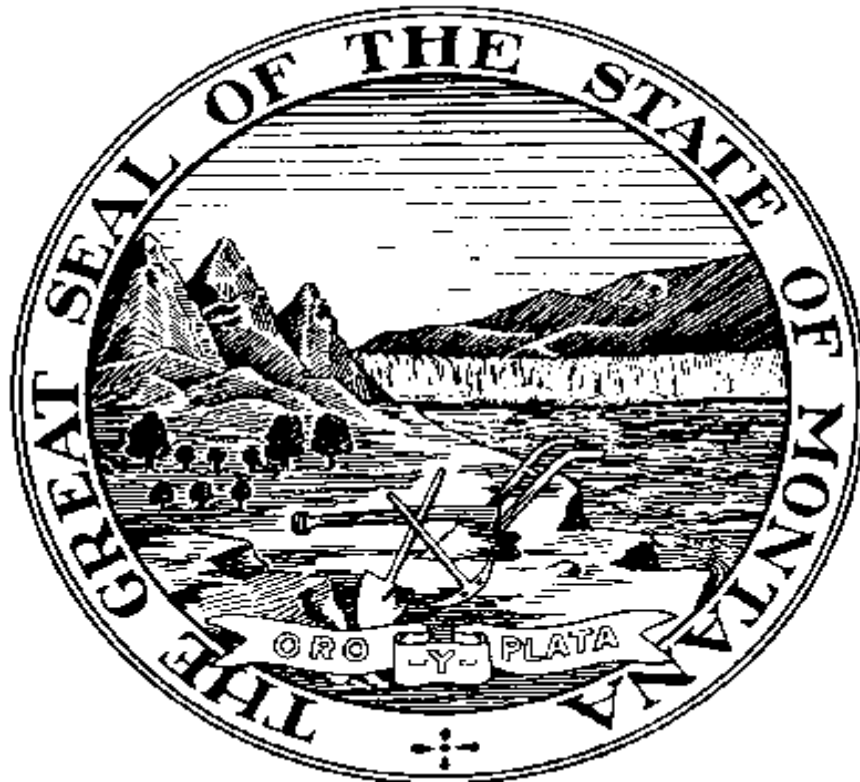


# Flammable and Combustible Storage Checklist

Occupational Safety and Health Bureau



Montana Department of Labor and Industry

Prepared for Montana Employers  
by the

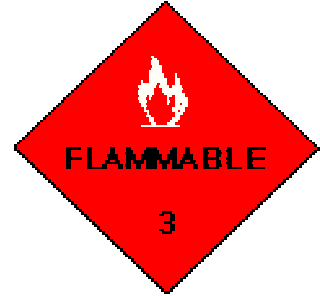
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This checklist has been compiled to help employers and employees comply with the requirements of the Occupational Safety and Health Act and the Montana Safety Act, (Reference 29 CFR 1910 and 1926 of the Federal OSHA Standards) regarding the storage and use of flammable and combustible liquids. This checklist is only a guide. The use of it does not necessarily assure full compliance with all State and Federal regulations. This checklist is designed in such a manner that a negative answer indicates a need for safety attention.

### **Common Flammable Liquids**

Acetone  
Alcohol  
Benzene  
Carbon Disulfide  
Ether  
Gasoline  
Isopropyl Alcohol

Lacquer Thinner  
MEK  
Petroleum Ether  
Toluene  
Turpentine  
VM+P Naptha  
Xylene



### **Flammable Liquids**

- Have flash point below 100 degrees Fahrenheit
- Are labeled as Class IA, IB, or IC liquids

### **Common Combustible Liquids**

Butyl Cellosolve  
Creosote Oil  
Ethylene Glycol  
Formaldehyde  
Fuel Oils  
Hydraulic Fluid  
Kerosene

Linseed Oil  
Mineral Oil  
Mineral Solvent  
Phenol  
Quenching Oil  
Safety Oil  
Transformer Oil

### **Combustible Liquids**

- Have flash points above 100 degrees Fahrenheit
- Are labeled as Class II, IIIA, or IIIB liquids

