



DUSTCON
SOLUTIONS



Dust Explosion Safety Professionals
Specializing in Dust Hazard Analysis (DHA)

www.DustconSolutions.com

Combustible Dust – What are the risks?

Combustible Dust Hazards are found in a variety of industries and can arise from handling everyday materials such as sugar, plastics, and sawdust.

A combustible dust is a finely divided combustible particulate solid that presents a flash fire or explosion hazard when suspended in air. Particle Size and Moisture Content play a pivotal factor in explosibility and ignition potential.

Flash Fires and Dust Explosions present a dangerous and seemingly unpredictable risk that puts employees and business assets in harms way.

Statistics show that since 1980, Combustible Dust Incidents are responsible for at least 185 fatalities, more than 1,000 injuries, and extensive property damage to facilities.



Anatomy of a Dust Explosion: The Pentagon

Dust Explosions occur when all five of the legs of the **Dust Explosion Pentagon** are present.



- 1. Fuel** – Combustible Dusts serve as fuel for combustion. Examples include grain dust, plastics, cornstarch, coal, wood dust, and metals.
- 2. Oxygen** – Air is the most common oxidizing medium. O_2 must be present in sufficient concentration to support the combustion.
- 3. Dispersion** – A suspended cloud of explosive dust with sufficient concentration will allow combustion to occur more rapidly than in a layer.
- 4. Confinement** – A suspended dust cloud must be enclosed in order to build pressure that is characteristic of a dust explosion. Without confinement, the rapid combustion is a Flash Fire.
- 5. Ignition** – Ignition source is often the only leg of the pentagon not readily present. Possible ignition sources include open flame, hot surfaces, static or electrical discharges, and heat from friction or mechanical impact.

OSHA and NFPA Compliance Solutions

Under the National Emphasis Program (NEP) for Combustible Dust released in 2007, OSHA has relied on the National Fire Protection Association (NFPA) Standards as the governing documents for Combustible Dust. Further, OSHA is enforcing these NFPA Standards under Section 5(a)(1), better known as the “General Duty Clause”.

Our consultants at Dustcon Solutions have been active members in the NFPA Technical Committees for over 20 years. Let our knowledge and experience help you navigate the requirements to keep your facility safe and compliant.

NFPA 652 (Fundamentals Standard) is the starting point for all combustible dust users.

This document lays out the basic requirements for all facilities handling combustible dust.

Industry Specific Standards:

- ✓ **NFPA 61** Food and Agriculture
- ✓ **NFPA 484** Combustible Metals
- ✓ **NFPA 654** General Industry
- ✓ **NFPA 655** Sulfur
- ✓ **NFPA 664** Wood Processing

How-to Standards:

- ✓ **NFPA 68** Explosion Venting
- ✓ **NFPA 69** Explosion Prevention Systems
- ✓ **NFPA 77** Static Electricity
- ✓ **NFPA 91** Exhaust Systems
- ✓ **NFPA 499** Electrical Classification



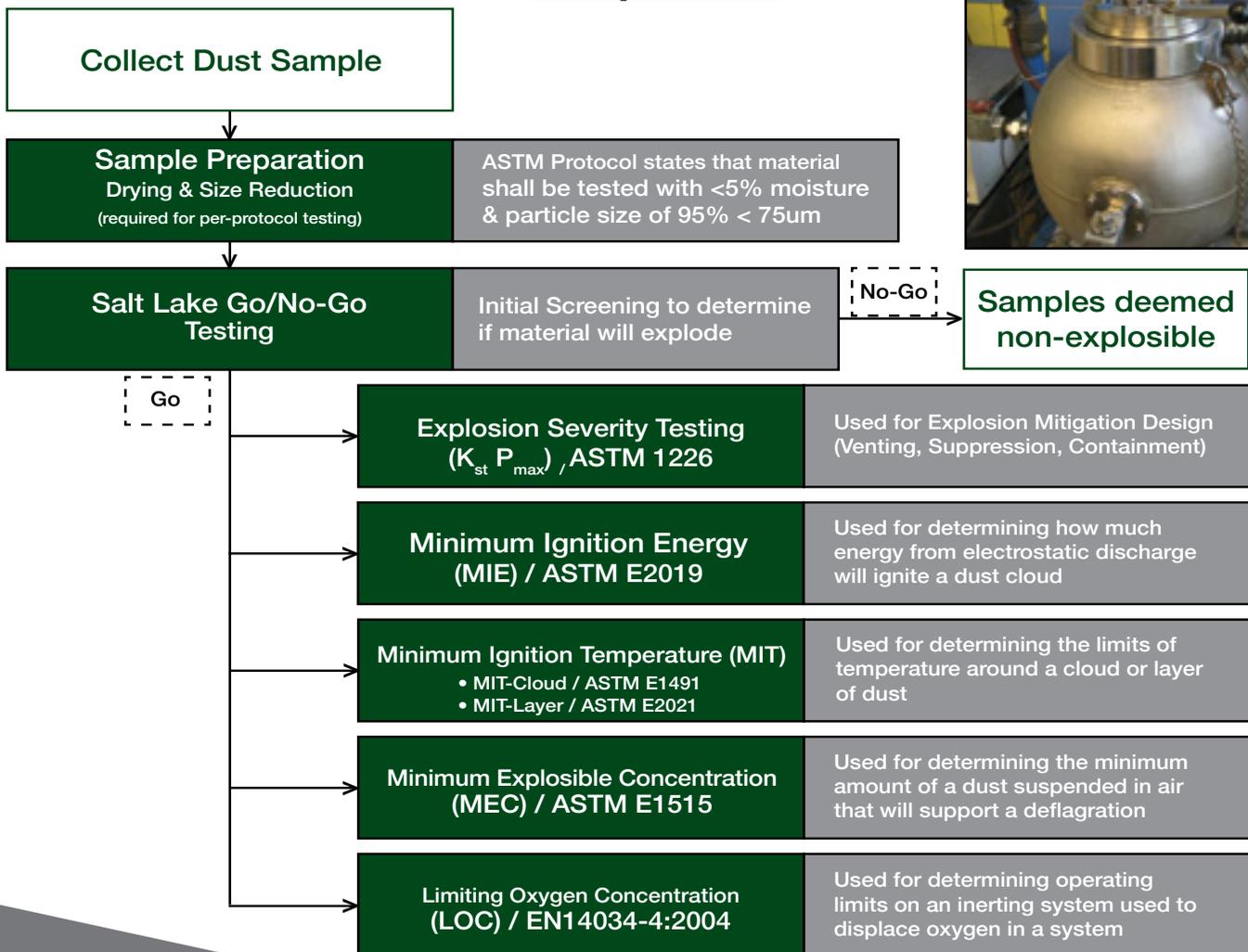
Determining Explosibility – Dust Testing Services



