

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

CONSTRUCTION SAFETY STANDARDS

FILED WITH THE SECRETARY OF STATE ON FEBRUARY 24, 2015

These rules become effective immediately upon filing with the Secretary of State unless adopted under sections 33, 44, 45a(6), or 48 of 1969 PA 306.

Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 19 and 21 of 1974 PA 154, and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4, MCL 445.2001, 445.2011, 445.2025, and 445.2030)

R 408.40709, R 408.40713, R 408.40721, R 408.40722, R 408.40723, R 408.40731, R 408.40751, R 408.40761, and R 408.40762 of the Michigan Administrative Code are amended, as follows:

PART 7. WELDING AND CUTTING

GENERAL PROVISIONS

R 408.40709 Adopted and referenced standards.

Rule 709. (1) **The following standards are adopted by reference in these rules and are available from IHS Global, 15 Inverness Way East, Englewood, Colorado, 80112, USA, telephone number: 1-800-854-7179 or via the internet at website: <http://global.ihs.com>; at a cost as of the time of adoption of these rules, as stated in this subrule.** The standards specified in this rule, except for the standards specified in subrule (2) of this rule, are adopted by reference.

(a) **American National Standard Institute Standard ANSI/AWS Z49.1, "Safety in Welding and Cutting and Allied Processes," 1973 edition. Cost: \$96.00.** The following standards are available from Global Engineering Documents, 15 Inverness Way East, Englewood, Colorado, 80112, USA, telephone number: 1-800-854-7179 or via the internet at website: <http://global.ihs.com>; at a cost as of the time of adoption of these rules, as stated in this subrule:

(i) American National Standard Institute Standard ANSI/AWS Z49.1, Safety in Welding and Cutting and Allied Processes, 1973 edition. Cost: \$96.00.

(ii) American National Standard Institute Standard ANSI/ASA B57.1, Compressed Gas Cylinder Valve Outlet and Inlet Connections, 1965 edition. Cost \$29.00.

(b) **American National Standard Institute Standard ANSI/ASA B57.1, "Compressed Gas Cylinder Valve Outlet and Inlet Connections," 1965 edition. Cost \$29.00.** The following standards are available from the National Fire Protection Association, Charles S Morgan Technical Library, 1 Batterymarch Park, P.O. Box 9101, Quincy, Massachusetts, 02269-9101, USA; telephone number: 617-984-7445; or via the internet at web-site: www.nfpa.org/library or e-mail at Library@NFPA.org; at a cost as of the time of adoption of these rules, as stated in this subrule.

(i) National Fire Protection Association NFPA 50 Standards for Bulk Oxygen Systems at Consumer Sites, 1974 edition. Cost: \$27.00.

(ii) National Fire Protection Association NFPA 58 Liquefied Petroleum Gas Code, 1974 edition. Cost: \$27.00.

(c) Code of Federal Regulations, Title 49 Transportation, Part 186-199, stock number 869-048-00199-9 is available from the U.S. Government Bookstore, Washington DC, 20402; telephone number: 888-293-6498; or via the internet at website: <http://bookstore.gpo.gov>; at a cost, as of the time of adoption of these rules, of \$4.00. These standards are also available for inspection at, and purchase from, the Michigan Department of Licensing and Regulatory Affairs, MIOSHA Standards Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan 48909-8143.

(2) **This standard is adopted by reference in these rules, National Fire Protection Association NFPA 50 "Standards for Bulk Oxygen Systems at Consumer Sites," 1974 edition. This standard is available from National Fire Prevention Association, 1 Batterymarch Park, Quincy, Massachusetts, USA, 02169-7471, telephone number: 1-617-770-3000 or via the internet at website: www.nfpa.org; at a cost as of the time of adoption of these rules of \$27.00.** The following Michigan occupational safety and health standards are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of Licensing and Regulatory Affairs, MIOSHA Standards Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48909-8143 or via the internet at web-site: www.michigan.gov/mioshastandards. For quantities greater than 5, the cost, as of the time of adoption of these rules, is 4 cents per page

(a) Construction Safety Standard Part 1 General Rules, R 408.40101 to R 408.40134.

(b) Construction Safety Standard Part 6 Personal Protective Equipment, R 408.40601 to R 408.40641.

(c) Construction Safety Standard Part 45 Fall Protection, R 408.44501 to R 408.44502.

(d) General Industry Safety Standard Part 12 Welding and Cutting, R 408.11231 to R 408.11252.

