

CHEMETRON
Fire Systems™

CO₂ High Pressure



A World of Protection



CHEMETRON
Fire Systems™

More Experience. More Applications Worldwide.

A History of Fire Safety Technology

With over 60 years of commitment to innovative fire protection technology worldwide, Chemetron continues as a leader for integrated special hazard fire protection systems. Since CARDOX®

carbon dioxide systems were first installed in 1940, our effective combination of engineering, equipment and system performance continues to make Chemetron the leading choice for high risk applications.

Technology, expertise and customer loyalty have driven Chemetron Fire Systems to the forefront in the global marketplace. Today, our core businesses hold a leading share in their specific markets.

Would your business survive a fire?

While it seems that everything in our world is changing, Chemetron Fire Systems remains constant in our commitment to provide the highest standard of fire protection safety and value. As the nation's oldest CO₂ systems manufacturer, Chemetron has led the way in establishing industry standards.

Today we understand the challenge you face in this just-in-time business environment. If a fire occurs, a company simply cannot afford a major interruption to its operations and financial future. Your ability to prevent or recover from a business disruption is critical and will depend on selecting the best fire protection system and agent.

With our worldwide reach, Chemetron Fire Systems is your single source solution for standard or custom designed multiple hazard fire protection.



Advanced

Advanced Engineering with Custom Solutions

Chemetron leads the industry in innovative product design. As we begin the new millennium, new product development remains a top priority.

You can measure our experience by the diversity of applications, the technical sophistication, and system performance represented by a variety of commercial and industrial special hazard applications. CO₂ is used in the extinguishment and prevention (inerting) of flammable liquid and gas fires. Innovative solutions were developed for dealing with fires involving energized electrical equipment, as well as for a variety of combustibles found in these applications:

- Aerospace
- Data processing centers
- Manufacturing and industrial processes

- Marine
- Power generation
- Telecommunications

The Benefits of Experience

The challenge of new applications and protection of valuable assets continues to advance our technical development. Chemetron is your single source solution for special hazards fire suppression systems by integrating:

- Fire hazard evaluations
- Hardware
- Advanced engineering, technical and service support
- Innovative computer software
- A worldwide distribution and service network
- A commitment to environmental safety

CHEMETRONTM

Fire Systems



Our growth has not been a matter of chance. It has been built on a history of ideas, service and quality.

CO2 is ...

Effective.

Fast. Carbon dioxide is a three-dimensional clean agent. Within seconds, it penetrates the entire hazard area to smother the combustion.

Efficient. CO2 vapor chokes off

combustion quickly. The dry ice “snow” in the discharge allows “local application” protection of non-enclosed hazards.

A Low-Cost Clean Agent. CO2 is colorless and odorless. It exists as a gas in the earth's atmosphere and is one of the by-products of combustion. Its use has no environmental impact.

Non-damaging. CO2 is normally harmless to equipment, materials and property. It does not cause spoilage, requires no clean up and leaves no residue, thus minimizing downtime after a fire.

Non-conductive. CO2 is electrically non-conductive and three-dimensional, allowing use for a wide variety of special applications.

Adaptive. CO2 is effective on a wide range of flammable and combustible materials in both surface and deep-seated fires.

A CO2 High Pressure fire protection system allows for:

- minimal space and weight requirements
- fast installation and service

Recognized by the top independent listing and approval agencies.



Effective

Chemetron Integrated System Extinguishing Performance

Around the world, Chemetron continues to meet the challenge of special hazards. A Chemetron CO2 High Pressure system is a versatile, cost-effective suppression system designed with an extra measure of reliability.

Multiple Hazard Versatility

Chemetron CO2 High Pressure systems work hand-in-hand with state-of-the-art control and detection components to identify and extinguish fires.

Multiple hazards may be protected from a common supply of CO2 by using pneumatically operated directional (selector) valves. CO2 pressure is used to open valves as well as operate switches and accessories. This is essentially an economy measure designed to reduce system size. It is to be used only when there is

assurance that only one hazard could require a discharge at any one time.

Similar controls are provided for each hazard area. The directional valves are pilot-controlled and operated by line CO2 pressure. Pilot controls can be actuated by solenoid valve using pressure from automatic releases or by manually operating the pilot control valve.

A CO2 High Pressure system is designed to cost effectively combine major components into a reliable system consisting of:

Storage, valve & discharge components

These components consist of agent containers, valve assemblies, piping, and discharge nozzles.

Control panels

The control panel is the brain of the system and is used to monitor the detection and accessories, as well as control the alarm and discharge functions.



Detection, alarm devices, and accessories

These external devices act as the eyes and voice of the system as they detect fire and give audible and visual signals, as well as specialized annunciations.

CO2 storage cylinders

A quantity of CO2 sufficient to extinguish the type of fire anticipated in the protected hazard area is stored in 50 lb (22 kg), 75 lb (34 kg), or 100 lb (45 kg) cylinders, which can be used individually or manifolded together. The gas is released into the piping distribution system upon system actuation.

