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(f) The pilot boarding equipment required by paragraph (b) of this section must include at least one pilot ladder approved under subpart 163.003 of this chapter. Each pilot ladder must be of a single length and capable of extending from the point of access to the water's edge during each condition of loading and trim, with an adverse list of 15°.

(g) Whenever the distance from the water's edge to the point of access is more than 30 feet, access from a pilot ladder to the vessel must be by way of an accommodation ladder or equally safe and convenient means.

[CGD 79–032, 49 FR 25455, June 21, 1984, as amended by USCG–2020–0519, 89 FR 76695, Sept. 18, 2024]

# PART 34—FIRE FIGHTING EQUIPMENT

## Subpart 34.01—General

Sec.

34.01–1 Applicability—TB/ALL, preemptive effect.
34.01–5 Equipment installed but not required—TB/ALL.
34.01–10 Protection for unusual arrangements or special products—TB/ALL.
34.01–15 Incorporation by reference.

## Subpart 34.05—Firefighting Equipment, Where Required

34.05–1 Fire main system—T/ALL.
34.05–5 Fire extinguishing systems—T/ALL.
34.05–10 Portable and semiportable extinguishers—TB/ALL.
34.05–20 Fire axes—T/ALL.

## Subpart 34.10—Fire Main System, Details

34.10–1 Application—TB/ALL.
34.10–5 Fire pumps—T/ALL.
34.10–10 Fire station hydrants, hose and nozzles—T/ALL.
34.10–15 Piping—T/ALL.
34.10–90 Installations contracted for prior to May 26, 1965—T/ALL.

## Subpart 34.13—Steam Smothering System

34.13–1 Application—T/ALL.

## Subpart 34.15—Carbon Dioxide Extinguishing Systems, Details

34.15–1 Application—T/ALL.
34.15–5 Quantity, pipe sizes, and discharge rates—T/ALL.
34.15–10 Controls—T/ALL.
34.15–15 Piping—T/ALL.
34.15–20 Carbon dioxide storage—T/ALL.
34.15–25 Discharge outlets—T/ALL.
34.15–30 Alarms—T/ALL.
34.15–35 Enclosure openings—T/ALL.
34.15–40 Pressure relief—T/ALL.
34.15–50 Lockout valves—T/ALL.
34.15–60 Odorizing units—T/ALL.
34.15–90 Installations contracted for prior to January 1, 1962—T/ALL.

## Subpart 34.17—Fixed Foam Extinguishing Systems, Details

34.17–1 Application—T/ALL.
34.17–5 Quantity of foam required—T/ALL.
34.17–10 Controls—T/ALL.
34.17–15 Piping—T/ALL.
34.17–20 Discharge outlets—T/ALL.
34.17–25 Additional protection required—T/ALL.
34.17–90 Installations contracted for prior to January 1, 1962—T/ALL.

## Subpart 34.20—Deck Foam System, Details

34.20–1 Application—T/ALL.
34.20–3 Cargo area definition—T/ALL.
34.20–5 Quantity of foam required—T/ALL.
34.20–10 Controls—T/ALL.
34.20–15 Piping—T/ALL.
34.20–20 Discharge outlets—T/ALL.
34.20–25 Foam monitor capacity—T/ALL.
34.20–90 Installations contracted for prior to January 1, 1970—T/ALL.

## Subpart 34.25—Water Spray Extinguishing Systems, Details

34.25–1 Application—T/ALL.
34.25–5 Capacity and arrangement—T/ALL.
34.25–10 Controls—T/ALL.
34.25–15 Piping—T/ALL.
34.25–20 Spray nozzles—T/ALL.
34.25–90 Installations contracted for prior to January 1, 1964—T/ALL.

## Subpart 34.30—Automatic Sprinkler Systems, Details

34.30–1 Application—TB/ALL.

## Subpart 34.50—Portable and Semiportable Extinguishers

34.50–1 Application—TB/ALL.
34.50–10 Location, number, and installation of fire extinguishers—TB/ALL.
34.50–20 Semiportable fire extinguishers—TB/ALL.
34.50–80 Location and number of fire extinguishers required for vessels constructed prior to August 22, 2016—TB/ALL.
34.50–90 Vessels contracted for prior to January 1, 1962—TB/ALL.

## Subpart 34.60—Fire Axes

34.60–1 Application—T/ALL.

34.60–5 Number required—T/ALL.
34.60–10 Location—T/ALL.

AUTHORITY: 46 U.S.C. 3306, 3703; E.O. 12234, 45 FR 58801, 3 CFR, 1980 Comp., p. 277; DHS Delegation No. 00170.1, Revision No. 01.4.

SOURCE: CGFR 65–50, 30 FR 16694, Dec. 30, 1965, unless otherwise noted.

## Subpart 34.01—General

### § 34.01–1 Applicability—TB/ALL, preemptive effect.

(a) The provisions of this part shall apply to all tank vessels except as otherwise noted in this part.

(b) The regulations in this part have preemptive effect over State or local regulations in the same field.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 88–032, 56 FR 35821, July 29, 1991; USCG–2006–24797, 77 FR 33873, June 7, 2012]

### § 34.01–5 Equipment installed but not required—TB/ALL.

(a) Where firefighting equipment is not required, but is installed, the equipment and its installation must be of an approved type.

(b) Use of non-approved fire detection systems may be acceptable as excess equipment provided that:

(1) Components are listed and labeled by an independent, nationally recognized testing laboratory (NRTL) as set forth in 29 CFR 1910.7, and are designed, installed, tested, and maintained in accordance with an appropriate industry standard and the manufacturer's specific guidance;

(2) Installation conforms to the requirements of 46 CFR chapter I, subchapter J (Electrical Engineering), especially the hazardous location electrical installation regulations in 46 CFR 111.105; and

(3) Coast Guard plan review is completed for wiring plans.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by USCG–2012–0196, 81 FR 48248, July 22, 2016]

### § 34.01–10 Protection for unusual arrangements or special products—TB/ALL.

(a) The provisions of this part contemplate fire protection for tank vessels of conventional design carrying the usual liquid petroleum products in internal tanks. Whenever unusual arrangements exist or special cargoes are carried upon which the vessel's normal firefighting equipment will be ineffective, additional suitable firefighting equipment of approved type shall be carried.

### § 34.01–15 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in this section, the Coast Guard must publish notice of change in the FEDERAL REGISTER and the material must be available to the public. All approved material is available for inspection at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030 or go to *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*. Also, it is available for inspection at the Coast Guard Headquarters. Contact Commandant (CG–ENG), Attn: Office of Design and Engineering Systems, U.S. Coast Guard Stop 7509, 2703 Martin Luther King Jr. Avenue SE., Washington, DC 20593–7509, telephone 202–372–1405, and is available from the sources listed in this section.

(b) ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959, 877–909–2786, *http://www.astm.org*.

(1) ASTM F1121–87 (Reapproved 2010), Standard Specification for International Shore Connections for Marine Fire Applications, (approved March 1, 2010), incorporation by reference approved for § 34.10–15 (''ASTM F 1121'').

(2) [Reserved]

(c) National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169–7471, telephone 617–770–3000, *http://www.nfpa.org*.

(1) NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, effective August 26, 2009, IBR approved for § 34.30–1.

(2) NFPA 2001, Standard on Clean Agent Fire Extinguishing Systems,

(2008 Edition), IBR approved for § 34.05–5(a)(4) (''NFPA 2001'').

[USCG–2006–24797, 77 FR 33873, June 7, 2012, as amended by USCG–2012–0866, 78 FR 13249, Feb. 27, 2013; USCG–2013–0671, 78 FR 60147, Sept. 30, 2013; USCG–2012–0196, 81 FR 48249, July 22, 2016]

## Subpart 34.05—Firefighting Equipment, Where Required

### § 34.05–1 Fire main system—T/ALL.

(a) Fire pumps, piping, hydrants, hose and nozzles shall be installed on all tankships.

(b) The arrangements and details of the fire main system shall be as set forth in subpart 34.10.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 77–057a, 44 FR 66502, Nov. 19, 1979]

### § 34.05–5 Fire extinguishing systems—T/ALL.

(a) Approved fire extinguishing systems must be installed on all tankships in the following locations. Previously approved installations may be retained as long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection.

(1) *Dry cargo compartments.* A carbon dioxide or water spray system must be installed for the protection of all dry cargo compartments. Where such compartments are readily accessible by means of doors such spaces need be protected only by the fire main system.

(2) *Cargo tanks.* A deck foam system must be installed for the protection of all cargo tank spaces. Where a deck foam system is installed, an approved inert gas, steam or other system may also be installed for the purposes of fire prevention or inerting of cargo tanks. For vessels under 100 feet in length, the semiportable equipment required by footnote 1 of table 34.05–5(a) will be considered as meeting the requirements of this subparagraph.

