

Welding, Cutting and Brazing

Description:

29 CFR Subpart Q gives requirements for PPE, operating procedures, certain managerial and supervisory responsibilities, and basic safety precautions for welding, cutting and brazing operations.

Regulatory Reference

29 CFR Subpart Q Welding, Cutting and Brazing

29 CFR § 1910.251 Definitions

29 CFR § 1910.252 General requirements

29 CFR § 1910.253 Oxygen-fuel gas welding and cutting

29 CFR § 1910.254 Arc welding and cutting

29 CFR § 1910.255 Resistance welding (Not applicable to typical propane operations)

Applies to:

OSHA welding, cutting and brazing standards apply to any workplace where electric or gas welding or cutting equipment is used. Some specific responsibilities of managers and supervisors are set out in 29 CFR § 1910.252, General requirements. Affected employees are identified as “welder” and “welding operator,” which mean “any operator of electric for gas welding and cutting equipment.”

General Requirements:

- (1) Section (a) of § 1910.252 gives basic fire prevention and fire protection requirements for areas where cutting, welding or brazing operations (hot work) are performed. Specific managerial and supervisory actions and responsibilities regarding hot work are given in the section. Mandatory use of back-check valves on oxygen and fuel-gas torch hose connections is part of the fire prevention guidelines in the section.
- (2) PPE and other personnel protection requirements are given in section (b). Minimum ventilation requirements, procedures for hot work in confined spaces, and mandatory precautions with highly toxic materials are also set out in section (c).
- (3) Section (d) of § 1910.252 gives safety precautions that apply to welding operations on transmission pipelines and mechanical piping systems.
- (4) 29 CFR § 1910.253 sets out requirements for oxygen-fuel gas welding and cutting. Included are requirements for approved apparatus, personnel qualifications, cylinder and container marking, cylinder valve and valve protection requirements, storage and handling procedures, segregation requirements for oxygen cylinders. Operating procedures for the use of cylinders are also set out. Section (e) gives requirements for protective equipment, regulators and hoses.
- (5) Arc welding and cutting are covered in § 1910.254. The standard requires the use of approved equipment, training of operating personnel, environmental controls that prohibit operations under stated adverse conditions, electrical grounding and protection procedures, and standards for operation and maintenance of arc welding and cutting equipment, including machine and accessory inspections.

Training Requirements:

29 CFR § 1910.253(a)(4) requires that persons “in charge of the oxygen or fuel-gas supply equipment... shall be instructed and judged competent by their employers for this important work before being left in charge. Rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equipment including generators, and oxygen or fuel-gas distribution piping systems shall be readily available.”

General training requirements for arc welding personnel are given in § 1910.254(a)(3), with specific training requirements detailed in section (d).

Maintenance and Review

Many companies detail their requirements for welding, cutting and brazing operations in standard operating procedures (SOP). SOPs, if adopted, should be based on the requirements of the OSHA standards, and other codes and standards as published by the National Fire Protection Association, the Compressed Gas Association, American National Standards Institute, related American Petroleum Institute standards, and the American Welding Society.

SOPs should detail the roles and responsibilities of managers, supervisors and designated welders who are authorized to supervise and perform hot work. Fire protection, PPE, equipment inspection, environmental controls and other procedures for hot work should be enumerated as well.

Improper handling of oxygen and fuel-gas cylinders, lack of torch hose back check valves, defects in welding cables, switches and electrode holders are frequently the subjects of OSHA violation citations. Compliance and safety programs can be enhanced through the use of scheduled facilities inspections that list items to be checked in areas where welding, cutting and brazing operations are performed.

Additional Information and Resources

NFPA 51B, *Fire Prevention During Welding, Cutting and Other Hot Work*, National Fire Prevention Association, Quincy, MA

NFPA 51, *Design and Installation of Oxygen-Fuel Gas Systems for Welding, Cutting and Allied Processes*, National Fire Prevention Association, Quincy, MA