

CHAPTER 17

FLAMMABLE LIQUIDS

17.01 STATE CODE ADOPTED.

- A. Ch. Comm 48, Wis. Adm. Code, is adopted by reference and made a part of this chapter with the same force and effect as though set out in full. Failure to comply therewith shall constitute a violation of this chapter, punishable according to the penalties provided herein. A copy of such Code shall be on file in the office of the Allouez Public Safety Director. If such Code and this chapter conflict, the more stringent regulations shall govern.
- B. The authorized agent for approval, inspection and plan review under this chapter shall be the Public Safety Department.

17.02 PERMITS.

A. Required.

No person shall have or store more than 5 gallons of any of the oils named in this chapter, except oils stored in automobiles or other machines using oils as herein provided, unless and until a permit therefor is received from the Building Inspector at a location approved by the Fire Department.

B. Building Inspector to Issue.

Permits shall be granted by the Building Inspector upon receipt of written approval by the Public Safety Director, provided the proposed installation and use comply with the provisions of this chapter. All persons installing tanks subsequent to July 1, 1982 shall obtain a permit therefor and pay the fees provided in Section 8.07 A of this Village Code.

C. Restrictions.

No permit shall be granted for the storage of any of the oils named in this chapter within 250 feet of any school house, and no such oils shall be kept or stored within such distance of any school except in the quantities and manner herein provided, for which no permit is required. No permit shall be granted for the storage of any oils named in this chapter with the exception of fuel oil upon any lot in the Village where 2/3 of the lots in the same block and fronting on the same side of the street are used for residence purposes.

17.03 UNDERGROUND STORAGE.

A. Protection of Underground Tanks.

The tops of tanks located underground shall be at least 3 feet underground and below any piping to which such tanks are connected. Where concrete is used as protection and cover, it

shall extend at least one foot horizontally beyond the perimeter of the tank in all directions.

B. Tanks to be Anchored.

Where conditions that can cause flotation exist, tanks shall be securely anchored in place or weighted to prevent flotation. Tanks shall be set on firm foundations and surrounded with soft earth or sand, well tamped into place, or encased in concrete.

C. Test Wells.

Tanks may have a test well provided such well extends to near the bottom of the tank. The top end shall be hermetically sealed and locked except when necessarily open. For tanks located beneath buildings, the test wells shall extend above the source of supply.

D. Placement and Installation.

All federal and state laws, rules and regulations shall be complied with when placing and installing underground storage tanks.

17.04 ABOVE-GROUND STORAGE.

A. Distance Requirements: Outside, Above-Ground Storage.

- (1) For Class I, II and III liquids other than crude petroleum, the minimum distances from outside, above-ground tanks to the line of a public highway or of property which may be built upon shall be in accordance with the provisions of Federal and State laws, rules and regulations.
- (2) For Class I, II and III liquids, the minimum distances from outside, above-ground tanks to the nearest building other than a bulk oil storage station, warehouse or pumphouse shall be the following:

| Capacity of Tank (Gallons) | Minimum Distance (Feet) |
|-------------------------------|---|
| 1,000 or less | 10 |
| 1,001 to 3,000 | 15 |
| 3,001 to 18,000 | 20 |
| 18,001 to 21,000 | 25 |
| 21,001 to 31,000 | 30 |
| 31,001 to 45,000 | 40 |
| Over 45,000 | According to Federal and State laws, rules and regulations. |

B. Flammable Liquids Stored in Buildings.

The following provisions shall be observed for the storage of flammable liquids inside buildings in other than special rooms or enclosures:

(1) Frame Buildings.

- (a) Class I. Storage shall be in sealed containers or safety cans of not more than 5 gallons capacity. The total quantity shall not exceed 5 gallons.
- (b) Class II. Storage shall be in sealed containers or safety cans of not more than 5 gallons capacity or in barrels, drums or tanks not exceeding 6 gallons capacity. The total quantity stored in this manner shall not exceed 275 gallons.
- (c) Class III. Storage shall be in sealed containers or safety cans not exceeding 5 gallons capacity, in barrels and drums not exceeding 60 gallons capacity or in tanks not exceeding 275 gallons capacity. The total quantity stored in this manner shall not exceed 550 gallons.

(2) Buildings Other Than Frame.

- (a) Class I. Storage shall be in sealed containers or safety cans of not more than 5 gallons capacity. The total quantity shall not exceed 10 gallons.
- (b) Class II. Storage shall be in sealed containers or safety cans of not more than 5 gallons capacity, in drums and barrels not exceeding 60 gallons capacity or in tanks not exceeding 110 gallons capacity. The total quantity stored in this manner shall not exceed 550 gallons.
- (c) Class III. Storage shall be in sealed containers or safety cans not exceeding 5 gallons, in drums or barrels not exceeding 60 gallons or in tanks not exceeding 275 gallons capacity. The total quantity stored in this manner shall not exceed 1,100 gallons.

