



Safety for your life



Introduction

Carbon dioxide (CO₂) is a non-corrosive, odorless, colorless gas. During discharge, it presents as a white fog; it does not dirty or otherwise negatively affect the materials with which it comes into contact.

The principle of extinguishment is dual: CO₂ acts by suffocation or oxygen dilution, reducing the concentration of the oxygen present in the area, and by the cooling caused by the rapid expansion of the gas.

CO₂ must not be used for protecting normally-occupied areas, since inhalation can cause asphyxia even at low concentrations. Furthermore, visibility is greatly reduced during discharge due to the formation of CO₂ fog. This extinguishing agent can be used in normally-unoccupied areas if suitable safety devices are installed.

After use of the extinguishing system, the area must be adequately ventilated; remember that since carbon dioxide is heavier than air, it accumulates in low-lying areas.



Advantages

- Low filling costs
- Suitable for use in the presence of deep-seated fires
- Leaves no residues after discharge
- Does not contribute to depleting the ozone layer
- Does not conduct electricity
- Forms no decomposition products in contact with flame
- CO₂ is the extinguishing gas most widely used in industrial applications



Why Carbon Dioxide?

Carbon dioxide is an effective fire suppression agent applicable to a wide range of fire hazards. Carbon dioxide works quickly, with no residual clean-up associated with a system discharge which translates into minimal business interruption.

Other benefits of carbon dioxide fire protection system include:

- **Fast and Effective** - within seconds, CO₂ penetrates the entire hazard area to smother the combustion.
- **Electrically non-conductive** - for a wide range of applications.
- **Versatile** - CO₂ is effective on flammable and combustible materials and approved for Class A, B, and C hazards.
- **Environmentally friendly** - because carbon dioxide is naturally found in the atmosphere, there is no environmental impact.



CO₂ is suitable for extinguishing fires involving certain types of materials and equipment such as:

- Flammable liquids and materials which.
- Flammable gases.
- Electrical and electronic equipment.
- Flammable materials such as wood, paper, textiles etc.

CO₂ cannot extinguish fires involving certain types of materials such as:

- Chemicals containing oxygen.
- Metals and chemicals which react with CO₂, e.g. alkaline metals and metallic hydrides.

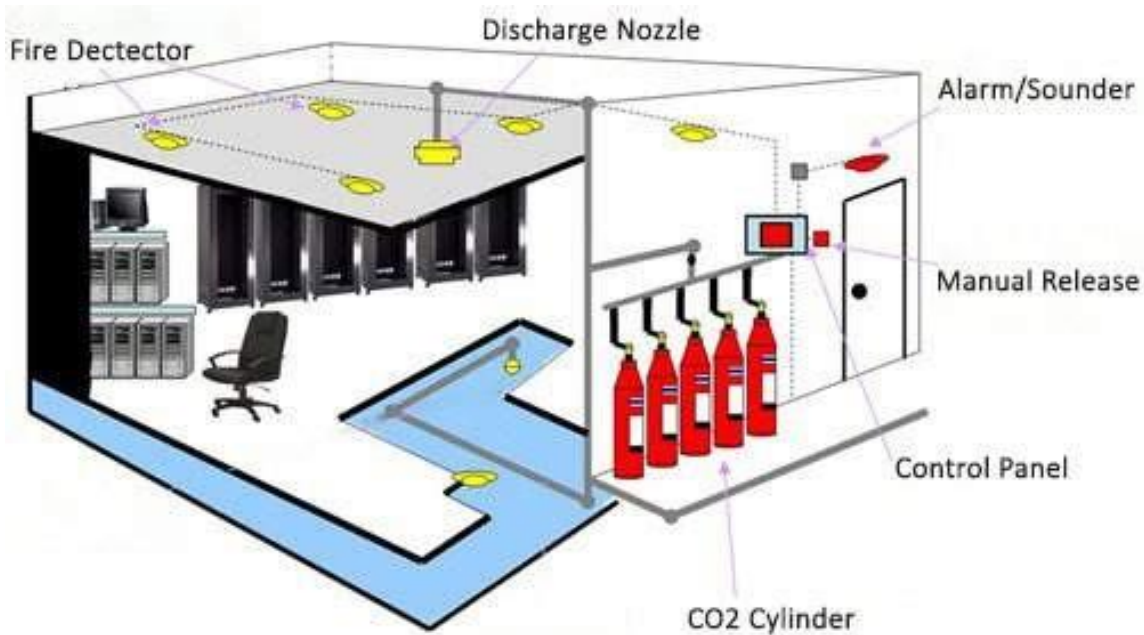
Some of the many fire-fighting applications for which CO₂ is suitable are listed below:

- Flammable liquid storage areas.
- Quench tanks.
- Mixing operations.
- Spray booths.
- Turbine driven generators.
- Electrical areas.
- Dust collectors.
- Engine rooms.