(3) The Code of Federal Regulations, Title 49 Transportation, Parts 186-199, "Subchapter D-Pipeline Safety" are available from the United States Government Printing Office website: www.ecfr.gov, at no charge as of the time of adoption of these rules.

(4) The standards adopted in these rules are available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 7150 Harris Drive, Lansing, Michigan, 48909-8143.

(5) The standards adopted in these rules may be obtained from the publisher or may be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost of the standard plus \$20.00 for shipping and handling.

(6) The following Michigan occupational safety and health standards (MIOSHA) are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of licensing and regulatory affairs, MIOSHA Regulatory Services Section, 7150 Harris Drive, P.O. Box 30643, Lansing, MI, 48909-8143 or via the internet at website: www.michigan.gov/mioshastandards. For quantities greater than 5, the cost, at the time of adoption of these rules, is 4 cents per page.

(a) Construction Safety Standard Part 1 "General Rules," R 408.40101 to R 408.40134.

(b) Construction Safety Standard Part 6 "Personal Protective Equipment," R 408.40601 to R 408.40641.

(c) Construction Safety Standard Part 45 "Fall Protection," R 408.44501 to R 408.44502.

R 408.40713 Working in confined spaces.

Rule 713. (1) Before the start of a welding operation in a confined space, **the employer shall ensure that** the atmosphere shall be tested and recorded. Ventilation shall be provided and maintained in accordance with the requirements of the department of **Licensing and Regulatory Affairs.** ~~labor and economic growth.~~

~~(2)(a)~~ The records shall be maintained **by the employer** at the jobsite as prescribed in Construction Safety Standard Part 1 ~~General Rules,~~ **"General Rules," as referenced in R 408.40709.** ~~R 408.40101 et seq.~~

~~(3)(3)~~ When working in a confined space, the torch valves, the gas supply valve, and oxygen valve outside the confined space shall be shut off during the lunch period, overnight, or during any other prolonged period and the torch and hose shall be removed from the confined space. Open-end fuel gas and oxygen hoses shall be immediately removed from enclosed spaces when they are disconnected from the torch or other gas-consuming device.

~~(4)(3)~~ When electrodes are used in a confined space and welding is suspended during the lunch period, overnight, or during any other prolonged period, the electrode shall be removed from the holder and the machine shall be shut off. The holders shall be placed or protected so that they cannot make electrical contact with employees or conducting objects.

~~(5)(4)~~ A gas cylinder or a welding machine used for welding operations in a confined space shall be placed on the outside of the space where work is being performed.

~~(6)(5)~~ If an employee must enter a confined space through a small opening to perform welding operations, another employee trained in rescue procedures and equipped with the means necessary to effect a rescue shall be stationed outside the confined space in position to watch the welder. When a safety harness and lifeline are used, they shall be provided for as prescribed in Construction Safety Standard Part 45 ~~Fall Protection,~~ **"Fall Protection," as referenced in R 408.40709,** ~~R 408.44501 et seq.,~~ and shall be attached to the welder's body so that his or her body cannot be jammed in a small exit opening.

CYLINDERS

R 408.40721 Cylinders manufacturing, labeling, periodic testing, and marking.

Rule 721. (1) A cylinder shall be manufactured, labeled, and periodically tested in accordance with the specifications of the federal department of transportation requirements published in 49 C.F.R. Part 178, Subpart C, ~~Specification~~ **"Specification for Cylinders,"** ~~Cylinders,~~ which are adopted by reference in R 408.40709.

(2) A cylinder shall be legibly marked with either the chemical or trade name. Marking shall be by stenciling, stamping, or labeling and shall not be tampered with or be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder.

~~(3) An unlabeled cylinder shall not be used.~~

R 408.40722 Storage.

Rule 722. (1) An oxygen cylinder shall be stored not less than 20 feet from fuel gas cylinders or any highly combustible material, such as, but not limited to, oil, grease, excelsior, flammable gas, or a source of ignition, or shall be separated from the material by a noncombustible wall not less than 5 feet (1.6 meters) high which has a fire resistance rating of 30 minutes.

(2) A cylinder shall be stored away from any source of heat more than 125 degrees Fahrenheit.

(3) A cylinder, whether full or empty, in storage or during shipment, or with the regulator removed, shall have the valve closed and the cap connected in place if a cap is provided in the design, or shall be otherwise protected.

