EXPLOSION PROTECTION
For Combustible Dust Hazards

If your facility or processing equipment handles combustible dust, it's your responsibility to:

- Protect workers by reducing the risk of combustion and installing necessary explosion protection systems
- Comply with your local regulations concerning dust hazards and recommended protection methods
- Document and submit upon an inspector's request how fire and explosion safety is achieved in your facility

Learn how Fike can guide you through this complex process of protecting both your business and most importantly its employees by:

1. Testing & Analyzing Dust
2. Conducting Risk Assessment
3. Identify Prevention Methods
4. Design Explosion Protection
5. Performing Field Service

1

Dust Testing

Dust testing is required by both NFPA and EN standards because it's essential to:

- Knowing where dust hazards exist in your process
- Designing explosion protection for your unique hazards
- Making process improvements to reduce the risk of ignition

Fike can help you choose and perform the following dust tests applicable to your process and safety goals:

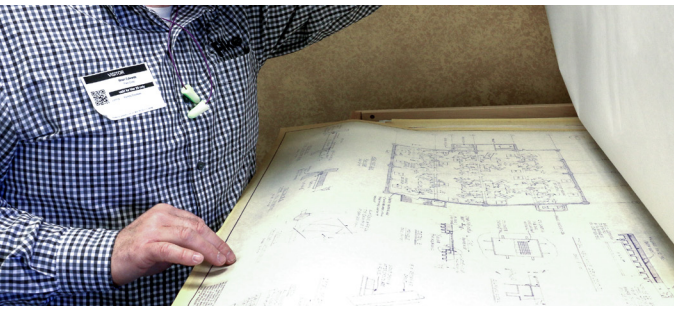
	Dust Test Required	Data is Used to Defin
1 Is the dust explosive?	Screening (Go/No-Go)	Materials in the process susceptible to a dust explosion
2 How explosive is the dust?	Severity (Kst & Pmax)	Maximum energy and rate of an explosion if ignition occurs
3 Where may dust explosion hazards exist?	MEC - Minimum	Minimum dust concentration for ignition.
	LOC - Limited Oxygen Concentration	Lowest oxygen concentration for combustion.
4 How sensitive is the dust to ignition?	MIE - Minimum Ignition Energy	Lowest spark energy required for ignition
	MIT - Minimum Ignition Temperature	Lowest surface temp required for ignition
	MAIT - Minimum Auto Ignition Temperature	Lowest temp of heated air required for ignition

Once the dust tests have been performed, your Fike consultant will walk you through the results and discuss which areas of your process should be investigated during a risk assessment.

2 Risk Assessment

Before preventative and protection strategies may be identified, a risk assessment is required to identify where combustible dust hazards exist within your facility.

The most important thing to know about a risk assessment conducted by Fike is that we are working with you. It's in both of our best interests to complete the risk assessment as efficiently, and most importantly as thoroughly, as possible. Here's what you can expect:



How You'll Prepare for the Risk Assessment

- Assemble your team
- Identify sources of dust
- Complete dust testing
- Collect process documents & drawings

How Fike Will Conduct the Risk Assessment

- Identify zones to analyze
- Inspect equipment for hazards
- Locate ignition sources
- Review existing safeguards

How the Results Will be Used

- Prioritize prevention and mitigation strategies
- Develop & execute an action plan
- Consult with Fike system design team

Why Fike for a Risk Assessment?

- Fulfills a Dust Hazard Analysis (DHA) for NFPA and Explosion Protection Document (EPD) for ATEX
- Conducted by Fike's global consultancy team experienced in your local regulations and requirements
- Find strategies to reduce risk of combustion, which are often cost-free operational improvements
- Results in a simple-to-interpret report with prioritized hazard areas and a clearly defined action plan

3

Prevention Methods

Before explosion protection systems are recommended, your Fike consultant will use the results from the dust tests and identify opportunities within your process to lower the risk of combustion from ever occurring by reducing or removing the following ignition sources:

Open Flames or Heat
Welding, cutting or smouldering cigarettes

Hot Surfaces
Combustion equipment, heated processes, motors and lights

Frictional Heat or Sparks
Overheated bearings or other malfunctioning equipment

Unisolated Explosions
Secondary explosions which consume additional fuel and grow intensity

Electrical Sparks
When a high-voltage device fails or cable ruptures

Electrostatic Discharges
When equipment or containers are not grounded properly

Smoldering Material
Which slowly combusts internally as long as oxygen is present

