



This safety resource was written for the recycled materials industry by the recycled materials industry and was developed to assist you in making your recycling operation a safe place for employees, customers, and visitors. This resource covers OSHA requirements that may or may not be applicable to your operation.

TORCH CUTTING

DEFINITION: Process for cutting metal using an apparatus that produces a very hot flame through the combustion of gases.

Potential Hazards:

- Aerosolized particles
- Back strain
- Burns
- Explosive atmosphere
- Falling heavy objects
- Fire
- Flammable gases or vapors
- Hazardous fumes
- Hot environment
- Oil and hydraulic fluids
- Repetitive motion injuries
- Sharp objects/edges

Guarding/Shielding:

- Approved protective equipment must be installed into the fuel gas piping to prevent
 - Backflow of oxygen into the fuel gas supply system
 - Passage of a flash back into the fuel gas supply system
 - Excessive back pressure of oxygen in the fuel gas supply system.

Protective Equipment:

Hard hats*

Safety glasses*

Steel toe/steel shank work boots with metatarsal guards*

Oil resistant clothing or covering*

Fire retardant gloves*

Fire retardant coveralls or other form of full body work clothing*

Fire retardant long sleeved shirt*

Eye/face shielding that provides protection from ultraviolet light (shade ratings of 4 to 6, depending on the thickness of the material being cut)*

Respirator (unless the absence of a respiratory hazard can be proven)*

Hearing protection as needed

**minimum requirements*

Safety Procedures:

- Portable fire extinguisher must be plainly marked and readily available in close proximity to torch cutting operations.

- Managers and operators must analyze torch cutting operations to determine the level of potential exposure to hazardous materials. These materials include, but are not necessarily limited to:
 - Lead
 - Cadmium
 - Beryllium
 - Carbon monoxide
 - Chromium
 - Iron oxide
 - Magnesium oxide
 - Mercury vapor
 - Nickel
 - Nitrogen dioxide
 - Zinc oxide

- Where hazardous levels exist, workers must be protected and monitored in accordance with the corresponding regulation(s).

- Compressed gas cylinders must never be moved via magnet.

- Torch cutting areas must be reasonably free of flammable or combustible materials.

- Establish a written procedure for handling and storage of compressed gases that includes, at a minimum:
 - Maximum cylinder pressure
 - Maintenance of cylinder labels and markings
 - Storage of cylinders
 - Away from heat
 - Away from combustible materials in general
 - Away from oil, grease or any petroleum products
 - With valve protection caps in place
 - With valves closed
 - Valve end up
 - Oxygen cylinders stored separately from fuel gas cylinders or other combustible materials
 - Oxygen and fuel gas cylinders must be separated by either:
 - A physical separation of 20 feet; or
 - A noncombustible barrier at least 5 feet high having a fire resistive rating of at least one-half hour.

- Remove regulators before moving or transporting cylinders.
 - For cylinders not having fixed hand wheels, a key, handle or nonadjustable wrench must remain on the valve stem when cylinders are in use. For a multiple cylinder installation, only one such device is required for each manifold.
 - Cylinders may not be placed in a location where they might become part of an electrical circuit.
- Written procedures must be developed for use of compressed gas cylinders, and those procedures must address:
 - Cylinders, valves, couplings, regulators, hoses and apparatuses must be kept free of oil, grease or other petroleum products;
 - Cylinder valves must be operated only by hand, and closed only hand-tight;
 - Before connecting to a regulator to a cylinder valve, the valve should be opened slightly then closed immediately to clear the surfaces of debris;
 - Stand to one side when opening the cylinder valve;
 - An acetylene cylinder valve should be opened no more than one-half of one turn of the spindle;
 - Only a friction spark lighter may be used to light a torch.
 - Cylinders found to have leaking valves must be immediately removed from service and taken outside, where they will be segregated from sources of ignition. Such leaking cylinders should be returned to their suppliers.