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Welding, Cutting, and Brazing Checklist

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INTRODUCTION



This checklist is designed to help employers and employees in general industry and construction follow the welding, cutting, and brazing Occupational Safety and Health Administration (OSHA) safety standards. It's based on the following OSHA Codes of Federal Regulations (CFRs):

- **OSHA General Industry Standard:** [29 CFR 1910 Subpart Q](#).
- **OSHA Construction Industry Standard:** [29 CFR 1926 Subpart J](#).

You can find these standards at www.osha.gov.

Employers in general industry should thoroughly review and understand the requirements outlined in 29 CFR 1910 Subpart Q, as these standards specifically apply to their workplaces. They should pay close attention to the frequently cited standards and ensure compliance with all relevant sections, including those related to fire prevention, protection of personnel, and equipment specifications.

Construction employers, on the other hand, need to familiarize themselves with both 29 CFR 1926 Subpart J and relevant portions of 29 CFR 1910 Subpart Q. This is because some general industry standards are universal and apply across industries, including in construction. For example, standards for

chemical hazard communication found in 1910 also apply to the construction industry.

It's crucial for construction employers to:

1. Identify which general industry standards are applicable to their worksites.
2. Ensure compliance with both construction-specific (1926) and relevant general industry (1910) standards.
3. Implement safety measures that address the unique aspects of construction work, such as the dynamic nature of job sites and the variety of simultaneous work activities.

By understanding and applying both sets of standards, construction employers can create a comprehensive safety program that addresses all potential hazards associated with welding, cutting, and brazing operations in their work environments.

Following this checklist doesn't guarantee full OSHA compliance. Employers are responsible for reading and understanding the appropriate OSHA standards to ensure complete compliance with all relevant regulations.

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Part 1: General Industry – CFR 1910



Frequently cited welding standards in general industry

1910.253(b)(4)(i)	Oxygen cylinders shall not be stored near highly combustible material (especially oil and grease); near reserve stocks of carbide, acetylene, or other fuel gas cylinders; near any other substance likely to cause or accelerate fire; or in an acetylene generator compartment.
1910.253(b)(4)(iii)	Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum of 20 feet or by a noncombustible barrier at least five (5) feet high having a fire-resistance rating of at least one-half hour.
1910.253(b)(2)(ii)	Inside buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location at least 20 feet from highly combustible materials such as oil or excelsior. Cylinders should be stored in assigned places away from elevators, stairs, or gangways. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized people. Cylinders shall not be kept in unventilated enclosures such as lockers or cupboards.
1910.253(b)(2)(iii)	Empty cylinders shall have their valves closed.
1910.253(b)(2)(iv)	Valve protection caps, where cylinders are designed to accept a cap, shall always be in place, hand-tight, except where cylinders are in use or connected for use.
1910.254(d)(9)(iii)	Cables with damaged insulation or exposed bare conductors shall be replaced. Joining lengths of work and electrode cables shall be done using connecting means specifically intended for the purpose. The connecting means shall have insulation adequate for the service conditions.

Welding, Cutting, and Brazing Checklist for General Industry

(A negative answer to any question indicates an area of safety or health concern.)

Company name: _____ **Date/Time:** _____

Physical address of worksite: _____

Supervisor: _____ **Inspector:** _____

Installation and Operation of Oxygen-Fuel Gas Systems for Welding and Cutting - 1910.253	Yes	No	Date Corrected
1. Is a documented, functioning housekeeping program in place?			
2. Have personnel in charge of the oxygen or fuel gas supply equipment been instructed and judged competent before being left in charge? [1910.253(a)(4)].			
3. Is the gas content of compressed gas cylinders marked with either the chemical or the trade name of the gas? [1910.253(b)(1)(ii) and ANSI Z48.1-1954].			
4. Are cylinders stored away from radiators and other sources of heat? [1910.253(b)(2)(i)].			
5. Are cylinders that are stored inside kept in a well-ventilated, dry location at least 20 feet from highly combustible material? [1910.253(b)(2)(ii)].			
6. Are cylinders stored in assigned places away from elevators, stairs, or gangways and where they will not be knocked over or damaged? [1910.253(b)(2)(ii)].			
7. Are the valves of empty cylinders kept closed? [1910.253(b)(2)(iii)].			
8. Are valve protection caps in place and hand-tight except when in use or connected for use? [1910.253(b)(2)(iv)].			
9. Are fuel gas cylinders stored inside a building limited to a total gas capacity of 2,000 cubic feet or 300 pounds of liquefied petroleum gas, except for those cylinders in use or attached for use? [1910.253(b)(3)(i)].			
10. Are acetylene cylinders stored valve-end up? [1910.253(b)(3)(ii)].			