Rogue Objects
Such as a bolt entering the system and creating friction or sparks

Other explosion prevention efforts may include:

- Improving housekeeping in areas with dust accumulation
- Performing regular maintenance on equipment, such as lubricating bearings
- Installing spark detectors or reducing risk of static discharge
- Inerting the process to lower oxygen levels

4

Explosion Protection Systems

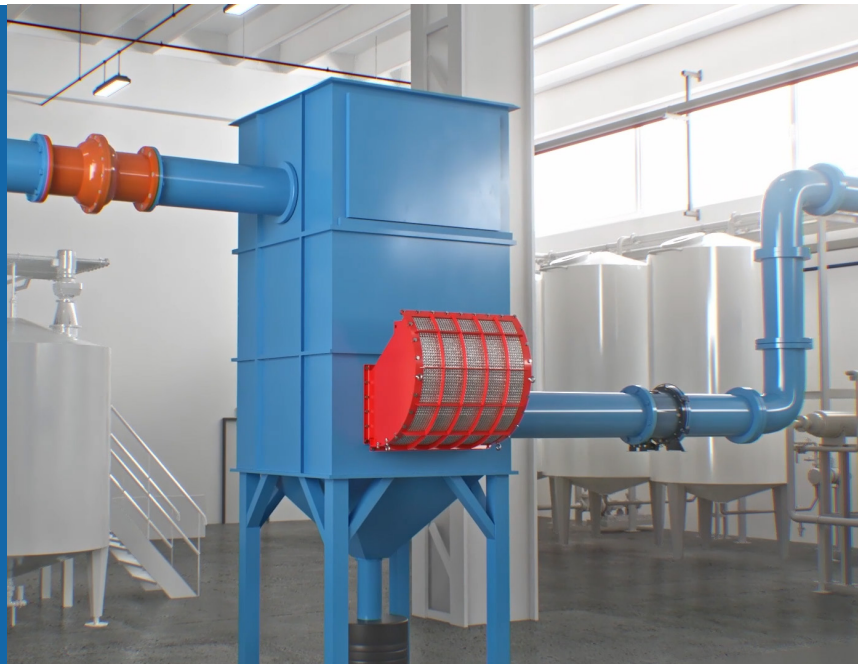
If explosion protection is required, Fike's system design team will use the data from the dust tests and risk assessment to develop a reliable protection strategy unique to your process. Engineered, manufactured, tested and validated on-site, our explosion protection systems offer the highest degree of quality possible for which the Fike name is known.

Active Explosion Protection:

- **Explosion Suppression Systems**
  Detects and suppresses a deflagration in its early stages with chemical suppression, all within hundreds of milliseconds.
- **Active Isolation Systems**
  May use a series of chemical barriers or electronically activated mechanical valves, and will be determined based on the unique application.

Passive Explosion Protection:

- **Explosion Venting Systems**
  Provides a pathway for gases and flames to escape. Flameless vent panels may be used to absorb the deflagration, making it safe for indoor applications.
- **Passive Isolation Systems**
  Activated by the pressure wave itself, which locks the mechanical devices and protects connected vessels from pressure and flames.



5 Field Service

If explosion protection is required, Fike's system design team will use the data from the dust tests and risk assessment to develop a reliable protection strategy unique to your process. Engineered, manufactured, tested and validated on-site, our explosion protection systems offer the highest degree of quality possible for which the Fike name is known.

Installation

Facilitates seamless integration into your production schedule — ensuring timely delivery, organized labeling, and strategic installation for easy maintenance access.

Commissioning

Turns on process with active explosion protection system installed to ensure electrical, PLC and all other systems work as expected.

Maintenance

Performs quarterly inspections required to comply with most regulations; global technicians available 24/7 for emergency situations as well.

Why Fike?

Flexible Solutions: To ensure you meet your goals with safety and compliance, we can work with you over weeks or even months to prioritize hazards that fit both your budget and production schedule.

World-Class Test Facility: Fike's Remote Testing Facility conducts daily large-scale explosion testing to advance the industry's understanding of explosion safety and to validate the unmatched reliability of Fike protection systems.

One-Stop Shop: Regardless of your location, equipment and hazard, Fike can help you overcome nearly any industrial safety challenge. From consultancy to maintenance and every other step in between, we are here for you.

Fike®
BECAUSE SO MUCH IS AT STAKE™

Fike UK
35 Earl Street
Maidstone ME14 1PF, UK.
+44 1622-677081 | sales.uk@fike.com