

# Dry Powder System

liquefied gas and certain chemicals/agents in bulk shall be equipped with a fixed dry powder System ready for operation.

**Characteristics .** Dry chemical powder, when introduced directly to a fire, causes the flame to go out almost at once.

The chemical used is in principle Sodium or Potassium Bicarbonate (BC).

Various additives are mixed with the base chemicals to improve the storage, flow, and water-repellent characteristics.



Dry powders are stable at both low and high temperatures (up to 50 deg. C.)

BC powders are non-toxic, but due to the size of the particles (10 to 50 microns) temporary breathing difficulties may occur, and personnel must stay clear of the jets to avoid suffocation.

**Application.** Dry powder systems have been developed to meet the increasing demands for large capacity systems for use in the extinguishing of fires involving bulk chemical agents and liquefied gases. SOLAS rules (IGC and IBC) require that dry powder systems protect the entire deck area, cargo manifold, and connection areas from fixed monitors. In addition the system should be capable of supplying dry powder to any part of the cargo deck from at least two sources i.e., hand hose or hand hose line/monitor.

In order to design and calculate a system it is necessary to know the length, breadth, and format of the cargo deck together with details of any obstacles such as tank domes, cargo storage, and handling facilities, etc.

**System Operation.** Nitrogen passing through a reduction valve pressurizes the tank and nozzles fitted in the bottom atomise the contents.

When a pressure of 0.9-1 MPa bar has been achieved, a pilot valve opens the main discharge valve and the dry powder flows through the distribution manifold to the monitor or hand hose line in question.

The pressure during discharge is kept constant by means of a reduction valve placed upstream of the dry powder unit. Release of the system may be remotely operated from the release boxes utilizing a nitrogen pilot cylinder or alternatively manually operated at the dry powder unit.

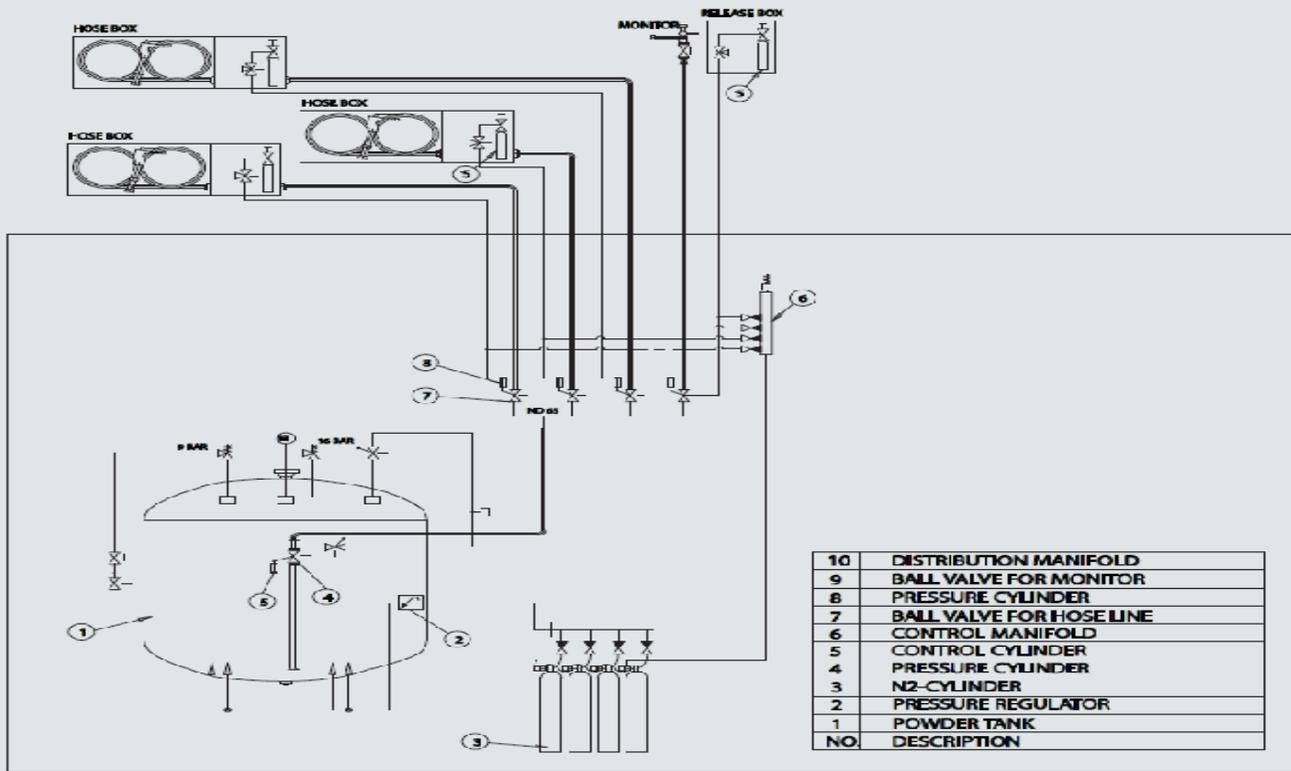
The propellant gas system is designed to contain sufficient nitrogen to maintain the pressure during release as well as to clean the pipes and hand hose lines after discharge.

The hand hose line cabinet is delivered complete, mounted in a GRP/FRP box suitable for installation on the weather deck and fitted with a release arrangement, trigger nozzle, and flange connection for the supply pipe.

Each hand hose line cabinet is suitably spaced along the deck in such a way that no part of the deck is more than 33 m from two cabinets.

Monitor(s) are located to ensure coverage of the cargo manifolds on each side of the vessel.

Release box(es) are provided beside the monitor(s) and in the cargo handling station.



**MAINTENANCE.** In general, all dry chemical powder systems should be thoroughly inspected and checked annually. The inspection and maintenance of hand hose line systems will vary with the location and climate conditions. Dry chemical powder is available in various sized packages. Whatever the container, it should be kept tightly closed and stored in a dry location in order to prevent absorption of moisture. Once the powder has lost its free flowing characteristic, it shall be discharged.