## Checklist for Storage of Flammable and Combustible Liquids

	Yes	No
<b>I. Tanks (in general)</b>		
A. Are tanks made of steel (unless they fit the exception as noted)? 1910.106 (b)(1)	_____	_____
B. If the tank is of inlined concrete, is it being used to store a flammable or combustible liquid having a gravity of 40 API or heavier? 1910.106 (b)(1)(i)(a)	_____	_____
C. Is the spacing between any two tanks housing flammable or combustible liquids not less than three feet? 1910.106 (b)(2)(ii)	_____	_____
D. Is the separation between a LP gas container and a flammable or combustible liquid storage tanks at least twenty feet? 1910.106 (b)	_____	_____
E. Does every above-ground storage tank have a pressure relieving system? 1910.106 (b)(2)(v)(a)	_____	_____
F. If tanks storing Class I liquids are located adjacent to buildings, are the vents arranged to be released at a safe point outside the building? 1910.106 (b)(2)(vi)(b)	_____	_____
G. Is the area around the tank(s) provided with drainage or diked as provided? 1910.106 (b)(5)(vii)(a)	_____	_____
H. Are tank supports on a firm foundation? Are these supports made of concrete, masonry or protected steel? 1910.106 (b)(5)(i)	_____	_____
I. If the tank(s) is inside the building, does it meet requirements of OSHA? 1910.106 (b)(4)(i)	_____	_____
J. If manual gaging is independent of the fill pipe, does it have a liquid-tight cap or cover?	_____	_____
<b>II. Outside Above Ground Storage</b>		
A. Is the area free of weeds, debris and other combustible material not necessary to storage? 1910.106 (b)(6)(iv)	_____	_____
B. If the quantity exceeds 1,100 gallons, is there a minimum distance of ten feet between the building and the nearest container? 1910.106 (d)(6)(ii)(b)	_____	_____

- C. Is the storage area either graded to divert possible spills away from buildings or surrounded by a curb at least six inches high?  
1910.106 (d)(6)(iii) \_\_\_\_\_
- D. If curbs are used are there provisions for draining accumulations of ground or rainwater of spills of flammable or combustible liquids?  
1910.106 (d)(6)(iii) \_\_\_\_\_
- E. Do the drains terminate at a safe location? 1910.106 (d)(6)(iii) \_\_\_\_\_
- F. Are suitable fire control devices available? 1910.106 (7)(i) \_\_\_\_\_
- G. Is the distance between any two of the storage tanks at least three feet? 1910.106 (b)(2)(a) \_\_\_\_\_
- H. If storage tanks are placed in an irregular fashion, are the inside tanks available for fire fighting purposes? 1910.106 (b)(2)(ii)(e) \_\_\_\_\_

**III. Underground Storage Tanks**

**A. Pit Tanks**

- 1. Is the pit (hole) big enough to allow easy access to all parts of the tank? \_\_\_\_\_
- 2. Does it have an access door that can be fastened shut? \_\_\_\_\_
- 3. When anyone enters the pit, is he wearing a safety belt with an attached life line? \_\_\_\_\_

**B. Underground Tanks**

- 1. In storing Class I liquids, is the tank at least one foot from the nearest wall? 1910.106 (b)(3)(i) \_\_\_\_\_
- 2. Is the tank at least three feet from the property line?  
1910.106 (b)(3)(i) \_\_\_\_\_
- 3. Is the tank surrounded by at least six inches of non-corrosive inert materials? 1910.106 (b)(3)(ii) \_\_\_\_\_
- 4. Is it properly covered (two feet of dirt, or foot of dirt on top of which is a concrete slab not less than four inches thick, unless subjected to traffic)? 1910.106 (b)(3)(ii) \_\_\_\_\_

5. Are the vent pipes at least 1 ¼ inches nominal inside diameter?  
1910.106 (b)(3)(iv)(b) \_\_\_\_\_

6. Do fill and discharge pipes enter only through the top?  
1910.106 (b)(3)(v)(c) \_\_\_\_\_

**IV. Diked Area**

A. Is the diked area large enough to hold the contents of the largest tank within the area (assuming the tank is full)?  
1910.106 (c)(1) \_\_\_\_\_