(3) *Lamp and paint lockers and similar spaces.* A carbon dioxide or clean agent system as described in 46 CFR subpart 95.16 or a water spray system must be installed in all lamp and paint lockers, oil rooms, and similar spaces.

(4) *Pump rooms.* A carbon dioxide or clean agent system as described in 46 CFR subpart 95.16, a foam spray system, or a water spray system must be installed for the protection of all pump rooms. If a clean agent system is installed for the pump room of a tank ship carrying chemical cargos, the amount of extinguishing agent must be determined by using the agent design concentration determined by the cup burner method, described in NFPA 2001 (incorporated by reference; see § 34.01–15) for the cargo requiring the greatest amount of agent.

(5) *Boiler rooms.* On tankships contracted for on or after November 19, 1952, a carbon dioxide or clean agent system as described in 46 CFR subpart 95.16 or a foam system must be installed to protect any space containing a main or auxiliary oil fired boiler, the boiler fuel oil service pump, or any fuel oil units such as heaters, strainers, valves, manifolds, etc., that are subject to the discharge pressure of the fuel oil service pumps.

(6) *Machinery spaces.* A carbon dioxide or clean agent system as described in 46 CFR subpart 95.16 must be installed to protect any machinery space containing an internal combustion-propelling engine that uses fuel having a flashpoint of less than 110 degrees Fahrenheit.

(7) *Internal combustion installations.* A fire extinguishing system must be provided for an internal combustion installation and:

(i) The system must be a carbon dioxide or clean agent system as described in 46 CFR subpart 95.16;

(ii) On vessels of 1,000 gross tons and over on an international voyage, the construction or conversion of which is contracted for on or after May 26, 1965, a carbon dioxide or clean agent system as described in 46 CFR subpart 95.16 must be installed in any space containing internal combustion or gas turbine main propulsion machinery, auxiliaries with an aggregate power of 1,000 b.h.p. or greater, or their fuel oil units, including purifiers, valves, and manifolds; and

(iii) On vessels of 1,000 gross tons and over, the construction, conversion or automation of which is contracted for on or after January 1, 1968, a carbon dioxide or clean agent system as described in 46 CFR subpart 95.16 must be

installed in any space containing internal combustion or gas turbine main propulsion machinery, auxiliaries with an aggregate power of 1,000 b.h.p. or greater, or their fuel oil units, including purifiers, valves and manifolds.

(8) *Enclosed ventilating system.* On tankships contracted for on or after January 1, 1962, where an enclosed ventilating system is installed for electric propulsion motors or generators, a carbon dioxide extinguishing system shall be installed in such system.

(b) The arrangements and details of the fire-extinguishing systems shall be as set forth in subparts 34.10 through 34.20.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGFR 67–90, 33 FR 1015, Jan. 26, 1968; CGD 77–057a, 44 FR 66502, Nov. 19, 1979; CGD 95–027, 61 FR 25998, May 23, 1996; USCG–2006–24797, 77 FR 33873, June 7, 2012]

### § 34.05–10 Portable and semiportable extinguishers—TB/ALL.

(a) All portable and semiportable extinguishers on board tank vessels shall be of an approved type.

(b) The type, size, location and arrangement of portable and semiportable extinguishers shall be as set forth in subpart 34.50.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGFR 70–143, 35 FR 19905, Dec. 30, 1970]

### § 34.05–20 Fire axes—T/ALL.

(a) Fire axes shall be provided on all tankships.

(b) The location and arrangement of fire axes shall be as set forth in subpart 34.60.

## Subpart 34.10—Fire Main System, Details

### § 34.10–1 Application—TB/ALL.

(a) On all tankships the provisions of this subpart, with the exception of § 34.10–90, shall apply to all fire main installations contracted for on or after May 26, 1965. Installations contracted for prior to May 26, 1965, shall meet the requirements of § 34.10–90.

(b) If a fire main system is installed on a tank barge, the system shall meet the intent of this subpart insofar as reasonable and practicable.

### § 34.10–5 Fire pumps—T/ALL.

(a) Tankships shall be equipped with independently driven fire pumps in accordance with table 34.10–5(a).

TABLE 34.10–5(a)—FIRE PUMPS

| Size vessel, L.O.A. (feet) | | Minimum number of pumps | Powerful streams of water per pump | Minimum hydrant and hose size (inches) | |
|---|---|---|---|---|---|
| Over— | Not over— | | | Exterior stations | Interior stations |
| | 100 | [1] | ..... | ..... | ..... |
| 100 | 250 | [2] 1 | [3] 2 | 1½ | 1½ |
| 250 | 400 | 2 | [3] 2 | 1½ | 1½ |
| 400 | 650 | 2 | [3] 2 | [4] 2½ | 1½ |
| 650 | ..... | 2 | [3] 3 | [4] 2½ | 1½ |

[1] Vessels of 65 feet and not over 100 feet shall be equipped with 2 B-V extinguishers. (Refer to table 34.50–5(c).) Vessels under 65 feet shall be equipped with 1 B-V extinguisher. (Refer to table 34.50–5(c).)

[2] Vessels of 1,000 gross tons and over on an international voyage shall have at least 2 fire pumps.

[3] From hydrants having greatest pressure drop between fire-pump(s) and nozzles.

[4] Where 2½-inch hydrant size is required, two 1½-inch outlets may be substituted therefor with two 1½-inch hoses.

(b) Each pump shall be capable of delivering simultaneously the number of streams of water required by table 34.10–5(a) from the outlets having the greatest pressure drop between fire pump(s) and nozzles at a Pitot tube pressure of approximately 75 p.s.i. Where 1½-inch hose is permitted in lieu of 2½-inch hose by footnote 3 of table 34.10–5(a), the pump capacity shall be determined on the basis that both hoses are used.

(c) On tankships of 1,000 gross tons and over on an international voyage, each required fire pump, while delivering water through the fire main system at a pressure corresponding to that required by § 34.10–15(e), shall have a minimum capacity of at least two-thirds of that required for an independent bilge pump if no length correction is taken for the cargo tank space. However, in no case shall the capacity of each fire pump be less than that otherwise required by this section.

(d) Fire pumps shall be fitted on the discharge side with relief valves set to relieve at 25 p.s.i. in excess of the pressure necessary to maintain the requirements of paragraph (b) of this section.

(e) Fire pumps shall be fitted with a pressure gage on the discharge side of the pumps.

(f) Fire pumps may be used for other purposes provided at least one of the required pumps is kept available for

use on the fire system at all times. In no case shall a pump having connection to an oil line be used as a fire pump. Branch lines connected to the fire main for purposes other than fire and deck wash shall be arranged so that the requirements of paragraph (b) of this section and any other services installed on the fire main can be met simultaneously.

(g) On all vessels where two fire pumps are required, they shall be located in separate spaces, and the arrangement of pumps, sea connections, and sources of power shall be such as to insure that a fire in any one space will not put all of the fire pumps out of operation. However, where it is shown to the satisfaction of the Commandant that it is unreasonable or impracticable to meet this requirement due to the size, or arrangement of the vessel, or for other reasons, the installation of a total flooding carbon dioxide system may be accepted as an alternate method of extinguishing any fire which would affect the powering and operation of at least one of the required fire pumps.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 95–028, 62 FR 51199, Sept. 30, 1997]

### § 34.10–10 Fire station hydrants, hose and nozzles—T/ALL.

(a) The size of fire station hydrants and hose required shall be as noted in table 34.10–5(a).

(b) Fire hydrants shall be of sufficient number and so located that any part of living quarters, storerooms, working spaces and weather decks accessible to crew while at sea may be reached with two effective spray patterns of water, one of which shall be from a single 50-foot length of hose. In main machinery spaces all portions of such spaces shall be capable of being reached by at least 2 effective spray patterns of water, each of which shall be from a single 50-foot length of hose from separate outlets.

(c) The outlets at the fire station hydrant shall be limited to any position from the horizontal to the vertical pointing downward so that hose will lead horizontally or downward to minimize possibility of kinking.

(d) All fire station hydrants shall be equipped with spanners suitable for use on the hose at that station.

(e) Each fire station hydrant must have at least 1 length of firehose. Each firehose on the hydrant must have a combination solid stream and water spray firehose nozzle that meets the requirements in subpart 162.027 of this chapter. Firehose nozzles previously approved under subpart 162.027 of this chapter may be retained so long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. A suitable hose rack or other device must be provided. Hose racks on weather decks must be located to afford protection from heavy seas. The hose must be stored in a location that is readily visible.

TABLE 34.10–10(e) HYDRANTS WITH COAST GUARD APPROVED LOW-VELOCITY WATER SPRAY APPLICATORS

| Location | Number of hydrants with approved applicators | Approved applicator length (feet) |
|---|---|---|
| Living space ..... | 1 | 4 |
| Weather deck ..... | 4 | 10 or 12 |
| Machinery space ..... | 2 | 4 |

(f) Each combination firehose nozzle previously approved under subpart 162.027 of this chapter in the locations listed in table 34.10–10(E) must have a low-velocity water spray applicator also previously approved under subpart 162.027 of this chapter that is of the length listed in that table.