Completer Kits

This system component consists of warning signs, hoses, connection fittings, pressure gauge, solenoid valve, and the actuator required to manually operate the cylinder valve.

Methods of Actuation

There are three independent types of actuation integrated into each system:

- automatic actuation
- manual electric station
- direct manual release (by handwheel on top of each pilot cylinder)

An optional feature is a pneumatic discharge delay for use in systems with no source of electric power or where an uninterrupted source of electric power is not assured. In the event of the loss of power, which would disable the electrical system controls, the pneumatic discharge delay would prevent an immediate CO2 discharge into a normally occupied space and allow personnel time to evacuate the area. In order to be effective and as an additional precaution, the pneumatic discharge delay should be connected to a CO2 siren.



Versatile

Continuous Operation

Reserve banks of CO₂ cylinders provide continued operation and protection while the main bank is being serviced after a discharge, or during routine inspection. The reserve cylinders can also be used for a second discharge if required.

A reserve cylinder bank can be activated three ways:

- automatic actuation
- manual electric station
- direct manual release (by handwheel on top of each reserve pilot cylinder)

System Safety

Carbon dioxide systems are designed in accordance with NFPA (National Fire Protection Association) standards, which require a minimum carbon dioxide concentration of 34%.

These design concentrations will not support human life. Visual and audible warnings must be provided to alert occupants to vacate the area prior to discharge. In addition, as CO₂ will tend to migrate to low lying areas near the protected hazard after a discharge, careful consideration of means to prevent accidental exposure of personnel to hazardous atmospheres in adjoining spaces must be designed into every system.

Because of the stated effects of CO₂ on the human body, certain precautions must be taken to prevent personnel exposure. A CO₂ system discharge will also cause turbulence and noise, and the discharge stream may have considerable force. Warning signs must be provided to advise personnel what to do when the fire extinguishing system is actuated, as well as providing instructions on how to activate the system manually.

It has always been recognized that a CO₂ discharge to fire extinguishing levels presents



a severe hazard to any personnel who might inadvertently be in the area where the CO₂ is discharged. Precautions to be taken to protect facility personnel are covered in NFPA Standard No. 12, the Chemetron publication “Carbon Dioxide Safety Manual” and OSHA’s Lock-out & Tag-out Standard, 29CFR Part 1.910,146.

The Chemetron Difference

With more experience and more applications, Chemetron provides a full range of hardware, design, specification, installation and support services worldwide.

Thousands of companies have the confidence to protect their businesses with Chemetron CO₂ High Pressure integrated systems. With our single source responsibility for suppression, control and support, Chemetron continues to invest in product improvement to meet changing requirements around the globe with:

- Systems engineering and design capability
- Continuous quality improvement programs
- Proprietary computer program software
- Education and safety training
- Product and technical assistance
- Installation and testing support services
- Worldwide sales and distribution network

Chemetron fire suppression systems have proven their reliability time and time again when performance counts.



Reliable

CO2 Physical and Chemical Properties

CO2 is an odorless, colorless, inert gas that extinguishes fire primarily by diluting the oxygen that supports combustion. Some cooling is also accomplished. It is used as an active free extinguishant and applied by either the total flood or local application method. In flooding, the enclosure of the hazard protected is flooded to a proper concentration.

In local applications, CO2 is directly applied in the proper amount at the needed rate to cover the protected hazard. The small "dry ice" par-

ticles, created in the discharge, facilitate its projection into the fire and coverage of the hazard protected.

Because CO2 is 1.5 times heavier than air, it will tend to settle in low-lying areas in the protected hazard as well as flow into adjacent areas outside of the protected space.

In the design concentrations required to extinguish fire, CO2 will not support human life.

Worldwide Applications

CO₂

- Power Generation
 - Base Load Plants
 - CO generation & combined cycle Plants
 - Power Peaking Units
 - Upgrading Existing Plants: w/
 - Coal Conversions
 - Coal Storage/Handling/ Pulverizing
- Cement Plant/Blast Furnace Indirect Coal Firing Systems
- Metals Production and Processing
 - Electric Furnaces
 - Continuous Casters
 - Rolling Mills (Steel & Aluminum)
 - Coating Lines
- Printing
 - Newspaper Production
 - Periodical Printing
 - Packaging
- Automotive
 - Assembly: Painting-Mixing & Storage
 - Parts: Machining
 - Heat Treating
- Electronics Operations
 - Computer Areas
 - Automated Information Storage Systems
- Electronics Production
 - Computer Production:
 - Wave Benches
 - Wave Soldering Machines
- Food Processing
- Research Facilities
 - Test Facilities
 - Anechoic Chambers
- Shipboard (Marine) Systems

Worldwide Applications

FM-200®

- Telecommunication Facilities
- Computer Operations
- Control Rooms
- Shipboard (Marine) Systems
- Rare Book Libraries
- University And Museum
- Art Galleries
- Record & Storage Facilities
- Petrochemical Installations
- Pharmaceutical & Medical Facilities
- Electronics & Data Processing Equipment

The seller makes no warranties, express or implied including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in seller's sales contract or sales acknowledgment form.

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