Installation and Operation of Oxygen-Fuel Gas Systems for Welding and Cutting - 1910.253 (continued)	Yes	No	Date Corrected
11. If oxygen cylinders are stored in outside generator houses, are they separated from the generator or carbide storage rooms by a gastight, noncombustible partition having a fire-resistance rating of at least one hour? [1910.253(b)(4)(ii)].			
12. Are stored oxygen cylinders separated from fuel gas cylinders or combustible material by a minimum of 20 feet, or by a noncombustible barrier at least 5 feet high with a fire-resistance rating of at least one-half hour? [1910.253(b)(4)(iii)].			
13. Are cylinders, cylinder valves, couplings, regulators, hose, and apparatus kept free from oily or greasy substances? [1910.253(b)(5)(i)].			
14. Do you ensure that cylinders are not dropped, struck, or permitted to strike each other violently? [1910.253(b)(5)(ii)(B)].			
15. Do you ensure that valve-protection caps are not used for lifting cylinders from one vertical position to another? [1910.253(b)(5)(ii)(C)].			
16. Do you ensure that cylinders without fixed hand wheels have keys, handles, or nonadjustable wrenches on the valve stems while the cylinders are in service? [1910.253(b)(5)(ii)(E)] (NOTE: In multiple cylinder installations, only one key or handle is required for each manifold.)			
17. Are cylinder valves closed before moving the cylinder and when work is finished? [1910.253(b)(5)(ii)(F) and (G)].			
18. Are cylinders kept away from sparks, hot slag, or flame produced by welding or cutting operations, or are fire-resistance shields provided? [1910.253(b)(5)(ii)(I)].			
19. Are cylinders placed where they will not become part of an electric circuit? [1910.253(b)(5)(ii)(J)].			
20. Do you ensure that cylinders are not used as rollers or supports, and that only proper tools are used to open cylinder valves? [1910.253(b)(5)(ii)(K)].			
21. Are only proper tools used to open cylinder valves? [1910.253(b)(5)(ii)(Q)].			
22. Are fuel-gas cylinders placed valve-end up while in use? [1910.253(b)(5)(iii)(A)].			
23. Are cylinders with leaky valves or fittings taken outdoors and slowly emptied? [1910.253(b)(5)(iii)(F)].			
24. Are warning signs posted that prohibit open flame or other sources of ignition near cylinders with leaking fuse plugs or other leaking safety devices, and are the cylinders tagged? [1910.253(b)(5)(iii)(G)].			

Manifold Systems - 1910.253	Yes	No	Date Corrected
25. Do you ensure that oxygen manifolds are not located in an acetylene generator room? [1910.253(c)(2)(ii)].			
26. Do you ensure that portable outlet headers are used indoors only for temporary service where conditions preclude a direct supply from outlets located on the service piping system? [1910.253(c)(4)(i)].			
27. Is each outlet on the service piping which supplies a portable outlet header equipped with a readily accessible shutoff valve? [1910.253(c)(4)(ii)].			
28. Are master shutoff valves for both oxygen and fuel-gas provided at the entry end of the portable outlet header? [1910.253(c)(4)(iv)].			
29. Are portable outlet headers provided with frames to support the equipment securely in the correct operating position? [1910.253(c)(4)(viii)].			
30. When acetylene cylinders are coupled in a manifold, are flash arresters installed between each cylinder and the coupler block? [1910.253(c)(5)(iii)].			
31. In service piping systems, are distribution lines installed and maintained in a safe operating condition? [1910.253(d)(3)(i).]			
32. Are emergency gas cocks or valves provided for all buildings? [1910.253(d)(3)(v)].			
33. Is underground pipe and tubing and outdoor ferrous pipe and tubing protected against corrosion? [1910.253(d)(4)(i).]			
General Requirements - 1910.253	Yes	No	Date Corrected
34. Is flashback protection provided by an approved device that will prevent flames from passing into the fuel-gas systems? [1910.253(e)(3)(ii)(C)(3)].			
35. Are hoses showing defects repaired or replaced? [1910.253(e)(5)(v)].			
36. Are pressure-reducing regulators used only for the gas and pressures for which they are intended? [1910.253(e)(6)(i)].			
37. Is the repair of regulators performed by properly instructed, skilled mechanics? [1910.253(e)(6)(ii)].			
38. Are gauges on oxygen regulators marked "USE NO OIL"? [1910.253(e)(6)(iii)].			
39. Are union nuts and connections on regulators inspected before use to detect faulty seats? [1910.253(e)(6)(iv)].			

