Health & Safety Laboratory
An agency of the Health & Safety Executive

Quadvent

Hazardous Area Classification Training and Consultancy

Established over 100 years ago specifically to investigate explosive industrial conditions, HSL is now a world authority on the subject and is still frequently consulted on the prevention of accidental explosions.

Building on this unique knowledge base, over recent years HSL has specifically taken a leading role in developing appropriate, scientifically-based approaches to hazardous area classification.

Through its unique relationship with its parent body, HSE, HSL can provide bespoke training on hazardous area classification, including the use of Quadvent, in addition to consultancy on hazardous area classification and other related matters.

Product Details

Quadvent is sold under perpetual licence and is supplied electronically as a downloadable installation package.

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Quadvent

HEALTH & SAFETY LABORATORY

Enabling a better working Britain

Product Overview

Quadvent is a mathematical model of a flammable gas jet that can be used as part of a hazardous area classification exercise under the Dangerous Substances and Explosives Atmospheres Regulations (DSEAR). It can model releases of flammable gas either in a ventilated enclosure or outdoors.

The model was originally developed by HSL in 2011 for calculating the flammable gas cloud volume (Vz) as a scientifically based alternative to the method described in the international standard on area classification (IEC60079:10-1).

HSL has now developed Quadvent into a software program that is easy to use, quick to run and allows the user to obtain realistic estimates of Vz for a given gas, pressure and hole size. The model can take into account the effects of ventilation by specifying the room volume and ventilation rate.

Quadvent also provides estimates of the ventilation rate of naturally ventilated enclosures through a relatively simple model based on the effects of buoyancy and wind driven ventilation.

Why Use Quadvent?

The approach for calculating Vz described in the international standard on area classification, IEC60079:10-1, has **frequently been shown to provide answers that are conservative by three orders of magnitude** or more.

Use of Quadvent as an alternative will therefore **save the capital and special maintenance costs** of unnecessarily protecting electrical and non-electrical equipment for use in hazardous areas, and **allow resources to be directed towards areas of genuine risk**.

In addition to being used for hazardous area classification, Quadvent can be used in any situation where the flammable gas cloud volume, or extent of the flammable cloud, needs to be determined for a pressurised gas release within an enclosure or outdoors.

Features of the Tool

Quadvent is a **quick and easy-to-use tool** for calculating the gas cloud volume, Vz, which is a key parameter used in a hazardous area classification assessment under DSEAR.

The model has been **published in a peer-reviewed journal and validated against a detailed data set** for gas releases in a ventilated enclosure.

The software has undergone a **rigorous testing programme**, to ensure that it is a robust and valid instrument for hazardous area classification.

The software contains:

- A model of a gas jet released within a ventilated building or outdoors
- A model for estimating the natural ventilation rate of a building
- A list of basic substance properties, as well as a comprehensive help system to assist with using the program.