Hazardous area classification for dusts

It is a requirement under the DSEAR regulations that a hazardous area classification exercise can be undertaken in all parts of the plant where flammable dusts are used or generated. Once this exercise has been completed, it will enable the safe selection of electrical and mechanical equipment for use in the hazardous area zones.

The work needed to achieve this will cover:

- Assessments of all areas where flammable dust clouds are created
- Determination of the source of release
- Calculation of the extent, frequency and time period of the dust clouds
- Evaluation of the dust layer and bulk deposit contribution to the hazardous area assessment
- Zoning diagrams to clearly identify the hazardous zones for each part of the process

Dust Containment

Inside a dust containment, dust is not released into the atmosphere but, as part of the process, continuous dust clouds may form. These may exist continuously or may be expected to continue for long periods or short periods. The frequency of their appearance depends on the process cycle. The hazardous area zones for dusts are defined as follows:

- Zone 20: An area in which an explosive dust atmosphere is present continuously or for long periods
- Zone 21: an area in which an explosive dust atmosphere is likely to occur in normal operation
- Zone 22: an area in which an explosive dust atmosphere is not likely to occur in normal operation and, if it occurs, will only exist for a short time.

Outside Dust Containment

Outside dust containment, many factors can influence area classification. Where higher than atmospheric pressures are used within the dust containment (e.g. positive pressure pneumatic transfer) dust can easily be blown out of leaking equipment. Dust particle size, moisture content and, where applicable, transport, velocity, dust extraction rate and fall height can influence release rate potential. Once the process potential for release is known, each source can be identified and its grade of release determined.

Grades of release—continuous, primary grade of release, (e.g. close vicinity around an open bag filling or emptying point), secondary grade of release (e.g. manholes that need to be opened occasionally and only during a very short period)

Secondary dust—that is layers of dust accumulated within the factory or building—should be considered separately, taking into account the grade of dust release, the rate at which dust is deposited and the effectiveness and frequency of the housekeeping (cleaning).
Please see our dust web page for a full list of BRE’s dust services including:

- Dust or powder testing
- DSEAR Consultancy
- Risk assessment and hazard identification
- Hazardous area zoning
- DSEAR—Staff and safety training in fire and explosion awareness (health and safety)
- Explosion prevention and protection (risk management)
- Equipment for use in hazardous areas
- HAZOP for DSEAR/ATEX compliance

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- promulgating standards and knowledge throughout the industry through publications and events
- developing and delivering training

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