



DATA SHEET

A Question of Compliance

ATEX & DSEAR

ATEX was introduced as European Directive 1999/92/EC on 16th December 1999 and sets out the minimum requirements for maintaining the health and safety for protection of workers potentially at risk from explosive atmospheres. All EU Member States had to implement the ATEX Directive into national Health & Safety Regulations by no later than 30th June 2003. In the UK, ATEX was implemented as DSEAR (Dangerous Substances & Explosive Atmospheres Regulations 2002). A company can be prosecuted for not complying with DSEAR, and a government can be prosecuted for not implementing the ATEX Directive. However, for the purposes of general understanding, the terms ATEX and DSEAR can be considered synonymous.

Does This Affect Me?

There is a wide range of “dangerous substances” or “preparations” that can give rise to fires and explosions. These may occur naturally or be produced in a chemical or manufacturing process. They can take different physical forms - solids, liquids, gases, vapours and also dusts. Substances produced by a work activity are included, such as intermediates in a chemical process, waste products, or those arising from an accident, for example in a runaway chemical reaction.

Since the introduction of ATEX and DSEAR, DEKRA Process Safety have been working closely with our clients to achieve compliance. During this time we have discussed the impact of these health and safety regulations with many different process companies and have identified a number of popular misconceptions regarding compliance. Requirements include risk assessments, definition of bases of safety, identification of ignition sources, operator training, etc.

The Most Frequent Compliance Misconceptions?

My electrical equipment is already compliant

ATEX / DSEAR requires that both electrical and non-electrical equipment be certified for use in explosive atmospheres. Therefore mechanical components need to be assessed in line with current best practice. In addition, the electrical equipment that was suitable on installation should be examined at regular intervals to ensure that it is still compliant.

Doesn't apply as my processes are not at ambient conditions

ATEX applies to explosive atmospheres occurring at atmospheric conditions however the Chemical Agents Directive (CAD) and DSEAR cover both elevated temperatures and pressures. Explosive atmospheres are most often the result of an unplanned escape of combustible substances. Once these are released to the atmosphere, they can be deemed to be at ambient temperature and pressure irrespective of their process conditions in confinement.

Our electrical-instruments engineer is dealing with it

In many companies, the site electrical or instrument engineer has become the project leader for ATEX / DSEAR compliance, particularly as they have experience of area classification. In the past when area classification related only to electrical equipment, this would have been acceptable. However area classification is just one part of the legislation, as ATEX / DSEAR specifically refers to other ignition hazards such as electrostatic spark discharge, in addition to electrical and mechanical ignition sources. There is also a requirement to conduct risk assessments of nonelectrical (commonly called 'mechanical' equipment) with regard to explosion safety and additionally to conduct a chemical reaction hazard assessment if the company processes or handles reactive chemicals. This can also include unstable substances such as organic peroxides which can spontaneously ignite if heated above (and sometimes even below) their ambient SADT (self-accelerating decomposition temperature).

This is specifically a requirement of the CAD which is incorporated within DSEAR in UK legislation. It is unlikely that the electrical or instrument engineer alone will have the necessary skills to demonstrate ATEX / DSEAR compliance and therefore it is advisable to utilise in-company skills and outside resources as appropriate.

Material Safety Data Sheets (MSDS) contain all the data I need

In order to complete an effective assessment of explosion risks as required by ATEX / DSEAR, an operating company must understand the flammability properties of the materials it handles.

Most MSDS don't contain any explosivity or flammability data in respect to dusts so full reliance on them to demonstrate compliance may result in failure. A company must have accessible flammability data relating to its materials, processes, and operational conditions and not just rely on generic explosivity data.

Employer Obligations

The implications of the ATEX/DSEAR regulations are for the employer to ensure the health and safety of their staff, and anyone else who could potentially be at risk, by taking all organisational and/or technical measures to prevent the formation of explosive atmospheres. Additionally, where the nature of an activity precludes this, remove any sources of ignition and mitigate the detrimental effects of an explosion.

Where necessary these measures must be combined and/or supplemented by measures to prevent the propagation of explosions. This can be summed up in DEKRA Process Safety's 'Three Rules of ATEX/DSEAR':

1. Do not have a flammable atmosphere, but if you do...
2. Do not ignite it, but if you do...
3. Do not hurt anyone.

The Path to Compliance

The employer's obligations under ATEX / DSEAR are clearly stated, however the implications to their site are not always understood. Practitioners need to undertake an explosion risk assessment and hazardous area classification. They need to ensure, not only that their equipment meets the safety standard for the zone in which it is used, but also provide suitable warning signs with adequate documentation such as an Explosion Protection Document (EPD).

For further advice, talk to us as we have undertaken ATEX/ DSEAR audits for many UK and international companies and developed specific techniques and competencies to help ensure compliance.

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 optimisation (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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