

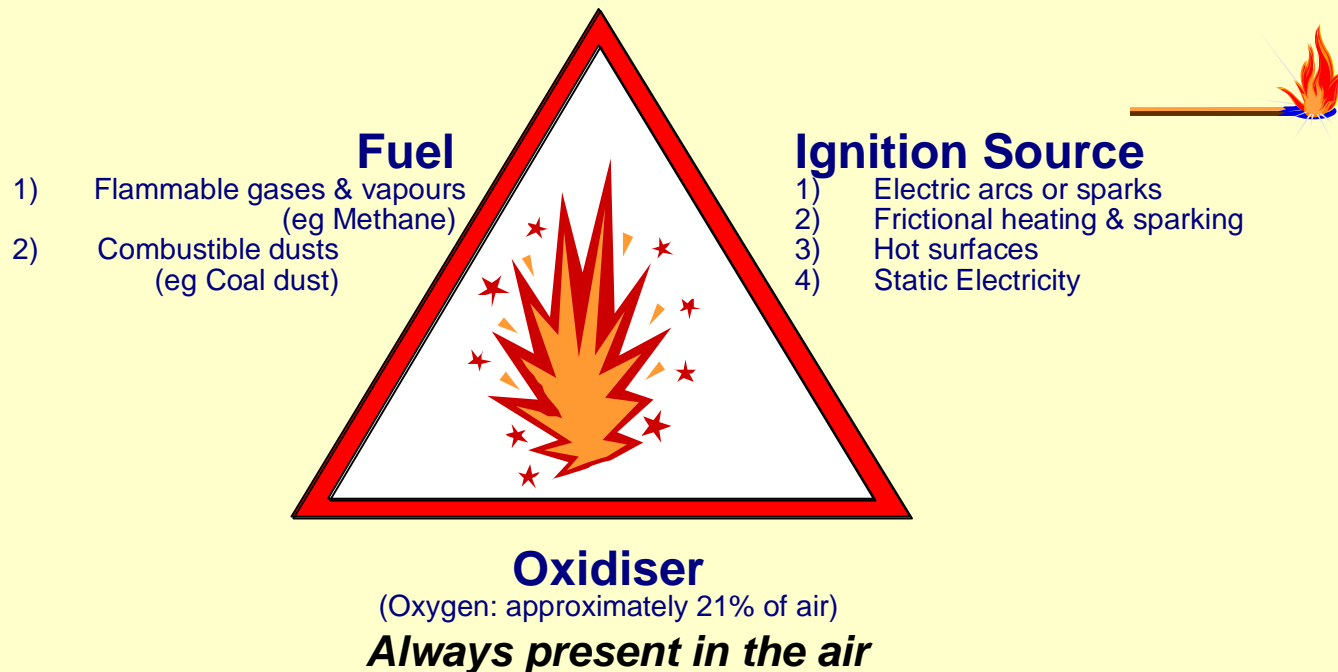


EXPLOSION

RISKS

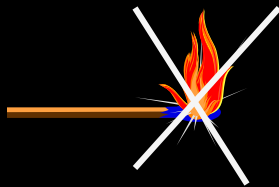
3 parameters for an **EXPLOSION**

- Requirement for an explosion: the ignition triangle



IGNITION TEMPERATURE...

- It is the temperature from which a product starts spontaneously its combustion without the intervention of an outside source (*spark*).
 - H_2 : $560^{\circ}C$
 - CH_4 : $550^{\circ}C$
 - acetone : $465^{\circ}C$
 - ethyl ether : $160^{\circ}C$
 - carbon sulphide : $102^{\circ}C$



FLASH POINT... (FLP)

- It is the minimal temperature from which a mixing of vapours, issued from liquids and air, may inflame in normal conditions of pressure.
 - *Ethyl ether* : - 45°C
 - *essence (oi 100)* : - 37°C
 - *acetone* : - 17°C
 - *gas oil* : + 55°C

About explosive atmosphere...



- *For each combustible gas or vapour in usual conditions of given temperature and pressure, there are:*
 - a **LOW EXPLOSIVE LIMIT :**
LEL
 - an **UPPER EXPLOSIVE LIMIT :**
UEL

Combustible gases

- **LEL** :

**lower
explosive
limit**

- The **minimum concentration** of gas or vapor mixed with air that will cause an explosion when its comes in contact with an ignition source.

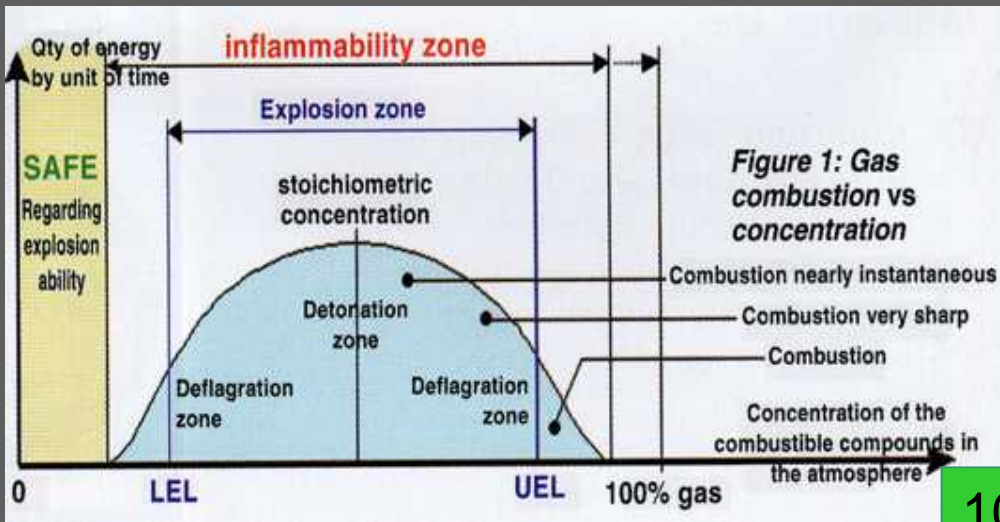
Combustible gases

- **UEL :**

**upper
explosive
limit**

- The **maximum concentration** of gas or vapor mixed with air that will cause an explosion when it comes in contact with a ignition source.

AIR/GAS CONCENTRATIONS



100% air

LEL 5% volume

UEL 14.7% volume

Alarm at 20% of LEL

(catharometre: % gas)

lean

explosive

rich

0%

100% of LEL