

# Calibration in a hazardous area

Posted by [Heikki Laurila](#) on Oct 31, 2017

[Tweet](#)[Share](#)[Like](#)[Share](#)

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click [Cookie Settings](#).

[> Cookie Settings](#)[✓ Accept Cookies](#)



ENG



equipment suitable for an EX area.

The downloadable white paper discusses this topics in more details:



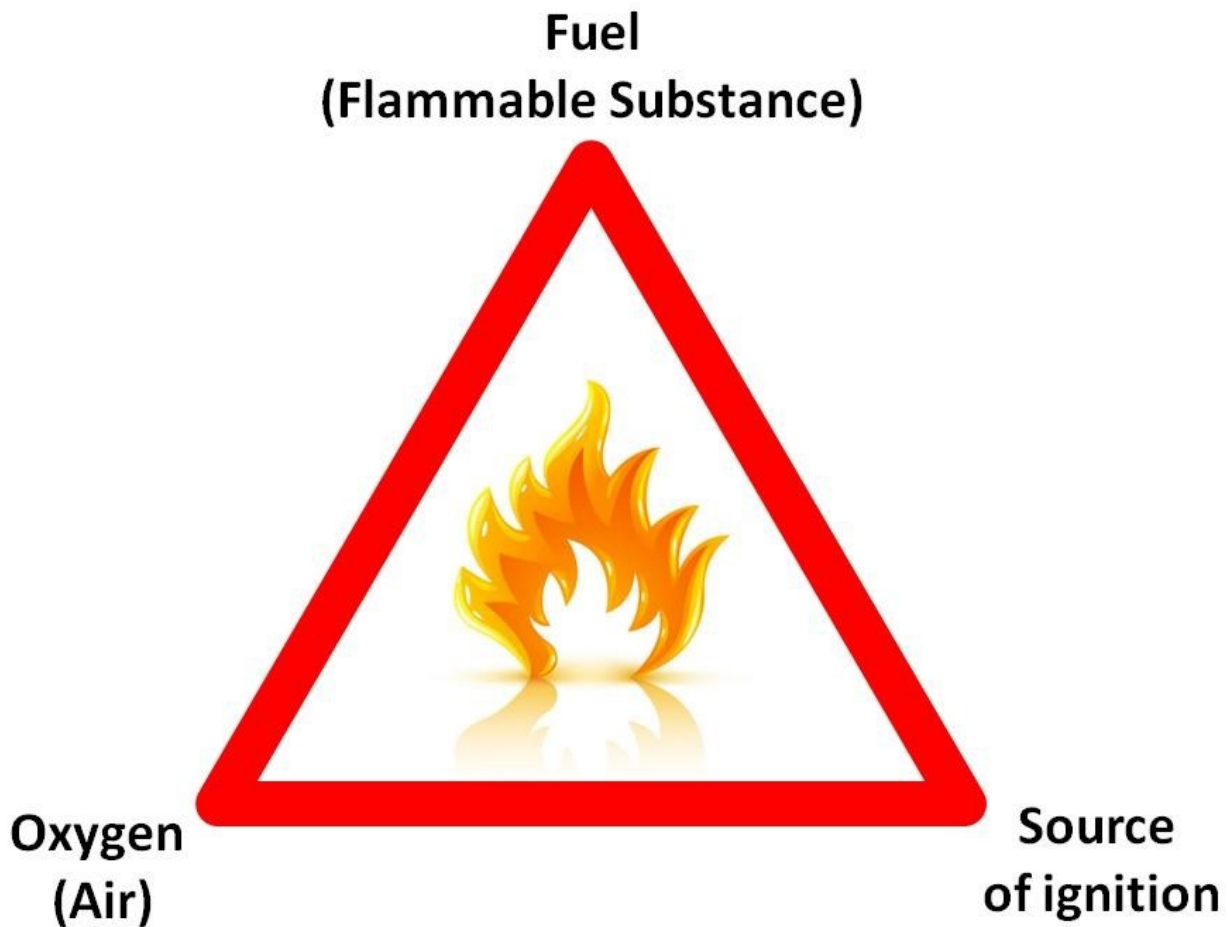
## What is a hazardous area?

