DEPARTMENT OF LABOR AND ECONOMIC OPPORTUNITY

DIRECTOR'S OFFICE

CONSTRUCTION SAFETY AND HEALTH STANDARD

(By authority conferred on the director of the department of labor and economic opportunity by sections 19 and 21 of the Michigan occupational safety and health act, 1974 PA 154, MCL 408.1019 and 408.1021, and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, 2011-4, and 2019-3, MCL 445.2001, 445.2011, 445.2025, 445.2030, and 125.1998)

PART 8. HANDLING AND STORAGE OF MATERIALS

R 408.40801 Rescinded.

History: 1979 AC; 2016 AACS; 2021 AACS.

R 408.40810 Scope and adoption by reference of standards.

Rule 810. (1) This standard pertains to the handling and storage of construction materials, including care and use of slings, ropes, and chains for a construction operation, except for specific rules covering materials covered in the following MIOSHA standards, which are referenced in this rule:

(a) Construction Safety Standard Part 7. “Welding and Cutting.”

(b) Construction Safety Standard Part 18. “Fire Protection and Prevention.”

(c) Construction Safety Standard Part 20. “Demolition”

(d) Construction Safety Standard Part 27. “Blasting and Use of Explosives.”

(2) The Compressed Gas Association Standard, P-1--2000, “Safe Handling of Compressed Gases in Containers,” ninth edition, is adopted in these rules. The standard is available from the Compressed Gas Association, Inc., 4221 Walney Road, 5th Floor, Chantilly, Virginia, 20151-2923; telephone number: 703-788-2700 or via the internet at web-site: www.cganet.com at a cost as of the time of adoption of these rules of $227.00.

(3) The standard adopted in these rules is available for inspection at the Department of Labor and Economic Opportunity, MIOSHA, Standards and FOIA Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143.

(4) The standard adopted in these rules may be obtained from the publisher or may be obtained from the Department of Labor and Economic Opportunity, MIOSHA, Standards and FOIA Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143, plus $20.00 for shipping and handling.

(5) The following Michigan occupational safety and health (MIOSHA) standards are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of Labor and Economic Opportunity, MIOSHA, Standards and FOIA Section, 530 West Allegan Street, P.O. Box 30643, Lansing,

Michigan, 48909-8143 or via the internet at website: 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 7. “Welding and Cutting,” R 408.40701 to R 408.40762.

(b) Construction Safety Standard Part 18. “Fire Protection and Prevention,” R 408.41801 to R 408.41884.

(c) Construction Safety Standard Part 20. “Demolition,” R 408.42001 to R 408.42047.

(d) Construction Safety Standard Part 27. “Blasting and Use of Explosives,” R 408.42701 to R 408.42799.

(e) General Industry Safety and Health Standard Part 49. “Slings,” R 408.14901 to R 408.14965.

History: 2004 AACS; 2013 AACS; 2016 AACS; 2021 AACS.

R 408.40817 Definitions.

Rule 817. (1) "Block" means a masonry unit having 1 dimension exceeding 15 inches, and 1 of its other 2 dimensions exceeding 7 inches.

(2) "Brick" means a masonry unit which is not a block.

(3) "Chain" means a series of metal links connected to, or fitted into, one another.

(4) "Lay" means the lengthwise distance required by a single strand to make 1 complete spiral around the rope.

(5) "Rigging equipment" means chain, wire rope, fiber rope, synthetic rope, sling, and their accessories and includes hoisting lines.

(6) "Rope" means a strand or series of strands of fiber, synthetic or wire braided, woven or twisted together.

History: 1979 AC.

R 408.40818 General provisions; storage.

Rule 818. (1) All material shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse during storage or transit.

(2) Structural steel, poles, pipe, bar stock, and other cylindrical materials, unless racked, shall be stacked and blocked so as to prevent spreading or tilting.

(3) The maximum safe load limit in pounds per square foot of a floor or roof of a building shall be conspicuously posted in all storage areas, except when a storage area is on a floor or slab on grade. The maximum safe load limit shall not be exceeded. Posting is not required for storage areas in all single-family residential structures and wood-framed multi-family residential structures.

