



**Standard for clean air**

## Determining the explosion parameters in the design of dust collection systems

### Dust analysis by Keller sets matters straight

As a result of EU guideline ATEX 137, system operators of machines at risk of explosion are required to determine and evaluate the risk of explosion by filing an explosion protection document.

To fulfill this requirement it is frequently necessary to determine explosive dust parameters, among other issues, for the suitable design of dust collection systems.

Keller is capable of providing the necessary support for the evaluation of the explosion hazard, the detection of the explosive parameters and establishing explosion protection measures with interrelated service packages.

### Package 1 (clarification)

#### To determine if explosion protection measures are necessary

Scope of the examination:

- Sieving on dust particle size < 63 μm
- Determining explosiveness with the modified Hartmann device:

- Not explosive
- Explosive
- Dust explosion class St1
- Dust explosion class St2
- Total disposal volume
- Volume of dust particles: approx. 100 g

### Package 2 (decision)

#### To determine if the prevention of ignition is sufficient, or if constructive explosion protection is necessary:

Provided that ignition sources are not created during the extraction process, the prevention of ignition sources as an explosion protection is sufficient (according to regulations for explosion protection for dust with a MIE of > 10 mJ). There are no constructive

explosion protection measure requirements for pressure relief, for example, or for explosion suppression.

Scope of the examination:

- Sieving on dust particle size < 63 μm
- Definition of particle size distribution
- Determination of the minimum ignition energy without electrical source
- Total disposal volume
- Volume of dust particles: approx. 300 g

## Package 3

### To design constructive explosion measures such as pressure relief or explosion suppression.

Pressure relief or explosion suppression. Operational parameters are of vital importance.

Scope of examination:

- Sieving on dust particle size < 63 µm
- Definition of particle size distribution
- Determining the pressure increase ( $K_{St}$  value) and of the max. explosion pressure  $p_{max}$  in the 20 L ball (screening means that only one test is made)
- Total disposal volume
- Quantity of dust particles: approx. 500 g

## Package 4

### Determining the mixture ratio for inertisation with limestone powder.

Inert limestone powder is added to prevent an explosive environment. Additional explosion protection measures in the separator are not necessary. For optimal results when supplying limestone, the suitable dust – limestone powder combination ratio must be determined. The ratio can be reduced to 1:1.

Scope of the testing:

- Sieving on dust particle size < 63 µm
- Definition of the particle size distribution
- Determining the necessary mixing ratio of the limestone powder: explosive dust in the 20 L ball in 12 % increments
- Total disposal volume
- Quantity of dust particles: approx. 1500 g

## Information for evaluation:

The sample should be representative of the process being evaluated.

Please send the sample in a securely closed envelope to the following address:

Keller Lufttechnik GmbH + Co. KG  
Mr. Marcel Schneider  
Neue Weilheimer Str. 30  
73230 Kirchheim unter Teck  
Germany

The following information must be provided with the dust sample:

- Company, contact person with e-mail address
- Name of the product (type of dust)
- Storable at room temperature?
- Hygroscopic?
- Skin irritant?
- Contains solvents?
- Is it a hazardous substance?
- Are there any regulations concerning the handling of the substance?

A corresponding printable form can be found on

**[www.keller-lufttechnik.de/en/explosion-protection/dust-analysis](http://www.keller-lufttechnik.de/en/explosion-protection/dust-analysis)**

The duration of the evaluation is normally 10 working days. Test report is sent to contact person by e-mail.

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