

Welding, Cutting and Brazing
General Requirements
1910.252(a)

1910.252(a)

Fire prevention and protection.

1910.252(a)(1)

Basic precautions. For elaboration of these basic precautions and of the special precautions of paragraph (d)(2) of this section as well as a delineation of the fire protection and prevention responsibilities of welders and cutters, their supervisors (including outside contractors) and those in management on whose property cutting and welding is to be performed, see, Standard for Fire Prevention in Use of Cutting and Welding Processes, NFPA Standard 51B,1962, which is incorporated by reference as specified in Sec. 1910.6. The basic precautions for fire prevention in welding or cutting work are:

1910.252(a)(1)(i)

Fire hazards. If the object to be welded or cut cannot readily be moved, all movable fire hazards in the vicinity shall be taken to a safe place.

1910.252(a)(1)(ii)

Guards. If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards.

1910.252(a)(1)(iii)

Restrictions. If the requirements stated in paragraphs(a)(1)(i) and (a)(1)(ii) of this section cannot be followed then welding and cutting shall not be performed.

1910.252(a)(2)

Special precautions. When the nature of the work to be performed falls within the scope of paragraph (a)(1)(ii) of this section certain additional precautions may be necessary:

1910.252(a)(2)(i)

Combustible material. Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no readily combustible materials on the floor below will be exposed to sparks which might drop through the floor. The same precautions shall be observed with regard to cracks or holes in walls, open doorways and open or broken windows.

1910.252(a)(2)(ii)

Fire extinguishers. Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use. Such equipment may consist of pails of water, buckets of sand, hose or portable extinguishers depending upon the nature and quantity of the combustible material exposed.

1910.252(a)(2)(iii)

Fire watch.

1910.252(a)(2)(iii)(A)

Fire watchers shall be required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist:

1910.252(a)(2)(iii)(A)(1)

Appreciable combustible material, in building construction or contents, closer than 35 feet (10.7 m) to the point of operation.

1910.252(a)(2)(iii)(A)(2)

Appreciable combustibles are more than 35 feet (10.7 m) away but are easily ignited by sparks.

1910.252(a)(2)(iii)(A)(3)

Wall or floor openings within a 35-foot (10.7 m) radius expose combustible material in adjacent areas including concealed spaces in walls or floors.

1910.252(a)(2)(iii)(A)(4)

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Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.

1910.252(a)(2)(iii)(B)

Fire watchers shall have fire extinguishing equipment readily available and be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

1910.252(a)(2)(iv)

Authorization. Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations. He shall designate precautions to be followed in granting authorization to proceed preferably in the form of a written permit.

1910.252(a)(2)(v)

Floors. Where combustible materials such as paper clippings, wood shavings, or textile fibers are on the floor, the floor shall be swept clean for a radius of 35 feet (10.7 m). Combustible floors shall be kept wet, covered with damp sand, or protected by fire-resistant shields. Where floors have been wet down, personnel operating arc welding or cutting equipment shall be protected from possible shock.

1910.252(a)(2)(vi)

Prohibited areas. Cutting or welding shall not be permitted in the following situations:

1910.252(a)(2)(vi)(A)

In areas not authorized by management.

1910.252(a)(2)(vi)(B)

In sprinklered buildings while such protection is impaired.

1910.252(a)(2)(vi)(C)

In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids, or dusts with air), or explosive atmospheres that may develop inside uncleaned or improperly prepared tanks or equipment which have previously contained such materials, or that may develop in areas with an accumulation of combustible dusts.

1910.252(a)(2)(vi)(D)

In areas near the storage of large quantities of exposed, readily ignitable materials such as bulk sulfur, baled paper, or cotton.

1910.252(a)(2)(vii)

Relocation of combustibles. Where practicable, all combustibles shall be relocated at least 35 feet (10.7 m) from the work site. Where relocation is impracticable, combustibles shall be protected with flameproofed covers or otherwise shielded with metal or asbestos guards or curtains.

1910.252(a)(2)(viii)

Ducts. Ducts and conveyor systems that might carry sparks to distant combustibles shall be suitably protected or shut down.

