

## Abstract

### A Study on Classification of Explosion Hazardous Area through the Physical Properties of Flammable Liquid

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Objectives : Fire and explosion accidents caused by the vapor of flammable liquid have occurred frequently in recent years. Looking at the causes, after explosive gas atmosphere is formed by the vapor of flammable liquids into the workplace, it has occurred by ignition source such as static electricity, spark, etc. In this study, after obtaining the physical properties such as vapor pressure, etc. through the experiment and the calculation equation in order to classify hazardous area due to evaporation rate of flammable liquids. We calculated the rate of evaporation of flammable liquids. Then, it was performed classification of hazardous area with degree and availability of ventilation. These results would be provided workplace that handles flammable liquids and expected to help to prevent chemical accidents.

Methods : It was conducted to review correlation equation of

hazardous area related to leakage and evaporation of the flammable liquids and investigated the actual conditions for classification of hazardous area of the workplace that manufacture, handling or use of flammable liquids. Then, it was performed classification of hazardous area applied physical properties, degree and availability for ventilation and extent of zone and time of persistence of an explosive gas atmosphere carried out a review due to changes of external environment conditions such as temperature, wind, etc. and leakage hall size.

Results : Among the model equations to obtain the rate of evaporation of stored flammable liquids in open mixing vessels, if judging in the conservative point of view, It is preferable that model equations of US EPA related to RMP is calculated the greatest extent of zone. As the temperature increases in the workplace, the vapor pressure of mixed solvent with high volatility is greatly rising and the type of hazardous area has been strengthened. Also, extend of zone is widened. Prior to distinguish hazardous area, it is necessary to prevent stay vapor of flammable liquids by complementing supply and return air system in order to get an adequate ventilation and formation of air current.

Key words : Hazardous area, Extend of zone, Flammable liquids, Rate of evaporation