

## Gas Extinguishing Systems

A gas extinguishing system is a fire extinguishing system which extinguishes a fire by displacing the oxygen supply (reduction of oxygen content) or by physical means (withdrawal of heat).

With gas extinguishing agents, only room protection in an enclosed safety area is possible. An exception is the protection of machinery (object protection) using carbon dioxide, e.g., printing presses.

Differentiation of gas extinguishing systems according to the extinguishing agent used:

- Carbon dioxide - (CO<sup>2</sup>) extinguishing systems
- Inert gas -extinguishing systems
- Argon- extinguishing systems
- Nitrogen- extinguishing systems
- Inert gas- extinguishing systems with gas mixtures (Inergen, Argonite)
- Chemical extinguishing systems (HFC-227ea, HFC-23, Novec™ 1230)

When using carbon dioxide and inert gas extinguishing systems, personnel must vacate the area before the spraying of the extinguishing gas to avoid harm caused by the reduced oxygen content.

Chemical extinguishing systems function by withdrawing heat from the flames. The displacement of oxygen that takes place is so small that it does not have an extinguishing effect and only has a negligible effect on the safety of people.

Evacuation of the extinguishing area is always necessary as gases of combustion released in a fire pose a risk to health.

Along with gas extinguishing systems, alarms which warn personnel before operation of the extinguishing system must always be provided for those present in the extinguishing area.



Image: Wagner, [www.wagner.de](http://www.wagner.de)

When using carbon dioxide extinguishing systems the following must also be considered:

- In an effective extinguishing concentration the extinguishing agent is toxic and fundamentally life threatening
- Carbon dioxide is much heavier than air, therefore it sinks and gathers in trenches and cellars.
- Because of the instantaneous cooling of the carbon dioxide expanding at the nozzle, as with all vaporising extinguishing gases the humidity of the air in the room condenses to a mist, which increases the difficulty of escape from the extinguishing area.

Because of their possible risks, gas extinguishing systems are only used for fire risks, which cannot be controlled by other fire extinguishing systems or in which other fire extinguishing systems cause a disproportionately large amount of damage as a result of their extinguishing. The use of extinguishing water or foam can cause severe or irreparable damage, e.g. in archives, libraries, switching rooms, technical rooms, EDP rooms or server rooms.