(4) Where different gases are stored, they shall be grouped by types. Groupings shall separate the fuel gases from the oxidizing gases as specified in subrule (1) of this rule.

(5) A storage area for cylinders shall be well ventilated.

(6) A cylinder shall not be stored in basements or pits.

(7) Where a liquid or gaseous oxygen system is used to supply gaseous oxygen for welding and cutting and the system has a storage capacity of more than 20,000 cubic feet (560 cubic meters), measured at 14.7 psia and 70 degrees Fahrenheit, including unconnected reserves at the site, the system shall be as prescribed in National Fire Protection Association Standard NFPA 50, ~~1974 edition, Standards~~ **Standards** for Bulk Oxygen Systems at Consumer ~~Sites,~~ **Sites,** **1974 edition,** which is adopted by reference in R 408.40709.

R 408.40723 Cylinders generally.

Rule 723. (1) A chain, bracket, or other restraining device shall be used at all times to prevent cylinders from falling.

(2) A cylinder shall stand valve end up at all times.

(3) A cylinder shall not be dropped, dragged, rolled on its side, or struck violently.

(4) When using a crane or hoisting device, a cylinder shall be lifted only by cradles or enclosed platforms. An electromagnet, hook, rope, or sling shall not be used.

(5) A frozen or ice-clogged valve shall be thawed either by warm air or warm water and shall be dried before using. Boiling water or a flame shall not be used. Force shall not be applied to a valve or cap to loosen a cylinder frozen in place.

(6) Gases shall not be mixed within a cylinder except by the supplier. Only the owner of the cylinder, if the owner is qualified, or a person trained, qualified, and authorized by the owner, shall refill a cylinder. The contents of a cylinder shall be used only for those purposes intended by the supplier.

(7) A cylinder shall not be placed where it will become a part of the electrical circuit by accidental grounding or where it may be burned by an electric welding arc. A cylinder shall not be placed so that hot slag or flame can reach it unless the cylinder is protected by a fire-resistant shield. An electrode shall not be tapped against a cylinder to strike an arc.

(8) A regulator, gauge, or hose shall not be interchangeable between fuel gas, oxidizing gas, or inert gas. Connections for compressed gas cylinders shall be as prescribed in American National Standard Institute Standard ANSI/ASA B57.1, 1965 edition, ~~Compressed~~ **Compressed** Gas Cylinder Valve Outlet and Inlet **Connections,** ~~Connections,~~ which is adopted by reference in R 408.40709.

(9) A cylinder valve shall be opened slightly for an instant and then closed before connecting to a regulator or manifold to clear the valve of dust and dirt. The employee opening the valve shall stand to one side of the outlet, not in front of it. **The employee shall not open the valve** ~~This shall not be done~~ near a source of ignition. Pressure to a regulator shall be introduced by slowly opening the cylinder valve. An acetylene cylinder valve shall only be opened enough to allow proper working pressure, but shall not be opened more than 1 1/2 turns of the spindle.

(10) Acetylene shall not be utilized or piped, except in cylinder manifolds, at a pressure in excess of 15 psig.

(11) A cylinder to which a regulator is attached shall not be moved unless secured to a hand or powered truck designed or equipped for this purpose.

(12) A cylinder valve ~~shall~~ **must** be closed in any of the following situations:

(a) When moving the cylinder.

(b) When the work is finished or is left unattended during the lunch period, overnight, or any other prolonged period.

(c) When the cylinder is empty.

(d) When the regulator is removed.

(13) A cylinder without fixed handwheels shall have keys, handles, or nonadjustable wrenches on valve stems while in service. A multiple cylinder installation shall require only 1 key or handle for each manifold.

A hammer shall not be used to open a cylinder valve or loosen a cap.

(14) A cylinder, whether full or empty, shall not be used as a roller or support.

(15) A damaged or a leaking cylinder, a cylinder with a valve stuck open, or a valve in need of repair shall be taken outdoors away from sources of ignition, tagged with a warning sign, and the manufacturer or distributor notified. Complete removal of the stem from the cylinder valve shall be avoided.

(16) Nothing shall be placed on top of the cylinder.

HOSES AND REGULATORS

R 408.40731 Hoses and connections.

Rule 731. (1) Hose and hose connections used for a welding operation shall be as prescribed in paragraph 3.5.6 of the American National Standard Institute Standard ANSI/AWS Z49.1, ~~1973 edition, Safety~~ **Safety** in Welding and Cutting and Allied ~~Processes,~~ **Processes,** **1973 edition,** which is adopted by reference in R 408.40709.

