

— How to Speak —

COMBUSTIBLE DUST TESTING

THE SAMPLE

- **Quantity**
 - 1 - 2 lbs; 500 g to 1 Kg
- **Sampling Locations**
 - dust collector filter
 - floor
 - ceiling
 - equipment



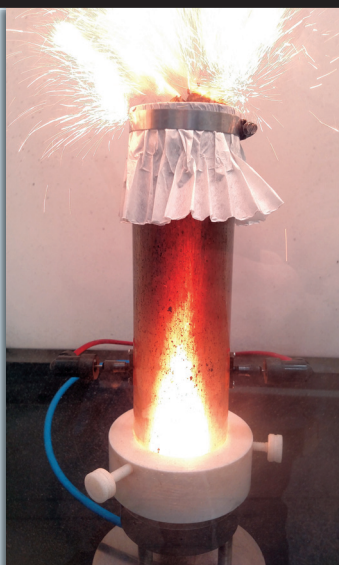
DOCUMENTATION

- **MSDS/SDS**
 - what material is and how to handle it safely
- **Sample Test Options Form**
 - what tests to complete
- **Payment Info**
 - purchase order
 - credit card authorization form



SCREENING TESTS

- **Explosibility Screening Tests, aka Go/No-Go**
 - could this material present a combustible dust hazard
- **Combustibility Screening Test**
 - could this material present a fire hazard



ADDITIONAL TESTING

- **Explosion Severity Test**
 - how energetic a dust explosion could be (used for explosion protection strategies)
- **Minimum Explosible Concentration**
 - minimum concentration of dust capable of propagating a deflagration through a uniform mixture of the dust in air
- **Minimum Ignition Energy**
 - minimum energy needed to ignite a combustible dust cloud
- **Minimum Autoignition Temperature**
 - lowest temperature of a hot surface that will cause a dust cloud to ignite and propagate a flame
- **Layer Ignition Test**
 - the lowest temperature at which a layer of dust (~5 mm) ignites on a heated surface
- **UN/DOT**
 - used to classify materials for transport
- **1m³ Chamber**
 - verification of uncertainty if $K_{St} < 50$



COMMON TERMS

- Deflagration** - An explosion in which the reaction front moves at a speed less than the speed of sound through the unreacted medium
- Detonation** - An explosion in which the reaction front moves at a speed greater than the speed of sound in the unreacted medium
- Explosion** - Rapid expansion of gases resulting in a rapidly moving pressure or shock wave
- Flame Propagation** - The spread of a flame in a combustible environment outward from the point of ignitions
- Overpressure** - The pressure on an object as a result of an impacting shock wave

Acronyms

- DHA – Dust Hazards Analysis
ISO – International Organization for Standardization
LIT – Layer Ignition Temperature
LOC – Limiting Oxygen Concentration
MEC – Minimum Explosible Concentration
MIE – Minimum Ignition Energy
MIT – Minimum Autoignition Temperature of a Dust Cloud in Air
NEP – National Emphasis Program

- NFPA – National Fire Protection Association
OSHA – Occupational Safety and Health Administration
REACH – Registration, Evaluation, Authorization and Restriction of Chemicals (European Union Regulation)
SDS – Safety Data Sheets
UN DOT – United Nations/ US Department of Transportation
US CSB – US Chemical Safety Board