(g) The pipes and fire station hydrants shall be so placed that the fire hose may be easily coupled to them. All hydrants shall be so located as to be readily accessible. If deck cargo is carried, it shall not interfere with access to the fire station hydrants, and the pipes shall be arranged as far as practicable to avoid risk of damage by such cargo.

(h) Each fire station hydrant or ''y'' branch shall be equipped with a valve so that the hose may be removed while there is pressure on the fire main.

(i) Fire station hydrant connections shall be brass, bronze, or other equivalent metal. Couplings shall either:

(1) Use National Standard fire hose coupling threads for the 1½ inch (38 millimeter) and 2½ inch (64 millimeter)

hose sizes, i.e. 9 threads per inch for 1½ inch hose, and 7½ threads per inch for 2½ inch hose; or

(2) Be a uniform design for each hose diameter throughout the vessel.

(j) Fire hose shall be 50 feet in length except on weather decks the hose shall be increased in length if necessary to enable a single length to be goose-necked over each side of the vessel. If two fire mains are installed on the weather decks, the length of hose shall be such that it may be goose-necked over the side from the nearest fire main.

(k) Fire hose when part of the fire equipment shall not be used for any other purpose than fire extinguishing, fire drills, and testing.

(l) Fire hose shall be connected to outlets at all times. However, in heavy weather on open decks where no protection is afforded the hose may be removed temporarily from the hydrant and stowed in an accessible location nearby. While in port, fire hose in way of cargo area shall be kept ready for immediate use. The fire hose may be temporarily removed when it will interfere with the handling of cargo.

(m) Each section of fire hose used after January 1, 1980 must be lined commercial fire hose that conforms to Underwriters' Laboratories, Inc. Standard 19 or Federal Specification ZZ-H-451E. Hose that bears the label of Underwriters' Laboratories, Inc. as lined fire hose is accepted as conforming to this requirement. Each section of replacement fire hose or any section of new fire hose placed aboard a vessel after January 1, 1977 must also conform to the specification required by this paragraph.

(n) Coupling shall conform to the requirements of paragraph (h) of this section.

(o) Each low-velocity water spray applicator under paragraph (f) of this section must have fixed brackets, hooks, or other means for stowing next to the hydrant.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 74–60, 41 FR 43151, Sept. 30, 1976; CGD 76–086, 44 FR 2391, Jan. 11, 1979; CGD 95–027, 61 FR 25999, May 23, 1996; CGD 95–028, 62 FR 51199, Sept. 30, 1997]

### § 34.10–15 Piping—T/ALL.

(a) All piping, valves and fittings shall meet the applicable requirements of subchapter F (Marine Engineering) of this chapter.

(b) An adequate number of valves shall be installed to isolate damaged sections of piping except on self-propelled vessels carrying bulk liquefied gases that must have stop valves:

(1) At cross connections;

(2) At the front of the after deck house; and

(3) In the cargo area spaced 40 m (131 ft.) or less between hydrants.

(c) All distribution valves shall be marked as required by § 35.40–10 of this subchapter.

(d) Tankships of 500 gross tons and over on an international voyage must be provided with at least one international shore connection which meets ASTM F 1121 (incorporated by reference, see § 34.01–15). Facilities must be available enabling such a connection to be used on either side of the vessel.

(e) For tankships on an international voyage, the diameter of the fire main shall be sufficient for the effective distribution of the maximum required discharge from two fire pumps operating simultaneously. This requirement is in addition to § 34.10–5(b). The discharge of this quantity of water through hoses and nozzles at a sufficient number of adjacent hydrants shall be at a minimum Pitot tube pressure of approximately 71 pounds per square inch on self-propelled vessels that carry bulk liquefied gases and approximately 50 pounds per square inch on other tankships.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 74–289, 44 FR 26006, May 3, 1979, CGD 88–032, 56 FR 35821, July 29, 1991; USCG–2000–7790, 65 FR 58459, Sept. 29, 2000]

### § 34.10–90 Installations contracted for prior to May 26, 1965—T/ALL.

(a) Installations contracted for prior to January 1, 1962, shall meet the following requirements:

(1) Existing arrangements, materials and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements

of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) Except as further modified by this paragraph, the details of the systems shall be in general agreement with §§ 34.10–5 through 34.10–15 insofar as is reasonable and practicable.

(3) Tankships of less than 500 gross tons shall be equipped with an efficient hand pump capable of delivering 50 gallons per minute or a power-driven pump of equivalent capacity. However, on tankships of 20 gross tons or under, where it is impracticable to install a hand or power-operated fire pump, or on tankships with only one man in the crew, at least one additional 40–B fire extinguisher may be accepted in lieu of a fire pump.

(4) Tankships of 500 gross tons and over but not over 1,000 gross tons shall be provided with one independently power-driven pump.

(5) Tankships of over 1,000 gross tons shall be provided with two independently power-driven pumps.

(6) On tankships of 500 gross tons and over, the capacity of the combined fire pump installation shall be one-fifth gallon per minute per gross ton of the ship. The maximum total fire pump capacity required for any tankship shall be 800 gallons per minute.

(7) Each fire pump on a tankship of 500 gross tons or more must deliver enough water to the fire main so that the topmost outlet on the fire main emits two jets of water at a Pitot tube pressure of 50 pounds per square inch through two combination solid stream and water spray firehose nozzles meeting paragraph (10) of this section.

(8) On oil-burning tankships, provided with two fire pumps, where the engine and fire rooms are not entirely separated by iron or steel bulkheads, or if fuel can drain from fireroom bilges into the engineroom, one of the fire pumps shall be located in an accessible space separate from the machinery compartment. On all tankships contracted for on or after November 19, 1952, the requirements of paragraph (f) of § 34.10–5 shall be met.

(9) Fire hydrant outlets shall have a minimum diameter of 1½ inches.

(10) Each fire station hydrant on a tankship of 500 gross tons or more must have at least 1 length of firehose. Each firehose on the hydrant must have a combination solid stream and water spray firehose nozzle that meets the requirements of subpart 162.027. Firehose nozzles previously approved under subpart 162.027 of this chapter may be retained so long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection.

(11) On each tankship of 1000 gross tons or more, the firehose nozzle required by paragraph (a)(10) of this section on each of the following hydrants must have a low-velocity water-spray applicator that was previously approved under subpart 162.027 and that connects to that nozzle when the nozzle itself was previously approved under subpart 162.027—

(i) At least two hydrants in the Machinery and boiler spaces; and

(ii) At least 25 percent of other hydrants.

(12) Vessels contracted for on or after July 1, 1954, shall meet the requirements of § 34.10–10(h).

(b) Installations contracted for on or after January 1, 1962, but prior to May 26, 1965, shall meet the following requirements:

(1) Existing arrangements, materials, facilities, and equipment, except firehose nozzles, previously approved shall be considered satisfactory as long as they meet the minimum requirements of this paragraph and they are maintained in good conditions to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) Each fire station hydrant must have at least 1 length of firehose. Each firehose on the hydrant must have a combination solid stream and water spray firehose nozzle that meets the requirements of subpart 162.027. Firehose nozzles previously approved under subpart 162.027 of this chapter may be retained so long as they are maintained in good condition to the satisfaction of

the Officer in Charge, Marine Inspection. If the firehose nozzles were previously approved under subpart 162.027, each of the number of hydrants in the locations listed in table 34.10–10(E) must have a low-velocity water spray applicator that—

(i) Was previously approved under subpart 162.027 of this chapter;

(ii) Is the length listed in table 34.10–10(E); and

(iii) Meets § 34.10–10(o).

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 76–086, 44 FR 2391, Jan. 11, 1979; CGD 95–027, 61 FR 25999, May 23, 1996; USCG–2020–0519, 89 FR 76695, Sept. 18, 2024]

## Subpart 34.13—Steam Smothering Systems

SOURCE: CGD 95–027, 61 FR 25999, May 23, 1996, unless otherwise noted.

### § 34.13–1 Application—T/ALL.

Steam smothering fire extinguishing systems are not permitted on vessels contracted for on or after January 1, 1962. Previously approved installations may be retained as long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection.

## Subpart 34.15—Carbon Dioxide Extinguishing Systems, Details

### § 34.15–1 Application—T/ALL.

(a) Where a carbon dioxide extinguishing system is installed, the provisions of this subpart, with the exception of § 34.15–90, shall apply to all installations contracted for on or after January 1, 1962. Installations contracted for prior to January 1, 1962, shall meet the requirements of § 34.15–90.

(b) The requirements of this subpart are based on a ''high pressure system,'' i.e., one in which the carbon dioxide is stored in liquid form at atmospheric temperature. Details for ''low pressure systems,'' i.e., those in which the carbon dioxide is stored in liquid form at a continuously controlled low temperature, may be specifically approved by the Commandant where it is demonstrated that a comparable degree of safety and fire extinguishing ability is achieved.

