



Flammable Gases

Version: March 2020

Flammable gases are any substance that exists in the gaseous state at normal atmospheric temperature and pressure and are capable of being ignited and burned when mixed with the proper proportions of air, oxygen or other oxidizers.

Examples of flammable gases include Acetylene and Hydrogen.



Personal Protective Equipment & Personnel Monitoring



Lab Coat

Flame resistant lab coat.



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 flammable gases away from oxidizing materials. Fire code requires that cylinders of flammable gases in storage be separated from oxidizing gas cylinders or other oxidizing 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 at 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 feasible for the handling of these materials. If you have a question about a lab-specific protocol or procedure involving the use of flammable gases and proper engineering controls, please contact the Office of Research Safety at 706-542-5288.



Cautions & Considerations

Static Electricity

There have been cases of static buildup igniting cylinders of flammable gases. Consequently, use spark proof equipment to attach or disconnect regulators and consider using an intrinsically safe pressure-gauge should your protocol require it.

Leaks

In the event that there is a potential leak coming from the gas cylinder do not try to make any self-repairs. Clear the room and call 911 and 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 (ABC or BC). If the fire is beyond the capabilities of the lab, 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 the affected person to an area with fresh air. If symptoms persist, get medical attention.

References

NFPA 45, Standard on Fire Protection for the Use of Chemicals in Laboratories, National Fire Protection Agency, 2015.

NFPA 55, Compressed Gases and Cryogenics Fluids Code, National Fire Protection Agency, 2013.

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

Contacts

Office of Research Safety: 706-542-5288

Environmental Safety Division: 706-542-5801



**UNIVERSITY OF
GEORGIA**

Office of Research Safety
Environmental Safety Division