Acetylene Generators - 1910.253	Yes	No	Date Corrected
40. Is ample space provided around the generator for operation and maintenance? [1910.253(f)(3)].			
41. Are generators placed where water will not freeze, and is the use of sodium chloride to prevent freezing prohibited? [1910.253(f)(4)(i)(B)].			
42. Are portable generators located at a safe distance from the welding position? [1910.253(f)(5)(ii)(E)].			
43. Are the walls, floors, and roofs of outside generator houses constructed of noncombustible materials? [1910.253(f)(6)(i)(B)].			
44. Are exit doors readily accessible in case of emergency? [1910.253(f)(6)(i)(D)].			
45. Are generators installed inside buildings enclosed in a separate room? [1910.253(f)(6)(i)(G)].			
46. Are the walls, partitions, floors, and ceilings of inside generator rooms of noncombustible construction with a fire-resistance rating of at least one hour? [1910.253(f)(6)(i)(H)].			
47. Are generator rooms or buildings well-ventilated with vents located at floor and ceiling levels? [1910.253(f)(6)(ii)].			
48. Do generator rooms or buildings have natural light during daylight hours or artificial light restricted to electric lamps installed in a fixed position? [1910.253(f)(6)(iv)(A)].			
49. Are operating instructions posted in a conspicuous place near the generator or available for ready reference? [1910.253(f)(7)(i)(A)].			
50. Is the generator room electrically wired in accordance with 1910.307 (hazardous locations)?			
51. Do you ensure that the water-carbide residue mixture drained from generator is not discharged into sewer pipes or stored in areas near open flames? [1910.253(f)(7)(i)(D)].			
52. Do you ensure that calcium carbide is kept in metal packages that are strong enough to prevent rupture? [1910.253(g)(1)(i)].			
53. Are the packages marked "Calcium Carbide-Dangerous If Not Kept Dry"? [1910.253(g)(1)(ii)].			
54. Do you ensure that the calcium carbide stored indoors does not exceed 600 pounds and that the storage area is dry, waterproof, and well-ventilated? [1910.253(g)(2)(i)].			
55. Are carbide containers that are stored outside periodically examined for conditions that could affect water or air tightness? .253(g)(3)(ii)			

Installation and Operation of Resistance Welding Equipment - 1910.255	Yes	No	Date Corrected
56. Have employees who are designated to operate arc welding equipment been properly instructed and qualified? [1910.254(a)(3)].			
57. Are open-circuit (no-load) voltages of arc welding and cutting machines as low as possible, consistent with satisfactory welding? [1910.254(b)(3)].			
58. When open-circuit voltages must be higher, are means provided to prevent the operator from making accidental contact with the higher voltages? [1910.254(b)(3)(iii)].			
59. Is control apparatus enclosed on all types of arc welding machines? [1910.254(b)(4)(ii)].			
60. Are terminals for welding leads protected from accidental electrical contact by personnel or metal objects? [1910.254(b)(4)(iv)].			
61. Do you ensure that no connections for portable control devices, such as push buttons carried by the operator, are connected to an A.C. circuit of higher than 120 volts? [1910.254(b)(4)(v)].			
62. Is the frame or case of the welding machine effectively grounded, and was the grounding checked? [1910.254(c)(2)(i) and (d)(3)].			
63. Is a separate disconnecting switch or controller provided at or near each welding machine? [1910.254(c)(3)(i)].			
64. Are electrode holders placed so they cannot make electrical contact with people, conducting objects, fuel, or compressed gas tanks? [1910.254(d)(7)].			
65. Has the operator been instructed to report any equipment defect or safety hazard to a supervisor, and is the use of the equipment discontinued until repaired by qualified personnel? [1910.254(d)(9)(i)].			
66. Are work and electrode lead cables frequently inspected for wear and damage, and are cables with damaged insulation or exposed bare conductors replaced? [1910.254(d)(9)(iii)].			
Installation and Operation of Resistance Welding Equipment - 1910.255			
67. Have personnel who are designated to operate resistance welding equipment been properly instructed and judged competent to operate such equipment? [1910.255(a)(3)].			
68. Are all doors and access panels of all resistance welding machines and control panels kept locked and interlocked? [1910.255(b)(3)].			