(3) Special Enclosures.

For provisions governing the storage of flammable liquids in special enclosures see sec. 17.06 of this chapter.

C. Provisions Applying to Both Inside and Outside Above-Ground Storage.

- (1) Distances Between Tanks. The minimum distances between above-ground storage tanks for all classes of liquids shall conform to the requirements of Ch. Ind. 8, Wis. Adm. Code.
- (2) Venting of Above-Ground Tanks. Each above-ground tank having an individual capacity exceeding 100 gallons shall

be equipped with approved venting facilities in accordance with the following provisions:

- (a) Operating Vents. Operating vents shall in no case be less than 1/4" in diameter; and where a power pump is used in filling tanks and a tight connection is made to the fill pipe, the vent shall not be smaller than the fill pipe. If the tank is inside of a building, the vent shall terminate outside of such building according to State codes and not less than 5 feet measured horizontally and vertically from any window or other building opening.
- (b) When Flame Arresters Required. All individual operating vents and all combination type vents which incorporate both operating and excess pressure relief features shall be equipped with approved flame arrestor type equipment. Emergency relief vents which are designed specifically to relieve excessive internal pressure and which will not emit vapor until pressure equals 3/4 inch of water above the pressure at which the operating vent will open need not be equipped with flame arresters. Covers for manholes, handholes and gauge openings shall be tight fitting.
- (c) Relief Construction Other than a Weak Seam. For tanks where the entire dependence for relief is placed upon some form of emergency relief construction other than a weak seam, such tanks shall have a capacity as prescribed by the State Department of Industry, Labor and Human Relations, which shall consider the design and construction of such tanks as they affect the pressure which such tanks may safely withstand.
- (d) Exception. No form of emergency relief construction shall be required on vertical tanks with cone roofs having a slope of less than 2 1/2 inches in 12 inches where the strength of the joint between the roof and the shell is no greater than that of the weakest vertical joint in the shell.
- (e) Bulk Storage Safety Requirements. See sec. 17.05 of this chapter.

17.05 SAFETY REQUIREMENTS FOR BULK STORAGE ABOVE-GROUND TANKS.

A. Bulk Storage Defined.

For the purposes of this section, bulk storage shall mean the storage of flammable liquids which are received by pipeline, tank vessel, tank car or tank vehicle and are stored in tanks for distribution by tank vehicle or tank car.

B. Access Roadways.

Serviceable roadways shall be provided for access to tank locations.

C. Lighting.

Emergency lighting shall be provided for normally accessible operating areas.

D. Piping, Valves and Fittings.

- (1) Materials. Piping, valves and fittings shall be designed and installed for the working pressures and structural stresses to which they may be subjected. They shall be of steel or of other material suitable for use with the liquid being handled. Cast iron shall not be permitted for fittings except as herein permitted.
- (2) Systems and Runs. Piping systems and runs shall contain a sufficient number of valves to operate the system properly and to protect the plant and control the flow of the liquid in the event of physical damage. Except where provision is made for pumping of product from one tank to another, all tanks shall be equipped with internal valves or swing lines. When storage tanks are connected by vapor lines for the purposes of stock conservation, such lines shall likewise be installed with valves or flanges to permit the installation of spectacle or other types of blinds.
- (3) Joints. Joints may be welded, screwed, or flanged and shall be so constructed and maintained as to prevent leakage. Threaded joints shall not be permitted on pipes of 4" in diameter or larger except as herein permitted.
- (4) Tests. The systems and runs shall be tested for leakage after installation at pressures not less than 50% in excess of the normal working pressures for not less than 30 minutes.
- (5) Drains. All drains from pipelines and tanks shall be installed so as to retain any product drained therefrom within a diked area or storage tank.
- (6) Valves to Control Pipeline Flow. If a pipeline is used for transfer of product to more than one terminal, the flow of product shall be controlled by the manual or mechanical interlocking of valves at the terminal junction at each such location. Valves and interlocking controls shall be installed to prevent the flow of product to any but the receiving terminal.
- (7) Support Required. Pipe systems shall be substantially supported on flame resistant supports so constructed as to protect the piping against physical damage and excessive stresses arising from settlement, vibration, expansion and contraction.

