

1. PRODUCT NAME

Ansul Carbon Dioxide (CO₂) Fire Suppression System

2. MANUFACTURER

Ansul Fire Protection
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3. PRODUCT DESCRIPTION

The Ansul Carbon Dioxide (CO₂) Fire Suppression System is an engineered system utilizing either a fixed nozzle agent distribution network, hose reel(s), or a combination of both. The system is Underwriters Laboratories, Inc. (UL) listed, Factory Mutual (FM) approved, and designed in accordance with the latest revision of the National Fire Protection Association (NFPA) Standard 12, "Carbon Dioxide Extinguishing Systems." When properly designed, the carbon dioxide system will extinguish fire in Class A, B, and C hazards by displacing the air containing oxygen which supports combustion.

The system can be actuated by detection and control equipment for automatic system operation along

with providing local and remote manual operation as needed. Accessories are used to provide alarms, delay discharge, ventilation control, door closures, or other auxiliary shutdown or functions.

Due to the method of extinguishment, personnel occupying areas protected by carbon dioxide systems must be evacuated prior to system discharge. For this reason, discharge time delays and alarms are mandatory for occupied hazards. Two or more hazard areas can be protected with a single group of agent storage containers (cylinders) by means of directional or selector valves.

A system installation and maintenance manual is available containing information on system components and procedures concerning design, maintenance, and recharge.

The system is installed and serviced by authorized distributors that are trained by the manufacturer.

Basic Use: The Ansul Carbon Dioxide system is particularly useful for suppressing fires in hazards where an electrically non-conductive medium is essential or desirable; where clean-up of other agents presents a problem; or where the hazard obstructions require the use of a gaseous agent. The following

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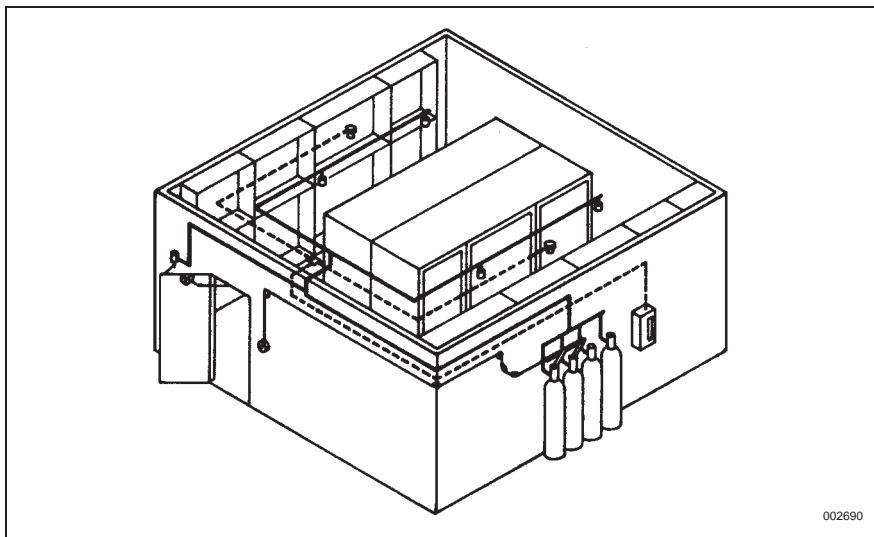
are typical hazards protected by carbon dioxide systems:

- Printing presses
- Vaults
- Open pits
- Dip tanks
- Spray booths
- Ovens
- Engine rooms
- Coating machines
- Process equipment
- Hoods and ducts
- Flammable gas or liquid storage areas
- Generators

Composition and Materials: The basic system consists of agent (CO₂) stored in high strength alloy steel cylinders. Various types of actuators, either manual or automatic, are available for release of the agent into the hazard area. The agent is distributed and discharged into the hazard area through a network of piping and nozzles. Each nozzle is equipped with a fixed orifice designed to deliver a uniform discharge to the protected area. On large hazards, where three or more cylinders are required, a screwed or welded pipe manifold assembly is employed. The manifold assembly is connected to each cylinder by means of a flexible discharge bend and check valve assembly.

Additional equipment includes: remote manual pull stations, corner pulleys, door closures, pressure trips, bells and sirens, transfer switches, time delays, pneumatic switches, and weighing devices. All or some are required when designing a total system.

CO₂ Agent – Carbon dioxide is an effective fire extinguishing agent that can be used on many types of fires. It is effective for surface fires, such as flammable liquids and most solid combustible materials. It



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expands at a ratio of 450 to 1 by volume. For fire suppression purposes the discharge is designed to raise the carbon dioxide concentration in the hazard. This displaces the air containing oxygen which supports combustion, and results in fire extinguishment. Other attributes are its high degree of effectiveness, its excellent thermal stability, and freedom from deterioration. It has a low toxicity classification by Underwriters Laboratories (Group 5a).

Cylinders – The cylinders are constructed, tested, and marked in accordance with applicable Dept. of Transportation (DOT) and the U.S. Bureau of Explosives specifications.

Cylinder Assembly – The cylinder assembly is of steel construction with a red enamel or epoxy finish. Five sizes are available to meet specific needs. Each is equipped with a pressure seat-type CV90 valve. The valve is of forged brass and is attached to the cylinder providing a leak tight seal. The valve also includes a safety pressure relief device which provides relief at 2650 to 3000 psi (18269 to 20682 kPa). Cylinder charging pressure is 850 psi at 70 °F (5861 kPa at 21 °C) with a filling density of not more than 68% of its water capacity. The cylinders are shipped with a maintenance record card and shipping cap attached. The cap is attached to the threaded collar on the neck of each cylinder to protect the valve while in transit. The cylinder serial number along with the full and empty weight capacities are stamped near the neck of each cylinder.

