

Hazardous Area Classification

Guidance Notes

What is it, when is it required and how is it done?

When the DSEAR risk assessment process identifies that there is sufficient risk from flammable substances (be they gases, solvents, mists or solid dust particles) to warrant special precautions to control sources of ignition then an area classification exercise should be carried out.

Area classification is a risk assessment which in outline is carried out as follows:



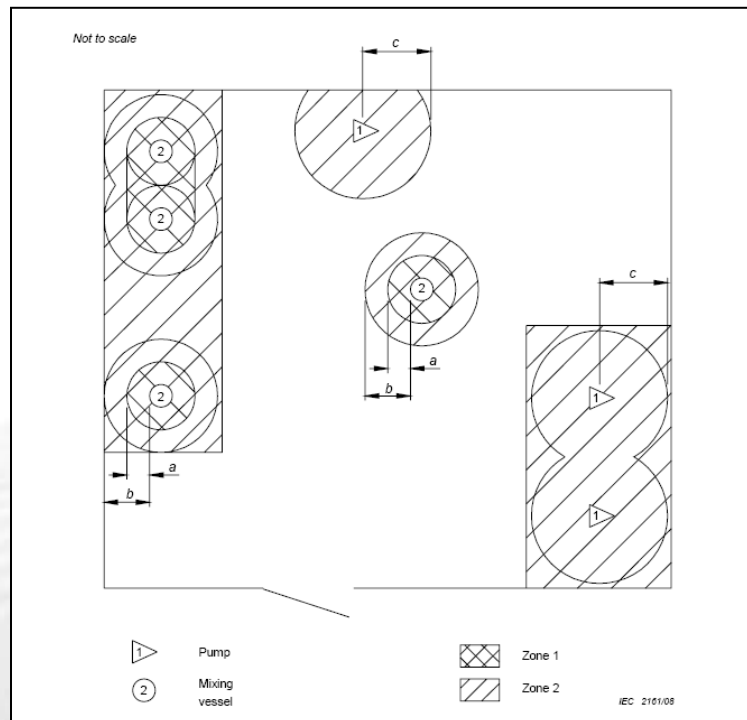
- Draw up a list of flammable materials and their properties
- Decide which process equipment can leak these flammable materials
- Decide how much of these flammables can escape from this equipment and how often
- Decide how far these flammable materials can spread before dilution to below the LEL
- Draw up a hazardous area zone plan

Hazardous Area Zoning

Fig 1

Typical Hazardous Area Zoning Plan

Mixing room in a paint factory



These actions & decisions are taken before, during & after the area classification meeting. The meeting is where the operations people and the engineering people meet to discuss and take the above decisions.

What is area classification used for?

- To set the specifications for electrical (& instrument) equipment both fixed & portable
- To set the specifications for mechanical & process equipment both fixed & portable
- The issue of hot work permits
- The control of vehicle movements etc

Hazardous Area Classification



What is the process?

Area classification is a team exercise involving the Design Process Engineer and/or Plant Manager, the Design Mechanical Engineer and/or Plant Mechanical Engineer, the Design Electrical Engineer and/or Plant Electrical Engineer and perhaps a facilitator.

1. Start by drawing up a list of materials handled, processed and stored.
2. Get properties from MSDS sheets, etc
3. Develop a Table of Flammable Materials with their flammable characteristics
4. Get process line diagrams and layout plans
5. Do a site survey to locate and list items of equipment which are sources of flammable hazard in both normal operation and fault conditions
6. Develop number 5 into a List of Equipment for Area Classification (LEAC) Sheets or Table of Sources of Release
7. Hold an area classification meeting to:
 - ✓ Brief / train the team
 - ✓ Go through and validate the Table of Flammable Materials with their flammable characteristics.
 - ✓ Identify any missing materials etc and complete the table
 - ✓ Go through and validate the LEAC Sheets. Identify any missing items and add to the list
 - ✓ Go through each item in turn on the LEAC Sheets deciding the grade(s) of release and what controls are in place such as ventilation natural or mechanical etc.
 - ✓ Assign the zoning and the extent and enter all of the foregoing into the blank fields in the LEAC Sheets. This may require calculation or measurements outside of the meeting. Large jobs may require further meetings
8. Specify the electrical equipment certification requirements. Add to the LEAC Sheets.
9. Produce Hazardous Area Classification Zone Drawings and application notes
10. Hold a review meeting which re-iterates and finalises the above steps.
11. Ensure installed equipment meets the zone requirements
12. Equipment not fit for purpose shall be put into a replacement / improvement programme
13. Inspect and maintain equipment fit for purpose for life using competent (Compex trained) people
14. Post EX Signage in appropriate places

Applicable Standards

BS EN 60079-10-1:2009

Explosive atmospheres
Classification of areas
Explosive gas atmospheres

IEI IP-MCSP-P15 (2005)

Model Code of Safe Practice Part 15: Area Classification
Code for installations handling flammable fluids (3rd edition)

BSI BS EN 61241-10

Electrical apparatus for use in the presence of combustible dust Part 10: Classification of areas where combustible dusts are or may be present

Useful links

HSE Explosive Atmospheres – Classification of Hazardous Areas (Zoning) and Selection of Equipment:

<http://www.hse.gov.uk/fireandexplosion/zoning.pdf>

NOTE Hazardous areas cost money! Are there opportunities for improvement or legitimate avoidance?