- (8) Provision for Movement, Temperature Change, Etc. Piping systems shall be designed and constructed to provide for movement, vibration and settling and for expansion and contraction over a range of temperatures from -39 degrees F. to 100 degrees F.
- (9) Special Provisions. Where (8) above is complied with, an existing installation in use as of July 1, 1982 which includes threaded joints or cast iron fittings or both may be continued in service provided the installation otherwise complies or is brought into compliance with the requirements of this section. Cast iron fittings and threaded joints may also be used in fill pipe assembly installation, at tank vehicle or car loading racks or at tank vessel docks or for filling barrels or other small containers. The use of pumps, strainers, meters or valves such as plug cocks of the Nordstrom type or equivalent, which can normally be obtained for the service only in casings other than steel, shall be permitted.

E. Dikes.

Dikes shall be provided as required in State law, rules and regulations. Weeds and grass shall be controlled by cutting or chemical treatment in all areas. Earthen dikes shall be maintained to minimize erosion and water flow and shall be kept at the proper elevation. When drain lines are provided for dike areas, each such line shall have attached to it a valve or a swivel connection and swing line which will permit the raising of the swing line to the height of the dike wall. An explosion-proof, electric motor-driven pump shall be provided for pumping water from the enclosed area. Diked areas shall be kept free of water at all times.

F. Pumping Equipment.

Explosion-proof, electric motor-driven pumping equipment shall be used for the transfer of product at all bulk storage terminal locations and in bulk storage plants. In addition, a portable, explosion-proof, electric motor-driven pump of approved capacity shall be provided at all bulk storage terminals for emergency transfer of product. There shall also be provided a sufficient number of explosion-proof power outlets at strategic locations for making power connections to such emergency pump.

G. Loading Areas.

Tank car and tank vehicle loading facilities shall be on the terminal property, shall be readily accessible for trucks and shall provide an ample waiting area for trucks which are to be loaded or unloaded. The loading area shall be equipped with drains connected to a storage tank which shall be provided for the disposal of product. Drains shall be designed to eliminate surface accumulation of drainage or spills of product. All containers receiving product shall be grounded during filling operations.

H. Fire Protection.

Fire extinguishers of the required type and size shall be provided at all locations in accordance with the provisions of State law, rules and regulations. All fire extinguishers shall be checked by competent personnel. Carbon dioxide and dry chemical extinguishers shall be checked at least every 6 months; other extinguishers shall be checked annually. At those locations where a fire water main is accessible, a fire hydrant shall be installed near but outside the diked area and maintained in good working order. At least two 30-pound dry chemical extinguishers, or the equivalent, shall be provided at marine docks when ships are unloaded.

I. Cleaning Tanks.

The operator shall notify the Fire Department at least 24 hours prior to the cleaning of any storage tank.

J. Labeling of Tanks.

Above-ground tanks for Class I and II liquids shall have painted conspicuously upon their sides in letters at least 5 inches high the words "FLAMMABLE - KEEP FIRE AWAY."

K. Approval of Plans.

Plans for any extension, remodeling or rebuilding or for new construction shall be approved by the Building Inspector, the Director of Public Works and the Fire Department before the beginning of such work, but only after such plans have been approved by the State Department of Industry, Labor and Human Relations.

17.06 CONSTRUCTION AND INSTALLATION OF TANKS IN BUILDINGS.

A. Tanks Of 110 Gallons Capacity Or Less.

For Class II and III liquids, tanks of 110 gallon capacity or less shall be of galvanized steel or tin plate suitable for the purpose, with all joints locked, double seamed or riveted and also soldered or made tight by some equally satisfactory method, shall be not less than No. 16 gauge U.S. standard, provided where used in connection with and in the same room with oil burning equipment No. 16 gauge metal shall be used. The original barrels or drums may be used until their contents are drawn if they are substantially placed to prevent tipping or rolling and have a pump insert through a close-fitting connection inside of the head.

B. Tanks Over 110 Gallons Capacity.

For Class II and III liquids, tanks of greater than 110 gallon capacity shall be of the thickness specified for horizontal or vertical tanks, or shall be of concrete, and shall be properly vented.

C. Tanks To Be Below Piping.

Tanks shall be located below the level of any piping to which they may be connected or, if this is impractical, satisfactory arrangements shall be made to prevent siphoning or gravity flow in case of accident to the equipment or piping.

D. Firm Foundations Required.

Tanks shall be set on firm foundations, and those exceeding 2,500 gallon capacity shall be supported independently of the floor construction unless the floor construction is such as will safely carry the superimposed load.

E. Tanks For Oil-Burning Equipment.

Steel tanks exceeding 250 gallon capacity and installed in connection with oil-burning equipment shall be completely enclosed with heat insulation equivalent to reinforced concrete not less than 12 inches thick, with at least 6 inches of space on the sides between the tank and the concrete insulation filled with sand or well-tamped earth and with 12 inches of sand on top of the tank, either between the tank and the concrete slab or above the concrete slab.