B. Are the walls of the area made of earth, steel, concrete or solid masonry and are they liquid tight? 1910.106 ( c ) (2) \_\_\_\_\_

C. Have you made sure that there is no loose combustible material, or full drum or barrel within the diked are? 1910.106 (c)(6) \_\_\_\_\_

D. Is the average height of the wall restricted to six feet above the interior grade? 1910.106 (c)(4) \_\_\_\_\_

**V. Portable Tank**

A. Does it have emergency vent(s) to relieve internal pressure automatically if the tank gets too hot? 1910.106 (d)(2)(i) \_\_\_\_\_

B. Is the vent set open at not less than 5 psig? 1910.106 (d)(2)(ii) \_\_\_\_\_

C. If fusible vents are used, are they actuated by elements that operate at a temperature not exceeding 300 degrees F.  
1910.106 (d)(2)(ii) \_\_\_\_\_

D. If stacked over one tier, are they designed to nest securely without dunnage? 1910.106 (d)(5)(vi)(d) \_\_\_\_\_

**VI. Drum**

A. Is the drum grounded for Class I liquids? 1910.106 (d)(6)(ii) \_\_\_\_\_

B. Before dispensing of liquid, is the container bonded to the drum for Class I liquids? 1910.106 (f)(3)(v) \_\_\_\_\_

C. Is the drum on metal supports if inside? (Recommended) \_\_\_\_\_

**VII. Safety Can**

- A. Does it have a spring-closed lid and spout cover? 1910.106 (a)(29) \_\_\_\_\_
- B. Is it designed to prevent spills and to relieve internal pressure of expanding vapors? 1910.106 (a)(29) \_\_\_\_\_
- C. Does it have a maximum safe capacity of five gallons (except for Class IA and this has a safe capacity of two gallons)? 1910.106 (a)(29) Table H-12 \_\_\_\_\_
- D. Does it have a flame arrester? 1926.155 (1) \_\_\_\_\_

**VIII. Storage Cabinet**

**A. Capacity**

- 1. Is it ascertained that not more than 60 gallons of Class I and Class II liquids or not more than 120 gallons of Class III liquids are stored in any storage cabinet? 1910.106 (d)(3)(i) \_\_\_\_\_

**B. Metal Cabinets**

- 1. Is it labeled “Flammable –Keep Fire Away”? 1910.106 (d)(3)(ii) \_\_\_\_\_
- 2. Is it made of at least number 18 gauge sheet iron? 1910.106 (d)(3)(ii) \_\_\_\_\_
- 3. Is it double-walled with 1 ½ inches air space? 1910.106 (d)(3)(ii)(a) \_\_\_\_\_
- 4. Is the door provided with a 3-point lock? 1910.106 (d)(3)(ii)(a) \_\_\_\_\_
- 5. Is the door raised at least 2 inches above the bottom of the cabinet? 1910.106 (d)(3)(ii)(a) \_\_\_\_\_

**C. Wooden Cabinets**

- 1. Is it made of an approved grade of plywood that is at least 1 inch in thickness? 1910.106 (d)(3)(ii)(b) \_\_\_\_\_
- 2. Are all joints rabbetted and fastened in two directions with flathead wood screws? 1910.106 (d)(3)(ii)(b) \_\_\_\_\_
- 3. If more than one door is used, is there a rabbetted overlap of not less than 1 inch? 1910.106 (d)(3)(ii)(b) \_\_\_\_\_

