

MICHIGAN DEPARTMENT OF LABOR AND ECONOMIC GROWTH

DIRECTOR'S OFFICE

GENERAL INDUSTRY SAFETY STANDARDS

(By authority conferred on the director of the department of labor and economic growth by sections 16 and 21 of 1974 PA 154, and Executive Reorganization Order Nos. 1996-2 and 2003-1, MCL 408.1016, 408.1021, 445.2001, and 445.2011)

PART 8. PORTABLE FIRE EXTINGUISHERS

R 408.10801 Scope.

Rule 801. The rules of this part apply to the installation, use, inspection, maintenance, and testing of portable fire extinguishers in, around, and about places of employment. The provisions of this part are the minimum requirements for portable fire extinguishers. A specific rule may be set forth in other general industry safety standards where, due to process hazards, additional portable fire extinguishers may be required.

History: 1979 AC; 1984 AACS.

R 408.10803 Definitions; A to C.

Rule 803. (1) "Approved label" means a label or other identifying mark of a nationally recognized testing laboratory such as underwriters' laboratories, incorporated, factory mutual research corporation, or underwriters' laboratories of Canada that maintains a periodic inspection of production of labeled fire equipment or materials and by whose labeling is indicated compliance with nationally recognized standards or tests to determine suitable usage in a specified manner.

(2) "Class "A" fire" means a fire that has as its fuel ordinary combustible material such as wood, cloth, paper, rubber, and many plastics.

(3) "Class "B" fire" means a fire that has as its fuel flammable liquids, gases, or greases.

(4) "Class "C" fire" means a fire that involves energized electrical equipment where the nonconductivity of the extinguishing agent is necessary to prevent shock. The fuel consumed by a class "C" fire will be classed as A, B, or D.

(5) "Class "D" fire" means a fire that involves the oxidation reaction of combustible metals such as magnesium, titanium, zirconium, sodium, or potassium.

(6) "Class "K" fire" means a fire in cooking appliances that involve combustible vegetable or animal oils and fats.

History: 1979 AC; 2006 AACS.

R 408.10804 Definitions; E to I.

Rule 804. (1) "Extinguisher" means a portable fire extinguisher.

(2) "High hazard" means a condition where the amount of combustibles or flammable liquids present is such that a fire of severe magnitude may be expected. These may include woodworking, auto repair, aircraft servicing, warehouses with high piled (over 15 feet in solid piles, over 12 feet in piles that contain horizontal channels) combustibles and processes such as flammable liquid handling, painting, and dipping.

(3) "Inspection" means a check to see if an extinguisher is in its designated place with no obvious damage or defects that would prevent operation.

History: 1979 AC.

R 408.10805 Definitions; L to O.

Rule 805. (1) "Low hazard" means a condition where combustible or flammable liquids would create a beginning fire of minimal intensity in occupancies such as, but not limited to, offices, schools exclusive of trade schools and shops, and public buildings.

(2) "Ordinary hazard" means a condition where combustibles would create a beginning fire of average or medium intensity in occupancies such as, but not limited to, department stores, warehouses, and manufacturing buildings of average hazard.

History: 1979 AC.

R 408.10807 Obtaining referenced standards.

Rule 807. (1) The following referenced standards are available for review at the offices of the Michigan department of labor and economic growth, MIOSHA Standards Section, 7150 Harris Drive, Lansing, Michigan 48909-8143, and are available as follows:

(a) The Code of Federal Regulations, Title 49, Transportation, Part 100 to 185, 2004 edition, stock number: 869-052-00203-8 and The Code of Federal Regulations, Title 49, Transportation, Part 186 to 199, 2004 edition, stock number: 869-052-00204-6, may be obtained from the U.S. Government Printing Office, 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 \$63.00 and \$23.00, respectively.

(b) The Michigan Occupational Safety and Health General Industry Safety Standard Part 9 "Fixed Fire Equipment," being R 408.10921 et seq., may be obtained from the Michigan department of labor and economic growth, MIOSHA Standards Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48908-8143 or via the internet at website: www.michigan.gov/mioshastandards.

Up to 5 copies are available at no charge, for quantities greater than 5, the cost is 4 cents per page.