### § 34.15–5 Quantity, pipe sizes, and discharge rates—T/ALL.

(a) *General.* (1) The amount of carbon dioxide required for each space shall be as determined by paragraphs (b) through (d) of this section.

(b) *Total available supply.* (1) A separate supply of carbon dioxide need not be provided for each space protected. The total available supply shall be at least sufficient for the space requiring the greatest amount.

(c) *Dry cargo spaces.* (1) The number of pounds of carbon dioxide required for each space shall be equal to the gross volume of the space in cubic feet divided by 30.

(2) Although separate piping shall be led to each cargo hold and 'tween deck, for the purpose of determining the amount of carbon dioxide required, a cargo compartment will be considered as the space between watertight or firescreen bulkheads and from the tank top or lowest deck to the deck head of the uppermost space on which cargo may be carried. If a trunk extends beyond such deck, the trunk volume shall be included. Tonnage openings shall be considered as sealed for this purpose.

(3) Branch lines to the various cargo holds and 'tween decks shall not be less than ¾-inch standard pipe size.

(4) No specific discharge rate need be applied to such systems.

(d) *Machinery spaces, pumprooms, paint lockers, and similar spaces.* (1) Except as provided in paragraph (d)(4) of this section, the number of pounds of carbon dioxide required for each space shall be equal to the gross volume of the space divided by the appropriate factor noted in table 34.15–5(d)(1). If fuel can drain from the compartment being protected to an adjacent compartment, or if the compartments are not entirely separate, the requirements for both compartments shall be used to determine the amount of carbon dioxide to be provided. The carbon dioxide shall be arranged to discharge into both such compartments simultaneously.

TABLE 34.15–5(d)(1)

| Gross volume of compartment, cubic feet | | Factor |
|---|---|---|
| Over | Not Over | |
| | 500 | 15 |
| 500 | 1,600 | 16 |
| 1,600 | 4,500 | 18 |
| 4,000 | 50,000 | 20 |
| 50,000 | ..... | 22 |

(2) For the purpose of the above requirement of this paragraph, the volume of a machinery space shall be taken as exclusive of the normal machinery casing unless the boiler, internal combustion propelling machinery, or fuel oil installations subject to the discharge pressure of the fuel oil service pump extend into such space, in which case the volume shall be taken to the top of the casing or the next material reduction in casing area, whichever is lower. The terms ''normal machinery casing'' and ''material reduction in casing area'' shall be defined as follows:

(i) By ''normal machinery casing'' shall be meant a casing the area of which is not more than 40 percent of the maximum area of the machinery space.

(ii) By ''material reduction in casing area'' shall be meant a reduction to at least 40 percent of the casing area.

(3) For the purpose of the above requirements of this paragraph, the volume of a pumproom shall include the pumproom and all associated trunks up to the deck at which access from the weather is provided.

(4) For tankships on an international voyage contracted for on or after May 26, 1965, the amount of carbon dioxide required for a space containing propulsion boilers or internal combustion propulsion machinery shall be as given by paragraphs (d) (1) and (2) of this section or by dividing the entire volume, including the casing, by a factor of 25, whichever is the larger.

(5) Branch lines in the various spaces shall be noted in table 34.15–5(d)(5).

TABLE 34.15–5(d)(5)

| Maximum quantity of carbon dioxide required, pounds | Minimum pipe sizes, inches | Maximum quantity of carbon dioxide required, pounds | Minimum pipe size inches |
|---|---|---|---|
| 100 | ½ | 2,500 | 2½ |
| 225 | ¾ | 4,450 | 3 |
| 300 | 1 | 7,100 | 3½ |
| 600 | 1¼ | 10,450 | 4 |
| 1,000 | 1½ | 15,000 | 4½ |
| 2,450 | 2 | ..... | ..... |

(6) Distribution piping within the space shall be proportioned from the supply line to give proper distribution to the outlets without throttling.

(7) The number, type and location of discharge outlets shall be such as to give a uniform distribution throughout the space.

(8) The total area of all discharge outlets shall not exceed 85 percent nor be less than 35 percent of the nominal cylinder outlet area or the area of the supply pipe, whichever is smaller. The nominal cylinder outlet area in square inches shall be determined by multiplying the factor 0.0022 by the number of pounds of carbon dioxide required, except that in no case shall this outlet area be less than 0.110 square inches.

(9) The discharge of at least 85 percent of the required amount of carbon dioxide shall be complete within 2 minutes.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 79–165a, 45 FR 64188, Sept. 29, 1980; CGD 95–028, 62 FR 51199, Sept. 30, 1997; USCG–1999–6216, 64 FR 53223, Oct. 1, 1999]

### § 34.15–10 Controls—T/ALL.

(a) Except as noted in § 34.15–20(b), all controls and valves for the operation of the system shall be outside the space protected, and shall not be located in any space that might be cut off or made inaccessible in the event of fire in any of the spaces protected.

(b) If the same cylinders are used to protect more than one space, a manifold with normally closed stop valves shall be used to direct the carbon dioxide into the proper space. If cylinders are used to protect only one space, a normally closed stop valve shall be installed between the cylinders and the space except for systems of the type indicated in § 34.15–5(d) which contain not more than 300 pounds of carbon dioxide.

(c) Distribution piping to the dry cargo spaces shall be controlled from

not more than two stations. One of the stations controlling the system for the main machinery space shall be located as convenient as practicable to one of the main-escapes from the space. All control stations and the individual valves and controls shall be marked as required by § 35.40–10 of the subchapter.

(d) Systems of the type indicated in § 34.15–5(d) shall be actuated at each station by one control operating the valve to the space and a separate control releasing at least the required amount of carbon dioxide. These two controls shall be located in a box or other enclosure clearly identified for the particular space. Systems installed without a stop valve shall be operated by one control releasing at least the required amount of carbon dioxide.

(e) Where provisions are made for the simultaneous release of a given amount of carbon dioxide by operation of a remote control, provisions shall also be made for manual control at the cylinders. Where gas pressure from pilot cylinders is used as a means for releasing the remaining cylinders, not less than two pilot cylinders shall be used for systems consisting of more than two cylinders. Each of the pilot cylinders shall be capable of manual control at the cylinder, but the remaining cylinders need not be capable of individual manual control.

(f) Systems of the type indicated in § 34.15–5(d), which are of more than 300 pounds of carbon dioxide shall be fitted with an approved delayed discharge so arranged that the alarm will be sounded for at least 20 seconds before the carbon dioxide is released into the space. Such systems of not more than 300 pounds of carbon dioxide shall also have a similar delayed discharge, except for spaces which have a suitable horizontal escape.

(g) All distribution valves and controls shall be of an approved type. All controls shall be suitably protected.

(h) Complete but simple instructions for the operation of the systems must be located in a conspicuous place at or near all pull boxes, stop valve controls and in the $CO_2$ cylinder storage room. On systems in which the $CO_2$ cylinders are not within the protected space, these instructions must also include a schematic diagram of the system and instructions detailing alternate methods of discharging the system should the manual release or stop valve controls fail to operate. Each control valve to branch lines must be marked to indicate the related space served.

(i) If the space or enclosure containing the carbon dioxide supply or controls is to be locked, a key to the space or enclosure shall be in a break-glass-type box conspicuously located adjacent to the opening.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 74–100R, 40 FR 6208, Feb. 10, 1975; USCG–1999–6216, 64 FR 53223, Oct. 1, 1999]

### § 34.15–15 Piping—T/ALL.

(a) The piping, valves, and fittings shall have a bursting pressure of not less than 6,000 pounds p.s.i.

(b) All piping, in nominal sizes not over ¾-inch shall be at least Schedule 40 (standard weight) and in nominal sizes over ¾-inch, shall be at least Schedule 80 (extra heavy).

(c) All piping, valves, and fittings of ferrous materials shall be protected inside and outside against corrosion unless specifically approved otherwise by the Commandant.

(d) A pressure relief valve or equivalent set to relieve between 2,400 and 2,800 pounds p.s.i. shall be installed in the distributing manifold or such other location as to protect the piping in the event that all branch line shut- off valves are closed.

(e) All deadend lines shall extend at least 2 inches beyond the last orifice and shall be closed with cap or plug.

(f) All piping, valves, and fittings shall be securely supported, and where necessary, protected against injury.

(g) Drains and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture. Drains and dirt traps shall be located in accessible locations where possible.

(h) Piping shall be used for no other purpose except that it may be incorporated with the fire-detecting system.

(i) Piping passing through living quarters shall not be fitted with drains or other openings within such spaces.

(j) Installation test requirements are:

(1) Upon completion of the piping installation, and before the cylinders are connected, a pressure test shall be applied as set forth in this paragraph.

Only carbon dioxide or other inert gas shall be used for this test.

