Coast Guard, DOT

108.441 Piping and discharge rates for CO₂ systems.

(a) The size of branch lines to spaces protected by a CO_2 system must meet Table 108.441.

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

(c) The number, type, and location of discharge outlets must distribute the CO_2 uniformly throughout the space.

TABLE 108.441—CO₂ System Pipe Size

CO ₂ supply in system, kilograms (pounds)	Minimum pipe size (inches), millimeters (inches)
45 (100) 104 (225) 136 (300) 272 (600) 450 (1,000) 1,110 (2,450) 1,130 (2,500) 2,023 (4,450) 3,229 (7,100) 4,750 (10,000) 6,818 (15,000)	$\begin{array}{c} 12.7 \ (1/2).\\ 19.05 \ (3/4).\\ 25.4 \ (1).\\ 31.75 \ (1/4).\\ 38.10 \ (11/2).\\ 50.80 \ (2).\\ 63.5 \ (21/2).\\ 76.2 \ (3).\\ 88.9 \ (31/2).\\ 101.6 \ (4).\\ 114.3 \ (41/2). \end{array}$

(d) The total area of all discharge outlets must be more than 35 percent and less than 85 percent of the nominal cylinder outlet area or the area of the supply pipe, whichever is smaller. The nominal cylinder outlet area in square centimeters is determined by multiplving the factor 0.0313 by the number of kilograms of CO2 required. (The nominal cylinder outlet area in square inches is determined by multiplying the factor 0.0022 by the number of pounds of CO_2 required). The nominal cylinder outlet area must not be less than 71 square millimeters (0.110 square inches).

(e) A CO_2 system must discharge at least 85 percent of the required amount within 2 minutes.

§108.443 Controls and valves.

(a) At least one control for operating a CO_2 system must be outside the space or spaces that the system protects and in a location that would be accessible if a fire occurred in any space that the system protects. Control valves must not be located in a protected space unless the CO_2 cylinders are also in the protected space.

(b) A CO_2 system that protects more than one space must have a manifold

with a stop valve, the normal position of which is closed, that directs the flow of CO_2 to each protected space.

(c) A CO_2 system that protects only one space must have a stop valve installed between the cylinders and the discharge outlets in the system, except on a system that has a CO_2 supply of 136 kilograms (300 pounds) or less.

(d) At least one of the control stations in a CO_2 system that protects a machinery space must be as near as practicable to one of the main escapes from that space.

(e) All distribution valves and controls must be of an approved type.

(f) Each CO_2 system that has a stop valve must have a remote control that operates only the stop valve and must have a separate remote control for releasing the required amount of CO_2 into the space protected by the system.

(g) Each CO_2 system that does not have a stop valve must be operated by a remote control that releases the required amount of CO_2 into the space protected by the system.

(h) Remote controls to each space must be in an enclosure.

(i) Each system must have a manual control at its cylinders for releasing CO_2 from the cylinders, except that if the system has pilot cylinders, a manual control is not required for other than pilot cylinders.

(j) If gas pressure is used to release CO_2 from a system having more than 2 cylinders, the system must have at least 2 pilot cylinders to release the CO_2 from the remaining cylinders.

(k) If the entrance to a space containing the CO_2 supply or controls of a CO_2 system has a lock, the space must have a key to the lock in a break-glass type box that is next to and visible from the entrance.

§108.445 Alarm and means of escape.

(a) Each CO_2 system that has a supply of more than 136 kilograms (300 pounds) of CO_2 , except a system that protects a tank, must have an alarm that sounds for at least 20 seconds before the CO_2 is released into the space.

(b) Each audible alarm for a CO_2 system must have the CO_2 supply for the system as its source of power and must be in a visible location in the spaces protected.