



CLARK COUNTY FIRE DEPARTMENT - FIRE PREVENTION BUREAU

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Permit Submittal Guideline

COMBUSTIBLE DUST

This guide is to assist in the permitting process for obtaining an annual renewable operational permit to operate a grain elevator, flour starch mill, feed mill, or a plant pulverizing aluminum, coal, cocoa, magnesium, spices, sugar, or other operations producing combustible dust as defined in IFC chapter 2. An annual, renewable, operational permit is required per section 105.5.7 of CCFC. Dust control is required when combustible dust is generated inside buildings. Operations producing dust that occupy more than 5,000 sq.ft. or where the dust producing equipment requires an aggregate dust collection flow rate exceeding 1,500 cfm require a permit.

APPLICABLE CODES:

The following codes and standard apply to this permit.

- *International Fire Code, 2024 edition (IFC)*
- *Clark County Fire Code Amendments, 2024 edition (CCFC)*
- *Standard for the Prevention of Fires and Dust Explosions in Agriculture and Food Processing Facilities, NFPA 61, 2020 edition*
- *Standard on Explosion Prevention Systems, NFPA 69 2019 Edition*
- *National Electrical Code, NFPA 70 2023 Edition*
- *Boiler and Combustion Systems Hazard Code, NFPA 85 2023 Edition*
- *Standard for Fire Prevention and Control in Coal Mines NFPA 120 2020 Edition*
- *Standard for Coal Preparations Plants, NFPA 120 2020 Edition*
- *Standard for Combustible Metals, NFPA 484 2022 Edition*
- *Standard for Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustibles Particulate Solids, NFPA 654 2020 Edition*
- *Standard for the Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities, NFPA 664 2020 Edition*

SUBMITTAL REQUIREMENT CHECKLIST:

The requirements listed in this guide are not intended to be all inclusive, nor do they entail a limit to the extent of the information, etc., which may be necessary to properly evaluate the submitted plans and documents. Not all items may apply to your project. All documents shall be printed to .PDF file and uploaded as a PLAN.

1. PROJECT INFORMATION:

- Project name, address, and APN (Assessor's Parcel Number).
- Contractor's/Owner's contact information.

2. OPERATION: Describe the dust-producing and dust-handling equipment process

- Provide a copy of the Dust Hazard Analysis (DHA) of the processes and facility compartments. This report should be a systematic review to identify and evaluate the potential for flash-fire,

and explosion hazards associated with the presence of one or more combustible particulates in a process or facility. It should clarify the safeguards in-place to mitigate any hazards.

- Accumulation of combustible dust shall be kept to a minimum in the interior of buildings.
 - Accumulated combustible dust shall be collected by vacuum cleaning and other means that will not place combustible dust in the air.
 - The maximum dust layer on all surfaces, including but not limited to walls, ceilings, beams, equipment, furniture, pipes, ducts shall not exceed critical depth layer below.

CRITICAL DEPTH LAYER (IFC TABLE 2203.1)	
TYPE OF DUST	CRITICAL DEPTH LAYER (inches)
Wood flour	1/8
All other dusts	1/32

- Information on dust collecting equipment, deflagration vent discharge area marking, and caution/warning signs.
- If dust collection is occurring inside a building;
 - Need to comply with section 510 of the international Mechanical Code
 - Wet-type dust collectors specifically listed for the type of dust conveyed shall be permitted inside in accordance with Manufacturer’s instructions and specifications
 - Dust collectors designed to specific NFPA standard listed in page 1 applicable codes
- Emergency Response Plan in accordance with IFC section 2203.7
- Information on the Fire Protection equipment in place;
 - Fire Sprinkler system; sprinkler system is required to be provided throughout all Group F-1 that contain woodworking operations in excess of 2,500sq.ft. in area
 - Fire extinguishers, include type, number, and location on site plans
 - Fire protection systems; installed in dust collection and air separation equipment must be specifically designed to address building protection, process equipment, and the chemical and physical properties of the material(s) being processed.
 - Extinguishing agents: must be compatible with the air conveyance and air separator’s construction materials, and with the dust materials conveyed in the system
 - Fire detection systems; must be designed to incorporate safe interlocking requirements for air movement, deflection, and process operation control. This includes feed system shutdown, diversion of material flows, abort gates and dampeners, and continued operation of fire sensors and extinguishing systems.

