry [Sec. 64]. 4. Subject to Sec. 65(2), a collector that collects aluminum, magnesium or other fine dust of an easily ignitable nature must be located: a. outdoors; or b. in a room used solely for the housing of dust-collecting equipment, which is: i. separated from the rest of the building by a dust-tight partition having a minimum fire-resistance rating of one hour, and ii. constructed to provide explosion venting to the outdoors [Sec. 65(1)]. 5. The above doesn□t apply to a collector that: a. uses an inert liquid as a medium to collect dust; b. is used for a wood-working operation other than wood flour manufacturing and having less than 0.47 cubic metres per second capacity; c. will safely contain explosions; or d. will resist explosions and is equipped with effective explosion venting to the outdoors [Sec. 65(2)].
PE	*OHS Regs.*: The employer must ensure that a welding and cutting operation is prohibited in the close proximity of explosive or flammable dusts unless adequate precautions are taken to prevent fires or explosions [Sec. 37.2].

QC	*Reg. respecting occupational health and safety*: 1. All rooms where combustible dusts are generated must be cleaned as often as necessary to prevent the accumulation of dusts on floors, beams, equipment and machines, in quantities that can present a fire or explosion hazard [Sec. 54]. 2. The rules provided for in Sec. 52 (static electricity) apply in areas or rooms containing combustible dusts that present a fire or explosion hazard [Sec. 55]. 3. No flammable source is permitted in areas where combustible dusts present a fire or explosion hazard. Smoking is prohibited [Sec. 56]. 4. Machines and equipment presenting a fire or explosion hazard due to combustible dusts, must be so located, constructed, enclosed or purged as to protect employees near such machines or equipment [Sec. 57]. 5. In addition to the requirements of Sec. 108, every blower, conveyor, transfer or processing system for pulverized combustible dust must be designed, built, installed, used and maintained in compliance with the following standards according to their respective application: a. NFPA Standard 61-2002 Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities; b. NFPA Standard 484-2002 Combustible Metals, Metal Powders and Metal Dusts; or c. NFPA Standard 664-2002 Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities. For any other field of application, the system must comply with NFPA Standard 654-2000 Prevention of Fire and Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids. Any system referred to in the first paragraph installed before Jan. 4, 2007 must comply with one of those standards or with the standard applicable at the time of the system's installation [Sec. 58]. 6. Every enclosed collector for combustible dust must: a. be designed, manufactured and maintained according to the rules of the trade; and b. be placed and installed: i. outside a building if provided with explosion vents in compliance with NFPA Standard 68-1998 Guide for Venting of Deflagrations; vents already installed on collectors on Jan. 4 2007 must also comply with that standard or with the standard applicable at the time of installation of the vents and be in good order; ii. inside a building if: A. adjacent to an outside wall or ceiling towards which the explosion vents are channelled by explosion proof ducts and if they comply with NFPA Standard 68-1998 Guide for Venting of Deflagrations; vents already installed on the collectors on Jan. 4 2007 must also comply with that standard or with the standard applicable at the time of the installation of the vents and be in good order; or B. if equipped with an automatic explosion prevention system in compliance with NFPA Standard 69-2002 Explosion Prevention Systems; the automatic prevention systems installed on the collectors on Jan. 4 2007 must also comply with that standard or with the standard applicable at the time of the installation of the systems and be in good order [Sec. 59]. 7. Every open collector for combustible dust and used in the wood industry may be placed and installed inside a building: a. if it isn't connected to a sander or abrasive planer with mechanical feed; b. if its capacity doesn't exceed 2.4 m^3 per second; c. if the fan motor is designed for Class II or III locations according to the Canadian Electrical Code, First Part, Nineteenth Edition, CSA Standard C22-10-04 with Québec Amendments; d. if it's emptied as needed sufficiently often to ensure safety and collecting efficiency; e. if installed at least 6 m from a work station, a travel way or an emergency exit, unless a protective blast screen, such as a steel sheet, a fire-resistant synthetic sheet or a gypsum wall, is installed between the station, the travel way or the exit and the open dust collector if it is not possible to comply with that distance; and f. where there's more than one open dust collector, if the collectors are at least 6 m apart, unless a protective blast screen, such as a steel sheet, a fire-resistant synthetic sheet or a gypsum wall is installed between the collectors if it isn't possible to comply with that distance [Sec. 59.1]. 8. No worker may enter or be present in an enclosed area where there are combustible dusts posing a risk of fire or explosion unless the worker's safety is ensured by the implementation of one of the following procedures: a. maintaining and controlling such dusts at a safe level; b. controlling existing ignition sources in the enclosed area associated with the training of the worker, by a qualified person, on the methods and techniques to be used for performing the work safely; or c. making the atmosphere in the enclosed area inert, associated with the worker wearing the respiratory protective equipment specified in Sec. 45 and the training of the latter in compliance with the above [Sec. 303]. 9. Welding and cutting operations are prohibited in places containing combustible dusts presenting a fire or explosion hazard, unless special precautions are taken to prevent any risk of fire or explosion [Sec. 313].

SK	*OHS Regs*.: 1. If any flammable or explosive dusts are or may be present in a hazardous confined space, an employer must ensure that all sources of ignition are eliminated or controlled [Sec. 274(6)]. 2. An employer or contractor must ensure that suitable procedures are developed and implemented to prevent the ignition of explosive dusts that are present at a worksite [Sec. 367(a)].
YT	*OHS Reg.*: 1. Welding, cutting, burning or soldering operations must not be carried out at a workplace unless the surrounding area has been thoroughly inspected to ensure that all the combustible, flammable or other explosive materials (including dust) have been removed, or other equally effective measures have been taken to prevent the possibility of a fire or explosion [Sec. 13.12(1)]. 2. A process that□s likely to produce a dust or fume capable of forming a flammable mixture with air must be carried out in an area that: a. is isolated from other operations; b. has a system of ventilation that removes the dust; c. has no potential sources of ignition; and d. has vents, baffles, chokes, dampers or other means to reduce the effects of any explosion, as may be required [Sec. 15.34].