**Limiting Oxygen Concentration (LOC)**

The Limiting Oxygen Concentration is the highest concentration of oxygen that will prevent a dust explosion taking place. The test follows the BS EN 14034-4 and is mandatory if inerting is to be used as a method of dust explosion prevention under a DSEAR risk assessment.

**Limiting Oxygen Concentration**

A weighed quantity of dust or powder is placed in the storage chamber and the explosion chamber is then filled with a known concentration of oxygen in nitrogen. An automatic test sequence is initiated to pressurise the dust storage chamber to 20 bar g and activate the ignition source 60 ms after the dust has been dispersed. Once ignition is achieved at a known oxygen concentration, the level of oxygen is reduced until a point is reached where no ignition occurs after three attempts at varying dust concentrations. An ignition is deemed to have occurred if the maximum explosion pressure is at or above 0.4 bar.

Test work is normally undertaken with nitrogen as the inerting gas, but tests can also be carried out using Carbon Dioxide or steam.

**Test Results**

The test determines, for a given inerting gas, the highest allowable oxygen concentration that will prevent a dust explosion taking place.

**Examples of typical dangerous substances in the workplace:**

- Acrylic Polymer
- Aluminium Dust
- Amino Alcohol
- Bronze Powder
- Carbon Black
- Carbon Fibre Dust
- Cereal Flake Dust
- Coal Dust
- Coke Dust
- Composite Dust
- Curry Powder
- Dimethyl-phenylpyrazolidone
- Dried Sewage Sludge
- Fibre Insulation
- Flour
- Glass Fibre Polyurethane
- Grain Dusts
- Gum Arabic
- HDPE
- Hydroxy-methyl-phenylpyraolidone
- Leather Dust
- Liquorice Powder
- Melamine Dust
- Paper Dust
- Paraformaldehyde
- Pharmaceutical Powders
- Phenolic Resin
- Pigment Powder
- Polyelectric Powder
- Plastic Dust
- Potato starch
- Refined sugar
- Resin Dust
- Sodium Flurbiprofen
- Sulfuramide
- Tea
- Wood
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• researching and writing standards
• testing and certification in the areas of fire, electronics, security, and sustainability
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A-Z Services/Dust Testing

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