History: 2006 AACS.

R 408.10808 Employers' responsibilities.

Rule 808. (1) An employer in control of a property where extinguishers are required shall be responsible for compliance with this part.

(2) A portable extinguisher shall be maintained in a fully charged and operable condition and kept at its designated place ready for use, except as prescribed in R 408.10839.

History: 1979 AC.

IDENTIFICATION

R 408.10811 Classification.

Rule 811. (1) An extinguisher shall be classified by suitability for a class of fire as defined in R 408.10803 and rated for extinguishing capability.

(2) The classification shall consist of a letter which indicates the class of fire on which the extinguisher has been found effective, preceded by a rating numeral, for class "A" and "B" only, which rates the extinguishing potential of the extinguisher. See tables 3 and 4.

History: 1979 AC; 2006 AACS.

R 408.10812 Labels.

Rule 812. (1) A new extinguisher shall bear an approved label indicating its class and rating.

(2) An extinguisher effective on more than 1 class of fire shall have multiple letter and numeral-letter classifications and ratings.

History: 1979 AC.

R 408.10813. Classes of fire; type and contents of extinguisher.

Rule 813. (1) An extinguisher shall be selected and provided for protection against a specific class or classes of fire in accordance with table 1.

(2) Table 1 reads as follows:

HAZARD	EXTINGUISHER TYPE AND CONTENTS
Class "A" fire	Foam, loaded stream, multipurpose dry chemical, pressure-operated water, water pump tanks.
Class "B" fire	Carbon dioxide, dry chemical, foam, loaded stream, multipurpose dry chemical, bromotrifluoromethane.
Class "C" fire	Carbon dioxide with plastic horn only, dry chemical, multipurpose dry chemical, bromotrifluoromethane.
Class "D" fire	Extinguishing agent listed for use on a specific combustible metal hazard.
Class "K" fire	Potassium acetate, potassium carbonate, potassium citrate, or a combination of these chemicals mixed with water.

(3) Soldered or riveted shell self-generating soda acid or self-generating foam or gas cartridge water-type portable fire extinguishers which are operated by inverting the extinguisher to rupture the cartridge or to initiate an uncontrollable pressure generating chemical reaction to expel the agent shall be removed from service on the effective date of this part.

History: 1979 AC; 1980 AACs; 1984 AACs; 2006 AACs.

R 408.10814 Vapor toxicity.

Rule 814. (1) An extinguisher or extinguishing device containing an active agent or propellant whose thermal decomposition products have a level of vapor toxicity equal to or greater than any of the materials listed in table 2 shall not be used, installed for use, or allowed to remain installed for use.

(2) Table 2 reads as follows:

Figure for 408.10814

TABLE 2
1. Carbon tetrachloride, CCL4
2. Chlorobromomethane, CH2Br CL
3. Azeotropic chlormethane, CM7
4. Dibromodifluoromethane, CBr2F2
5. 1, 2-dibromo-2-chloro-1, 1, 2-trifluoroethane, Cbr F2CBrCLf
6. 1, 2-dibromo-2, 2-difluoroethane, CH2BrCBrF2
7. Methyl bromide, CH3Br
8. Ethylene dibromide, CH2BrCH2Br
9. Hydrogen bromide, HBr
10. Methylene bromide, CH2Br2
11. Bromodifluoromethane, CHBrF2

History: 1979 AC; 1980 AACCS.

DISTRIBUTION

R 408.10821 Number and classes.

Rule 821. The number and classes of extinguishers needed shall be based on the area of the building or occupancy, the severity of the hazard and the anticipated classes of fire.

History: 1979 AC.

R 408.10822 Class "A" extinguishers.

Rule 822. (1) The number of class "A" fire extinguishers required shall be in accordance with table 3.

(2) Travel distance to the nearest extinguisher shall not be more than 75 feet.

(3) A class "A" extinguisher shall be provided for a combustible building, interior finish and contents having class "A" fire potential in accordance with table 3.

(4) A combustible building having an occupancy hazard subject to class "B" or "C" fires shall have the required class "A" extinguishers in addition to class "B" or "C" extinguishers except that if the fire extinguisher has more than 1 letter classification, it may be considered to satisfy the requirements of both classifications.

