

Fire Hazards & Extinguishment

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ME 415: Refrigeration & Building Mechanical Systems



Types of Combustion

- ① **Slow or incipient combustion:** amount of heat and light emitted are feeble.
- ② **Rapid or active combustion:** considerable amount of heat and light are emitted within a short period of time.
- ③ **Deflagration:** combustion takes place with considerable rapidity, evolving heat and light.
- ④ **Explosion or detonation:** very rapid combustion accompanied by loud sound and impact within an extremely short time. It generates very high pressure and temperature.

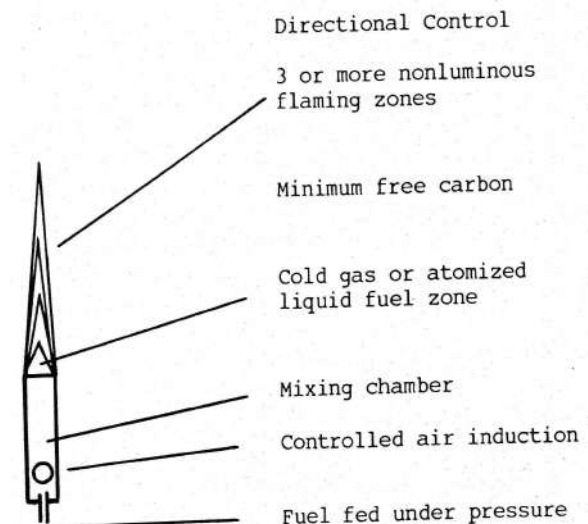


Fire

Fire is defined as a steady state of exothermic, self catalysed chemical reaction with the characteristic ability to propagate through a combustible medium, usually a fuel and an oxidiser which is generally atmospheric oxygen.



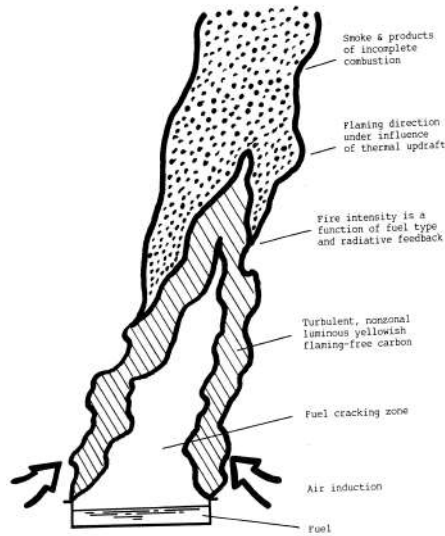
Types of Flame: Premixed Flame



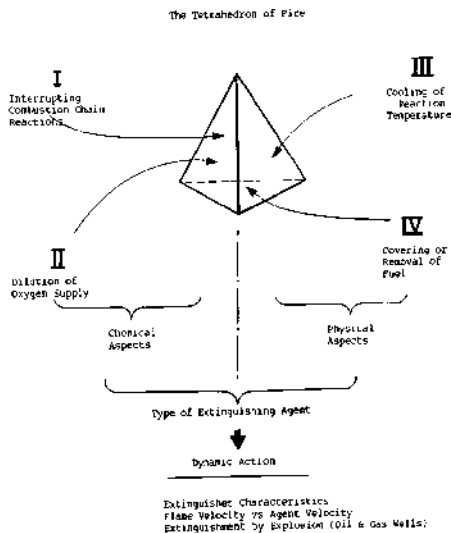
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Types of Flame: Diffusion Flame



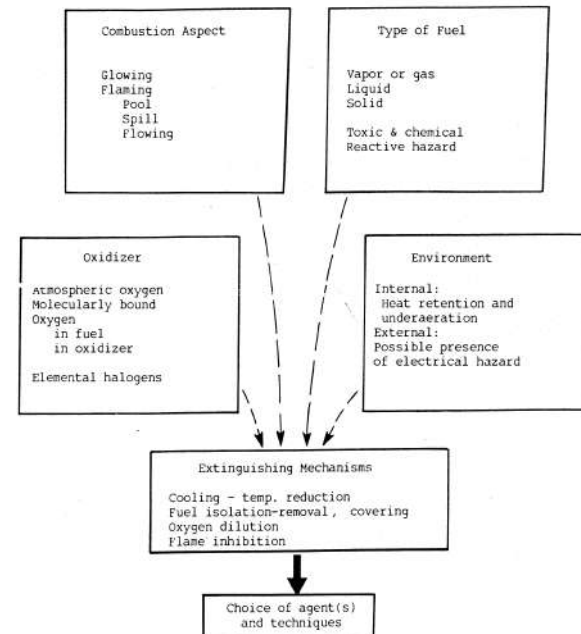
Fire Extinguishment Mechanism



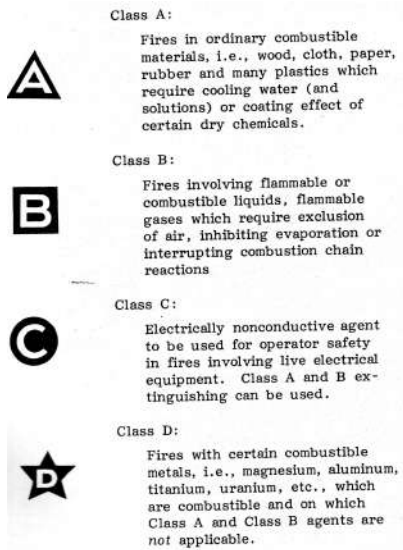
Flammable Liquid Classification

- 1 Class I: all liquids with flash points below 38°C . In most areas indoor temperature may reach 38°C ¹.
- 2 Class II: liquids with flash points between 38°C and 60°C . In some areas, flash point may exceed 38°C .
- 3 Class III: liquids with flash points above 60°C . Considerable heating from a source is required other than ambient temperature is required before ignition could occur.

¹Based on boiling temperatures, Class IA liquids have boiling points not exceeding 38°C and Class IB liquids have boiling points in excess of 38°C



Identification for Fire Hazard Materials



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Examples of Portable Extinguisher

Extinguisher type	Class A	Class B	Class C	Class D
Soda-acid	OK			
Foam	OK			
Loaded stream	OK	OK		
Dry chemical		OK	OK	
Carbon-di-oxide		OK	OK	
Dry power				OK