



Update Your HazCom Program for Combustible Dusts

An ioMosaic Corporation Whitepaper

Authored by: Michelle Murphy, Partner

According to the “[Status Report on Combustible Dust National Emphasis Program](#),” published by OSHA in October 2009, the Hazard Communication (HazCom) standard is the most frequently-cited standard with respect to combustible dust-related hazards.ⁱ This paper can help you determine what type of information you need to develop and include on your Safety Data Sheets (SDSs).

Note that the recent update to the HazCom standard refers to material safety data sheets (MSDSs) as safety data sheets (SDSs). A link to this update is included at the end of this paper.

OSHA’s *Hazardous Communication Standard*, 29 CFR 1910.1200, requires manufacturers and importers of chemicals to conduct a hazard evaluation of chemicals they produce or import. The results of this evaluation are to be included on a SDS and any container labels. Employers must then maintain these SDSs in the workplace and develop a written program to communicate to workers this hazardous chemical information. Although always intended to be included in HazCom programs, the most recent update to this standard, on March 26, 2012, added “combustible dust” to the definition for a hazardous chemical.

In July 2009, OSHA published hazard communication guidance specifically for combustible dusts, [OSHA 3371-08-2009](#).ⁱⁱ This guidance is intended to help manufacturers and importers apply the hazard determination requirements of HazCom to the unique hazards of handling combustible dusts. It focuses on SDS requirements, product labels, training, and information. Additional references are contained therein.

According to the bulletin, the following existing SDS requirements apply to combustible dusts:

- Chemical and common names of the hazardous chemical or ingredients
- Physical and chemical characteristics of the hazardous chemical, including the potential for fire, explosion, and reactivity—if known, deflagration index (K_{St}), minimum ignition energy (MIE), minimum explosible concentration (MEC), and particle size should be included
- Known generally applicable precautions for safe handling and use
- Known generally applicable control measures

With respect to the physical and chemical characteristics of combustible dusts, OSHA states that testing is not required. Rather, a review of the full range of available scientific literature and other evidence can be conducted. It should be noted that the characteristics referenced in the bulletin, K_{St} , MIE, MEC and particle size, are specific to the chemical and physical composition of the dust being handled. Particle size and moisture content of the dust have a significant impact on the measured results and ultimately, the explosibility and combustibility of the dust. Most publicly available literature does not specify the particle size and moisture of the material tested. For accurate characterization, testing of specific process samples should be conducted utilizing standard test methods. Test methods for these characteristics have been defined by ASTM International.

The following example SDS excerpt is taken from the guidance:

Table 1: Excerpt from OSHA's Hazard Communication Guidance

Examples of Combustible Dust Warning Information on the SDS (Presented in the ANSI (Z400.1) Format)
<p>Section 2. Hazard Identification:</p> <p>Emergency Overview WARNING! MAY FORM COMBUSTIBLE DUST CONCENTRATION IN AIR (DURING PROCESSING)</p>
<p>Section 5. Fire Fighting Measures:</p> <p>Explosion: Avoid generating dust; fine dust dispersed in air in sufficient concentrations and in the presence of an ignition source is a potential dust explosion hazard.</p>
<p>Section 6. Accidental Release Measures:</p> <p>Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.</p> <p>Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).</p> <p>Nonsparking tools should be used.</p>
<p>Section 7. Handling and Storage:</p> <p>Minimize dust generation and accumulation.</p> <p>Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces.</p> <p>Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding or inert atmospheres.</p>
<p>Section 8. Exposure Controls/Personal Protection:</p> <p>It is recommended that all dust-control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment.</p> <p>Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment).</p> <p>Use only appropriately-classified electrical equipment and powered industrial trucks.</p>
<p>Section 16. Other Information:</p> <p>Refer to NFPA 654, <i>Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids</i>, for safe handling.</p>

With respect to product labels, where manufacturers are aware that downstream handling routinely generates combustible dusts, a warning should be included on the label. An example warning label from the guidance is:

Warning: May Form Combustible (Explosive) Dust – Air Mixtures

Keep away from all ignition sources including heat, sparks, and flame.

Keep container closed and grounded.

Prevent dust accumulations to minimize explosion hazard.

Figure 1: Warning Label from OSHA Guidance

With respect to training and information, employers who use materials capable of producing combustible dusts must evaluate the operations and provide the required information and training to workers.

Proper hazard communication is critical to ensure all employees fully understand the nature of any hazards present. This applies to combustible dusts in the same way it applies to other hazardous chemicals. The U.S. Chemical Safety and Hazard Investigation Board (CSB) recognized this failure in the combustible dust report they issued in November 2006, http://www.csb.gov/assets/document/Dust_Final_Report_Website_11-17-06.pdf. Among its key findings, the CSB found SDSs for combustible powders frequently (41 % of 140 surveyed) failed to provide warnings about explosion hazards. In addition, most did not provide appropriate National Fire Protection Association (NFPA) references related to preventing dust explosions. As a result of their investigation, the CSB recommended that OSHA expand dust warnings under HazCom. The newest hazard communication standard (March 26, 2012) specifically includes “combustible dust” in the definition of a hazardous chemical. Further, the preamble to the standard references OSHA’s bulletin, *Hazard Communication Guidance for Combustible Dust*, for further information. OSHA’s Hazard Communication page provides links to all related OSHA documents surrounding the update, <http://www.osha.gov/dsg/hazcom/index.html>.

ⁱ http://osha.gov/dep/combustible_dust/combustible_dust_nep_rpt_102009.html

ⁱⁱ <http://osha.gov/Publications/3371combustible-dust.html>