(2) Parallel lengths of hose taped together shall have not more than 4 inches out of each 12 inches covered by tape.

(3) Parallel hoses shall be color coded as follows:

(a) Red-fuel gases. See subrule (4) of this rule.

(b) Green-oxygen.

(c) Black-inert gas or air.

(4) The employer shall assure that only approved hose is used for LP gas.

(5) A hose and its connections shall be inspected before each shift for burns, leaks, worn places, or other defects which could affect the safety of an employee. Suspected leaks shall be checked by use of a grease-free soap solution.

(6) A defective hose shall not be used, but shall be repaired or replaced.

(7) A hose that has been subject to a flashback or has been repaired or spliced shall be tested at twice the normal pressure, but not less than 300 psig.

(8) A box used for the storage of gas hose shall be ventilated.

PERSONAL PROTECTIVE EQUIPMENT

R 408.40751 Personal protective equipment.

Rule 751. (1) ~~A welder shall wear face~~ Face and eye protection shall be worn by a welder when performing welding operations and by other employees exposed to a risk of injury from spatter or flash, or both. The protective devices shall be provided for as prescribed in **Construction Safety Standard Part 6 "Personal Protective Equipment," as referenced in R 408.40709.** ~~construction safety standard Part 6 Personal Protective Equipment, R 408.40617, R 408.40623, and R 408.40624.~~

(2) ~~The employer shall provide welding gloves~~ Welding gloves shall be provided for by the employer, at no expense to the ~~employee~~ employee, and ~~the employee shall wear them~~ be worn to protect ~~their~~ the hands and wrists.

(3) ~~The employer shall provide other~~ Other protective devices, such as, but not limited to, body protection, chaps, and curtains, shall be provided for by the employer, at no expense to the employee, and ~~shall be used when an~~ the employee shall use them when is exposed to a risk of injury by flash burn, sparks, and foreign bodies.

GENERAL FIRE RULES

R 408.40761 Fire precautions.

Rule 761. (1) Welding operations shall not be performed within 50 feet of explosives, stored cylinders, or stored fuel. Combustible and flammable materials located within 35 feet of a welding operation shall either be removed or covered with fire-resistant material.

(2) Cracks or openings through which sparks could pass in the floor or wall that are within 35 feet of a welding operation shall be covered with a fire-resistant material.

(3) A wood floor within 10 feet of a welding operation shall be protected by either wetting down, covering with sand, or covering with a fire-resistant material.

(4) A minimum of 1 2A-10BC portable fire extinguisher shall be immediately available to the work area during welding operations.

(5) An employer shall designate a person as responsible for fire safety during a welding operation where a fire could start or where 1 of the following conditions exists:

(a) Appreciable combustible and flammable materials are more than 35 feet from a welding operation but are easily ignited.

(b) Combustible and flammable material is adjacent to the opposite side of a metal partition, wall, ceiling, or roof that is likely to ignite by conduction or radiation.

(c) If there is a possibility that a smoldering fire may have started, the person shall remain at the scene of the work for not less than 30 minutes after the welding operation has stopped. Personnel shall be instructed as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.

(6) The connection, by welding, of branches to a pipeline carrying a flammable substance shall be performed in accordance with the regulations of the department of transportation, 49 C.F.R. Part 192, ~~Minimum~~ **"Minimum Federal Safety Standards for Gas Pipelines," Pipelines,** which are adopted by reference in R 408.40709.

(7) Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

R 408.40762 Welding drums, barrels, tanks, or other containers.

Rule 762. (1) Welding operations shall not be performed on drums, barrels, tanks, or other containers until they have been cleaned of all flammable, combustible, or toxic materials or fumes.

(2) All pipelines or other connections to drums, barrels, or tanks shall be disconnected or blanked before performing welding operations.

(3) Hollow spaces or cavities shall be vented and either filled with water or purged with an inert gas before preheating, cutting, or welding.

(4) An opening shall be maintained during welding and cutting to vent gases or vapors.

(5) Welding on natural gas pipelines shall be as prescribed by the regulations of the department of transportation, 49 C.F.R. Part 192, ~~Minimum~~ **"Minimum Federal Safety Standards for Gas Pipelines," Pipelines,** which are adopted by reference in R 408.40709.