**IX. Inside Storage Room**

- A. Are all openings provided with approved self-closing fire doors?  
1910.106 (d)(4)(i) \_\_\_\_\_
- B. Is the room provided with either a gravity or mechanical exhaust ventilation system? 1910.106 (d)(4)(iv) \_\_\_\_\_
- C. Is the ventilation system designed for a complete change of air within the room at least six times per hour? 1910.106 (d)(4)(iv) \_\_\_\_\_
- D. If mechanical exhaust system is being used, is the control switch outside the door and is it connected to the light fixture system? 1910.106 (d)(4)(iv) \_\_\_\_\_
- E. Does the room have one clear aisle that is at least three feet wide?  
1910.106 (d)(4)(v) \_\_\_\_\_
- F. If containers are over thirty (30) gallons in capacity, did you remember not to stack one upon the other? 1910.106 (d)(4)(v) \_\_\_\_\_
- G. Are things stacked in the storage room so as not to limit use of exits or areas normally used for safe egress? 1910.106 (d)(5)(i) \_\_\_\_\_
- H. Is the room liquid tight where walls join the floors? 1910.106 (d)(4)(i) \_\_\_\_\_
- I. Does the room have either: (1) raised sills at least four inches high; (2) a floor at least four inches below the surrounding floor; or (3) an open-grated trench inside the room that drains to a safe location?  
1910.106 (d)(4)(i) \_\_\_\_\_
- J. Does the total allowable quantity stored within the room comply with the room comply with Table H-13? 1910.106 (d)(4)(i) \_\_\_\_\_
- K. Are all storage room areas posted “No Smoking”?  
1910.106 (d)(7)(iii) \_\_\_\_\_
- L. If wood is used for shelving, dunnage or racks, is it at least one inch in thickness? 1910.106 (d)(4)(i) \_\_\_\_\_
- M. Is there a fire extinguisher (12B minimum) located within ten feet of the door? 1910.106 (d)(7)(i)(a) \_\_\_\_\_

N. If the storage building is located fifty feet or less from a building or line of adjoining property that may be built upon, does the exposing wall have a fire resistance rating of at least two hours?  
1910.106 (d)(5)(vi)(a) \_\_\_\_\_

O. If containers are stacked in piles, are they separated by pallets or dunnage where necessary to assure stability? 1910.106 (d)(5)(vi)(c) \_\_\_\_\_

**X. Storage Inside Building**

A. Are containers stored so as not to limit the use of stairways, exits or other means of egress? 1910.106 (d)(5)(i) \_\_\_\_\_

B. Are the containers being used the approved type? 1910.106 (d)(5)(ii) \_\_\_\_\_

C. In office areas, is there only enough of these liquids for maintenance and operation? 1910.106 (d)(5)(iii) \_\_\_\_\_

D. Is storage being done in accordance with Table H-14 or Table H-15?  
1910.106 (d)(5)(v) \_\_\_\_\_

**XI. Inside Tanks**

A. If inside tanks are being used, do they meet requirements as listed?  
1910.106 (4)(i) \_\_\_\_\_

B. Do the vents discharge vapors outside the building? 1910.106 (b)(ii) \_\_\_\_\_

C. Are the employing and filling connections that are made and broken located outside and free from any source of ignition?  
1910.106 (b)(3)(v)(e) \_\_\_\_\_

D. Does it have an automatic-closing heat-activated valve on each withdrawal connection to prevent continued flow in the event of fire in the vicinity? 1910.106 (b)(4)(iv)(c) \_\_\_\_\_

E. Is it provided with a means to prevent overflow into the building?  
1910.106 (b)(4)(iv)(h) \_\_\_\_\_

**XII. Storage in Public Warehouse**

A. Is storage done in accordance with Table H-14 or Table H-15?  
1910.106 (d)(5)(v) \_\_\_\_\_



**XIII. Storage in Warehouse or Storage Building**

- A. Is storage in accordance with Table H-14 or Table H-15?  
1910.106 (d)(5)(iv)(a) \_\_\_\_\_
  
- B. If the building is located 50 feet or less from another building, does the exposed wall have a fire-resistance rating of at least 2 hours?  
1910.106 (d)(5)(v)(a) \_\_\_\_\_

**XIV. Incidental Storage**

- A. Are the liquids stored in tanks or closed containers?  
1910.106 (e)(2)(ii) \_\_\_\_\_
  
- B. Is the amount of Class IA liquid stored not in excess of 25 gallons?  
1910.106 (e)(ii)(b)(1) \_\_\_\_\_
  
- C. Is the amount of Class IB, IC, II, or III liquids stored not in excess of 660 gallons (in a single portable tanks)? 1910.106 (e)(ii)(b)(3) \_\_\_\_\_