A hazardous area is an area (indoors or outdoors) that contains, or may contain, flammable substances. The flammable substance may be a liquid, gas, vapor or dust. Depending on the hazardous area classification, the area may contain a flammable substance all the time, or it is likely to be a certain ratio of the time, or only in

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

> [Cookie Settings](#)

✓ [Accept Cookies](#)



## Eliminating one element from the explosion triangle

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click [Cookie Settings](#).

[> Cookie Settings](#)

[✓ Accept Cookies](#)



In the case of electrical calibration equipment, the device can be specially designed, so that it can be used safely in hazardous areas. There are many ways to design electrical equipment suitable for hazardous areas and this topic will be discussed later.

Calibration equipment is often designed in such a way that it cannot provide enough energy to cause the source of ignition, spark or heat.

## Brief history of hazardous areas

Some of the first hazardous areas were discovered in early coal mines. Being flammable substances, both the coal dust and the methane absorbed created a hazardous area. The lighting in early mines was produced by candles and torches, generating a source of ignition.

This led to many accidents. Later, when miners began to use electrical equipment (lighting, tools), many accidents occurred due to sparking or heating. Eventually, design standards were

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

[Cookie Settings](#)

[✓ Accept Cookies](#)



There are many industries that have hazardous areas. Some plants have large hazardous areas, while others have only small sections classified as hazardous areas. Typical industries with hazardous areas include chemical and petrochemical industries, offshore and on-shore oil and gas, oil refining, the pharmaceutical industry, food and beverage, energy production, paint shops and mining.

Since a flammable substance may be a liquid, gas, vapor or dust, there are surprisingly many different industries that may have some areas in the plant where these substances may be present during the normal operation or during shut-down. Even some seemingly safe industries may have hazardous areas.

In plants, all areas classified as hazardous should be clearly marked with the Ex logo:



We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

[> Cookie Settings](#)

[✓ Accept Cookies](#)



They are liquids that can burn. They may be gasoline, diesel fuel, solvents, cleaners, paints, chemicals, etc. Some of these liquids are present in many workplaces.

Flashpoint and autoignition temperatures are also often discussed.

Flashpoint is the lowest temperature of a liquid at which it produces sufficient vapor to form an ignitable mixture with air. With a spark or enough heat, it will ignite.

Autoignition temperature is the lowest temperature at which a liquid will ignite even without an external source of ignition. Most commonly, flammable and combustible liquids have autoignition temperatures in the range of 572 °F to 1022 °F (300 °C to 550 °C). However, there are liquids that have an auto-ignition temperature as low as 392 °F (200 °C) or less.

Based on their flashpoint, liquids are classified as flammable or combustible. Flammable liquids may ignite at normal working temperatures, while combustible liquids burn at higher temperatures. Often 100 °F (37.8 °C) is considered as the temperature limit. Flammable liquids have a flashpoint below 100

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

[> Cookie Settings](#)

[✓ Accept Cookies](#)



flashpoint. For example, gasoline has a flashpoint as low as c. -40 °F (-40 °C). It produces enough vapors in normal environmental conditions to make a burnable mixture with air. Combustible liquids have a flashpoint way above normal environmental conditions, and therefore they have to be heated before they will ignite.

Some examples of flashpoints and autoignition temperatures:

## Various protection techniques

As mentioned earlier, to prevent an explosion, one of the three elements of the Explosion Triangle should be eliminated. In practice, eliminating the source of ignition would be the most sensible. There are various techniques in electrical equipment that make them safer for use in hazardous areas.