1910.252(a)(2)(ix)

Combustible walls. Where cutting or welding is done near walls, partitions, ceiling or roof of combustible construction, fire-resistant shields or guards shall be provided to prevent ignition.

1910.252(a)(2)(x)

Noncombustible walls. If welding is to be done on a metal wall, partition, ceiling or roof, precautions shall be taken to prevent ignition of combustibles on the other side, due to conduction or radiation, preferably by relocating combustibles. Where combustibles are not relocated, a fire watch on the opposite side from the work shall be provided.

1910.252(a)(2)(xi)

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Combustible cover. Welding shall not be attempted on a metal partition, wall, ceiling or roof having a combustible covering nor on walls or partitions of combustible sandwich-type panel construction.

1910.252(a)(2)(xii)

Pipes. Cutting or welding on pipes or other metal in contact with combustible walls, partitions, ceilings or roofs shall not be undertaken if the work is close enough to cause ignition by conduction.

1910.252(a)(2)(xiii)

Management. Management shall recognize its responsibility for the safe usage of cutting and welding equipment on its property and:

1910.252(a)(2)(xiii)(A)

Based on fire potentials of plant facilities, establish areas for cutting and welding, and establish procedures for cutting and welding, in other areas.

1910.252(a)(2)(xiii)(B)

Designate an individual responsible for authorizing cutting and welding operations in areas not specifically designed for such processes.

1910.252(a)(2)(xiii)(C)

Insist that cutters or welders and their supervisors are suitably trained in the safe operation of their equipment and the safe use of the process.

1910.252(a)(2)(xiii)(D)

Advise all contractors about flammable materials or hazardous conditions of which they may not be aware.

1910.252(a)(2)(xiv)

Supervisor. The Supervisor:

1910.252(a)(2)(xiv)(A)

Shall be responsible for the safe handling of the cutting or welding equipment and the safe use of the cutting or welding process.

1910.252(a)(2)(xiv)(B)

Shall determine the combustible materials and hazardous areas present or likely to be present in the work location.

1910.252(a)(2)(xiv)(C)

Shall protect combustibles from ignition by the following:

1910.252(a)(2)(xiv)(C)(1)

Have the work moved to a location free from dangerous combustibles.

1910.252(a)(2)(xiv)(C)(2)

If the work cannot be moved, have the combustibles moved to a safe distance from the work or have the combustibles properly shielded against ignition.

1910.252(a)(2)(xiv)(C)(3)

See that cutting and welding are so scheduled that plant operations that might expose combustibles to ignition are not started during cutting or welding.

1910.252(a)(2)(xiv)(D)

Shall secure authorization for the cutting or welding operations from the designated management representative.

1910.252(a)(2)(xiv)(E)

Shall determine that the cutter or welder secures his approval that conditions are safe before going ahead.

1910.252(a)(2)(xiv)(F)

Shall determine that fire protection and extinguishing equipment are properly located at the site.

1910.252(a)(2)(xiv)(G)

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Where fire watches are required, he shall see that they are available at the site.

1910.252(a)(2)(xv)

Fire prevention precautions. Cutting or welding shall be permitted only in areas that are or have been made fire safe. When work cannot be moved practically, as in most construction work, the area shall be made safe by removing combustibles or protecting combustibles from ignition sources.

1910.252(a)(3)

Welding or cutting containers.

1910.252(a)(3)(i)

Used containers. No welding, cutting, or other hot work shall be performed on used drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which when subjected to heat, might produce flammable or toxic vapors. Any pipe lines or connections to the drum or vessel shall be disconnected or blanked.

1910.252(a)(3)(ii)

Venting and purging. All hollow spaces, cavities or containers shall be vented to permit the escape of air or gases before preheating, cutting or welding. Purging with inert gas is recommended.

1910.252(a)(4)

Confined spaces.

1910.252(a)(4)(i)

Accidental contact. When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine be disconnected from the power source.

1910.252(a)(4)(ii)

Torch valve. In order to eliminate the possibility of gas escaping through leaks or improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the gas supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. Where practicable, the torch and hose shall also be removed from the confined space.