(5) A class "A" extinguisher shall be located on the same floor as the hazard.

(6) A floor area of a building less than that specified in table 3 shall have at least 1 class "A" extinguisher of the minimum size.

(7) The requirements of table 3 may be fulfilled by extinguishers of lower ratings whose numerical ratings are equal to or exceed the minimum rating for the area specified, except that an extinguisher with a rating of less than "2A" shall not be acceptable.

(8) Protection requirements shall be considered fulfilled if extinguishers of a higher rating are provided and the travel distance does not exceed 75 feet.

(9) Within a location where an approved automatic sprinkler system is provided, the square feet area limitation prescribed in table 3 shall not apply for the protection requirements of class "A" extinguishers. The 75 feet travel distance to an extinguisher shall not be exceeded.

(10) The employer may use uniformly spaced standpipe and hose systems or sprinkler system hose stations where installed for emergency use by employees instead of class "A" portable fire extinguishers if such systems meet the requirements as prescribed in general industry safety standard, Part 9. Fixed Fire Equipment, being R 408.10921 to R 408.10937.

(11) Table 3 reads as follows:

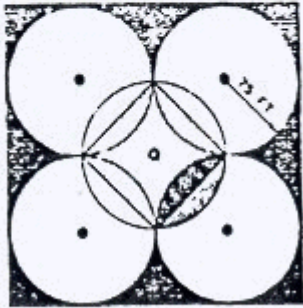
Figure for 408.10822

TABLE 3

	Light (Low) Hazard Occupancy	Ordinary (Moderate) Hazard Occupancy	Extra (High) Hazard Occupancy
Minimum rated single extinguisher	2-A	2-A	4-A*
Maximum floor area per unit of A	3,000 sq. ft.	1,500 sq. ft.	1,000 sq. ft.
Maximum floor area for extinguisher	11,250 sq. ft.**	11,250 sq. ft.**	11,250 sq. ft.**
Maximum travel distance to extinguisher	75 ft.	75 ft.	75 ft.

*Two 2½ gal. (9.46 L) water type extinguishers can be used to fulfill the requirements of one 4-A rated extinguisher.

**



The dotted squares show the maximum area (11,250 sq. ft.) (1,045 m²) that an extinguisher can protect within the limits of the 75-ft. (22.7 m) radius.

History: 1979 AC; 1980 AACS; 1984 AACS; 2006 AACS.

R 408.10823 Class B extinguishers.

Rule 823. (1) A class B extinguisher shall be provided according to the severity of the hazard listed in table 4, except as required by subrule (3) of this rule.

(2) A foam extinguisher only of a lower rating, not to exceed 3, may be used to fulfill this rule.

(3) An open tank in a building having flammable liquids in depth exceeding 1/4 inch shall be provided with an extinguisher on a basis of 1 numerical unit of class B extinguishing agent per square foot of the surface area of the largest tank hazard within the area. An open tank in a building having an area of more than 100 square feet shall be provided with a fixed extinguishing system in addition to the required portable units. An open tank in a building having an area of more than 100 square feet and protected by a fixed system shall be provided with portable units to protect an area to a maximum of 100 square feet.

(4) Travel distance to the nearest class B extinguisher in a building shall be not more than 50 feet. A class B extinguisher of a higher rating may be used, but the travel distance shall be not more than 50 feet.

(5) Widely separated hazards, such as, but not limited to, kitchens, boiler rooms and paint storage rooms shall be protected with an extinguisher for the type of hazard present if the travel distance exceeds 25 feet.

(6) A class B extinguisher shall be located on the same floor as the hazard and shall be located so as not to expose an employee to undue danger in order to reach the extinguisher.

(7) Table 4 reads as follows:

TABLE 4 (For Extinguishers labeled prior to June 1, 1996) Type of Hazard Basic Minimum Extinguisher Rating Light 4B Ordinary 8B Extra 12B

(For Extinguishers labeled after June 1, 1996) Type of Hazard Basic Minimum Extinguisher Rating Light 5B 10B Ordinary 10B 20B Extra 20B 40B

History: 1979 AC; 1980 AACS.

