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HFC-227ea CLEAN AGENT FIRE SUPPRESSION SYSTEM

STANDARD FEATURES

- UL Listed, FM Approved Clean Agent Fire Suppression product.
- Colorless
- Odorless
- Safe for people
- Electronically nonconductive
- Non corrosive
- Free of residue
- Does not contain chlorine or bromine
- Complies fully with the standards of ASTM D6064 and NFPA 2001

PRODUCT DESCRIPTION

Hochiki's HFC-227ea by Chemori, is a safe and effective fire extinguishing agent that is used for total flooding fire suppression systems. HFC-227ea is stored as a liquid and dispensed into the hazard as a colorless, electrically non-conductive vapor that is clear and does not obscure physical vision. It leaves no residue and has acceptable toxicity for use in occupied spaces at design concentration. Hochiki HFC-227ea is suitable for use on Class A, Class B, and Class C fires, does not displace oxygen, has zero ozone-depleting potential, and low global-warming potential with a short atmospheric lifetime. It contains no chlorine or bromine and fully complies with NFPA 2001 and ASTM D6064 standards. Cylinder sizes range from 20 lb. up to 1,200 lb., and each cylinder is pre-filled according to specific design flow calculations for the hazard. Common applications include computer and server rooms, libraries, telecommunications, medical facilities, vehicles, and much more.

PHYSICAL AND CHEMICAL CHARACTERISTICS	
Chemical Name	Heptafluoropropane (CF_3CHFCF_3)
General	Colorless, Odorless Liquified Gas
Molecular Weight	170.03
Boiling Point	-16.4°C/2.48°F
Freezing Point	-131°C/-203.8°F
Vapor Pressure @ 21°C / 70°F	58.8 psia
Critical Temperature	101.7°C/215.1°F
Critical Pressure (psia)	422.3 psia
Vapor Density (AIR = 1)	6.04
Water Reactive	No
Specific Gravity (H_2O = 1)	1.46
Percent Volatile (by volume)	n/a
Evaporation Rate (Butyl acetate = 1)	n/a
Viscosity @ 20°C / 68°F	n/a
Water Solubility (V/V @ 20°C / 68°F)	260mg/L
Ozone Depletion Potential	0
Estimated Atmospheric Lifetime (years)	31-42

PRODUCT LISTINGS

UL

FM APPROVED

Specifications subject to change without notice.

HFC-227ea CLEAN AGENT FIRE SUPPRESSION SYSTEM

Clean Agent Cylinders (360 Psi System)

The Clean Agent cylinders are manufactured, tested and stamped in accordance with DOT 4BW500 or DOT 4BA500. All cylinders are equipped with a back pressure type valve. A piston in the valve bore is equipped with a rubber seal that keeps the HFC-227ea Clean Agent under pressure within the cylinder. A small hole in the piston allows cylinder pressure to be equalized on both sides of the piston. Since the area at the top of the piston is greater than the area at the bottom of the piston, the net force seals the piston against the valve discharge outlet. When the cylinder pressure on the top of the piston is relieved by means of automatic or manual activation, there is only cylinder pressure acting against the piston seal, and the piston slides to it's full open position, allowing cylinder discharge through the distribution piping network.

Attached to the bottom of the cylinder valve is a siphon tube, which is straight and runs from the top of the cylinder to the bottom of the cylinder. The cylinder must be installed in an upright position (valve on top).

There is a 1/8" NPT outlet stamped "P" on the cylinder valve. This outlet transmits cylinder pressure to an optional low pressure supervisory switch, which when used, monitors the internal pressure of the cylinder. Another 1/8" NPT outlet stamped "M" on the cylinder valve is available for use as a pressure source to drive the piston actuators on a multiple cylinder system or to actuate a pressure operated switch in the event of the cylinder discharge.

Cylinder Model

HFC-227ea Clean Agent cylinders are available in the following capacities:

Part Number	Cylinder Size	Max Fill at 70 lb/ft^3	Min Fill at 30 lb/ft^3	Valve Size
1260-01340	35 LB	35 LB	16 LB	1" Valve
1260-01350	70 LB	71 LB	31 LB	1" Valve
1260-01360	100 LB	101 LB	44 LB	1" Valve
1260-01370	150 LB	152 LB	66 LB	1 1/2" Valve
1260-01380	250 LB	253 LB	109 LB	1 1/2" Valve
1260-01390	375 LB	379 LB	163 LB	2 1/2" Valve
1260-01400	560 LB	561 LB	241 LB	2 1/2" Valve

NOTE:

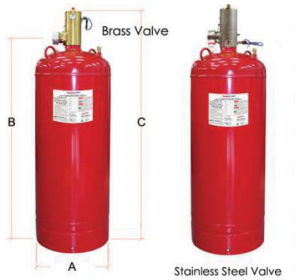
1. Each of the basic sizes can be filled with one pound increments to meet the exact amount of HFC-227ea Clean Agent required, within their fill ranges.