These different techniques fall into two main categories: eliminate

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

[Cookie Settings](#)

[✓ Accept Cookies](#)



ENG ▼



equipment. Intrinsically safe equipment is designed so that it will not provide enough energy to generate sparks and excessively high surface temperatures, even in the case of a fault in the device. The equipment is designed to be intrinsically safe.

Inside an Exi device, the Exm (“Encapsulated”) technique may also be used for certain parts of the equipment (as in a battery pack).

## “Hot work permit”

Using non-Ex calibration equipment in a hazardous area may be possible, but it requires special approval from the safety personnel in the factory. Oftentimes, this also involves the use of safety devices, such as personal portable gas detectors, to be carried in the field while working.

Using equipment rated for use in Ex area is easier, as it does not require any special approvals. Naturally, the rating of the Ex-rated calibration equipment must be suitable for the rating of the hazardous area to which it is taken to.

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

[> Cookie Settings](#)[✓ Accept Cookies](#)



- NORTH AMERICAN legislation differences. DIVISIONS
- Explosion group
- Environmental conditions
- Example of equipment marking

Click the image below to download the free white paper:



## New Beamex MC6-Ex calibrator for hazardous areas

Last, but not least: We have recently introduced the MC6-Ex, a new calibrator & communicator that can be used in any hazardous

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

> [Cookie Settings](#)

✓ [Accept Cookies](#)



ENG ▼



## Written by Heikki Laurila

Heikki Laurila est responsable marketing produit chez Beamex. Il a commencé à travailler pour Beamex en 1988 et a, au cours de ses années chez Beamex, travaillé à la production, au SAV, au laboratoire d'étalonnage, en tant que responsable qualité, responsable produit et responsable marketing produit. Heikki est titulaire d'une licence en sciences. La famille de Heikki se compose de lui-même, de sa femme et de leurs quatre enfants. Pendant son temps libre, il aime jouer de la guitare.

### Back to top

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

[> Cookie Settings](#)[✓ Accept Cookies](#)



Necesito una cotización , que compañía me puede hacer llegar a mi correo, vivo en la Ciudad de México

Reply to *Daniel Zamorano*

---

**Heikki Laurila**

02/11/2017, 17:34:28

Thanks Daniel,  
We will contact you by email.  
Heikki

Reply to *Heikki Laurila*

---

**Moisés Medina**

03/11/2017, 02:08:16

Necesito calibrador de Sensores de Temperatura, urgente.  
Ensamblamos Sensores Pt100, Pt1000-RTD, Termocuplas y Resistencias eléctricas.  
Gracias

Reply to *Moisés Medina*

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

> [Cookie Settings](#)

✓ Accept Cookies



ENG



Favor comuníquese conmigo al cel 0984839317

Reply to *JOHN ANGULO TORRES*

**Heikki Laurila**

09/11/2017, 00:17:15

Sure, we'll be in touch with you.

Reply to *Heikki Laurila*

**Carlos Marquez**

10/11/2017, 04:45:06

Excelente

Reply to *Carlos Marquez*

**Sai Lao**

08/01/2021, 20:59:04

66805047

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

> [Cookie Settings](#)

✓ Accept Cookies



## Heikki Laurila

03/11/2017, 17:18:47

Dear Sir,

Thanks for your interest in Beamex. We will take a look at your application. However, we do get pretty many application, and can not unfortunately offer job/training place for all.

Heikki

Reply to *Heikki Laurila*

---

## Carlos Marquez

10/11/2017, 04:50:13

Excelente

Reply to *Carlos Marquez*

---

## Oscar Osorto

14/11/2017, 00:30:46

Necesito informacion y cotizacion del equipo .  
Gracias

Reply to *Oscar Osorto*

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

> [Cookie Settings](#)

✓ Accept Cookies



ENG



I want to download the operating software for MC5

Reply to *Akintunde Godwin*

**Heikki Laurila**

23/11/2017, 17:12:31

You can find the latest firmware updates to MC5 (and other calibrators) in our web site in the "Download Center" located under "Resources" menu:  
<https://www.beamex.com/download-center/>

Reply to *Heikki Laurila*

**John Smith**

23/11/2017, 18:16:28

This is a very informative article for all calibration professionals, as well as other people who work in close proximity to these dangers, in various plants and industries. We especially liked the way you have given such a detailed explanation, about all the danger signs and logos- about what they actually mean. We strongly agree with the fact that, equipment that are made especially for use in Ex-areas, should be increasingly adopted by calibration professionals to save time and avoid freak accidents.

