Loss Prevention
Safety Tip

Loss Prevention Program
By Red River Mutual

ACETYLENE & OXYGEN CYLINDER STORAGE

Acetylene and Oxygen are used as fuel gas for welding, cutting and allied processes. These gases are classified according to Canada Transportation of Dangerous Goods Regulation as Class 2 (Gases). These gases are delivered in cylinders that are under constant pressure. The risk associated with these cylinders is due to the high pressure of the gasses contained in them. Transportation and storage of these cylinders must be done with extreme care.

The National Fire Code of Canada has specific details on indoor and outdoor storage of acetylene and oxygen cylinders. These specifications are also adopted under the National Building Code of Canada. A summary of the above codes and standards requirements for cylinder storage includes:

GENERAL SAFETY

All cylinders should be protected against:

- physical and mechanical damage
- tampering by an unauthorized person
- valve damages
- high temperature (above 52^{o}C)

Oxygen cylinders should be separated by at least 6 m (20') distance or by a noncombustible barrier at least 1.5 m (5') high with a fire resistant rating of at least 1/2h from:

- flammable or combustible liquids
- easy ignited materials (e.g. wood, paper packing materials)
- oil and grease
- propane (fuel gas) cylinders
- reserve stocks of calcium carbide

Acetylene and liquefied gas cylinders must be stored valve end up, with the valve closed and the protective device in place.

INDOOR STORAGE

Located away from:

- elevators, stairways, gangways, exits or corridors providing exit
- 1 m (3.2') from exit in buildings other than industrial occupancies
- any fire escape, outside exit stairs or passage

Note: propane cylinders should be stored outside the building, and only daily used quantities can be kept indoors.

Oxygen cylinders stored outside acetylene generator houses should be separated from the generator or carbide storage rooms by a noncombustible partition with a fire resistance rating of at least 1h. This partition must be without openings and be gas tight.

Cylinders should be located in a room that is separated from the remainder of the building by a gas-tight fire separation having a fire resistance rating of 2h (for flammable gases) or 1h (for poisonous, corrosive or oxidizing gases),

- located on the exterior wall of the building
- have direct access from the exterior of the building
- equipped with self-closing devices
- constructed in order to prevent migration of gases from the room into other parts of the building
- provided with natural or mechanical ventilation
- free of fuel fired appliances or high temperature heating elements
- used for no purpose other than the storage of gases

For gases lighter than air, storage is permitted outside of a room if:

- in an unsprinklered building of combustible construction, the aggregate capacity of expended gas outside of the room is not more than 60m^3
- in a sprinklered building or in a building of noncombustible construction, the aggregate capacity of expanded gas outside of the room is not more than 170m^3

OUTDOOR STORAGE

Compressed gases should be:

- Located in an enclosure surrounded with a firmly anchored fence that discourages climbing and unauthorized entry, not less than 1.8 m (5.9') high and provided with gates that must be locked when the storage area is not staffed
- When in the Fire Department route, it should have gates according with the Fire Code provisions.
- For flammable and poisonous or corrosive gases shall be not less than:
  - 1.5 m (4.9') from any building opening, if the aggregate capacity of the gas is not more than 170 m^3
  - 7.5 m (24.6') from any building opening, if the aggregate capacity of the gas is more than 170 m^3 but less than 500 m^3
  - 15 m (49.2') from any building opening, if the aggregate capacity of the gas is more than 500 m^3

These requirements do not apply when the opening referred to is in a room that has to be designed as an indoor storage area which is used for storing Class 2 gases.