CO2 systems use intelligent, reliable, and fast acting controls to quickly sense a fire before it can cause costly damage to your property. Carbon dioxide gas has a high rate of expansion which allows it to work fast. When applied to a fire, CO2 provides a heavy blanket of gas that reduces the oxygen level to a point where combustion cannot occur. Since carbon dioxide is a gas, there is no clean-up associated with a system discharge - which means minimal business interruption.

CO2 systems are designed, installed and maintained according to ISO 6183 (Fire protection equipment) standards.



Design Calculations

$$m = K_B (0,2A + 0,7V)$$

Inside:

$$A = A_V + 30A_{OV}$$

$$V = V_V + V_Z - V_G$$

m - CO2 design quantity.

A_V - Total surface area of all walls, floor and ceiling (including the openings A_{OV}).

A_{OV} - Total surface area of all openings, which can be assumed to be open in the event of a fire.

V_V - Volume of the enclosure or the volume of the object.

V_Z - The volume of air, which will be blown into or extracted from the enclosure during the discharge time by ventilation systems which cannot be shut down.

V_G - Volume of the building structure in the calculation zone, which the CO2 cannot penetrate.

K_B - Factor for the material to be protected.

Product Specification



No.	Description	Material
1	Cylinder Valve	Brass
2	Discharge hose	Wire braided rubber hose
3	Pilot line hose	Brass
4	Safety relief valve	Brass
5	Selection valve zone 1	Carbon Steel
6	Selection valve zone 2	Carbon Steel
7	Nitrogen cylinder	Steel Alloy
8	Cylinder strap	Steel
9	Pilot cylinder	Steel Alloy
10	Manifold	Carbon Steel

System components

All system components as listed must be sourced from Canatech to ensure effective and safe operation.

Installation and maintenance shall be carried out according to the CO2 System manuals.

Product Specification



68 Liter CO2 Cylinder

- Test pressure: 250bar
- Empty weight: 75kg
- Finishing: Red color
- Capacity: 45kg/68liter
- Manufacture to BS5045 Part 1
- Material Mn Steel thread 28.8x14" TPI
- Filling ratio 0.667
- Develop pressure 50bar-725psi @ 15°C
60bar-870psi @ 30°C
170bar-2465psi @ 60°C
- Part No.: CA45-CO2



Pilot Cylinder

- Test pressure: 250bar
- Empty weight: 5kg
- Finishing: Red color
- Capacity: 2,2kg
- Part No.: CA-PILOT-CO2



Safety Relief Valve DN25 (1")

Material: Brass
Working Pressure: 25-45bar
Part No.: CA-SRV-CO2



Discharge Nozzle

Material: Brass
Working Pressure: 25-42bar
Part No.:

- CA-DIS15-CO2 (Size 15mm - 1/2")
- CA-DIS20-CO2 (Size 20mm - 3/4")
- CA-DIS25-CO2 (Size 25mm - 1")
- CA-DIS32-CO2 (Size 32mm - 1 1/4")
- CA-DIS40-CO2 (Size 40mm - 1 1/2")
- CA-DIS50-CO2 (Size 50mm - 2")



Selection Valve (Control by Electric)

Material: Carbon Steel
Working Pressure: 25-42bar
Part No.:

- CA-SELEC32-CO2 (Size 32mm - 1 1/4")
- CA-SELEC40-CO2 (Size 40mm - 1 1/2")
- CA-SELEC50-CO2 (Size 50mm - 2")
- CA-SELEC65-CO2 (Size 65mm - 2 1/2")
- CA-SELEC80-CO2 (Size 80mm - 3")
- CA-SELEC100-CO2 (Size 100mm - 4")



Discharge Hose

Material: wire braided rubber hose
Part No.:

- CA-15FLE-CO2 (Size 15mm - 1/2")
- CA-20FLE-CO2 (Size 20mm - 3/4")
- CA-25FLE-CO2 (Size 25mm - 1")