Installation and Operation of Resistance Welding Equipment - 1910.255 <i>(continued)</i>	Yes	No	Date Corrected
69. Has a shield guard of safety glass or suitable fire-resistant plastic been installed at the point of operation? [1910.255(b)(5)].			
70. Are foot switches guarded to prevent accidental operation of the machine? [1910.255(b)(6)].			
71. Are two or more safety emergency stop buttons provided on all special, multi-spot-welding machines, including 2-post and 4-post weld presses? [1910.255(b)(7)].			
72. Are flash welding machines equipped with hoods to control flying flash? [1910.255(d)(1)].			
73. Are periodic inspections of the machines made by qualified maintenance personnel, and are records of the inspections maintained? [1910.255(e)].			
Fire Prevention and Protection - 1910.252	Yes	No	Date Corrected
74. Is suitable fire-extinguishing equipment maintained in a state of readiness for instant use? [1910.252(a) (2)(ii)].			
75. Are fire watches on duty whenever welding or cutting is performed in locations where a major fire might develop? [See conditions listed in 1910.252(a)(2)(iii)(A)].			
76. Before cutting or welding is permitted, is the area inspected by the individual responsible for authorized cutting and welding operations? [1910.252(a)(2)(iv)].			
77. Where practicable, are all combustibles relocated at least 35 feet from the work site? [1910.252(a)(2)(vii)].			
78. Does management recognize its responsibility for the safe usage of cutting and welding equipment on its property? [1910.252(a)(2)(xiii)].			
79. Do supervisors recognize their responsibilities in the safe management of welding and cutting operations? [1910.252(a) (2)(xiv)(A)]			
Protection of Personnel - 1910.252	Yes	No	Date Corrected
80. Are welders or helpers who are working on platforms, scaffolds, or runways protected against falling by railings, safety belts, or lifelines? [1910.252(b)(1)(i)].			
81. Is welding cable and other equipment kept clear of passageways, ladders, and stairways? [1910.252(b) (1)(ii)].			
82. Are helmets, hand shields, goggles, or other suitable eye protection worn during all arc welding or cutting operations? [1910.252(b)(2)(i)(A)].			

Protection of Personnel – 1910.252 (continued)	Yes	No	Date Corrected
83. Has a hazard assessment been performed to determine if hazards are present or likely to be present? [1910.132(d)(1)].			
84. Are employees who are exposed to the hazards created by welding, cutting, or brazing operations protected by personal protective equipment (PPE), as required by 1910.132 and 1910.252(b)(3)?			
85. When welding or cutting is being performed in any confined space, are gas cylinders and welding machines left outside? [1910.252(b)(4)(iii)].			
86. Before operations are started, is heavy, portable, wheel-mounted equipment securely blocked to prevent accidental movement? [1910.252(b)(4)(iii)].			
87. Where a welder must enter a confined space through a manhole or other small opening, have means been provided for his or her quick removal in case of emergency? [1910.252(b)(4)(iv)].			
Health Protection and Ventilation – 1910.252	Yes	No	Date Corrected
88. Are welders or helpers who are working on platforms, scaffolds, or runways protected against falling by railings, safety belts, or lifelines? [1910.252(b)(1)(i)].			
89. Is welding cable and other equipment kept clear of passageways, ladders, and stairways? [1910.252(b) (1)(ii)].			



Table 1 - Ventilation Requirements for Welding and Cutting - 29 CFR 1910

Metal Compound	Confined Space Requirements	Indoor Requirements	Outdoor Requirements
Fluorine Compound	Air replacement or airline respirator or self-contained breathing apparatus needed. ¹	Air sample tests to determine if exhaust hood, booth, and airline respirator are required.	Same as indoors.
Lead, Zinc (Galvanized Metals)	Air replacement or airline respirator or self-contained breathing apparatus. ¹	Exhaust hood or booth. ^{2,3}	Combination particulate and vapor-and-gas-removing type respirator if tests indicate need.
Beryllium	Exhaust hood or booth and airline respirator if air sample tests indicate need.	Exhaust hood or booth and airline respirator if air sample tests indicate need.	Exhaust hood or booth and airline respirator if air sample tests indicate need.
Cadmium, Mercury	Exhaust hood or booth and airline respirator if air sample tests indicate need.	Exhaust hood or booth and airline respirator if air sample tests indicate need.	Combination particulate and vapor-and-gas-removing type respirator if tests indicate need