2. *add -"SS" if valve is Stainless Steel

Temperature Range: 32°F (0° C) to 130°F (54.4°C)

System Operating Pressure: 360 psi at 70°F (25.3kg$_f$ / cm^2 at 21.1°C)

Cylinder Dimensions

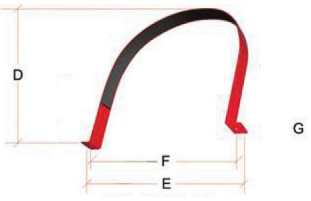


Part Number	A	B	C
1260-01340	10"	17.607"	22.336"
1260-01350	10"	28.04"	32.769"
1260-01360	12.75"	27.127"	32.706"
1260-01370	12.75"	37.127"	42.706"
1260-01380	16"	39.883"	45.462"
1260-01390	16"	57.16"	64.462"
1260-01400	20"	55.516"	65.76"

Cylinder Bracket

The cylinder bracket is manufactured from galvanized steel band formed to the radius of the cylinder with flanges for bolting to the continuous slot metal framing channel of 12-gauge steel with corrosion resistant paint or galvanized. The channel must be supplied by the installer. The cylinder bracket must be secured to a surface that the bracket will withstand a load up to 5 times of the cylinder weight. This precaution is to have the bracket safely support the weight of the cylinder and the reaction force of the HFC-227ea Clean Agent during discharge.

Cylinder Part Number	Cylinder O.D	D	E	F	G	Bracket Part #
1260-01340	10.75"	11"	14"	12.6"	2"	1260-01720
1260-01350	10.75"	11"	14"	12.6"	2"	1260-01720
1260-01360	12.80"	13"	16.05"	14.65"	2"	1260-01730
1260-01370	12.80"	13"	16.05"	14.65"	2"	1260-01730
1260-01380	16.00"	16.25"	19.2"	17.7"	2"	1260-01740
1260-01390	16.00"	16.25"	19.2"	17.7"	2"	1260-01740
1260-01400	20.00"	20.25"	23.2"	21.7"	2"	1260-01760



P/N: 1260-01770

For the 20 lb to 250 lb cylinders - One cylinder bracket must be used / For the 375 lb to 650 lb cylinders - Two cylinder brackets must be used

HFC-227ea CLEAN AGENT FIRE SUPPRESSION SYSTEM

Engineered Clean Agent Cylinders (360 Psi System)

P/N: 1260-01430 P/N: 1260-01420 P/N: 1260-01410

The 800 lb, 1000 lb and 1200 lb cylinders are filled with one pound increments in order to meet the exact amount of agent required. By using Chemori's Flow Calculation Software Version CR 4.00, the two-phase and the two -component flow of agent and nitrogen through the distribution piping network in quasi-steady state from the initiation of the discharge to the final gas blow down can be estimated and predicted. The cylinder is equipped with a stainless steel valve that offers excellent flow characteristics for the liquefied gas, allowing for long pipe runs and has a greater coverage area.
Temperature Range: 32°F (0° C) to 130°F (54.4°C)
Operating Pressure: 360 psi at 70°F (25.3kg_f / cm^2 at 21.1°C)

Part Number	Cylinder Size	Max Fill at 70 lb/ft^3	Min Fill at 30 lb/ft^3	Valve Size	Diameter	Total Height	Height to Discharge Outlet
1260-01410	800 LB	806 LB	353 LB	4" Valve	30.00"	56.792"	47.002"
1260-01420	1000 LB	1008 LB	439 LB	4" Valve	30.00"	64.154"	54.364"
1260-01430	1200 LB	1211 LB	519 LB	4" Valve	30.00"	71.516"	61.726"

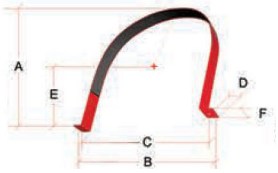
The cylinder is equipped with a stainless steel back pressure type valve in which a piston installed within the valve is equipped with a rubber seal that keeps the clean agent under pressure within the cylinder. A small hole in the piston allows the pressure within the cylinder to be equalized on both sides of the piston. Since the area at the top of the piston is greater than the area at the bottom of the piston, the net force seals the piston against the valve discharge outlet. When the cylinder pressure on the top of the piston is relieved by means of automatic or manual activation, there is only cylinder pressure acting against the piston seal; hence, the piston slides to its full open position, allowing cylinder discharge through the distribution piping network.
The cylinder must be installed in an upright position (valve on top) in which each cylinder installation shall use a top plug adapter. The available accessories include electric solenoid, pressure gauge, liquid level indicator, and bracket as described in the following manner.

