

3. Rooms for CO₂ cylinders

3.1 Rooms for CO₂ cylinders may not be located forward of the collision bulkhead and shall, wherever possible, be situated on the open deck. Access should be possible from the open deck. CO₂ cylinder rooms below the open deck must have a stairway or ladder leading directly to the open deck. The CO₂ cylinder room shall not be located more than one deck below the open deck. Direct connections via doors or other openings between cylinder rooms and machinery spaces or accommodation spaces below the open deck are not permitted. In addition to the cabins themselves, other spaces provided for use by passengers and crew such as sanitary spaces, public spaces, stair wells and corridors are also considered to form part of the accommodation space.

The size of the cylinder room and the arrangement of the cylinders must be conducive to efficient operation.

Means are to be provided for

- conveying cylinders to the open deck, and
- the crew to safely check the quantity of CO₂ in the cylinders, independent of the ambient temperatures. These means shall be so arranged that it is not necessary to move the cylinders completely from their fixing position. This is achieved, for instance, by providing hanging bars above each bottle row for a weighing device or by using suitable surface indicators.

Cylinder rooms shall be lockable. The doors of cylinder rooms must open outwards.

Bulkheads and decks including doors and other means of closing any opening therein which form the boundaries between CO₂ storage rooms and adjacent enclosed spaces shall be gas tight.

Cylinder rooms shall not be used for other purposes.

3.2 Cylinder rooms are to be protected or insulated against heat and solar radiation in such a way that the room temperature does not exceed 45 °C. The boundaries of the cylinder room must conform to the insulation values prescribed for control stations (Chapter 1 – Hull Structures, Section 22).

Cylinder rooms are to be fitted with thermometers for checking the room temperature.

3.3 Cylinder rooms are to be provided with adequate ventilation. Spaces where access from the open deck is not provided or which are located below deck are to be fitted with mechanical ventilation at not less than 6 air changes per hour. The exhaust duct should be led to the bottom of the space. Other spaces may not be connected to this ventilation system.

4. Piping

4.1 Piping is to be made of weldable materials in accordance with II – Materials and Welding, Part 1 –

Metallic Materials, Chapter 2 – Steel and Iron Materials.

4.2 The manifold from the cylinders up to and including the distribution valves are to be designed for a nominal working pressure of PN 100.

Material certificates are to be provided acc. to the requirements for pipe class I (see Section 11). Manufacturers' inspection certificates acc. to EN10204-3.1 may be accepted as equivalent provided that by means of the pipe marking (name of pipe manufacturers, heat number, test mark) unambiguous reference to the certificate can be established. The requirements regarding remarking are to be observed when processing the pipes.

4.3 Pipework between distribution valves and nozzles is to be designed for a nominal working pressure of PN 40. However, for the purpose of material certification this piping may be considered in pipe class III.

4.4 All pipework is to be protected against external corrosion. Distribution lines serving spaces other than machinery spaces are to be galvanised internally.

4.5 Wherever possible, welded pipe connections are to be used for CO₂ systems. For detachable connections which cannot be avoided and for valves and fittings, flanged joints are to be used. For pipes with a nominal bore of less than 50 mm, welded compression type couplings may be used.

Threaded joints may be used only inside CO₂ protected spaces.

4.6 Bends or suitable compensators are to be provided to accommodate the thermal expansion of the pipelines.

Hoses for connecting the CO₂ cylinders to the manifold are to be type approved, see Section 11, U.

4.7 Distribution piping for quick-flooding is to be designed such that icing due to expansion of the extinguishing gas cannot occur. Reference values are shown in Table 12.5. System flow calculations shall be performed using a recognized calculation technique (e.g. NFPA calculation program).

4.8 The minimum nominal bore of flooding lines and of their branches to nozzles in cargo holds is 20 mm; that of the nozzle connections 15 mm.

The minimum pipe thicknesses are shown in Table 12.6.

4.9 A compressed air connection with a non-return valve and a shutoff valve is to be fitted at a suitable point. The compressed air connection must be of sufficient size to ensure that, when air is blown through the system at a pressure of 5 to 7 bar, it is possible to check the outflow of air from all nozzles.