(4) Storage areas, aisles, and passageways shall be kept free of the accumulation of materials that constitutes a hazard to the movement of material-handling equipment and employees. Such areas shall be kept in good repair.

(5) If a difference in road or work levels exists, ramps, grading, or blocking shall be provided to ensure the safe movement of material-handling equipment.

(6) A railcar, truck, or semitrailer shall be chocked or otherwise secured during loading and unloading if the movement of a railcar, truck, or trailer could create a hazard for the employee.

(7) While roofing work is being performed, materials and equipment shall not be stored within 6 feet (1.8 m) of a roof edge, unless guardrails are erected at the roof edge.

(8) Material stored inside buildings under construction shall not be placed within 6 feet of any hoistway or inside floor openings, nor within 10 feet of an exterior wall that does not extend above the top of the material stored.

(9) Noncompatible materials shall be segregated in storage.

(10) Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage. Vegetation control shall be exercised when necessary.

(11) Materials shall not be stored on scaffolds or runways in excess of supplies needed for immediate operations.

(12) Portable and powered dockboards shall be strong enough to carry the load imposed on them.

(13) Portable dockboards shall be secured in position by being anchored and equipped with devices that will prevent slipping.

(14) Handholds, or other effective means, shall be provided on portable dockboards to permit safe handling.

(15) Positive protection shall be provided to prevent railroad cars from being moved while dockboards or bridge plates are in position.

History: 1979 AC; 1996 AACS; 2004 AACS; 2013 AACS; 2021 AACS.

R 408.40819 Storage of bagged material, brick, and block.

Rule 819. (1) Bagged material on a pallet shall be all of the following:

(a) Not more than 36 inches in height.

(b) Secured to prevent displacement from the pallet before moving.

(c) Stacked not more than 2 pallets high.

(d) Stacked by stepping back the layers and cross-keying the bags at least every 10 bags high.

(2) A loose brick or tile stack shall be all of the following:

(a) Tapered back 2 inches in every foot of height above 4 feet.

(b) Not exceed 6 feet in height.

(c) Cross-keyed at each 2-foot level.

(3) A loose block stack shall be all of the following:

(a) Not exceed 6 feet in height.

(b) Cross-keyed at each 3-foot level.

(4) Brick on a pallet shall be all of the following:

(a) Not more than 30 inches in height.

(b) Secured to prevent displacement from the pallet before moving.

(c) Stacked not more than 2 pallets high.

(5) Block on a pallet shall be all of the following:

(a) Not more than 46 inches in height.

(b) Cross-keyed every course or secured to pallet.

(c) Stacked not more than 2 pallets high.

(6) Brick or block in a banded cube shall not be stacked more than 2 cubes high.

History: 1979 AC; 1983 AACS; 2004 AACS; 2013 AACS.

Editor's Note: An obvious error in R 409.40819 was corrected at the request of the promulgating agency, pursuant to Section 56 of 1969 PA 306, as amended by 2000 PA 262, MCL 24.256. The rule containing the error was published in Annual Administrative Code Supplement 2013. The memorandum requesting the correction was published in Michigan Register, 2026 MR 16.

R 408.40820 Storage of lumber.

Rule 820. (1) Lumber shall be stacked on level and solidly supported sills so as to be self-supporting and stable.

(2) A pile of lumber manually stacked, and a pile of lumber to be manually unstacked, shall not exceed 6 feet in height.

(3) Lumber which is mechanically stacked shall not exceed 10 feet in height. This lumber shall not be rehandled manually, except as prescribed in subrule (2) of this rule.

(4) Used lumber shall have all protruding nails removed or bent into the lumber before stacking.

History: 1979 AC; 2013 AACS.

R 408.40821 Storage of material in bins or hoppers.

Rule 821. A bin or hopper that has a bottom discharge shall have sloped sides to allow material to flow freely.

History: 1979 AC; 1982 AACS; 1996 AACS; 2004 AACS; 2013 AACS.

R 408.40822 Clearances.

