Fire Suppression System  
  
[ECLSS & Fire Safety](https://www.nasa.gov/wp-content/uploads/2016/05/7-gatens_eclss_firesafety_tagged.pdf)  
ECLSS & Fire Safety (NASA document) — Explains aspects of fire safety in space environments, detection, types used, prevention.  
  
[R0200469.pdf](https://www.nist.gov/system/files/documents/el/fire_research/R0200469.pdf)  
Fire Protection in Manned Missions: Current and Planned — A research paper discussing preferred options for firefighting systems in human missions, some of which are compatible with the ISS.  
summary   
The fire suppression system aboard ISS comprises detection and suppression components:

* **Detection**: Photoelectric smoke detectors are used. They detect light scattering or obscuration by smoke particles. These detectors are often located in ventilation ducts or airway passages to sample air.
* **Suppression**: When a fire is detected, suppression may use:
  1. **Portable Fire Extinguisher (PFE)**: handheld cylinders containing CO₂ at high pressure (≈850 psi), designed to discharge in ~45 seconds. Multiple nozzles (conical for open area, cylindrical for enclosed volume) are used.
  2. **Air blow-out + CO₂ injection**: in open volumes, the system may first blow air to disrupt the flame, then inject CO₂ to reduce oxygen to < 10.5 % in an enclosed space within ~1 minute.
* **Suppression ports**: These are perforated ports in racks or standoffs where cylindrical nozzles can be inserted to direct CO₂ into enclosures.
* Upon detection, power may be cut to racks or experimental payloads to isolate ignition sources.
* A **Portable Breathing Apparatus (PBA)** is available to supply oxygen to crew members during fire response.