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Storage and Handling of Flammable Liquefied Gas Cylinders in the Aerosol Product Laboratory - Guidelines

Applicable Codes and References

NFPA® 30B, Code for the Manufacture and Storage of Aerosol Products

NFPA® 45, Standard on Fire Protection for Laboratories Using Chemicals

NFPA® 55, Compressed Gases and Cryogenic Fluids Code

NFPA® 58, LIQUEFIED PETROLEUM GAS CODE

NFPA® 70, National Electrical Code

49CFR Transportation

Aerosol propellant cylinders vary in capacity from one pound (0.45 kg) up to one ton (907 kg), and vary in size from a few inches diameter up to 30 in (762 mm) or more in diameter and must meet the requirements in 49CFR for DOT specification cylinders. Aerosol product laboratories that handle flammable gases must meet the requirements for Class A laboratory units, as set forth in *NFPA45, Standard on Fire Protection for Laboratories Using Chemicals*.

General Guidelines

Ensure flammable liquefied gas propellant cylinders are handled carefully and only by trained personnel. Store empty cylinders separately from full cylinders.

Store large cylinders (and any cylinder not in use) outdoors in a secure, well ventilated area while awaiting use. (See NFPA 58, Storage of Portable Cylinders Awaiting Use, Resale, or Exchange for further information.)

When transported or stored, secure cylinders in their upright position, allowing the safety relief valve to be in contact with the vapor space.

In the Aerosol Production Laboratory, limit the quantity of flammable liquefied gas propellant to a maximum of 5 gallons / 100 ft^2 of laboratory floor area. Limit the size of flammable gas propellant cylinders to no more than 5 gallons and not more than 5 cylinders.

Since aerosol propellants are not odorized, and leaks cannot be detected by smell, it is strongly recommended that only small quantities of propellant be stored inside at any given time and only under authorization of the laboratory manager. Do not store flammable gas propellant cylinders with or near any oxidizer, pyrophoric, or toxic materials. *Refer to NFPA45 and NFPA30B for specific requirements regarding storage and segregation.*

Transfer Product samples from larger capacity cylinders into smaller cylinders in a laboratory hood that meets the requirements of NFPA 45, or safely outdoors before transporting into a building.

Ensure Cylinder valves are firmly closed, plugged (and capped depending on the cylinder style) when not in use. This applies to both filled and emptied cylinders, since the entry of humid air could cause internal rusting and contamination problems.

Do not stack Cylinders connected for use one above the other.

Ensure Electrical equipment conforms to the provisions of NFPA 70, National Electrical Code®, Article 501.

Provide Ventilation Systems and Gas detection systems designed to meet the requirements of NFPA 45.

Provide Manual shut-off valves provided at each point of supply and at each point of use.

Prohibit Smoking, open flames, and other sources of ignition within 20 ft of storage areas.