F. Concrete Tanks.

Concrete tanks shall be completely enclosed with a heat insulation of reinforced concrete not less than 8 inches thick, with at least 6 inches of space on the sides between the tank and the concrete insulation filled with sand or well-tamped earth, except for the top of the tank an insulation of 12 inches of sand without concrete covering shall be sufficient. The walls of concrete tanks shall be constructed independently of and not in contact with the building walls.

G. Capacity.

- (1) Ordinary Buildings. In ordinary buildings, the gross capacity of tanks shall not exceed 5,000 gallons.
- (2) Fire Resistive Buildings. In fire resistive buildings, the gross capacity of tanks shall not exceed 10,000 gallons.
- (3) In Detached Room. In any building, if in a fire resistive or detached room cut off vertically and horizontally in an approved manner from other floors of the main building, the gross capacity of tanks shall not exceed 50,000 gallons, with an individual tank capacity not exceeding 25,000 gallons, provided the insulation specified under subs. (5) and (6) of this section shall be increased to 12 inches on the sides and 18 inches on the top.

17.07 OUTSIDE TANK CONSTRUCTION.

A. Materials.

Except as provided in sec. 17.09 of this chapter, all tanks outside of buildings, either above or below ground, as permitted by this chapter, shall be made of galvanized steel, basis open hearth steel or wrought iron of minimum gauge U.S. Standard, depending upon the capacity or size as given in the tables below. Wooden-top tanks shall not be used.

B. Required Thickness of Underground Tanks. Storage limits shall be those provided in sec. 17.03 (A) of this chapter. This thickness of permitted storage tanks shall conform to the following table:

| Capacity (Gallons) | Minimum Gauge or Thickness of Material |
|----------------------------|---|
| 1 to 285 | 14 |
| 286 to 560 | 12 |
| 561 to 1,100 | 10 |
| 1,101 to 4,000 | 7 |
| 4,001 to 12,000 | 1/4" |
| 12,001 to 20,000 | 5/16" |
| 20,001 to 40,000 | 3/8" |

C. Required Thickness of Above-Ground Tanks. The thickness of vertical tanks not over 1,100 gallon capacity shall be in conformity with the following table:

| Capacity (Gallons) | Minimum Gauge or Thickness of Material |
|------------------------|---|
| 1 to 285 | 14 |
| 286 to 560 | 12 |
| 561 to 1,100 | 10 |

D. Vertical Tanks Over 1,100 Gallons Capacity.

Tanks of this class shall be of such materials and so constructed as to have a factor of safety of at least 2.5. The minimum thickness of the roof shall be 1/8". The thickness of plates shall be in accordance with State law, rules and regulations.

17.08 OTHER PROVISIONS FOR TANKS.

A. Metal Tanks.

Metal tanks shall be constructed entirely of metal, including top, sides and bottom. All openings shall be gas-tight except in the breather vent.

B. To Be Grounded and Insulated.

All tanks shall be electrically grounded by resting directly on moist earth, or otherwise electrically grounded to permanent moisture, to the satisfaction of the Building Inspection

Superintendent. No insulated connections shall be permitted. Telephone or similar poles or projections liable to act as discharge points shall be as far as practicable from tanks. All steel work or reinforced concrete tanks shall be interconnected and grounded by an approved method.

C. Foundation Supports.

Tanks more than one foot above the ground shall have foundations and supports of non-combustible materials except wooden cushions. No combustible material shall be permitted within diked areas.

D. Crude Petroleum Tanks.

Tanks containing crude petroleum shall be surrounded by an embankment or wall of sufficient height to provide storage equal to 1/2 times the capacity of the tank.

17.09 SPECIAL MATERIAL MAY BE PERMITTED.

With the approval of the Building Inspection Superintendent, tanks of copper or other suitable material may be used, provided after the necessary handling incident to installation, they conform to the requirements as to strength, rigidity, durability and tightness set forth in this chapter. For liquids of 35 degrees Baume or below, tanks may be constructed of concrete from plans and specifications approved by the Building Inspection Superintendent. Tank materials approved by the State will be accepted.

17.10 PRESSURE TANKS TO SUSTAIN HYDROSTATIC TEST.

Tanks shall be riveted, welded or brazed and shall be soldered, caulked or otherwise made tight in a mechanical and workmanlike manner, and, if to be used with a pressure discharge system, shall safely sustain a hydrostatic test at least 1/2 times the pressure to which the tank may be subjected. The top of the tank shall be securely fastened to the top of the ring with joints of a tightness equal to those between rings. Tanks shall be covered with asphaltum or other non-rusting paint or coating. All pipe connections shall be made through flanges or reinforced metal securely riveted, welded or belted to the tank and made thoroughly tight.