Rule 822. (1) Material stored near an electrical distribution or transmission line shall maintain the following clearances:

(a) Line rated 50 kV or less--10 feet plus length of material stored.

(b) Line rated 50 kV or more--10 feet plus 0.4 inch for each 1 kV over 50 kV plus length of material stored or 10 feet plus 4 inches for each 10 kV over 50 kV plus length of material stored.

(2) An employee shall be designated to observe the clearance and give timely warning if it is difficult for the operator to maintain the prescribed clearance by visual means.

History: 1979 AC; 2004 AACS; 2013 AACS.

R 408.40823 Compressed gas.

Rule 823. The handling and storage of all compressed gases, except those used for welding and cutting, shall be as prescribed in the Compressed Gas Association Standard, P-1--2000, “Safe Handling of Compressed Gases in Containers,” in R 408.40810.

History: 1979 AC; 2004 AACS; 2016 AACS.

R 408.40831 Disposal of waste materials.

Rule 831. (1) The area onto and through which material is to be dropped shall be completely enclosed with barricades not less than 36 inches or more than 42 inches high and not less than 6 feet back from the opening and area receiving the material. Signs warning of the hazard of falling materials shall be posted on the barricades at each level containing the barricades. Removal of signs shall not be permitted in this lower area until debris handling ceases above.

(2) If material is dumped from mechanical equipment or a wheelbarrow, then a toeboard or bumper not less than 4 inches thick x 6 inches high nominal size shall be secured to the floor at each material chute opening.

(3) If the drop is more than 20 feet outside the exterior of the building, then a chute as prescribed in Construction Safety Standard Part 20 "Demolition," as referenced in R 408.40810, shall be used, and extend to within 8 feet of the lower level.

(4) Material, barricades, and chutes shall not be removed until material handling ceases above.

(5) All scrap lumber, waste materials, or rubbish shall be removed from the immediate work area as the work progresses.

(6) Disposal of waste material or debris by burning shall comply with local fire regulations.

(7) All solvent waste, oily rags, and flammable liquids shall be kept in fire resistant covered containers until removed from the worksite.

History: 1979 AC; 2004 AACS; 2013 AACS; 2016 AACS.

R 408.40832 Rigging equipment.

Rule 832. (1) Rigging equipment for material handling shall be inspected at the time of installation, before each job, and at the beginning of each shift if in use, by an employee qualified to perform this inspection. Defective rigging equipment shall be removed from service.

(2) If not in use, rigging equipment shall be stored in a manner that is not hazardous for an employee.

(3) Rigging equipment, other than a sling, hoisting line, and alloy steel chain, shall not be loaded in excess of its recommended safe working load, as prescribed in General Industry Safety Standard Part 49 "Slings," as referenced in R 408.40810.

History: 1979 AC; 2004 AACS; 2013 AACS; 2016 AACS.

R 408.40833 Slings.

Rule 833. (1) All slings used to store or handle material for construction operations shall meet the requirements of General Industry Safety Standard Part 49 "Slings," as referenced in R 408.40810.

(2) Employers shall ensure that rigging equipment complies with all of the following:

(a) Have permanently affixed and legible identification markings as prescribed by the manufacturer that indicate the recommended safe working load.

(b) Not be loaded in excess of its recommended safe working load as prescribed on the identification markings by the manufacturer.

(c) Not be used without affixed, legible identification markings, required by subdivision (a) of this subrule.

(3) Employers shall not use improved plow-steel wire rope and wire-rope slings with loads in excess of the rated capacities, such as working load limits, indicated on the sling by permanently affixed and legible identification markings prescribed by the manufacturer.

(4) Wire rope slings shall have permanently affixed, legible identification markings stating size, rated capacity for the type or types of hitch or hitches used and the angle upon which it is based, and the number of legs if more than 1 leg.

History: 1979 AC; 1983 AACS; 2004 AACS; 2013 AACS; 2016 AACS.

R 408.40834 Wire ropes.

Rule 834. (1) Wire rope shall be taken out of service if any of the following conditions exist:

(a) In running ropes, 6 randomly distributed broken wires in 1 lay or 3 broken wires in 1 strand in 1 lay.