3. SPECIFICATIONS:

- Include data sheets/specifications of the dust explosion control equipment, include but not limited to dust collection equipment, classified electrical equipment, damage limiting construction and dust explosion suppression equipment.
- Copy of the standard operational procedures
 - Fire and explosion protection and prevention
 - Dust-control equipment
 - Control of potential ignition sources
 - Electrical, process and mechanical equipment, including applicable process interlocks

4. SITE PLAN: Provide plans showing the following items and information;

- A site plan that identified the locations of dust producing equipment, dust collection systems and separation of the dust producing operations from other incompatible operations, hot works, spray painting, etc.
- Provide details on if the dust collection systems is an exterior system or an enclosureless interior system.
- For indoor enclosureless duct collectors they must meet the following conditions;
 1. Collectors are used only for dust pick up from wood processing machinery
 2. The collector is not used on sanders, molders, or abrasive planers
 3. Each collector has a maximum air-handling capacity of 5,000 cfm
 4. The fan motor is totally enclosed, fan-cooled design
 5. The collector's dust is removed daily or more frequently
 6. The collector is located at least 20 feet from any means of egress
 7. Multiple collector's in the same room are separated by at least 20ft.
- For Dust collection systems that terminate outdoors, provide details on the system such as filtration, piping, CFM, cleanouts, collection points, etc.
- All dust producing equipment shall be interlocked with the dust collection system and shall be adequately grounded in accordance with the Electrical Code (NFPA 70)
- Collected dust must be removed at least daily
- Smoking, carrying matches, the use of heating or other devices employing an open flame, and or use of spark-producing equipment shall be prohibited in areas containing dust-producing or agitating operations.
- Smoking shall be at least 25ft away from outdoor storage or open use areas
- Warning sign locations
- Identify sources of ignition; classified electrical, static electricity, hot works, hot surfaces and hot equipment, smoking, spark producing devices, open flame, heater
- Provide the fire extinguisher location(s) and type(s):
 - Maximum travel distance =75ft
 - Ensure fire extinguishers are provided in accordance with IFC 906 as required for an extra-hazard occupancy per IFC Table 906.3(1).

PERMIT DURATION:

Combustible Dust permits are Operational Permits and are limited to a duration of one (1) year

APPENDIX A: DEFINITIONS

COMBUSTIBLE DUST: Finely divided solid materials which is 420 microns or less in diameter and which, when dispersed in air in the proper proportions, could be ignited by a flame, spark or other source of ignition. Combustible dust will pass through a UD no. 40 standard sieve. Combustible dusts can be any particulate solid that presents a fire or deflagration hazard when suspended in air or some other oxidizing medium over a range of concentrations regardless of particle size and shape.

Examples include:

- Wood Particles - Sawdust, grinding and sanding dusts, shavings, etc.
- Foam Particles - Foam shaping and blowing waste
- Metal Particles - From sanding, grinding, polishing, sawing, wire brushing or shot blasting operations

OTHER FINELY DIVIDED DRY MATERIALS: Fine powders and dry chemicals, powder coating material, plastic residues, bead blasting and sandblasting waste, buffing waste, linen and fabric residue, and dust or particulate materials from the processing of grains or other foodstuffs

COMBUSTIBLE PARTICULATE MATERIAL: Any combustible solid material composed of distinct particles or pieces, regardless of size, shape, or chemical composition.

DUST COLLECTION SYSTEM: An exhaust system that is designed to capture wood dust, chips, and other particulate matter at the point of generation, usually from multiple sources, and to convey the material to a point of consolidation. A dust collection system includes the collection hood, the exhaust fan, the dust collector, and all ducts, flexible hoses, or other devices used for conveying the material.

DUST COLLECTOR: The part of the dust collection system where the materials are separated from the air stream and consolidated. Dust collectors include conventional solid-walled cyclones and baghouses, and unenclosed bag-type units.

UNENCLOSED BAG-TYPE DUST COLLECTOR: A dust collector where the filtration is accomplished by passing dust-laden air through filter media, collecting the dust on the inside of the filter media, and allowing cleaned air to exit to the surrounding area. Filter medium is not enclosed in a solid-walled container, is hand shaken and not mechanically shaken or pressure-pulsed, and under positive pressure. Removal of the dust is not continuous or mechanical.