**XV. Storage in Flood Areas**

- A. Vertical Tanks
  - 1. Is the amount of liquid to be stored considered safe for the tank during a flood (unless it has a guiding structure)? 1910.106 (b)(vi)(a) \_\_\_\_\_
  - 2. If the tank is located on an exposed point or on the bank of a shore line, is the structure able to withstand a unit force up to 50 pounds per square foot? 1910.106 (b)(5)(vi)(o) \_\_\_\_\_
  - 3. Are the structural guides designed to give free rise to the tank and are they made of non-combustible materials? 1910.106 (b)(5)(vi)(m) \_\_\_\_\_
  - 4. If there is no public water supply, is water available to fill any/all tanks that are practically empty? 1910.106 (b)(5)(vi)(b) \_\_\_\_\_
  - 5. If the tank is horizontal and more than 70% of the tank would be submerged during a flood, is it attached to a foundation of concrete or of steel and concrete? 1910.106 (b)(5)(vi)(b) \_\_\_\_\_

**XVI. Fire Protection or Control**

- A. Are an adequate number of portable fire extinguishers and control equipment provided for the special hazards that exist?  
1910.106 (e)(5)(i) \_\_\_\_\_

B. Is the water supply adequate both in volume and in pressure to supply all equipment needed? 1910.106 (e)(5)(ii) \_\_\_\_\_

C. Are all fire protection facilities maintained and periodically checked and tested? 1910.106 (e)(5)(v) \_\_\_\_\_

**XVII. Tank Cars**

A. Are the tanks cars separated from warehouses, plant buildings or adjoining property lines by a distance of 25 feet for Class I and by 15 feet for Class II and III liquids? 1910.106 (e)(4)(i) \_\_\_\_\_

B. Are the valves self-closing type and are they held open manually except when automatic means are provided for shutting off the flow? 1910.106 (f)(3)(i) \_\_\_\_\_

C. Are bonding facilities provided? 1910.106 (f)(3)(iv) \_\_\_\_\_

**XVIII. Dispensing Station**

A. Are the dispensing units either mounted on a concrete island or protected against collision damage? 1910.106 (g)(3)(ii) \_\_\_\_\_

B. Does the area have an approved mechanical or gravity ventilation system? 1910.106 (g)(3)(ii) \_\_\_\_\_

C. Is there an easily accessible switch (es) or a circuit breaker (s) at a location remote from the dispensing devices? 1910.106 (g)(3)(iii) \_\_\_\_\_

D. Is there a "No Smoking" sign(s)? 1910.106 (d)(7)(iii) \_\_\_\_\_

E. Is there an appropriate fire extinguisher? 1910.106 (f)(4)(ix) \_\_\_\_\_

**XIX. Industrial Plants**

A. Are the processing buildings made of fire-resistant, noncombustible or heavy timber construction? 1910.106 (h)(3)(i) \_\_\_\_\_

B. If the processing building is enclosed, is it ventilated at a rate of at least 1 cubic foot per minute per square foot of solid floor area? 1910.106 (h)(3)(iii) \_\_\_\_\_

C. Is emergency drainage provided to direct these liquids to a safe location? 1910.106 (h)(3)(ii) \_\_\_\_\_

- D. If Class I liquids are being used, is the area provided with explosion venting? 1910.106 (h)(3)(iv) \_\_\_\_\_
- E. Is proper fire control available? 1910.106 (h)(6) \_\_\_\_\_
- F. Does the plant have an approved automatic sprinkler system? 1910.106 (h)(6)(ii)(d) \_\_\_\_\_

**XX. Construction**

- A. Are the combustible materials piled no higher than twenty feet? 1926.151 (c )(1) \_\_\_\_\_
- B. Are the driveways between and around combustible storage piles at least fifteen feet wide? 1926.151 (c )(2) \_\_\_\_\_
- C. Is there at least ten feet between outside stored combustibles and any building or structure? 1926.151 (c )(5) \_\_\_\_\_
- D. Are the portable tanks at least twenty feet from any building? 1926.152 (c )(4)(i) \_\_\_\_\_
- E. Is there at least one portable fire extinguisher with a rating of not less than 20-B units at any outside storage area? 1926.152 (d)(2) \_\_\_\_\_
- F. Is this extinguisher not less than 25 feet and not more than 75 feet from the area? 1926.152 (d)(2) \_\_\_\_\_