(2) The piping from the cylinders to the stop valves in the manifold shall be subjected to a pressure of 1,000 pounds p.s.i. With no additional gas being introduced to the system, it shall be demonstrated that the leakage of the system is such as not to permit a pressure drop of more than 150 pounds per square inch per minute for 2-minute period.

(3) The individual branch lines to the various spaces protected shall be subjected to a test similar to that described in the preceding paragraph with the exception that the pressure used shall be 600 pounds p.s.i. in lieu of 1,000 pounds p.s.i. For the purpose of this test, the distribution piping shall be capped within the space protected at the first joint ahead of the nozzles.

(4) In lieu of the tests prescribed in the preceding paragraphs in this section, small independent systems protecting spaces such as emergency generator rooms, lamp lockers, etc., may be tested by blowing out the piping with the air at a pressure of at least 100 pounds p.s.i.

### § 34.15–20 Carbon dioxide storage—T/ALL.

(a) Except as provided in paragraph (b) of this section, the cylinders shall be located outside the spaces protected, and shall not be located in any space that might be cut off or made inaccessible in the event of a fire in any of the spaces protected.

(b) Systems of the type indicated in § 34.15–5(d), consisting of not more than 300 pounds of carbon dioxide, may have the cylinders located within the space protected. If the cylinder stowage is within the space protected, the system shall be arranged in an approved manner to be automatically operated by a heat actuator within the space in addition to the regular remote and local controls.

(c) The space containing the cylinders shall be properly ventilated and designed to preclude an anticipated ambient temperature in excess of 130 degrees F.

(d) Cylinders shall be securely fastened and supported, and where necessary, protected against injury.

(e) Cylinders shall be so mounted as to be readily accessible and capable of easy removal for recharging and inspection. Provisions shall be available for weighing the cylinders.

(f) Where subject to moisture, cylinders shall be so installed as to provide a space of at least 2 inches between the flooring and the bottom of the cylinders.

(g) Cylinders shall be mounted in an upright position or inclined not more than 30 degrees from the vertical. However, cylinders which are fitted with flexible or bent siphon tubes may be inclined not more than 80 degrees from the vertical.

(h) Where check valves are not fitted on each independent cylinder discharge, plugs or caps shall be provided for closing outlets when cylinders are removed for inspection or refilling.

(i) All cylinders used for storing carbon dioxide must be fabricated, tested, and marked in accordance with §§ 147.60 and 147.65 of this chapter.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 84–044, 53 FR 7748, Mar. 10, 1988; USCG–1999–6216, 64 FR 53223, Oct. 1, 1999]

### § 34.15–25 Discharge outlets—T/ALL.

(a) Discharge outlets shall be of an approved type.

### § 34.15–30 Alarms—T/ALL.

(a) Spaces required to have a delayed discharge by § 34.15–10(f) which are protected by a carbon dioxide extinguishing system and are normally accessible to persons on board while the vessel is being navigated, other than paint and lamp lockers and similar small spaces, shall be fitted with an approved audible alarm in such spaces which will be automatically sounded before the carbon dioxide is admitted to the space. The alarm shall be conspicuously and centrally located and shall be marked as required by § 35.40–7 of this subchapter. Such alarms shall be so arranged as to sound during the 20-second delay period prior to the discharge of carbon dioxide into the space, and the alarm shall depend on no source of power other than the carbon dioxide.

### § 34.15–35 Enclosure openings—T/ALL.

(a) Except for cargo spaces, the operation of the carbon dioxide system shall automatically shut down any mechanical ventilation to that space. This will not be required where the carbon dioxide system is a secondary system in addition to another approved primary system protecting the space.

(b) Where natural ventilation is provided for spaces protected by a carbon dioxide extinguishing system, provisions shall be made for easily and effectively closing off the ventilation.

(c) Means shall be provided for closing all other openings to the space protected from outside such space. In this respect, relatively tight doors, shutters, or dampers shall be provided for openings in the lower portion of the space. The construction shall be such that openings in the upper portion of the space can be closed off either by permanently installed means or by the use of canvas or other material which is normally carried by the vessel.

### § 34.15–40 Pressure relief—T/ALL.

(a) Where necessary, relatively tight compartments such as refrigeration spaces, paint lockers, etc., shall be provided with suitable means for relieving excessive pressure accumulating within the compartment when the carbon dioxide is injected.

### § 34.15–50 Lockout valves—T/ALL.

(a) A lockout valve must be provided on any carbon dioxide extinguishing system protecting a space over 6,000 cubic feet in volume and installed or altered after July 9, 2013. ''Altered'' means modified or refurbished beyond the maintenance required by the manufacturer's design, installation, operation and maintenance manual.

(b) The lockout valve must be a manually operated valve located in the discharge manifold prior to the stop valve or selector valves. When in the closed position, the lockout valve must provide complete isolation of the system from the protected space or spaces, making it impossible for carbon dioxide to discharge in the event of equipment failure during maintenance.

(c) The lockout valve design or locking mechanism must make it obvious whether the valve is open or closed.

(d) A valve is considered a lockout valve if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it.

(e) The master or person-in-charge must ensure that the valve is locked open at all times, except while maintenance is being performed on the extinguishing system, when the valve must be locked in the closed position.

(f) Lockout valves added to existing systems must be approved by the Commandant as part of the installed system.

[USCG–2006–24797, 77 FR 33873, June 7, 2012]

### § 34.15–60 Odorizing units—T/ALL.

Each carbon dioxide extinguishing system installed or altered after July 9, 2013, must have an approved odorizing unit to produce the scent of wintergreen, the detection of which will serve as an indication that carbon dioxide gas is present in a protected area and any other area into which the carbon dioxide may migrate. ''Altered'' means modified or refurbished beyond the maintenance required by the manufacturer's design, installation, operation and maintenance manual.

[USCG–2006–24797, 77 FR 33873, June 7, 2012]

### § 34.15–90 Installations contracted for prior to January 1, 1962—T/ALL.

(a) Installations contracted for prior to November 19, 1952, shall meet the requirements of this paragraph.

(1) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems shall be in general agreement with §§ 34.15–5 through 34.15–40 insofar as is reasonable and practicable, with the exception of § 34.15–5(d)(1) through (3) covering spaces other than cargo spaces, which systems may be installed in accordance with paragraphs (a) (4) through (7) of this section.

(3) For cargo tanks at least one pound of carbon dioxide shall be available for each 30 cubic feet of the largest cargo tank. The discharge of the required amount of carbon dioxide shall be complete within 5 minutes.

(4) In boiler rooms, the bilges shall be protected by a system discharging principally below the floor plates. Perforated pipe may be used in lieu of discharge nozzles for such systems. The number of pounds of carbon dioxide shall be equal to the gross volume of the boiler room taken to the top of the boilers divided by 36. In the event of an elevated boiler room which drains to the machinery space, the system shall be installed in the engineroom bilge and the gross volume shall be taken to the flat on which the boilers are installed.

(5) In machinery spaces where main propulsion internal combustion machinery is installed, the number of pounds of carbon dioxide required shall be equal to the gross volume of the space taken to the underside of the deck forming the hatch opening divided by 22.

(6) In miscellaneous spaces other than cargo or main machinery spaces the number of pounds of carbon dioxide required shall be equal to the gross volume of the space divided by 22.

(7) Branch lines to the various spaces other than cargo and similar spaces shall be as noted in table 34.15–90(a)(7). This table is based on cylinders having discharge outlets and siphon tubes of ⅜-inch diameter.

TABLE 34.15–90(a)(7)

| Number of cylinders | | Nominal pipe size, inches |
|---|---|---|
| Over | Not over | |
| | 2 | ½-standard. |
| 2 | 4 | ¾-standard. |
| 4 | 6 | 1-extra heavy. |
| 6 | 12 | 1¼-extra heavy. |
| 12 | 16 | 1½-extra heavy. |
| 16 | 27 | 2-extra heavy. |
| 27 | 39 | 2½-extra heavy. |
| 39 | 60 | 3-extra heavy. |
| 60 | 80 | 3½-extra heavy. |
| 80 | 104 | 4-extra heavy. |
| 104 | 165 | 5-extra heavy. |

(b) Installations contracted for on or after November 19, 1952, but prior to January 1, 1962, shall meet the requirements of this paragraph.

(1) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems shall be in general agreement with §§ 34.15–5 through 34.15–40 insofar as is reasonable and practicable with the exception that delayed discharges need not be provided for installations made prior to July 1, 1957.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGFR 66–33, 31 FR 15268, Dec. 6, 1966; USCG–1999–6216, 64 FR 53223, Oct. 1, 1999]

## Subpart 34.17—Fixed Foam Extinguishing Systems, Details

### § 34.17–1 Application—T/ALL.

(a) Where a fixed foam extinguishing system is installed, the provisions of this subpart with the exception of § 34.17–90, shall apply to all installations contracted for on or after January 1, 1962.