R 408.10824 Class C extinguishers.

Rule 824. At least one 15 pound CO₂ or equivalent class C extinguisher, as listed in table 1, shall be provided within 25 feet of a high hazard area containing an electrical distribution source including, but not limited to, a generator, transformer bank, or main switch gear immediately downstream from a service entrance. Since fire itself is a class A or B hazard, the extinguisher shall be sized and located according to the anticipated class A or B fire.

History: 1979 AC.

R 408.10825 Class D extinguishers.

Rule 825. (1) A class D extinguisher shall be used on the specific combustible metal fire for which it has been approved. The extinguisher shall be used according to instructions on the nameplate.

(2) A class D extinguishing agent in a quantity sufficient to provide a smothering blanket over the burning material shall be maintained within 25 feet of a combustible metal being machined or processed.

(3) The extinguishing agent may be applied directly from a bulk container.

History: 1979 AC.

R 408.10826 Class "K" extinguishers.

Rule 826. (1) A class 'K' extinguisher shall be provided for hazards where there is a potential for fires involving combustible vegetable or animal oils and fats.

(2) A placard shall be conspicuously placed near the extinguisher that states that the fire protection system shall be activated before using the fire extinguisher.

(3) A class "K" extinguisher shall be maintained within 30 feet (9.15 m) from the hazards.

(4) Class "K" fire extinguishers manufactured after January 1, 2002, shall not be equipped with "extended wand-type" discharge devices.

(5) Existing dry chemical extinguishers without a Class "K" listing that were installed for the protection of Class "K" hazards shall be replaced with an extinguisher having Class "K" listing when the dry chemical extinguishers become due for either a 6-year maintenance or hydrostatic test.

History: 2006 AACS.

INSTALLATION, INSPECTION, TESTING, AND MAINTENANCE

R 408.10831 Location.

Rule 831. (1) An extinguisher shall be located where it will be readily seen and accessible along normal paths of travel.

(2) In a location where a visual obstruction cannot be avoided, a sign, color symbol, or other means shall be used to indicate the location.

(3) Extinguishers of different classes grouped together shall be marked in a manner to facilitate proper choice in case of a fire. An extinguisher with an extinguishing agent which conducts electricity shall bear a label "not for electrical fires" with the letters legible from a distance of 3 feet or more.

History: 1979 AC.

R 408.10833 Installation.

Rule 833. (1) An extinguisher shall be installed securely on a hanger, in a bracket or mounted in a cabinet unless it is wheeled type or cart mounted. A means shall be used to indicate the location of an extinguisher mounted in a cabinet or on a shelf. The extinguisher shall be placed so that the operating instructions face outward.

(2) An extinguisher having a gross weight of not more than 40 pounds shall be installed so that the top is not more than 5 feet above the floor. An extinguisher having a gross weight of more than 40 pounds, except a wheeled type or cart mounted extinguisher, shall be installed so that the top is not more than 3 1/2 feet above the floor. An extinguisher, except a wheeled type or cart mounted extinguisher, shall be installed so that the bottom is not less than 4 inches from the floor.

(3) An extinguisher shall be suitable for use within a temperature range of not less than plus 40 degrees to plus 120 degrees Fahrenheit. An extinguisher installed at a location subjected to temperature extremes shall be of a type listed for the temperature to which it will be exposed or shall be placed in an enclosure capable of maintaining the temperature.

History: 1979 AC; 1980 AACS; 2006 AACS.

R 408.10835 Inspection; maintenance or recharge date tag; replacement; maintenance of dry chemical extinguishers.

Rule 835. (1) An extinguisher or hose, as prescribed in R 408.10822, shall be inspected monthly or at more frequent intervals when circumstances require to ensure that the extinguisher or hose complies with all of the following provisions:

(a) Is at its designated place.

(b) Has not been actuated or tampered with.

(c) Does not have obvious damage, such as, but not limited to, physical damage, external corrosion, or other impairment.

(2) An extinguisher showing defects which would possibly affect its operation shall be removed from service and given a complete check. An extinguisher shall have a tag attached to it showing the maintenance or recharge date and the initials or signature of the person who performed the service.