1. Airline or self-contained breathing apparatus are required in confined areas that are immediately hazardous to life.
2. Mechanical ventilation of 2,000 cubic feet of air per minute per welder is required when welding or cutting on metals other than as described above, or there is less than 10,000 cubic feet of space per welder or where the ceiling height is less than 16 feet or in confined spaces or where structural barriers (such as partitions or balconies) significantly obstruct cross ventilation. [1910.252(c)(2)(i)(A) through (C)].
3. Local exhaust hoods or booths must provide airflow of 100 linear feet per minute.

NOTE: Mechanical ventilation is necessary when an exhaust hood or fixed booth provides airflow that moves away from the welder. This airflow must maintain a velocity of at least 100 linear feet

Part 2: Construction Industry – CFR 1926

Frequently cited welding standards in the construction industry

1926.350(a)(9)	Compressed gas cylinders shall be always secured in an upright position except, if necessary, for short periods of time while cylinders are hoisted or carried.
1926.350(a)(1)	Valve protection caps shall be in place and secured.
1926.350(h)	Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use.
1926.351(b)(4)	Cables in need of repair shall not be used. When a cable, other than the cable lead referred to in subparagraph (2) of this paragraph, becomes worn to the extent of exposing bare conductors, the portion thus exposed shall be protected by means of rubber and friction tape or other equivalent insulation. [Note: Subparagraph (2) states that cables with standard insulated connectors or with splices whose insulating quality is equal to that of the cable are permitted.]



Welding, Cutting, and Brazing Checklist for Construction

(A negative answer to any question indicates an area of safety or health concern.)

Company name: _____ **Date/Time:** _____

Physical address of worksite: _____

Supervisor: _____ **Inspector:** _____

Transporting, Moving, and Storing Compressed Gas Cylinders - 1926.350	Yes	No	Date Corrected
1. Are valve protection caps in place and secured? [1926.350(a)(1)].			
2. When transported by powered vehicles, are cylinders secured in a vertical position? [1926.350(a)(4)].			
3. Are employees instructed not to use valve protection caps to lift cylinders from one vertical position to another? [1926.350(a)(5)].			
4. Unless cylinders are firmly secured on a special carrier, have regulators been removed and are valve protection caps in place before moving? [1926.350(a)(6)].			
5. Is a cylinder truck, chain, or other steadying device used to keep cylinders from being knocked over while in use? [1926.350(a)(7)].			
6. Are cylinder valves closed when work is finished, when cylinders are empty, or when cylinders are being moved? [1926.350(a)(8)].			
7. Are cylinders always secured in an upright position except when hoisted or carried? [1926.350(a)(9)].			
Placing Cylinders - 1926.350	Yes	No	Date Corrected
8. Are cylinders kept at a safe distance from welding operations, or are fire resistant shields provided? [1926.350(b)(1)].			
9. Are cylinders placed where they cannot become part of an electrical circuit? [1926.350(b)(2)].			
10. Do you ensure that cylinders containing oxygen, acetylene, or other fuel gas are not taken into confined spaces? [1926.350(b)(4)].			

Treatment of Cylinders - 1926.350	Yes	No	Date Corrected
11. Do you ensure that cylinders, whether full or empty, are not used as rollers or supports? [1926.350(c)(1)].			
Use of Fuel Gas - 1926.350	Yes	No	Date Corrected
12. Have employees been instructed in the safe use of fuel gas? [1926.350(d)(1) through (6)].			
Fuel Gas and Oxygen Manifolds - 1926.350	Yes	No	Date Corrected
13. Do fuel gas and oxygen manifolds bear the name of the substance they contain in letters at least 1 inch high, either painted on the manifolds or on a sign permanently attached to them? [1926.350(e)(1)].			
14. Are the manifolds placed in safe, well-ventilated, and accessible locations and not within enclosed spaces? [1926.350(e)(2)].			
Hoses - 1926.350	Yes	No	Date Corrected
15. Do you ensure that oxygen and fuel gas hoses are not interchangeable and that a single hose having more than one gas passage is not used? [1926.350(f)(1)].			
16. Are all hoses in use inspected at the beginning of each work shift, and is a defective hose removed from service? [1926.350(f)(3)].			
17. Are hose couplings of the type that cannot be unlocked or disconnected without a rotary motion? [1926.350(f)(5)].			
18. Are boxes that are used for the storage of gas hoses ventilated? [1926.350(f)(6)].			
Torches - 1926.350	Yes	No	Date Corrected
19. Are torches in use inspected at the beginning of each shift for leaking shutoff valves, hose couplings, and tip connections? [1926.350(g)(2)].			
20. Do you ensure that torches are lit by friction lighters or other approved devices, and not by matches or from hot work? [1926.350(g)(3)].			
Regulators and Gauges - 1926.350	Yes	No	Date Corrected
21. Are oxygen and fuel gas regulators and their gauges in proper working order? [1926.350(h)].			