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

[> Cookie Settings](#)

[✓ Accept Cookies](#)



Reply to *Heikki Laurila*

---

## Jouni Hermunen

19/07/2018, 18:18:29

About calibration pump in hazardous area . Are the pumps suitable in hazardous area? All tools have to be ex certificated when working in hazardous area

Reply to *Jouni Hermunen*

---

## Heikki Laurila

30/07/2018, 22:10:04

Hi Jouni,

This blog post talks mainly about process calibrators for hazardous areas. But sure all the tools you use in hazardous area needs to be suitable for that area classification.

Simple mechanical tool are often "non sparking" tools, not Ex certified. There are also some Ex certified calibration hand pumps available that are suitable for certain hazardous areas.

Reply to *Heikki Laurila*

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

› [Cookie Settings](#)

✓ Accept Cookies



ENG

Reply to *Heikki Laurila*

## Electricals equipment Suppliers

01/04/2019, 21:50:08

Nice post. Thanks for sharing such type of valuable article. Keep sharing this type of informative post. I just want to tell you about Electronics, Electricals equipment Suppliers which is also helpful. Thanks

Reply to *Electricals equipment Suppliers*

## Leave a Reply

First Name

Last Name

Email

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

[> Cookie Settings](#)[✓ Accept Cookies](#)

Beamex blog provides insightful information for calibration professionals, technical engineers as well as potential and existing Beamex users. The blog posts are written by Beamex’s own calibration and industry experts or by guest writers invited by Beamex.

## Disclaimer

Search blog posts

## Subscribe to Email Updates

Get Beamex blog updates right to your inbox.

E-mail address...\*

We respect your privacy and handle the data you provide us with care. By submitting this form, you agree that we will store and process your personal data to provide you blog updates. You may unsubscribe at anytime. For more information, please check out our [Privacy Policy](#).

OK

Recent

Popular

Categories



How to avoid safety and compliance issues

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click [Cookie Settings](#).

[Cookie Settings](#)

✓ Accept Cookies



## Improving efficiency and ensuring compliance in the pharmaceutical industry

posted at Oct 05, 2021



## Pressure Calibration [eBook]

posted at Jun 22, 2021



## The Evolution of Calibration Documentation

posted at May 20, 2021



## Manual Data Entry Errors

posted at Mar 25, 2021



## How to choose a calibration laboratory - 13 things to consider

posted at Feb 23, 2021



## How to calibrate a temperature switch

posted at Dec 02, 2020

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

> [Cookie Settings](#)

✓ [Accept Cookies](#)



ENG



We exist to provide better ways to calibrate.

## Products & Services

[Calibrators](#)[Software](#)[Services](#)

## About Beamex

[Our story](#)[Testimonials](#)[Case stories](#)

## Customer Service & Support

[Worldwide contacts](#)[Support contacts](#)[Terms & Conditions](#)

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click Cookie Settings.

[> Cookie Settings](#)[✓ Accept Cookies](#)



ENG



© 2019 Beamex Oy Ab. All rights reserved.

[Legal Notice](#)   [Privacy Policy](#)

We use cookies to personalise content and ads, to provide social media features and to analyse our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. By continuing to use our site, you agree to the use of cookies. To learn more about the cookies we use and to set your own preferences, click [Cookie Settings](#).

[> Cookie Settings](#)

✓ Accept Cookies