Technológia hasiacich látok/Extinguishing Agents Technology

EXTINGUISHING METHODS AND EXTINGUISHING EFFECTS

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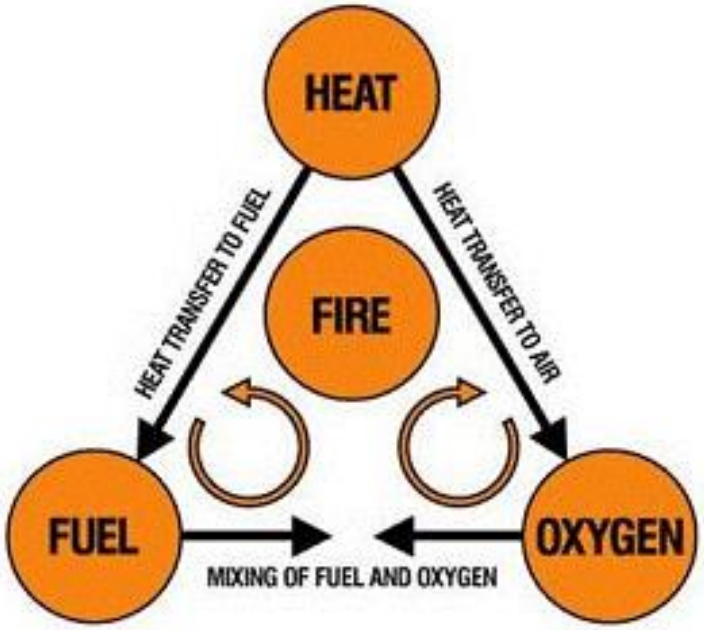
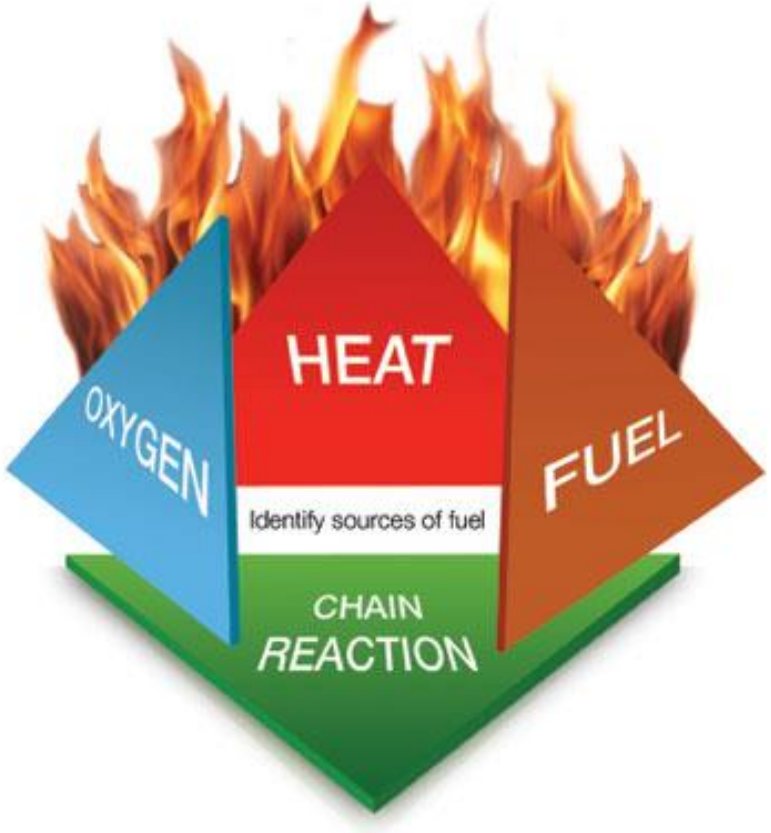
Contents