(b) Installations contracted for prior to January 1, 1962, shall meet the requirements of § 34.17–90.

### § 34.17–5 Quantity of foam required—T/ALL.

(a) *Area protected.* (1) For machinery spaces and pumprooms, the system shall be so designed and arranged as to spread a blanket of foam over the entire tank top or bilge of the space protected. The arrangement of piping shall be such as to give a relatively uniform distribution over the entire area protected.

(2) Where an installation is made to protect an oil-fired boiler installation on a flat which is open to or can drain to the lower engineroom or other space, both the flat and the lower space shall be protected simultaneously. The flat shall be fitted with suitable coamings on all openings other than deck drains to properly restrain the oil and foam at that level. Other installations of a similar nature will be considered in a like manner.

(b) *Rate of application.* (1) The rate of discharge to foam outlets protecting the hazard shall be at least as set forth in this paragraph.

(2) For chemical foam systems with stored ''A'' and ''B'' solutions, a total of at least 1.6 gallons per minute of the two solutions shall be discharged for each 10 square feet of area protected.

(3) For other types of foam systems, the water rate to the dry-powder generators or air foam production equipment shall be at least 1.6 gallons per minute for each 10 square feet of area protected.

(c) *Supply of foam-producing material.* (1) There shall be provided a quantity of foam-producing material sufficient to operate the equipment at the minimum discharge rate specified in paragraph (b) of this section for a period of at least 3 minutes.

(d) *Separate supply of foam-producing material.* (1) A separate supply of foam-producing material need not be provided for each space protected. This includes a deck foam system. The total available supply shall be at least sufficient for the space requiring the greatest amount.

(e) *Water supply for required pumps.* (1) The water supply shall be from outside and completely independent of the space protected.

### § 34.17–10 Controls—T/ALL.

(a) The foam agent, its container, measuring devices, and other items peculiar to the system shall be of an approved type.

(b) The foam-producing material container and all controls and valves for the operation of the system shall be outside the space protected and shall not be located in such space as might be cut off or made inaccessible in the event of fire in any of the spaces protected. The control space shall be as convenient as practicable to one of the main escapes from the spaces protected, and shall be marked as required by §35.40–10 of this subchapter. Where pumps are required, it shall not be necessary that they be started from the control space.

(c) Complete, but simple instructions for the operation of the system shall be located in a conspicuous place at or near the controls.

(d) The valves to the various spaces served shall be marked as required by §35.40–10 of this subchapter.

### § 34.17–15 Piping—T/ALL.

(a) All piping, valves, and fittings shall meet the applicable requirements of subchapter F (Marine Engineering) of this chapter.

(b) All piping, valves, and fittings of ferrous materials shall be protected inside and outside against corrosion unless specifically approved otherwise by the Commandant.

(c) All piping, valves, and fittings shall be securely supported, and where necessary, protected against injury.

(d) Drains and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture.

(e) Piping shall not be used for any other purpose than firefighting, drills and testing.

### § 34.17–20 Discharge outlets—T/ALL.

(a) Discharge outlets shall be of an approved type.

### § 34.17–25 Additional protection required—T/ALL.

(a) In order that any residual fires above the floor plates may be extinguished when a foam system is installed for the protection of machinery spaces, at least 2 fire hydrants, in addition to those required for the machinery space by subpart 34.10, shall be installed outside of the machinery space entrance. Such hydrants shall be fitted with sufficient hose so that any part of the machinery space may be reached with at least 2 streams of water, and each hose shall be equipped with an approved combination nozzle and applicator.

### § 34.17–90 Installations contracted for prior to January 1, 1962—T/ALL.

(a) Installations contracted for prior to January 1, 1962, shall meet the following requirements:

(1) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine

Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems shall be in general agreement with §§ 34.17–5 through 34.17–20, insofar as is reasonable and practicable. Installations contracted for prior to November 19, 1952, need not comply with paragraph (a)(2) of § 34.17–5 and § 34.17–25. A 6-inch blanket of foam in 3 minutes for machinery spaces and pumprooms will be considered as meeting the requirements of § 34.17–5.

(3) Where a system is installed to protect a tank, it shall be so designed and arranged as to spread a blanket of foam over the entire liquid surface of the tank within the range of usual trim. The arrangement of piping shall be such as to give a relatively uniform distribution over the entire area protected.

(4) For tanks, the rate of discharge to foam outlets protecting the hazard shall be as set forth in § 34.17–5(b), except that the value of 1 gallon per minute shall be substituted in both cases for the value of 1.6 gallons per minute. The quantity of foam provided shall be sufficient to operate the equipment for 5 minutes.

(5) On installations installed prior to November 19, 1952, a semiportable foam generator using a dry-chemical mixture or mechanical foam in conjunction with the fire lines may be substituted for the fixed system subject to the following conditions:

(i) There shall be at least one fire pump of suitable capacity available which can be operated and controlled from outside the space protected.

(ii) Stop valves shall be installed in the line so that if any portion of the fire main is ruptured, the foam generator may still be operated. Connections for at least two fire hoses shall be provided between the pump and the stop valve.

(iii) If the foam system is of the portable or semiportable type, the apparatus and chemicals shall be stored in a readily accessible place protected from the weather.

## Subpart 34.20—Deck Foam System, Details

### § 34.20–1 Application—T/ALL.

(a) Where a deck foam system is installed, the provisions of this subpart, except § 34.20–90, apply to all installations that are contracted for on or after January 1, 1970, unless otherwise indicated.

(b) Installations contracted for prior to January 1, 1970, shall meet the requirements of § 34.20–90.

(c) Foreign flag crude oil tankers and product carriers required to have fixed deck foam systems by this subpart must have systems that are designed and installed in accordance with Regulation 61 of Chapter II–2 of SOLAS 1974. (Senate Document, 57–1180, GPO, Washington, 1976; ''Message from the President of the United States transmitting, the International Convention for the Safety of Life at Sea, 1974, Done at LONDON, November 1, 1974'').

(46 U.S.C. 391a; 49 CFR 1.46(n)(4))

[CGFR 69–72, 34 FR 17481, Oct. 29, 1969, as amended by CGD 74–127, 41 FR 3846, Jan. 26, 1976; CGD 77–057a, 44 FR 66502, Nov. 19, 1979]

### § 34.20–3 Cargo area definition—T/ALL.

(a) For the purpose of this subpart, the term *cargo area* is defined as the maximum beam of the vessel times the total longitudinal extent of the cargo tank spaces.

### § 34.20–5 Quantity of foam required—T/ALL.

(a) *Area protected.* Systems of this type are designed to give primary protection to the spaces over the cargo tanks.

(b) *Rate of application.* The water rate of the foam production equipment shall be determined as follows:

(1) For usual petroleum products the rate of supply of foam solution shall be not less than the greatest of the following:

(i) 0.6 liters/min per square meter of cargo tanks deck area, where cargo tanks deck area means the maximum breadth of the ship multiplied by the total longitudinal extent of the cargo tank spaces;

(ii) 6 liters/min per square meter of the horizontal sectional area of the single tank having the largest such area; or

(iii) 3 liters/min per square meter of the area protected by the largest monitor, such area being entirely forward of the monitor, but not less than 1,250 liters/min.

(2) For polar solvent products (e.g. alcohols, ketones, etc.) the water rate shall be determined for each vessel. The rate will depend upon the vessel design, products to be carried and foam system to be used.

(c) *Supply of foam-producing material.* Each deck foam system must have a supply of foam-producing material sufficient to operate the system at its designed rate of foam production for the following periods:

(1) For installations contracted for on or after January 1, 1970, 15 minutes without recharging, except as required in paragraph (c)(2) of this section.

(2) For installations on ships that have a keel laying date on or after January 1, 1975, 20 minutes without recharging.

(d) *Separate supply of foam-producing material.* Where the same foam-producing material may be used for this system as well as a fixed foam system, separate supplies need not be provided for each space protected. The total available supply shall be at least sufficient for the space requiring the greatest amount.

(e) *Water supply.* Suitable pumps shall be provided capable of producing the required water rate. The fire pumps required by subpart 34.10 may be used for this purpose; however, the operation of the deck foam system shall not interfere with the simultaneous use of the fire main system.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGFR 69–72, 34 FR 17481, Oct. 29, 1969; CGD 74–127, 41 FR 3846, Jan. 26, 1976; CGD 95–028, 62 FR 51199, Sept. 30, 1997]

### § 34.20–10 Controls—T/ALL.

(a) The foam agent, its container, measuring devices, and other items peculiar to this system shall be of an approved type.

(b) The foam agent container and the main controls for operating the system shall be located in a protected space not likely to be made inaccessible in the event of a fire in any portion of the cargo area.

(c) Complete, but simple instructions for the operation of the system shall be located in a conspicuous place at or near the controls.

(d) All valves shall be marked as required by § 35.40–17.