Oil and Grease Hazards - 1926.350	Yes	No	Date Corrected
22. Do you ensure that cylinders, cylinder caps, valves, couplings, regulators, hose and apparatus are kept free from oil or greasy substances, and are not handled with oily hands or gloves? [1926.350(i)].			
Welding Cables and Connectors - 1926.351	Yes	No	Date Corrected
23. Do you use cable that is free from repair or splices for a minimum of 10 feet from the cable end to which the electrode holder is connected? [1926.350(b)(2)]. (NOTE: Cables with standard insulated connectors or with splices whose insulating quality is equal to that of the cable are permitted.)			
24. Do you ensure that cables in need of repair are not used? [1926.351(b)(4)].			
Operating Instructions - 1926.351	Yes	No	Date Corrected
25. Have employees been instructed in the safe means of arc welding and cutting as prescribed in .351(d)(1) through (4)?			
26. Are arc welding and cutting operations shielded by noncombustible or flameproof screens? [1926.351(e)].			
Fire Prevention - 1926.352	Yes	No	Date Corrected
27. Have employees been instructed that objects to be welded, cut, or heated must be moved to a designated location, or that movable fire hazards be taken to a safe place or otherwise protected? [1926.352(a)].			
28. Is suitable fire-extinguishing equipment that is ready for instant use available in the work area? [1926.352(d)].			
Ventilation and Protection - 1926.353	Yes	No	Date Corrected
29. Are employees protected by airline respirators in confined spaces when sufficient ventilation cannot be obtained without blocking the means of access? [1926.353(b)(2)].			
30. Do welding, cutting, and heating operations using toxic substances meet the requirements of 1926.353(a) and (c)?			
31. Are welders and other employees who are exposed to radiation suitably protected? [1926.353(d)(1)(iii)].			
32. Are employees who are performing any type of welding, cutting, or heating protected by suitable eye protective equipment? [1926.353(e)(2)].			

Preservative Coatings - 1926.354	Yes	No	Date Corrected
33. If the flammability of a preservative coating is unknown, is a test made by a competent person to determine its flammability? [1926.354(a)].			
34. Are employees protected against toxic preservative coatings as prescribed in 1926.354(c)(1) and (2)?			

Table 2: Ventilation Requirements for Welding and Cutting - 29 CFR 1926

Metal Compound	Confined Space Requirements	Enclosed-Space Requirements	Open-Air Requirements
All metals	Mechanical ventilation or exhaust hood.	Mechanical ventilation or exhaust hood.	N/A
Zinc-bearing base or filler metals; lead base metals; cadmium-bearing filler materials; chromium-bearing metals.	Mechanical ventilation or exhaust hood.	Mechanical ventilation or exhaust hood.	Combination particulate and vapor-and-gas-removing type respirator if tests indicate the need.
Metals containing lead or coated with lead-bearing materials; cadmium-bearing or cadmium-coated base metals; mercury-bearing metals.	Mechanical ventilation or exhaust hood.	*Exhaust hood or airline respirator.	Combination particulate and vapor-and-gas-removing type respirator if tests indicate the need.
Beryllium-containing base or filler metals.	Mechanical ventilation or exhaust hood.	*Exhaust hood or airline respirator.	Airline respirator if tests indicate the need.

* Freely movable hood placed by the welder as near as practicable to the work being welded, with a rate of airflow sufficient to maintain a velocity in the direction of the hood of 100 linear feet per minute in the zone of welding when the hood is at its most remote distance from the point of welding.



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