Product Specification



**Hochiki Conventional
Releasing Fire Alarm
Control Panel**

Part Number: HCVR-3

- UL Listed, FM Approved and CSFM listed
- Three conventional zones
- Any single zone or any combination of zones can be configured to release
- Fully programmable using simple menu options
- Simple, single board construction
- Installer-friendly
- Compatible with a wide range of detection devices
- Configurable first stage NAC delays
- Configurable detection delays
- Built-in manual release switch and external manual release circuit
- Built-in abort circuit
- Compatible with FirePro® Xtinguish
- Compatible with various releasing valves
- Configurable releasing delays up to 60 seconds in 5-second intervals
- Configurable releasing duration up to 5 minutes in 5-second intervals
- Releasing countdown timer displayed on the panel
- Supports up to seven HCVR-SDU or HCVR-AB
- Built-in relays for Fire, Trouble, Stage 1, Stage 2, Extract and Local Fire
- Available in red or gray



Hochiki Photoelectric Smoke Detector

Part Number	SOC-24VN
Light Source	GaAlAs Infrared Emitting Diode
Nominal Rated Voltage	24 VDC
Working Voltage	8 - 35.0 VDC
Maximum Voltage	42 VDC
Supervisory Current	59µA @ 24 VDC
Surge Current	160µA max. @ 24VDC
Alarm Current	150mA max. @24 VDC
Air Velocity Range	0-4000 fpm
Maximum Humidity	95% RH Non-Condensing
Ambient Temperature	32°F to 120°F (0°C to 49°C)
Color & Case Material	Bone PC/ABS Blend
Sensitivity Test Feature	Automatic Sensitivity window verification test
Mounting	Refer to NS Conventional Detector Base Data Sheet

Product Specification



Hochiki ROR Heat Detector

Part Number	DSC-EA
Rated Voltage	24VDC
Working Voltage	15 - 30VDC
Maximum Switching Current	100mA max.
Heat Sensing Element	Air chamber composed with the diaphragm.
Operating Temp. Range	-10°C - +50°C (14°F - 122°F)
Storage Temp. Range	-30°C - +70°C (-22°F - 158°F)
Relative Humidity (at 40°C)	95% RH Non-Condensing
Dimensions	3.9" D x 1.3" H
Weight	3 oz.
Color	Bone
Applicable Standard	UL-521
Response Grade	Ordinary



Hochiki Fixed Heat Detector

Part Number	DCD 135/190
Response	135° ± 7.5°F 190° ± 7.5°F
Rated Voltage	17.7 - 30.0 VDC
Working Voltage	15.0 - 33.0 VDC
Maximum Voltage	42 VDC
Supervisory Current	40µA @ 24 VDC
Surge Current	160µA max. @ 24 VDC
Alarm Current	150µA max. @ 24 VDC
Ambient Temperature	32°F to 120°F (0°C to 49°C)
Contact Rating	N/O Contacts 150mA max. @ 24 V
Color & Case Material	Bone PC/ABS Blend
Mounting	Refer to the NS Conventional Detector Base Data Sheet



Hochiki Flame Detector

Part Number	HF-24
Rated Voltage	17.6 - 27.7 VDC
Working Voltage	15 - 30 VDC
Normal Current	200µA @ 24 VDC
Alarm Current	250mA Maximum
Response to Ultraviolet	1850 - 3000 Angstrom
Ambient Temperature	14° to 122° Fahrenheit (-10°C to +50°C)
Mounting	HSC-4R and HSB-Series Bases
Color	Ivory ACS

Product Specification



Hochiki Manual Pull Station

Part Number: HPS-DAK-SR

Contact: Form

Contact Rating: 10A @ 120 VAC

Operating Temperature: -30°F (-35°C) ~ 150°F (66°C)



Hochiki Abort Switch

Part Number: HCVR-AS-R

Switch Rating: 1A @ 30VDC

Dimension: 3.81" W x 3.81" H x 2.32" D

Finish Colour: Red



Canatech Discharge Warning Box

Part Number: CA-DCW-CO2

Voltage: 24VDC

Ambient Temperature: -25 ~ +70 Deg

Dimensions (mm): H150 x W400 x D85

Material: Black Steel

Finish Colour: Red



Canatech Electronic Sounder and Beacon

Part Number: CA-17ESB

Voltage: 24V DC

Current Consumption 24V DC (tone 3): 14.5mA

Volume Control: 0 to -20dB adjustment

Ambient Temperature: -25°C ~ +80°C

Material: ABS plastic

Dimensions: 92.5mm(Dia.) x 110mm(H)

Weight: 278g



Hochiki Fire Alarm Bell

Part Number: FBB-150I

Rating: DC 24V, 8mA

Sound Pressure: ≥90 dB (at distance of 1m from the front)

Operating Temperature Range: -20°C - 60°C

Material: Steel, 1.2mm thickness, Chrome-plated

Color: Equivalent to Munsell 7.5R3.6/12.8

Weight: Approx. 465g

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FIRE PROTECTION