

## **DESCRIPTION**

FE-13 Fire Suppression Systems from Kidde are clean agent fire protection systems for special hazards. The combination of FE-13, a new agent from DuPont, and cylinders and associated hardware from Kidde, the world leader in clean agent systems, brings another tool to bear on the problem of fire protection in sensitive facilities

## **AGENT**

- Clean
- Efficient
- Effective
- Safe
- Environmentally acceptable
- Low boiling point

FE-13 is a high-pressure clean agent manufactured by DuPont. The agent leaves no residue when discharged in a fire or non-fire situation. FE-13 efficiently suppresses fires by the process of physiochemical thermal transfer. The presence of the FE-13 molecule at the flame front absorbs heat from the fire as a sponge absorbs liquid. FE-13 is safe for use in occupied spaces with no exposure restrictions up to a concentration of 24%. The agent does not deplete stratospheric ozone, and has a sufficiently low atmospheric lifetime to be ruled "Acceptable" by the US EPA. FE-13s low boiling point and high vapor pressure makes it useful for those applications requiring agent storage below 0°F (-17°C). Additional information on FE-13 can be found on Kidde data sheet 96-1300.

## **HARDWARE**

- Developed specifically for FE-13
- Based on proven CO<sub>2</sub> and Halon 1301 technology
- Two cylinder sizes
- Complete range of associated hardware
- Nozzles specifically developed for and tested with FE-13

Because of FE-13s high vapor pressure, the agent must be stored at room temperature in high pressure cylinders. Kidde has developed a new set of FE-13 agent hardware, based on proven high pressure CO<sub>2</sub> and high pressure Halon1301 technology. This hardware meets all requirements for storing, releasing, and distributing FE-13 in the most efficient and cost-effective manner possible. Kidde FE-13 systems require no nitrogen superpressurization, since the agent's own pressure is sufficient for distribution through piping and dispersion from specially-developed FE-13 discharge nozzles.

## **BENEFICIAL CHARACTERISTICS**

- High pressure
- Ultimate human safety

The beneficial characteristics of FE-13 clean agent systems from Kidde make them very suitable for many fire hazards. The high pressure nature of the agent means that low temperature applications (down to -40°F [-40°C]) can be accomplished. This is the lowest available system temperature today, and is unmatched by any other clean agent. High pressure also means thorough mixing within the hazard, making FE-13 systems particularly suitable in cluttered hazards, and those with high ceilings. The UL Listed maximum nozzle height of 25 feet is the highest available today.

FE-13 represents the ultimate in human-safe clean agent technology. These systems offer the widest safety margin between use concentration and onset of exposure restrictions ever seen. Design planners can rely on FE-13 to provide effective protection at low temperatures, without human exposure issues when the hazard is at a high temperature. Likewise, hazards with changeable contents are a challenge which can be faced with FE-13. Concentration for both the empty (gross) volume and filled (net) volume can be safe for people, with no exposure restrictions. If the hazard is a difficult one, requiring more than a minimum design concentration, the safety margin of FE-13 allows a comfortable "cushion" of concentration, ensuring fire suppression which is both safe and effective.

Typical applications for FE-13 systems can include:

- Oil and Gas
  - Pumping centers
  - Gathering stations
  - Processing facilities
  - Compressor facilities
  - Turbine enclosures
  - Loading/unloading
- Industry/Manufacturing
  - Anechoic chambers
  - Turbine enclosures
  - Laboratories
  - Flammable liquid storage
- Vehicles
  - Locomotives
  - Draglines
  - Mining vehicles

- General
  - Unheated spaces
  - High-ceiling hazards

## **SPECIFICATIONS**

DuPont quality specifications for FE-13 guarantee a very pure and essentially residue-free product.

Purity,% by weight minimum:	99.7
Moisture, ppm by weight, maximum:	10
Acidity, ppm by weight, expressed as HCl maximum:	0.1
Residue, % by volume, maximum:	0.01

## **DESIGN**

- Engineered design
- Easy and flexible
- Wide range of installation requirements

Kidde FE-13 systems use an engineered design concept for flexibility and ease of use. Two cylinder sizes are available. Cylinders may be filled to one-pound increments with FE-13, permitting precise tailoring of agent quantity and concentration. A UL Listed computer calculation program provides precise, accurate prediction of agent flow and outputs custom-drilled nozzle orifice sizes.

- Maximum nozzle area coverage:  
30 ft. x 30 ft. (9.1 m x 9.1 m)
- Maximum nozzle height: 25 ft. (7.6 m)
- Fill range of 74 lb. cylinder:  
40 - 74 lb. (18.2 kg - 33.6 kg)
- Fill range of 115 lb. cylinder:  
62 - 115 lb. (28.2 kg - 52.2 kg)
- Agent storage temperature range:  
-40°F to +130°F (-40°C to +54°C)
- Available nozzles: 180 degrees and 360 degrees

## **APPROVALS**

FE-13 clean agent is listed as “Acceptable” without use restrictions in the U.S. Environmental Protection Agency (EPA) Significant New Alternatives Policy (SNAP) list. EPA states that FE-13 can be used wherever technical or market conditions warrant. The agent is Component Recognized by Underwriters Laboratories, Inc. (UL). FE-13 agent is included in the National Fire Protection Association (NFPA) Standard 2001, and is identified in that document as HFC-23. Kidde FE-13 engineered systems are UL Listed. Kidde FE-13 agent storage containers are U.S. Department of Transportation (DOT) approved.

## **AVAILABILITY**

Kidde initially launched FE-13 fire suppression systems in September 1995. Since then, thousands of pounds of FE-13 have been deployed in Kidde fire systems. Agent is available in system agent storage containers filled by Kidde, and in bulk 140 lb. (63 kg) and 950 lb. (431 kg) shipping containers.

## **ARCHITECTS SPECIFICATION**

The fire suppression system for (insert hazard area) shall be a Kidde FE-13 fire suppression system. The hardware shall be manufactured by Kidde, 400 Main St., Ashland, MA. USA. The agent shall be manufactured by DuPont, USA, and shall be filled into the cylinders by Kidde. The agent shall be stored in high-pressure seamless steel cylinders meeting DOT requirements. The design concept shall be engineered. The design concentration shall be sufficient for the hazard, per NFPA 2001 and Kidde design manual requirements, but in no case shall exceed the safe level for occupants of the space. The agent storage shall be capable of a minimum in-service storage temperature of -40°F (-40°C). The nozzle shall be capable of installation of a maximum height of 25 feet, with no other nozzles at lower levels required. The design, piping and installation shall be in accordance with NFPA 2001 and the Kidde FE-13 Engineered System design manual. Acceptance of the finished system shall be in accordance with NFPA 2001 and the Kidde manual.

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