

ACCU-PINPOINT 8

DUST EXPLOSIONS

The Phenomenon

Almost every combustible material when in a finely divided form, is capable of producing a dust explosion. The occurrence and severity of a dust explosion depends upon:

- the type of dust
- the size of the particles
- the degree of concentration of particles
- the degree of ventilation in the area

It can occur only in the presence of a naked flame or spark when the dust cloud exists in an "ideal" concentration, in exactly the same manner as an explosion involving flammable gases or vapours will occur only if the concentration is neither too lean nor too rich. A feature of dust explosions is the occurrence of a double explosion. The first or "pilot" explosion may be relatively mild, but the dust clouds stirred up will result in the secondary and more serious explosion.

In industry many of the dusts handled are combustible. These may be produced either as end products (eg. flour, sugar, starch, plastics, metals, coal dyestuffs and pharmaceuticals), or by products (eg. wood, sawdust, and textile fluff). The dust explosions hazard should be considered at the design stage of a plant so that precautions can be built into the plant more economically.



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Explosion Prevention

In the design and safe operation of an industrial plant where explosible dusts are present, sources of ignition must be excluded as far as possible. These include:

- flames
- hot surfaces
- welding and cutting
- friction
- electric sparks
- spontaneous heating

Methods of dust explosion protection

Steps must be taken to deal with possible explosions when exposable dusts are present which may be dispersed into a cloud. Some of the methods of explosion protection, if used In conjunction with others, are beneficial but singly do not give adequate protection. These include:

- minimising dust cloud formation
- separation
- venting
- inerting



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