Dustcon Solutions strives to help each of our customers fully understand the potential hazards associated with each process and tailor a solution to your specific needs.

For this reason, Dustcon Solutions offers Dust Testing Services to characterize your specific material to ensure that the results are representative and applicable to your process.

Sample Flow



Dust Hazard Analysis (DHA) Services

What is a Dust Hazard Analysis?

Dust Hazard Analysis, or **DHA**, is a systematic review with the intent to both Identify and Evaluate the risk of fire and explosion hazards within a facility or process handling Combustible Dust.

An effective DHA will achieve three goals:

1. **IDENTIFY** where dust hazards exist within the process or facility and the risk posed.
2. **EVALUATE** what safeguards are currently in place to protect the facility or process.
3. **RECOMMEND** where additional safeguards should be implemented based on NFPA requirements and industry best practices.



Why Should I consider a DHA?

NFPA Standards now require that all combustible dust users complete a DHA for existing systems. Deadlines vary by industry, but center around 2020. This is a retroactive requirement that applies to all facilities, regardless of the facility's size or industry segment.

Dustcon Solutions specializes in this first and most important step toward achieving dust explosion safety.

Who is qualified to perform a DHA?

NFPA 652 states that the DHA shall be performed by a "qualified person". Dustcon's Safety Professionals have obtained the knowledge, skills and experience that comes from over 50 years in the industry including participation on applicable NFPA Technical Committees.

Additional Services Offered



Incident Investigation

Dustcon Solutions has a team of experts who can serve as an important third party when uncovering the root causes of a fire or explosion. Our safety professionals can also work on your behalf when dealing with OSHA or when faced with legal challenges related to process safety.

Combustible Dust Training Courses

Dustcon Solutions offers both **Online and In-Person Training Courses** to help improve safety performance within your organization. Our classes are designed to facilitate learning through practical and applicable case studies that highlight the importance of safe practices and will help attendees bring the knowledge back with them to the field with confidence.

Course Topics include:

- ✓ **Combustible Dust and Hazard Identification**
- ✓ **Navigating the NFPA Combustible Dust Standards**
- ✓ **Housekeeping and Dust Collection**
- ✓ **Electrical Safety & Classification (NFPA 499)**
- ✓ **Effectively Managing Change (MOC Processes)**



Administrative Controls

Having trouble designing a Management of Change program? Unsure where to begin with regards to Document Retention? Dustcon Solutions can help! Our Safety Professionals can guide you through the complexities of the Administrative Controls required by NFPA Standards.

Desktop DHA Services

Designing a new system or purchasing a new piece of equipment? Desktop DHAs provide a streamlined solution for completing a Dust Hazard Analysis on the front end, before the equipment is installed. We use Process Flow and Equipment Drawings to ensure that all designs meet the requirements for NFPA and avoid any costly back-end changes.



The Dustcon Solutions Advantage

Our outstanding service sets Dustcon apart! With dedicated professionals eager to help your business succeed, we put our clients at the center of everything we do. Dustcon offers a comprehensive set of services to empower your team to succeed in Combustible Dust Safety. Going beyond compliance, Dustcon Solutions strives to ensure that your process and people are protected.

Industries Served:

- ✓ Aerospace
- ✓ Agriculture
- ✓ Biomass
- ✓ Biosolids/Sewage
- ✓ Chemicals
- ✓ Coal & Power Generation
- ✓ Food & Beverage
- ✓ Fertilizer
- ✓ Grain Milling
- ✓ Gypsum
- ✓ Metal Processing
- ✓ Pet Food
- ✓ Pharmaceutical & Cosmetics
- ✓ Plastics & Rubber
- ✓ Pulp & Paper
- ✓ Recycling
- ✓ Rubber/Tires
- ✓ Wood Processing & Wood Working

Talk to your **Dustcon Solutions** representative today about how to address Combustible Dust Hazards in your facility!

About Dustcon Solutions

Dustcon Solutions is an Engineering & Safety Consulting Firm based out of West Palm Beach, FL. Our focus is on helping clients identify and address Combustible Dust Hazards that pose a risk to assets and personnel. Dustcon was started to meet the need for Dust Hazard Analysis (DHA) services within all industry segments. With over 20 years of active involvement on the NFPA Technical Committees responsible for the latest standards pertinent to the dust explosion problem, Dustcon has the knowledge and expertise required to provide DHA services.

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