



Oxidizing Gases

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Oxidizing gases are gases which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. These gases can react rapidly and violently with combustible materials or flammable vapors. Examples of oxidizing gases include halogens (especially chlorine), nitrous oxide, and oxygen.



Personal Protective Equipment & Personnel Monitoring



Lab Coat

Standard lab coats are required. Flame resistant lab coats should be considered when handling oxidizers around combustible substances.



Gloves

For proper glove selection, review the chemical safety data sheet and consult glove manufacturer recommendations with your PI or supervisor.



Eye Protection

ANSI Z87.1 - Compliant safety glasses or safety goggles.

Labeling & Storage

Store oxidizing gases away from combustible materials, flammable gases, flammable and combustible liquids, finely-divided metals, and other easily oxidized substances such as hydrides, sulfur and sulfur compounds, silicon, and ammonia and amine compounds. Fire code requires that cylinders of oxidizing gases in storage be separated from fuel-gas cylinders or combustible materials by a minimum distance of 20 feet unless separated by a noncombustible barrier at least five feet high and with a fire resistance rating of least one-half hour.

Compressed gas cylinders should be individually anchored to a stable structure such as a wall with a chain or strap approximately $\frac{1}{2}$ to $\frac{3}{4}$ of the way up the cylinder. Additionally, cylinders should be tagged as full, in-use, or empty. Untagged cylinders are assumed to be full. Cylinders not in use should have regulators removed and safety caps in place.

Engineering Controls, Equipment & Materials



Fume Hood Typically a fume hood is not necessary for the handling of oxygen, but could be necessary if handling halogens or nitrogen dioxide due to their dual hazard of being both oxidizing gases and toxic gases. If you have a question about a lab-specific protocol or procedure involving the use of oxidizing gases and proper engineering controls, please contact the Office of Research Safety at 706-542-5288.

First Aid & Emergencies

Fire Do not attempt to extinguish a leaking gas fire unless the leak can be stopped. Use a dry chemical or CO2 extinguisher. If the fire is beyond the capabilities of the lab, immediately evacuate the area and contact 911. Stay near the scene to answer questions once first responders arrive.

Skin or Eye Contact Remove contaminated clothing and accessories; flush affected area with water. If symptoms persist, get medical attention.

Inhalation Move person into fresh air. If symptoms persist, get medical attention.

References

Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards, National Research Council, 2011

NFPA 45: Standard on Fire Protection for Laboratories, National Fire Protection Agency, 2015