(3) An extinguisher shall receive a thorough inspection at least once a year to insure operability. An extinguisher requiring recharging or weighing shall be maintained at least annually.

(4) An extinguisher showing evidence of corrosion or mechanical injury shall be subjected to an approved hydrostatic test as specified in R 408.10836(2) or shall be replaced. A pump-type water or antifreeze extinguisher or a nonrefillable container showing evidence of corrosion or mechanical injury shall be replaced.

(5) Stored pressure dry chemical extinguishers that require a 12-year hydrostatic test shall be emptied every 6 years in compliance with applicable maintenance procedures. When recharging or hydrostatic testing is performed, the 6-year requirement shall begin from that date. Dry chemical extinguishers having a nonrefillable disposable container are exempt from this requirement.

History: 1979 AC; 1984 AACS.

R 408.10836. Testing.

Rule 836. (1) An extinguisher shall receive an approved hydrostatic test every 5 years, except for dry chemical extinguishers with brazed brass, aluminum, or mild steel shells; bromotrifluoromethane extinguishers; and dry powder extinguishers for metal fires, which shall be tested every 12 years. The hydrostatic test date shall be recorded on a suitable metallized decal or equally durable material which has been affixed by a heatless process to the shell of the extinguisher and which shows the date of the test, test pressure, and the name of the person or agency making the test. An extinguisher tested after July 5, 1974, shall have a label which will not retain its

original condition when removal from an extinguisher is attempted. An extinguisher manufactured under the United States department of transportation specifications incorporated in subrule (2) of this rule may have the inspection date and the serviceman's or firm's name, initials, or symbol stamped into the cylinder.

(2) An extinguisher, cylinder, or cartridge used for storage of a compressed gas, manufactured as prescribed by United States department of transportation specifications, shall be hydrostatically tested in accordance with the United States department of transportation regulations prescribed in 49 C.F.R. Part 179 to 190, 2004 edition, which are incorporated herein by reference.

(3) A nitrogen cylinder or other cylinder for inert gas, such as on a wheeled extinguisher, shall be tested at not less than 5 year intervals.

(4) The hose and couplings on an extinguisher equipped with a shut-off nozzle at the outlet end of the hose shall have a hydrostatic test interval prescribed for the unit on which the hose is installed.

(5) A dry chemical and dry powder hose assembly requiring a hydrostatic test shall be at a test pressure of 300 pounds per square inch for 1 minute. A carbon dioxide hose assembly requiring a hydrostatic test shall be at a test pressure of 1,250 pounds per square inch for 1 minute. Such hoses shall be tested within a protective cage.

(6) An extinguisher subjected to an original factory test pressure of 350 pounds per square inch or more shall be tested at 75% of the factory test pressure, but not less than 300 pounds per square inch (see table 5).

(7) Table 5 reads as follows:

Table 5

Hydrostatic Test Pressure Requirements – Non-ICC Shells
Shells Not Specified in U.S. Department of Transportation Regulations

EXTINGUISHER TYPE	ORIGINAL FACTORY TEST PRESSURE	REQUIRES HYDROSTATIC TEST PRESSURE
All Dry Chemical and Dry Powder	400 psi or greater	75% of factory test pressure
	350-399 psi below 350 psi	300 psi 75% of factory test pressure
Foam – 500 psi factory test	500	375
Foam – 350 psi factory test	350	300
Stored-Pressure or Cartridge-Operated Water-Type (including Anti-Freeze and Loaded-Stream)	400 psi or greater	75% of factory test pressure
	350-399 psi below 350	300 psi 75% of factory test pressure

History: 1979 AC; 1980 AACS; 1984 AACS; 2006 AACS.

Rule 837. An employer maintaining his own extinguisher shall use recharging materials of the class specified on the extinguisher nameplate or recommended by the manufacturer for recharging.

History: 1979 AC.

R 408.10839 Removal and return of extinguishers.

Rule 839. An employer shall assure that an extinguisher of the same classification or the equivalent alternate protection is provided when a portable extinguisher is removed from its location for service leaving less than the required minimum number of extinguishers. An extinguisher returned to service shall be fully charged and in operable condition.

History: 1979 AC; 1984 AACS.