(b) Wear of 1/3 the original diameter of outside individual wires. Kinking, crushing, bird-caging, or any other damage resulting in distortion of the rope structure, except for deformation caused by normal methods of attachment to drums, hooks, shackles, or other accessories.

(c) Evidence of any heat damage from any cause.

(d) Reductions from nominal diameter of more than 1/64-inch for diameters up to and including 5/16-inch, 1/32-inch for diameters 3/8-inch to and including 1/2-inch, 3/64-inch for diameters 9/16-inch to and including 3/4-inch, 1/16-inch for diameters 7/8-inch to 1-1/8-inches inclusive, 3/32-inch for diameters 1-1/4 to 1-1/2 inches inclusive.

(e) In standing ropes, more than 2 broken wires in 1 lay in sections beyond end connections or more than 1 broken wire at an end connection.

(f) Wire rope shall not be used if, in any length of 8 diameters, the total number of visible broken wires exceeds 10% of the total number of wires, or if the rope shows other signs of excessive wear, corrosion, or defect.

(2) A wire rope used for hoisting, lowering, or pulling shall consist of 1 continuous piece without a knot or splice, except an eye splice at the end of a wire rope.

(3) If wire rope clips are used to form eyes in a wire rope, table 1 shall be followed as to numbers and spacing to be used. The "u" section shall be on the dead end side.

(4) Protruding ends of strands in splices on slings and bridles shall be covered or blunted.

(5) Shock loading is prohibited.

(6) Table 1 reads as follows:

TABLE 1

NUMBER AND SPACING OF U-BOLT WIRE ROPE CLIPS

Improved plow steel, rope diameter (inches)	Number of clips		Minimum spacing (inches)
	Drop forged	Other material	
1/2 or less	3	4	3
5/8	3	4	3-3/4
3/4	4	5	4-1/2
7/8	4	5	5-1/4
1	5	6	6
1-1/8	6	6	6-3/4
1-1/4	6	7	7-1/2
1-3/8	7	7	8-1/4
1-1/2	7	8	9

History: 1979 AC; 1983 AACS; 2004 AACS; 2013 AACS.

R 408.40835 Natural and synthetic fiber rope; specifics.

Rule 835. (1) A natural or synthetic fiber rope used for hoisting, lowering, or pulling shall consist of 1 continuous piece without a knot or splice, except an eye splice at the end of the rope.

(2) An eye splice for manila rope shall contain not less than 3 full tucks, and short splices shall contain not less than 6 full tucks, 3 on each side of the splice center line.

(3) An eye splice for stranded synthetic fiber rope shall contain not less than 4 full tucks, and short splices shall contain not less than 8 full tucks, 4 on each side of the splice center line. An eye splice for other types of synthetic fiber rope shall be made as prescribed by the rope manufacturer.

(4) An eye splice for natural or synthetic fiber rope shall be of a size to provide an interior angle at the splice of not more than 60 degrees when the eye is placed over the load or support.

(5) A natural or synthetic fiber rope eye shall be equipped with a thimble if the eye is placed over or around an object with a sharp corner.

(6) Strand end tails from an eye splice shall not be trimmed flush with the surface of the rope immediately adjacent to the full tucks. This applies to both eye and short splices and all types of fiber rope.

(a) Tails from an eye splice for a fiber rope less than 1-inch in diameter shall project not less than 6 rope diameters beyond the last full tuck.

(b) Tails from the eye splice for fiber rope 1-inch or more in diameter shall project not less than 6 inches beyond the last full tuck.

(c) Projecting tails may be tapered and spliced into the body of the rope using not less than 2 additional tucks, which shall require a tail length of approximately 6 rope diameters beyond the last full tuck or they may be taped or wired down.

(7) A natural or synthetic rope shall not be used for load carrying service if any of the following apply:

(a) It is frozen or has been subjected to corrosive chemicals or extreme temperatures.

(b) It has begun to unravel.

(c) It has external abrasions, cuts, or broken fibers, decay, burns, softness, or variation in size or roundness.

