

## ★ Hazardous Area

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A hazardous area can be defined as "An area in which flammable substance in the form of gas, vapor or dust when mixed with the air, is present in such proportions that it can explode when in contact with an ignition source.&nbsp; This mixture of gas and air in proper proportions is important in the equation.&nbsp; The mixture must be between the lower flammable limit and the upper flammable limit in order for an explosion to occur. Most traditional flammable gases and vapors have limits between 2% - 10% fuel to oxygen ratios.&nbsp; In order for ignition to occur, a certain amount of energy is needed.&nbsp; The minimum ignition energy is the smallest possible amount of energy which is converted during the discharge of a capacitor and is just enough to ignite the most ignitable mixture.&nbsp; The minimum ignition energy is around 10<sup>-5</sup> for Hydrogen.



### **Area Classification**

Hazardous areas are classified with respect to the potential danger of an explosion and the areas are divided into zones:

**Zone 0:** An area in which an explosive atmosphere is continually present or present for long periods, typically over 100 hours per year

**Zone 1:** An area in which an explosive atmosphere is likely to occur in normal operation, typically between 10 and 100 hours per year

**Zone 2:** An area in which an explosive atmosphere is not likely to occur in normal operations and, if it does occur, will exist for only a short time, typically less than 10 hours per year