(e) The deck foam system on each tankship that has a keel laying date on or after January 1, 1975, must be capable of being actuated, including introduction of foam to the foam main, within three minutes of notification of a fire.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 74–127, 41 FR 3846, Jan. 26, 1976]

### § 34.20–15 Piping—T/ALL.

(a) All piping, valves, and fittings shall meet the applicable requirements of subchapter F (Marine Engineering) of this chapter.

(b) All piping, valves, and fittings of ferrous materials shall be protected inside and outside against corrosion unless specifically approved otherwise by the Commandant.

(c) The piping and outlet arrangement shall allow the required rate of applications as contained in § 34.20–5(b), to any portion of the open deck of the cargo area through the use of the mounted and hand-held appliances that are provided. At least 50 percent of the required rate of application shall be from the mounted appliances. One or more hose outlets for hand-held appliances shall be provided at each foam station. For enclosed spaces, application of at least 1.6 gallons per minute water rate for each 10 square feet of the enclosed area for 5 minutes is acceptable. For the purpose of this paragraph, all piping is assumed to be damaged in way of the fire and an adequate number of valves shall be fitted to prevent loss of foam by closing valves to damaged piping.

(d) All piping, valves, and fittings shall be securely supported, and where necessary, protected against injury.

(e) Drains and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture.

(f) Piping shall not be used for any other purpose than firefighting, drills, and testing.

(g) Tankships of 100,000 or more DWT (metric) and combination carriers of 50,000 or more DWT (metric) that have a keel laying date on or after January 1, 1975, must have at least one foam station port and at least one foam station starboard that are separated from each other by a distance equal to at least one-half the beam of the vessel:

(1) At the housefront or aft of the cargo area in a location that is accessible to the crew for fighting a cargo and a pumproom fire; and

(2) If the tankship has a forward accommodations house, at the after boundary of that house.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 72–138, 39 FR 7790, Feb. 28, 1974; CGD 74–127, 41 FR 3846, Jan. 26, 1976]

### § 34.20–20 Discharge outlets—T/ALL.

(a) Discharge outlets shall be of an approved type.

(b) At least one mounted foam appliance shall be provided for each station that is required in § 34.20–15(c).

(c) The number of hand-held appliances provided shall be at least equal to the number of hose outlets at the two foam stations having the most hose outlets. Hand-held appliances shall be stowed in a well marked, readily accessible position that cannot be isolated by a fire involving the cargo tanks.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGD 72–138, 39 FR 7790, Feb. 28, 1974]

### § 34.20–25 Foam monitor capacity—T/ALL.

The capacity of each foam monitor on ships that have a keel laying date on or after January 1, 1975, must be at least 3 liters per minute per square meter (.073 gallons per minute per square foot) of cargo area protected by that monitor.

[CGD 74–127, 41 FR 3846, Jan. 26, 1976]

### § 34.20–90 Installations contracted for prior to January 1, 1970—T/ALL.

(a) Installations contracted for prior to January 1, 1970, shall meet the following requirements:

(1) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) For installations contracted for prior to November 19, 1952, see § 34.17–90(a)(5).

(3) Installations contracted for on or after November 4, 1957, but prior to January 1, 1970, shall meet the requirements of §§ 34.20–5 through 34.20–20 insofar as is reasonable and practicable.

[CGFR 65–50, 30 FR 16694, Dec. 30, 1965, as amended by CGFR 69–72, 34 FR 17481, Oct. 29, 1969]

## Subpart 34.25—Water Spray Extinguishing Systems, Details

### § 34.25–1 Application—T/ALL.

(a) Where a water spray extinguishing system is installed, the provisions of this subpart, with the exception of § 34.25–90, shall apply to all installations contracted for on or after January 1, 1964. Installations contracted for prior to January 1, 1964, shall meet the requirements of § 34.50–90.

### § 34.25–5 Capacity and arrangement—T/ALL.

(a) The capacity and arrangement shall be such as to effectively blanket the entire area of the space protected. The rate of discharge and the arrangement of piping and spray nozzles shall be such as to give a uniform distribution over the entire area protected.

(b) The spacing of the spray nozzles shall be on the basis of the spray pattern provided by the lowest pressure at any spray nozzle in the system. In no instance shall a system be designed for any spray nozzle to be operated at a pressure less than that for which it was approved. The maximum permissible height of the spray nozzle above the protected area shall not exceed that specified in its approval. Whenever there are obstructions to coverage by the spray patterns, additional spray

nozzles shall be installed to provide full coverage.

(c) The water supply shall be from outside the space protected and shall in no way be dependent upon power from the space protected. The pump supplying water for the system shall either be reserved exclusively for the system or it may be one of the fire pumps, provided the capacity of the fire pump as set forth in subpart 34.10 is increased by the required capacity of the system, so that this system may be operated simultaneously with the fire main system.

### § 34.25–10 Controls—T/ALL.

(a) There shall be one control valve for the operation of the system located in an accessible position outside the space protected. The control shall be located as convenient as practicable to one of the main escapes from the space protected, and shall be marked as required by § 35.40–18 of this subchapter. It shall not be necessary to start the pumps from the control space.

(b) Complete, but simple instructions for the operation of the system shall be located in a conspicuous place at or near the controls.

(c) The valve to the space protected shall be marked as required by § 35.40–18 of this subchapter.

### § 34.25–15 Piping—T/ALL.

(a) All piping, valves and fittings shall meet the applicable requirements of subchapter F (Marine Engineering) of this chapter.

(b) Distribution piping shall be of materials resistant to corrosion, except that steel or iron pipe may be used if inside corrosion resistant coatings which will not flake off and clog the nozzles are applied. Materials readily rendered ineffective by heat of a fire shall not be used. The piping shall be subject to approval for each installation.

(c) All piping, valves, and fittings shall be securely supported, and where necessary, protected against injury.

(d) Drains, strainers, and dirt traps shall be fitted where necessary to prevent the accumulation of dirt or moisture.

(e) Threaded joints shall be metal to metal, with no thread compound used.

(f) Distribution piping shall be used for no other purpose.

(g) All piping shall be thoroughly cleaned and flushed before installation of the water spray nozzles.

### § 34.25–20 Spray nozzles—T/ALL.

(a) Spray nozzles shall be of an approved type.

### § 34.25–90 Installations contracted for prior to January 1, 1964—T/ALL.

(a) Installations contracted for prior to January 1, 1964, shall meet the following requirements:

(1) Existing arrangements, materials, and facilities previously approved shall be considered satisfactory so long as they meet the minimum requirements of this paragraph and they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection. Minor repairs and alterations may be made to the same standards as the original installation.

(2) The details of the systems shall be in general agreement with §§ 34.25–5 through 34.25–20 insofar as is reasonable and practicable.

## Subpart 34.30—Automatic Sprinkler Systems, Details

### § 34.30–1 Application—TB/ALL.

Automatic sprinkler systems must comply with Chapter 25 of NFPA 13 (incorporated by reference, see § 34.01–15).

[USCG–2012–0196, 81 FR 48249, July 22, 2016]

## Subpart 34.50—Portable and Semiportable Extinguishers

### § 34.50–1 Application—TB/ALL.

(a) The provisions of this subpart, with the exception of §§ 34.50–80 and 34.50–90, must apply to all vessels contracted for on or after August 22, 2016.

(b) Vessels contracted for prior to August 22, 2016 but on or after January 1, 1962, must meet the requirements of § 34.50–80.

(c) All vessels contracted for prior to January 1, 1962, must meet the requirements of § 34.50–90.

[USCG–2012–0196, 81 FR 48249, July 22, 2016]

### § 34.50–10 Location, number, and installation of fire extinguishers—TB/ALL.

(a) Approved portable and semi-portable extinguishers must be installed in accordance with table 1 to § 34.50–10(a). The location of the equipment must be, in the opinion of the Officer in Charge, Marine Inspection, convenient in case of emergency. Where special circumstances exist, not covered by table 1 to § 34.50–10(a), the Officer in Charge, Marine Inspection, may require additional equipment as deemed necessary for the proper protection of the vessel.

(b) For additional portable extinguishers as a substitute for sand, see § 34.55–10.

(c) Semi-portable extinguishers must be located in the open so as to be readily seen.

(d) If portable extinguishers are not located in the open or behind glass so that they may be readily seen they may be placed in enclosures together with the firehose, provided such enclosures are marked as required by § 35.40–25 of this subchapter.

(e) Portable extinguishers and their stations must be numbered in accordance with § 35.40–25 of this subchapter.

(f) Portable or semi-portable extinguishers which are required by their nameplates to be protected from freezing must not be located where freezing temperatures may be expected.

(g) Semi-portable extinguishers must be fitted with a suitable hose and nozzle, or other practicable means, so that all portions of the space concerned can be protected.

(h) Table 1 to § 34.50–10(a) indicates the minimum required number and type for each space listed. Extinguishers with larger numerical ratings or multiple letter designations may be used if the extinguishers meet the requirements of the table.