(d) It has internal presence of grit, broken fibers, mildew or mold, color change, powdering, or loose fibers.

(8) Natural or synthetic rope shall not be used if there is exposure to corrosive substances, chemicals, or heat.

History: 1979 AC; 2004 AACS.

R 408.40836 Hooks, shackles, and other accessories.

Rule 836. (1) A hook, ring, oblong link, pear-shaped link, welded or mechanical coupling link, or other attachment, when used with alloy steel chain, shall have a rated capacity equal to the chain or rope to which it is attached, and the load shall not exceed the rated load. Shackles and other accessories shall have a rated capacity equal to or greater than the load to which it is attached.

(2) A hook shall be discarded if either of the following applies:

(a) The throat opening is more than 15% greater than the manufactured size.

(b) The hook has more than 10 degrees twist from a vertical center line drawn through the hook center.

(3) Special custom designed grabs, hooks, clamps, and other lifting accessories, for such units as modular panels, prefabricated structures and similar materials, shall be marked to indicate the safe working loads and shall be proof tested to 125% of their rated load.

(4) A job or shop hook and link, or a makeshift fastener, formed from a bolt, rod, or other such accessories, shall not be used, unless tested in accordance to subrule (3) of this rule.

(5) A shackle and connecting pin, and other accessories, shall be discarded if the diameter is reduced by more than 10%.

History: 1979 AC; 1983 AACS; 2004 AACS; 2013 AACS.

Editor's Note: An obvious error in R 408.40836 was corrected at the request of the promulgating agency, pursuant to Section 56 of 1969 PA 306, as amended by 2000 PA 262, MCL 24.256. The rule containing the error was published in Michigan Register, 2013 MR 7. The memorandum requesting the correction was published in Michigan Register, 2013 MR 21.

R 408.40837 Chains.

Rule 837. (1) Chains used for material handling shall be made of alloy steel.

(2) A welded alloy steel chain shall have a permanently affixed tag showing the size, grade, rated capacity, and manufacturer's name.

(3) If wear at any point of any chain link is more than that shown in table 2, then the chain shall be repaired or replaced. The repair shall return the chain to its rated capacity.

(4) Employers shall not use alloy steel-chain slings with loads in excess of the rated capacities, such as working load limits, indicated on the sling by permanently affixed and legible identification markings prescribed by the manufacturer.

TABLE 2

MAXIMUM ALLOWABLE WEAR AT ANY POINT OF LINK

Chain Size (inches)	Maximum Allowable Wear (inch)
1/4	3/64
3/8	5/64
1/2	7/64
5/8	9/64
3/4	5/32
7/8	11/64
1	3/16
1-1/8	7/32
1-1/4	1/4
1-3/8	9/32
1-1/2	5/16
1-3/4	11/32

History: 1979 AC; 2004 AACS; 2013 AACS.

R 408.40840 Shackles and hooks safe working loads.

Rule 840. (1) The manufacturer's recommendations shall be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks. All hooks for which manufacturer's recommendations are not available shall be tested to twice the intended safe working load before they are initially put into use. The employer shall maintain a record of the dates and results of such tests.

(2) Employers shall not use shackles with loads in excess of the rated capacities, such as working load limits, indicated on the shackle by permanently affixed and legible identification markings prescribed by the manufacturer.

History: 2004 AACS; 2013 AACS.

R 408.40841 Synthetic webbing (nylon, polyester, and polypropylene).

Rule 841. (1) Employers shall use natural- and synthetic-fiber rope slings that have permanently affixed and legible identification markings that state the rated capacity for the type or types of hitch or hitches used and the angle upon which it is based, type of fiber material, and the number of legs if more than 1.

(2) Rated capacity shall not be exceeded.

(3) Synthetic webbing shall be of uniform thickness and width and selvage edges shall not be split from the webbing's width.

(4) Employers shall not use natural- and synthetic-fiber rope slings with loads in excess of the rated capacities, such as working load limits, indicated on the sling by permanently affixed and legible identification markings prescribed by the manufacturer.

History: 2004 AACS; 2013 AACS.