

# DustScreen Multiple Powder Hazard Screening

*Companies should be aware of their compliance obligations under the ATEX 137 EU Directive regarding potentially explosive atmospheres in the workplace, implemented as the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR 2002) in the UK. The provision of an appropriate basis of safety for powder handling operations requires a detailed risk assessment that must consider the fire and explosion properties of all processed materials.*



## OBTAINING DETAILED EXPLOSION HAZARD DATA

Flammability data will be required to cover all materials and processing conditions used in your business and will be required by your customers for use in their own process safety risk assessment. Such data is typically omitted from Material Safety Data Sheets (MSDS). The greatest problems are posed for companies who handle many powdered materials in a common plant covering raw, intermediate and finished materials. In such situations, the cost of obtaining detailed explosion hazard data on every material can be prohibitive - especially if this is the first time you are considering dust explosion hazards and little or no product data exists!

Where material hazard characteristics are unknown, it is impossible to design any safety system with certainty of its adequacy. Even where generic data from literature sources has been employed, the potential exists for this data to be wholly inappropriate to your specific material and processing conditions.

## DUSTSCREEN: MULTIPLE POWDER HAZARD SCREENING

To assist companies in achieving safety and compliance in a cost-effective manner, Chilworth Technology has devised a screening program for assessing dust explosion hazards. When working within the specifications of a proposed basis of safety it is possible to undertake a safety range test for every product. In this case, safety system specification will be based on the worst case properties of the complete range of materials processed. The Chilworth Technology DustScreen package aims to provide this targeted data.

Initially, Chilworth Technology will discuss with the client the existing, or proposed, basis of safety for plant powder handling operations. This will enable an identification of the dust explosion characteristics that must be evaluated for the specific plant and equipment. The initial assessment will also include a review of existing data on your products and aim to identify non-flammable powders and generic groups for which only a representative sample needs to be tested.

The DustScreen package for any project will only cover those tests which are deemed necessary, thereby providing cost savings by eliminating the testing of non-essential parameters.

# DustScreen

## HOW DUSTSCREEN WORKS

Tests that may be included in a DustScreen Package are:

- Minimum Ignition Energy (to IEC or EN standard methods)
- Minimum Ignition Temperature (to IEC or EN standard methods)
- Layer Ignition Temperature (to IEC or EN standard methods)
- 20L Sphere Explosion Severity analysis (to EN standard method) for evaluation of maximum explosion pressure, Kst and St class
- Limiting Oxygen for Combustion (to EN standard method)
- Minimum Explosible Concentration (to EN standard method)
- Burning Behaviour (to VDI standard method) or Flammability of Solids (to UN standard method)
- Thermal Stability (a range of tests is available to cover different processing conditions)
- Electrostatic Properties evaluation (e.g. charge relaxation time, powder volume resistivity, chargeability)

For powders selected for analysis, focused testing commences on each relevant characteristic to ultimately identify the worst-case result. Samples will be subject to the first screening level for each parameter to be tested and those that fail will go on to the next level as necessary to complete the analysis. For each sample that passes, testing will cease, and in this way the client will only pay for the tests that are required. The screening levels will be agreed with the client and matched to important boundary conditions for process safety applications within their plant.

If a client has many powders to assess and needs a cost effective testing strategy, Chilworth Technology will have a package to meet their requirements. The DustScreen package of tests will only be available to companies who have 10 or more powders to be assessed as a group. If you have less than 10 powders, DustScreen may not be the most appropriate testing rationale in the Chilworth range, so please contact us to discuss alternative packages.



### Training



### Consultancy



### Testing to GLP Standard



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