TABLE 1 TO § 34.50–10(a)—PORTABLE AND SEMI-PORTABLE EXTINGUISHERS

| Tank ships | | Area | Tank barges | |
|---|---|---|---|---|
| Quantity and location | Minimum required rating | | Minimum required rating | Quantity and location |
| **Safety Areas** | | | | |
| 1 required | 20–B:C | Wheelhouse and chartroom areas. | | None required. |
| 1 required in the vicinity of the exit. | 20–B:C [1] | Radio room | | None required. |
| **Accommodation Areas** | | | | |
| 1 required in each main passageway on each deck, conveniently located, and so that no room is more than 75 ft from an extinguisher. | 2–A | Staterooms, toilet spaces, public spaces, offices, etc., and associated lockers, storerooms, and pantries. | 2–A | 1 required in the vicinity of the exit. |
| **Service Areas** | | | | |
| 1 required for each 2,500 sq ft or fraction thereof. | 40–B:C | Galleys | 40–B:C | 1 required, suitable for the hazard involved. |
| 1 required for each 2,500 sq ft or fraction thereof. | 40–B | Stores areas, including paint and lamp rooms. | | None required. |
| **Machinery Area** [2] | | | | |
| 2 required [3] | 40–B | Spaces containing oil fired boilers, either main or auxiliary, or any fuel oil units subject to the discharge pressure of the fuel oil service pump. | 40–B | 1 required.[1,2] |
| 1 required | and. 160–B [4]. | | | |

TABLE 1 TO § 34.50–10(a)—PORTABLE AND SEMI-PORTABLE EXTINGUISHERS—Continued

| Tank ships | | Area | Tank barges | |
|---|---|---|---|---|
| Quantity and location | Minimum required rating | | Minimum required rating | Quantity and location |
| 1 required for each 1,000 brake horsepower; not less than 2, not more than 6 [5]. | 40–B | Spaces containing internal combustion or gas turbine propulsion machinery. | | None required. |
| | and. | | | |
| 1 required [6 7] | 120–B. | | | |
| 1 required in the vicinity of the exit [7]. | 40–B | Auxiliary spaces containing internal combustion or gas turbine units. | 40–B | 1 required in the vicinity of the exit. [7 9 12] |
| 1 required in the vicinity of the exit [8]. | 40–B:C | Auxiliary spaces containing emergency generators. | | None required. |
| **Cargo Areas** | | | | |
| 1 required in the lower pumproom. | 40–B | Pumprooms | 40–B | 1 required in the vicinity of the exit. [9 12] |
| None required | | Cargo tank area | 40–B | 2 required. [10 12 13] |
| | | | 160–B | 1 required. [9 11] |
| **Spare Units** | | | | |
| 10 percent of required units rounded up. | 2–A | | 2–A | 10 percent of required units rounded up. |
| 10 percent of required units rounded up. | 40–B:C | | 40–B:C | 10 percent of required units rounded up. |

[1] Vessels not on an international voyage may substitute two 5–B:C rated extinguishers.
[2] A 40–B:C must be immediately available to the service generator and main switchboard areas, and further, a 40–B:C must be conveniently located not more than 50 feet (15.25 meters) walking distance from any point in all main machinery operating spaces. These extinguishers need not be in addition to other required extinguishers.
[3] Vessels of fewer than 1,000 GT require 1.
[4] Vessels of fewer than 1,000 GT may substitute 1 120–B:C.
[5] Only 1 required for vessels under 65 ft in length.
[6] If an oil-burning donkey boiler is fitted in the space, the 160–B:C previously required for the protection of the boiler may be substituted. Not required where a fixed carbon dioxide system is installed.
[7] Not required on vessels of fewer than 300 GT if the fuel has a flashpoint higher than 110 °F.
[8] Not required on vessels of fewer than 300 GT.
[9] Not required if fixed system installed.
[10] If no cargo pump on barge, only one 40–B:C required.
[11] Manned barges of 100 GT and over only.
[12] Not required on unmanned barges except during the transfer of cargo, or operation of barge machinery or boilers when the barge is not underway.
[13] An extinguisher brought on to unmanned barges during the transfer of cargo, or operation of barge machinery or boilers does not have to be Coast Guard approved, provided it is approved by a nationally recognized testing laboratory (NRTL) in accordance with 29 CFR 1910.7.

[USCG–2012–0196, 81 FR 48249, July 22, 2016, as amended by USCG–2020–0519, 89 FR 76695, Sept. 18, 2024]

### § 34.50–20 Semiportable fire extinguishers—TB/ALL

(a) The frame or support of each size III, IV, and V fire extinguisher required by table 34.50–10(a) must be welded or otherwise permanently attached to a bulkhead or deck.

(b) If a size III, IV, or V fire extinguisher has wheels and is not required by table 34.50–10(a), it must be securely stowed when not in use to prevent it from rolling out of control under heavy sea conditions.

[CGD 77–039, 44 FR 34132, June 14, 1979]

### § 34.50–80 Location and number of fire extinguishers required for vessels constructed prior to August 22, 2016—TB/ALL.

Vessels contracted for prior to August 22, 2016, must meet the following requirements:

(a) Previously installed extinguishers with extinguishing capacities smaller than as required in table 34.50–10(a) need not be replaced and may be continued in service so long as they are maintained in good condition to the satisfaction of the Officer in Charge, Marine Inspection.

(b) All new equipment and installations must meet the applicable requirements in this subpart for new vessels.

[USCG–2012–0196, 81 FR 48250, July 22, 2016]

### § 34.50–90 Vessels contracted for prior to January 1, 1962—TB/ALL.

(a) Vessels contracted for prior to January 1, 1962, shall meet the following requirements:

(1) The provisions of §§ 34.50–5 through 34.50–15 shall be met with the exception that existing installations may be maintained if in the opinion of the Officer in Charge, Marine Inspection, they are in general agreement with the degree of safety prescribed by table 34.50–10(a). In such cases, minor modifications may be made to the same standard as the original installation: *Provided*, That in no case will a greater departure from the standards of table 34.50–10(a) be permitted than presently exists.

(2) [Reserved]

(b) [Reserved]

## Subpart 34.60—Fire Axes

### § 34.60–1 Application—T/ALL.

(a) The provisions of this subpart shall apply to all tankships.

(b) [Reserved]

### § 34.60–5 Number required—T/ALL.

(a) All tankships shall carry at least the minimum number of fire axes as set forth in table 34.60–5(a). Nothing in this paragraph shall be construed as limiting the Officer in Charge, Marine Inspection, from requiring such additional fire axes as he deems necessary for the proper protection of the tankship.

TABLE 34.60–5(a)

| Gross tons | | Number of axes |
|---|---|---|
| Over | Not over | |
| | 50 | 1 |
| 50 | 200 | 2 |
| 200 | 500 | 3 |
| 500 | 1,000 | 4 |
| 1,000 | ..... | 5 |

(b) [Reserved]

### § 34.60–10 Location—T/ALL.

(a) Fire axes shall be distributed throughout the spaces so as to be most readily available in the event of emergency.

(b) If fire axes are not located in the open, or behind glass, so that they may readily be seen, they may be placed in enclosures together with the fire hose, provided such enclosures are marked as required by § 35.40–15 of this subchapter.

# PART 35—OPERATIONS

## Subpart 35.01—General Provisions; Special Operating Requirements

Sec.

35.01–1 Inspection and testing required when making alterations, repairs, or other such operations involving riveting, welding, burning, or like fire-producing actions—TB/ALL.
35.01–2 Preemptive effect.
35.01–3 Incorporation by reference.
35.01–5 Sanitary condition and crew quarters—T/ALL.
35.01–10 Shipping papers—TB/ALL.
35.01–15 Carriage of persons other than crew—TB/ALL.
35.01–25 Sacrificial anode installations—TB/ALL.
35.01–35 Repairs and alterations to fire-fighting equipment—TB/ALL.
35.01–45 Open hopper type barges—B/ALL.
35.01–50 Special operating requirements for tank barges carrying certain dangerous bulk cargoes—B/ALL.
35.01–55 Pilot boarding operation.
35.01–60 Person excluded.

## Subpart 35.03—Work Vests

35.03–1 Application—TB/ALL.
35.03–5 Approved types of work vests—TB/ALL.
35.03–10 Use—TB/ALL.
35.03–15 Shipboard stowage—TB/ALL.
35.03–20 Shipboard inspections—TB/ALL.
35.03–25 Additional requirements for hybrid work vests.

## Subpart 35.05—Officers and Crews

35.05–1 Officers and crews of tankships—T/ALL.
35.05–5 [Reserved]
35.05–10 [Reserved]
35.05–15 Tank vessel security—TB/ALL.
35.05–20 Physical condition of crew—TB/ALL.
35.05–25 Illness, alcohol, drugs—TB/ALL.