Extinguishing

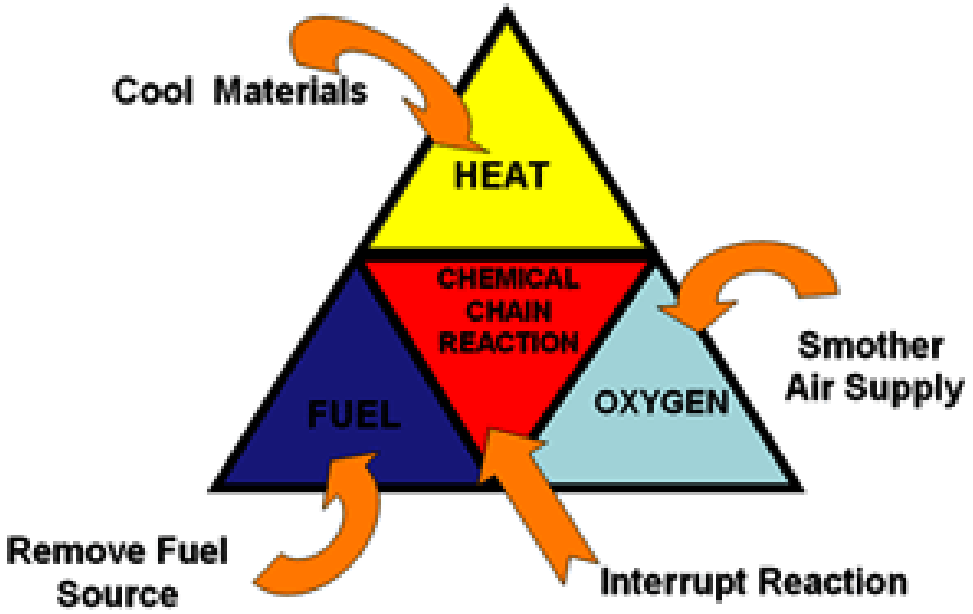
- a process with the aim to stop combustion
- meaningful activity
- physical or chemical principles

Fire Triangle/Fire Tetrahedron





Extinguishing methods



Extinguishing methods

1. **The heat** (= energy) **removing –** the extinguishing agent „removes“ energy from the fire (cooling effect)

2. **The reactants (fuel or oxygen) affecting** – the extinguishing agent isolates the fuel from the access to oxygen or dilutes the oxygen (isolation and dilution effect)

3. **The chain reaction rate slowing down –** the extinguishing agents react with intermediate products of the combustion reaction (inhibition effect)

Extinguishing effect

- The principle of action of the extinguishing agent
- Describes how the extinguishing agent affects the fire and how the fire is interrupted (stopped)

- The main EE and secondary EE

- Knowledge of EE, properties of ext. agents and their behavior under the influence of fire enables effective use of extinguishing media

Extinguishing effects

- They come from the fire triangle:

1. Cooling effect
2. Isolation effect
3. Dilution effect
4. Inhibition effect

Cooling effect

- Energy consumption by the extinguishing agent
- Lowering the temperature at the fire place
- Extingushing agents consume energy to physical changes (heating, evaporation)
- Water is the common EA
- Class A fires – organic materials, Wildlife fires

- Water jet/water spray/water mist

Dilution effect

- Air (oxygen) dilution until the combustion stop

- 6 – 16% of oxygen = 30 % of CO2
- Closed spaces
- Carbon dioxide, Nitrogen, Argon, Water mist

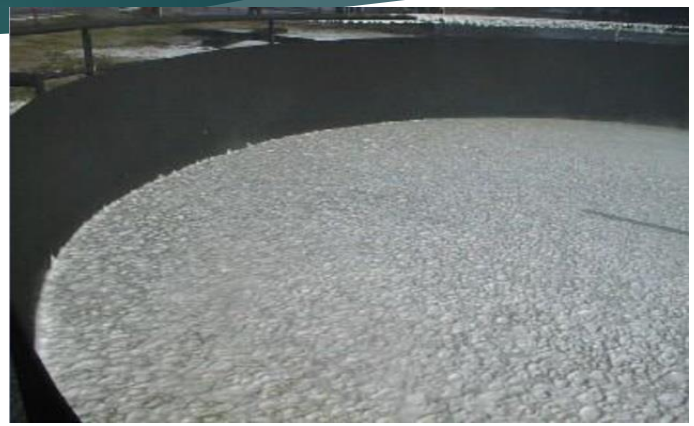
- Laboratory equipment, technological processes, IT technologies

Isolation effect

- Separation of combustibles from oxygen acces
- Firefighting foam – low-/medium-/high expansion
- Flammable liquids, waste tires, plastics,

airport hangares, warehouses

- The sand, fire blankets



Inhibition effect

- Halons and powder
- Lowering of chain reaction rate
- EAs react with intermediate products of the combustion reaction; EA must be in contact with flame

- Halons – synthetic gases, reaction with intermediates of combustion reaction

IT technologies, laboratory equipment, military (tanks, ships, U-boots, space rockets

- Powder – adsorption of intermediates of combustion reaction

Fires of class A, B and C, metal fires,

Practice makes perfect

- https://learningapps.org/watch?v=p5ikhstdt22
- https://learningapps.org/watch?v=p6kq74i4a22
- https://learningapps.org/watch?v=pyjka3te522