Electric Actuator – Electric actuation of an agent cylinder is accomplished by an electric actuator interfaced through an AUTOPULSE® Control System. This actuator can be used in hazardous environments where the ambient temperature range is between 0 °F and 130 °F (–18 °C and 130 °C). In auxiliary or override applications, a manual override valve actuator can be installed on top of the electric actuator. An arming tool is required to reset (arm) the electric actuator after operation.

Manual/Pneumatic Actuators – Several types of manual/pneumatic actuators are available for override manual/pneumatic actuation on the electric actuator or direct manual/

pneumatic actuation on the cylinder valve. Manual actuation is accomplished by pulling the hand lever on the actuator. The lever design contains a forged mechanical detent which secures the lever in the open position when actuated. A manual-local actuator is available to provide either a manual or pneumatic means for a remote pressure release from a remote pressure device. Direct manual actuation of this actuator is accomplished by pulling the ring pin and depressing the red palm button on top of the actuator.

Detection System – The AUTOPULSE Control System is used where an automatic electronic control system is required to actuate a fixed carbon dioxide system. This control system is used to control a single fixed fire suppression or alarm system based on inputs received from fire detection devices. The detection circuits can be configured using cross, counting, independent or priority-zone (counting) concepts. The control system has been tested to the applicable FCC Rules and Regulations for Class A Computing devices.

Nozzles – Nozzles are designed to direct the discharge of carbon dioxide in a liquid and gaseous state using the stored pressure from the cylinders. The system design specifies the orifice size to be used for proper flow rate and distribution pattern. The nozzle selection depends on the hazard and location to be protected. Both low velocity and high velocity nozzles may be used for total flooding. Low velocity nozzles are generally used for direct application to a flammable liquid fire. Both types of nozzles can be adapted for a specific hazard by sizing the orifice to achieve the designed flow rate and concentration. Standard nozzles are painted red or are natural brass, depending on type. Optional chrome plating is also available. All are corrosion resistant and, where the hazard warrants, are equipped with blow-off caps or sealing discs.

Limitations: The carbon dioxide system must be designed and installed within the guidelines of the manufacturer's design, installation, recharge, and maintenance manual. The ambient temperature limitations are 0 °F to 130 °F (–18 °C to 54 °C) for total flooding and 32 °F to 120 °F

(0 °C to 49 °C) for local applications. All AUTOPULSE Control Systems are designed for indoor applications and for temperature ranges between 32 °F and 120 °F (0 °C and 49 °C).

4. TECHNICAL DATA

Applicable Standards: UL listed under EX-2968; USCG approved under Approval No. 162.038/7/0; meets requirements of NFPA Standard 12 "Carbon Dioxide Extinguishing Systems;" approved by Factory Mutual Research Corporation; AUTOPULSE Control System meets requirements of NFPA 70 (Standard for National Electrical Code) and NFPA 72 (Standard for Protective Signaling Systems).

5. INSTALLATION

All system components and accessories must be installed by personnel trained by the manufacturer. All installations must be performed according to the guidelines stated in the manufacturer's design, installation, recharge, and maintenance manual.

6. AVAILABILITY AND COST

Availability: The Ansul Carbon Dioxide Systems are sold and serviced through an international network of independent distributors located in most states and many foreign countries.

Cost: Cost varies with type of system specified, size, and design.

7. WARRANTY

Warranty: The components of the fire suppression system supplied by Ansul Fire Protection ("Ansul") are warranted to you as the original purchaser for one year from the date of delivery against defects in workmanship and material. Ansul will replace or repair any Ansul-supplied components, which, in its opinion, are defective and has not been tampered with or subjected to misuse, abuse, or exposed to highly corrosive conditions provided that written notice of the alleged defect shall have been given to Ansul within 30 days after discovery thereof and prior to the expiration of one year after delivery, and further provided that if Ansul so instructs, such article or part thereof is promptly returned to Ansul with shipping charges prepaid.

Disclaimer of Warranty and

Limitation of Damage: The warranty described above is the only one given by Ansul concerning this system. ANSUL MAKES NO OTHER WARRANTIES OF ANY KIND, WHETHER EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE. ANSUL'S MAXIMUM RESPONSIBILITY FOR ANY CLAIMS WHETHER IN CONTRACT, TORT, NEGLIGENCE, BREACH OF WARRANTY, OR STRICT LIABILITY SHALL BE LIMITED TO THE PURCHASE PRICE OF THE SYSTEM. UNDER NO CIRCUMSTANCES SHALL ANSUL BE RESPONSIBLE FOR SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES OF ANY KIND. Ansul does not assume

or authorize any other person to assume for it any additional liability in connection with the sale of this system.

For repairs, parts, and service of the Ansul fire suppression system, contact a local Ansul representative, or Ansul Fire Protection, Marinette, WI 54143-2542, (715) 735-7411.

8. MAINTENANCE

Maintenance is a vital step in the performance of a fire suppression system. As such, it must be performed by an authorized Ansul distributor in accordance with NFPA 12 and the manufacturer's design, installation, recharge, and maintenance manual. When replacing components on the Ansul system, use only Ansul approved parts.

9. TECHNICAL SERVICES

For information on the proper design and installation of the Ansul Carbon Dioxide System, contact a local Ansul distributor. Ansul application engineering department is also available to answer design and installation questions. Call Ansul at (715) 735-7411.

10. FILING SYSTEMS

Electronic SPEC-DATA®
SPEC-DATA® II
Carbon Dioxide Systems Manual
Additional product information
available upon request