17.11 REMOVAL, USE, PLACEMENT AND REPAIR OF TANKS.

- A. Abandoned tanks and tanks unused for 180 days due to a change of occupancy shall be removed.
- B. The reuse of tanks is prohibited. This provision is not intended to prohibit the temporary relocation of a presently useful tank that must be moved for construction purposes.

- C. The placing of tanks shall be according to plans and specifications submitted to the Fire Prevention Bureau and shall meet the provisions of State and local codes.
- D. Leaking tanks may be repaired providing that the method of repair, including plans and specifications therefor, are submitted to the Fire Prevention Bureau and approved prior to the commencement of any repair. All repaired tanks shall be subjected to the same pressure tests used for new tanks and any repaired tank which fails such pressure test shall be immediately removed.

17.12 GASOLINE AND VOLATILE COMBUSTIBLES.

A. Where Storage Permitted.

No person shall have, store or permit to be stored within the Village any crude petroleum, benzine, benzol, gasoline, naphtha, ether or other like volatile combustibles or their compounds, except as herein provided:

- (1) Family Use. Any person may keep for family use in a building owned or controlled by him no more than 5 gallons of any of the oils named in a closed, approved metal safety can painted vermilion red and plainly marked with the name of the oil. A quantity of any such oil not exceeding one quart may be kept in a glass bottle plainly labeled with the name of the oil.
- (2) Dealers. Any person dealing in gasoline or other volatile oils may keep no more than 5 gallons of any of the oils named in a closed, approved, metal safety can painted vermilion red and plainly marked with the name of the oil.
- (3) Garages. Any person owning, handling, or storing automobiles or other machines using gasoline may keep no more than 25 gallons of gasoline in each such machine confined in a tank free from leaks and securely capped and protected by all necessary safety appliances.
- (4) Dry Cleaning Plants. Not more than 50 gallons of cleaning fluid may be kept in each dry cleaning machine. No more than 75 gallons of such fluid may be kept in a settling tank of approved design in a dry cleaning establishment operated and maintained in conformity with law.
- (5) Handling. No gasoline or other volatile combustible oils herein named shall be handled except in daylight or by incandescent electric lights.

17.13 LIQUEFIED PETROLEUM GASES.

- A. Ch. Comm 11, Wis. Adm. Code, entitled "Liquefied Petroleum Gases", is adopted by reference to the extent that it is not in

conflict with this chapter and is made a part hereof as though set out in full. A copy of Ch. Comm 11 shall be kept on file in the offices of the Village Clerk-Treasurer and the Public Safety Director. Whenever a conflict exists between the provisions of this chapter and those of Ch. Comm 11, the provisions of this chapter shall govern.

- B. No person shall store liquefied petroleum gas in underground containers unless the storage facility is approved by the Public Safety Director on the basis of safety standards promulgated by the State Department of Commerce.
- C. Cylinders, except those in actual use or attached ready to use on industrial tractors and lift trucks, shall be stored according to regulations provided by the Fire Chief for the exterior storage of containers, adequate housing, painting, ventilation and protection against loss of tampering.
- D. Liquefied petroleum gas-equipped industrial tractors and lift trucks shall be stored away from combustible materials and in locations where they are not subject to excessive rise in temperature, physical damage or tampering by unauthorized persons.
- E. Cylinder changing shall be made outside of buildings or in open door areas if such areas are approved by the Public Safety Director.
- F. No person shall store additional containers inside a building for uses permitted under Comm 11, Wis. Adm. Code, nor shall additional containers for use on industrial tractors or mobile lift trucks be so stored.
- G. No vehicle equipped with a liquefied petroleum gas mobile fuel tank shall be stored, parked, or maintained in any building used for institutional occupancy or public assemblies.
- H. Transport trucks for liquefied petroleum gas shall not be stored closer than 50 feet to any building, trailer camp, property line or public sidewalk. This restriction shall not apply to storage within approved buildings or on approved sites.
- I. Storage in any building of passenger automobiles equipped with liquefied petroleum gas fuel tanks shall be limited to two automobiles, except in fire resistive buildings approved for such storage.

17.25 GENERAL PENALTY.

Any person, firm, or corporation who shall violate and any person, firm, or corporation who shall allow, permit, or authorize a violation of any provision of this chapter or any rule, regulation or order made hereunder shall be subject to a penalty as provided in 1.05 of this Village Code.