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English Version

Guidance on Inerting for the Prevention of Explosions

Atmosphères explosibles - Guide de l'inertage pour la
prévention des explosions

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Foreword

This Technical Report (CEN/TR 15281:2006) has been prepared by Technical Committee CEN/TC 305 “Potentially explosive atmospheres – Explosion prevention and protection”, the secretariat of which is held by DIN.

1 Scope

Inerting is a measure to prevent explosions. By feeding inert gas into a system which is to be protected against an explosion, the oxygen content is reduced below a certain concentration until no explosion can occur. The addition of sufficient inert gas to make any mixture non-flammable when mixed with air (absolute inerting) is only required in rare occasions. The requirements for absolute inerting will be discussed. Inerting may also be used to influence the ignition and explosion characteristics of an explosive atmosphere.

The guidance given on inerting is also applicable to prevent an explosion in case of a fire.

The following cases are not covered by the guideline:

- admixture of an inert dust to a combustible dust;
- inerting of flammable atmospheres by wire mesh flame traps in open spaces of vessels and tanks;
- fire fighting;
- avoiding an explosive atmosphere by exceeding the upper explosion limit of a flammable substance.

Inerting which is sufficient to prevent an explosion is not a protective measure to prevent fires, self-ignition, exothermic reactions or a deflagration of dust layers and deposits.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1127-1:1997, *Explosive atmospheres – Explosion prevention and protection – Part 1: Basic concepts and methodology*.

EN 14034-4, *Determination of explosion characteristics of dust clouds – Part 4: Determination of the limiting oxygen concentration LOC of dust clouds*.

prEN 14756, *Determination of the limiting oxygen concentration (LOC) for gases and vapours*.

EN 50104, *Electrical apparatus for the detection and measurement of oxygen – Performance requirements and test methods*.

IEC 61508-1, *Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 1: General requirements (IEC 61508-1:1998 + Corrigendum 1999)*

IEC 61508-2, *Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 2: Requirements for electrical/electronic/programmable electronic safety-related systems (IEC 61508-2:2000)*.

IEC 61508-3, *Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 3: Software requirements (IEC 61508-3:1998 + Corrigendum 1999)*.

IEC 61511-1, *Functional safety – Safety instrumented systems for the process industry sector – Part 1: Framework, definitions, system, hardware and software requirements (IEC 61511-1:2003 + corrigendum 2004)*.

IEC 61511-2, *Functional safety – Safety instrumented systems for the process industry sector – Part 2: Guidelines for the application of IEC 61511-1 (IEC 61511-2:2003)*.

IEC 61511-3, *Functional safety – Safety instrumented systems for the process industry sector – Part 3: Guidance for the determination of the required safety integrity levels (IEC 61511-3:2003 + corrigendum 2004)*.