3" and 4" Valve Accessories

Description	Usage
Electric Solenoid available in: -24 VDC 15 Watts (4" Valve) / (3" Valve)	To automatically start and operate the clean agent discharge based on the operating specification requirement
Low Pressure Supervisory Switch	To monitor the internal pressure of the cylinder
Pressure Gauge, 360 psi	For quick visual inspection of the cylinder's internal pressure
Piston Actuator	For use as a pressure operated switch in the event of the cylinder discharge of multiple cylinders installation
Liquid Level Indicator	To measure the weight of the clean agent inside of the cylinder. Highly recommended for ease of maintenance
Cylinder Bracket	To support the weight of cylinder and the reaction force of the clean agent during discharge

Cylinder Bracket

The cylinder bracket is manufactured from galvanized steel band formed to the radius of the cylinder with flanges for bolting to the continuous slot metal framing channel of 12-gauge steel with corrosion resistant paint or galvanized. The channel must be supplied by the installer. The cylinder bracket must be secured to a surface that the bracket will withstand a load up to 5 times of the cylinder weight. This precaution is to have the bracket safely supports the weight of the cylinder and the reaction force of the HFC-227ea Clean Agent when discharge.



P/N: 1260-01770

Part Number	Diameter	A	B	C	D	E	F
1260-01770	30.00"	29.125"	33.250"	31.750"	1.5"	14.00"	2"

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Discharge Nozzles

Part Number	Description
1260-02300	1/2” (180°) Sidewall
1260-02310	1/2” (360°) Central
1260-02320	3/4” (180°) Sidewall
1260-02330	3/4” (360°) Central
1260-02340	1” (180°) Sidewall
1260-02350	1” (360°) Central
1260-02360	1 1/4” (180°) Sidewall
1260-02370	1 1/4” (360°) Central
1260-02380	1 1/2” (180°) Sidewall
1260-02390	1 1/2” (360°) Central
1260-02400	2” (180°) Sidewall
1260-02410	2” (360°) Central

DESCRIPTION
Chemori Discharge Nozzles are designed to control the flow of Clean Agent in a uniform, pre-determined pattern and concentration. The nozzles are intended to finish the release of Clean Agent in 10 seconds or less when introduced within the design limitations as stated in the Installation Instruction Manual.

Discharging Nozzles are available in sizes of 1/2”, 3/4”, 1”, 1-1/4”, 1-1/2” and 2”. Each discharge nozzle comes in two configurations: 180 and 360 degree distribution patterns. Deflector plates are available as a choice where sensitive ceiling tiles must be protected.

Discharge Nozzles are made of aluminum with female pipe threads. The orifice size of the discharge nozzle is determined by the hydraulic flow calculations. All nozzles are rated for a maximum hazard height of 16ft. If hazards exceed 16ft in height, a second tier of nozzles must be used.

Discharge Nozzles are also available in Brass and Stainless Steel materials.

Discharge Nozzles Selection - Sidewall 180°

Typically to be installed adjacent to the center of the one wall of one enclosure. It’s discharge path will be across the enclosure. At no time shall the area coverage be exceeded.

Discharge Nozzle Selection - Central 360°

Typically to be installed at the center of the enclosure. It’s discharge path will be across the enclosure. At no time shall the area coverage be exceeded.

Installation

Please refer to Chemori Installation, Maintenance & Service Technical Manual for Discharge Nozzles Area Coverage and Application Selections.

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Instructional Signs

CAUTION
(When Alarm Sound ...)
(CR 50230)

The purpose of this caution sign is to alert personnel to evacuate the protected area.

The sign should be conspicuously located near alarm devices.

CAUTION
(Do Not Enter Room ...)
(CR 50231)

The purpose of this caution sign is to prevent personnel from entering a protected area.

The sign should be conspicuously located outside the entrance door to the protected area.

CAUTION
(Operation of Manual Station ...)
(CR 50232)

The purpose of this caution sign is to instruct personnel as to use of Agent Release Manual Pull Station.

This sign should be installed adjacent to all Agent Release Manual Pull Stations.

DESCRIPTION
Instructional signs shall be provided at entrances to and inside of all protected areas. Hochiki offers a few diverse "standard" signs to conform to NFPA and other industry necessities. All signs are made of durable plastic and backed with a strong adhesive for easy installation. Signs are typically installed at all entrances (e.g. CAUTION - Room Protected by HFC-227ea) and near any devices for which the additional explanation is helpful. Custom made instructional signs are available upon request.

Part Number	Description
1260-02550	Caution Label - "When Alarm Sounds . . ."
1260-02560	Caution Label - "Do Not Enter . . ."
1260-02570	Caution Label - "Operation of Manual . . ."
1260-02580	Caution-Room Protected

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