Inspection performed by: \_\_\_\_\_ Date: \_\_\_\_\_

**XXI. Tables**

**Table H-12 Maximum Allowable Size of Containers and Portable Tanks**

<b>Container type</b>	Flammable liquids	Flammable liquids	Flammable liquids	Combustible Liquids	Combustible Liquids
	<b>Class IA</b>	<b>Class IB</b>	<b>Class IC</b>	<b>Class II</b>	<b>Class III</b>
Glass or approved					
Plastic	1 pint	1 quart	1 gallon	1 gallon	1 gallon
Metal (other than DOT drums)	1 gallon	5 gallons	5 gallons	5 gallons	5 gallons
Safety cans	2 gallons	5 gallons	5 gallons	5 gallons	5 gallons
Metal drums (DOT specifications)	60 gallons	60 gallons	60 gallons	60 gallons	60 gallons
Approved portable tanks	660 gallons	660 gallons	660 gallons	660 gallons	660 gallons

“ Rating and capacity.” Storage inside storage rooms shall comply with Table H-13.

**Table H-13 Storage In Inside Rooms**

Fire protection(1) provided	Fire resistance	Maximum size	Total Allowable quantities (gals/sq. ft/ floor area)
Yes	2 hours	500 sq. ft.	10
No	2 hours	500 sq. ft.	5
Yes	1 hour	150 sq. ft.	4
No	1 hour	150 sq. ft.	2

Footnote (1) Fire protection system shall be sprinkler, water spray, carbon dioxide, or other system.

**Table H-14 Indoor Container Storage**

<b>Class liquid</b>	<b>Storage level</b>	<b>Protected storage Maximum per pile</b>	<b>Unprotected storage Maximum per pile</b>
A	Ground and upper floors	2,705 gallons (50)	660 gallons (12)
	Basement	Not permitted	Not permitted
B	Ground and upper floors	5,500 gallons (100)	1,375 gallons (25)
	Basement	Not permitted	Not permitted
C	Ground and upper floors	16,500 gallons (300)	4,125 gallons (75)
	Basement	Not permitted	Not permitted
II	Ground and upper floors	16,500 gallons (300)	4,125 gallons (75)
	Basement	5,500 gallons (100)	Not permitted
III	Ground and upper floors	55,000 gallons (1,000)	13,750 gallons (250)
	Basement	8,250 gallons (450)	Not permitted

Note 1: When 2 or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile shall be the smallest of the 2 or more separate maximum gallonages.

Note 2: Aisles shall be provided so that no container is more than 12 ft. from an aisle. Main aisles shall be at least 3 ft. wide and side aisles at least 4 ft. wide.

Note 3: Each pile shall be separated from each other by at least 4 ft. (Number in parenthesis indicate corresponding number of 55-gallon drums)

**Table H-15 Indoor Portable Tank Storage**

<b>Class liquid</b>	<b>Storage level</b>	<b>Protected storage Maximum per pile</b>	<b>Unprotected storage Maximum per pile</b>
IA	Ground and upper floors	Not permitted	Not permitted
	Basement	Not permitted	Not permitted
IB	Ground and upper floors	20,000 gallons	2,000 gallons
	Basement	Not permitted	Not permitted
IC	Ground and upper floors	40,000 gallons	5,500 gallons
	Basement	Not permitted	Not permitted
II	Ground and upper floors	40,000 gallons	5,500 gallons
	Basement	20,000 gallons	Not permitted
III	Ground and upper floors	60, 000 gallons	22,000 gallons
	Basement	20,000 gallons	Not permitted

Note 1: When 1 or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile shall be the smallest of the 2 or more separate maximum gallonages.

Note 2: Aisles shall be provided so that no portable tank is more than 12 ft. from an aisle. Main aisles shall be at least 8 ft. wide and side aisles at least 4 ft. wide.

Note 3: Each pile shall be separated from each other by at least 4 ft.