Coffee Break Training - Fire Protection Series

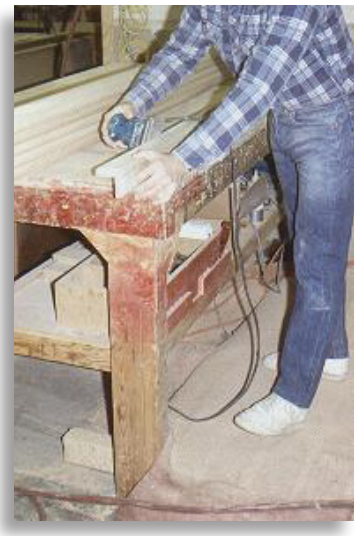
Inspection Techniques: Electrical "Classified Locations": Combustible Dusts and Fibers Divisions (Part 4)

No. FP-2011-22 May 31, 2011

Learning Objective: *The student shall be able to recite the "classes" and "groups" used to classify hazardous locations for electrical equipment.*

Last week's Coffee Break Training explained the National Fire Protection Association (NFPA) 70®, *National Electrical Code®* hazard divisions for electrical wiring and equipment where flammable vapors and gases exist. This Coffee Break Training will explain the dusty environments that may need classification.

Combustible dust is any finely divided solid material that is 420 microns (0.017 in) or smaller in diameter (material passing a U.S. No. 40 Standard Sieve) and presents a fire or explosion hazard when dispersed and ignited in air.



Woodworking shops may generate combustible dust small enough to be a concern for explosions.

Hazardous Electrical Locations

Location	Division	General Description
Class II	1	(1) Where combustible dust is in the air under normal operating conditions in quantities sufficient to produce explosive or ignitable mixtures, or (2) Where mechanical failure or abnormal operation of machinery or equipment might cause such explosive or ignitable mixtures to be produced, and also might provide a source of ignition through simultaneous failure of electric equipment, through operation of protection devices, or from other causes, or (3) Where "Group E" combustible dusts may be present in quantities to be hazardous. Group E dusts include combustible metal dusts (including aluminum, magnesium, and their commercial alloys), or other combustible dusts whose particle size, abrasiveness, and conductivity present similar hazards in the use of electrical equipment.
Class II	2	(1) Where combustible dust due to abnormal operations may be present in the air in quantities sufficient to produce explosive or ignitable mixtures, or (2) Where combustible dust accumulations are present but normally are insufficient to interfere with the normal operation of electrical equipment or other apparatus, but could, as a result of infrequent malfunctioning or handling of processing equipment, become suspended in the air, or (3) Where combustible dust accumulations on, in, or in the vicinity of the electrical equipment could be sufficient enough to interfere with the safe dissipation of heat from electrical equipment or could be ignitable by abnormal operation or failure of electrical equipment.
Class III	1	Where easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used.
Class III	2	Where easily ignitable fibers are stored or handled other than in the process of manufacture.

Hazardous area classification should be performed by knowledgeable and qualified experts.

For additional information, refer to NFPA 70®, *National Electrical Code®*, Chapter 5 *Special Occupancies*.