



FAQ - FREQUENTLY ASKED QUESTIONS

Hazardous Area Classification (HAC)

We summarised frequently asked questions on regulations and classification of hazardous areas to give you a deeper understanding of this topic to ensure safe operations as well as regulatory compliance.

If you want to learn more about our HAC services, please contact us.

1. What guidelines relate to HAC?

In the European or ATEX scheme, EN 60079-10-1 and EN 60079-10-2 are the relevant classification documents.

2. What classification scheme is used?

In the European community (IEC/ATEX), and some other countries, the Zone scheme is used. An area in which an explosive atmosphere is present continually, frequently or for long periods is designated zone 0 for gases and zone 20 for dust. An area in which an explosive atmosphere is likely to occur under normal operating conditions is labelled zone 1 for gases and zone 21 for dust. Finally, an area in which an explosive atmosphere is not likely to occur under normal operating conditions and, if it does occur, will be of short duration falls under zone 2 for gases and zone 22 for dust.

3. Which hazardous materials contribute to classified areas?

In the IEC/ATEX scheme, hazardous materials are grouped into categories designated I, IIA, IIB, IIB + H2 and IIC. Methane belongs to category I. Category IIA includes gasoline, acetone, ammonia, benzene, butane, cyclopropane, ethanol, hexane, methanol, natural gas, naphta, propane or similarly hazardous gases. In category IIB ethyl, ether and ethylene or gases of an equivalent hazard are grouped. A separate category, IIB + H2, comprises hydrogen, fuel and combustible process gases containing more than 30% hydrogen by volume or similar gases such as butadiene, ethylene oxide, propylene oxide and acrolein. Acetylene belongs to category IIC.

4. What information needs to be gathered to perform an effective HAC?

Flammability data on relevant substances must be obtained, which requires laboratory testing. For powders and dusts, this could include explosivity (dust deflagration constant (Kst)) and ignitibility (minimum ignition energy of a dust cloud (MIE), minimum ignition temperature of both a dust cloud and layer (MITc and MITl), minimum explosible concentration MEC)) tests, and conductivity properties. Where gases or liquids are concerned, important tests include limits of flammability, flashpoints (liquids), gas or vapour density, auto ignition temperature (AIT), minimum igniting current (MIC) and maximum experimental safe gap (MESG). Our experts conduct these tests in our own state-of-the-

art laboratories, which streamlines and expedites our services. Building and equipment layouts, evaluations of ventilation and fuel transport systems, estimations of leakage or release probability and duration are examples of other types of information required for the HAC process.

5. What is the end result of an HAC?

A hazardous area electrical classification report is the culmination of the HAC process and should be prepared for every facility where flammable atmospheres may be created during normal and/or abnormal operating conditions. This documentation should be revised every three years or where substantive changes are made.

Would you like to get more information?

Contact Us

DEKRA Process Safety

The breadth and depth of expertise in process safety makes us globally recognised specialists and trusted advisors. We help our clients to understand and evaluate their risks, and work together to develop pragmatic solutions. Our value-adding and practical approach integrates specialist process safety management, engineering and testing. We seek to educate and grow client competence to provide sustainable performance improvement. Partnering with our clients we combine technical expertise with a passion for life preservation, harm reduction and asset protection. As a part of the world's leading expert organisation DEKRA, we are the global partner for a safe world.

Process Safety Management (PSM) Programmes

- > Design and creation of relevant PSM Programmes
- > Support the implementation, monitoring, and sustainability of PSM Programmes
- > Audit existing PSM Programmes, comparing with best practices around the world
- > Correct and improve deficient Programmes

Process Safety Information/Data (Laboratory Testing)

- > Flammability/combustibility properties of dusts, gases, vapours, mists, and hybrid atmospheres
- > Chemical reaction hazards and chemical process optimization (reaction and adiabatic calorimetry RC1, ARC, VSP, Dewar)
- > Thermal instability (DSC, DTA, and powder specific tests)
- > Energetic materials, explosives, propellants, pyrotechnics to DOT, UN, etc. protocols
- > Regulatory testing: REACH, UN, CLP, ADR, OSHA, DOT
- > Electrostatic testing for powders, liquids, process equipment, liners, shoes, FIBCs

Specialist Consulting (Technical/Engineering)

- > Dust, gas, and vapour flash fire and explosion hazards
- > Electrostatic hazards, problems, and applications
- > Reactive chemical, self-heating, and thermal instability hazards
- > Hazardous area classification
- > Mechanical equipment ignition risk assessment
- > Transport & classification of dangerous goods

We have offices throughout North America, Europe, and Asia.

For more information, visit www.dekra-process-safety.co.uk

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