



# NAF S 227<sup>®</sup>

## Fire Suppression Engineered Systems

Safety Hi-Tech offers the largest range of UL listed clean agent fire-extinguishing systems in the market. By choosing from four different valve styles and cylinders ranging from 5 to 240 liters, Safety Hi-Tech is able to provide a complete range of gaseous fire suppression options to meet your needs.

Our seamless cylinders range from 5 to 120 liters, and are super-pressurized to 42 bar (600psi).

These 42 bar cylinder assemblies are the preferred choice for systems with long pipe runs or retrofitting existing Halon 1301 systems. The working pressure of the 142, 175 and 240 liters welded cylinders is 25 bar (360 psi), providing lower cost options for new systems.

The software used for engineered system design has been validated by UL.

NAF S 227 engineered systems have been tested according to MSC/Circ. 848 and MSC/Circ. 1267 and can be used to protect machinery spaces and cargo pump rooms on ships.

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 UL Listing Mark and UL Recognized Component Mark are registered trademarks of Underwriters Laboratories Inc.



European Patent n. EP 630278, United States Patent No. 6,402,975 MED-B-5573 MED-D-1258



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The proven  
 solution  
 to protect  
 you and your  
 property.

FIRE SUPPRESSION ENGINEERED SYSTEMS  
 NAF S 227<sup>®</sup>



# SAFETY HI-TECH

THE LARGEST RANGE OF UL LISTED CLEAN AGENTS FIRE-EXTINGUISHING SYSTEMS

**SAFETY HI - TECH** is a customer-focused supplier of advanced solutions for the Fire-Fighting sector which serves customers and markets through a network of integrated sales, production, research and technical services.

Safety Hi-Tech's experts sit on the Technical Committee of NFPA 2001 Standard on Clean Agent Extinguishing Systems and other international regulatory technical committees, such as ISO, UNI, CEN and IMO.

## NAF S 227<sup>®</sup> Fire Suppression Systems

**NAF S 227** is approved by the United States Environmental Protection Agency (EPA) for use as Halon 1301 replacement in normally occupied areas. It is a clean and non-conductive extinguishing media and suitable for Class A, B and C fires. Its formulation includes HFC-227ea and a patented additive that reduces the levels of decomposition by-products normally generated by halocarbons during extinguishment (inter alia US Patent No. 6,402,975 and EU Patent No. 630,278).

Underwriters Laboratories, Inc. (UL) also **recognizes** **NAF S 227** fire suppressant and its production is subject to UL inspections and complies with the quality requirements specified in the standards.



**SAFETY HI - TECH** has a network of worldwide distributors with UL approved Alternate Manufacturing Locations (AML). Our distributors include large companies such as **The Linde Group/BOC** which designs, assembles, fills and distributes NAF S 125 Fire Suppression Systems.

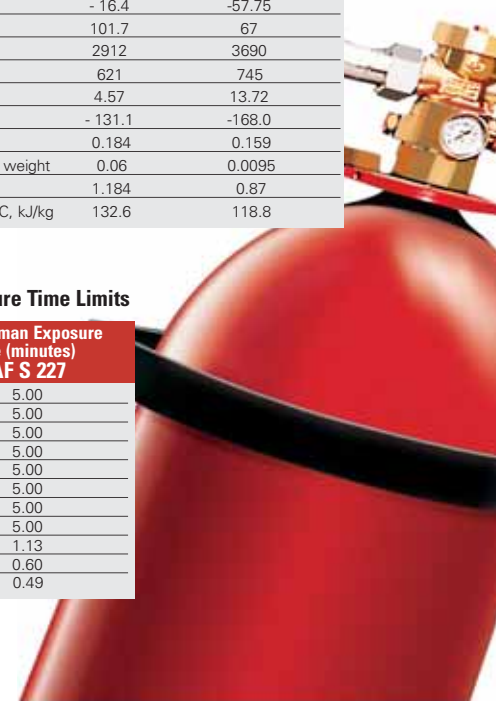
To check the current list of UL approved AMLs please search the UL Online Certifications Directory ([www.UL.com](http://www.UL.com)) and enter "NAF" keyword.

### NAF S 227 Physical Properties

| Physical Properties                                 | NAF S 227 | HALON 1301 |
|---|-----------|------------|
| Molecular Weight                                    | 170.03    | 148.93     |
| Boiling Point @ 760 mm Hg, °C                       | - 16.4    | -57.75     |
| Critical Temperature, °C                            | 101.7     | 67         |
| Critical Pressure, kPa                              | 2912      | 3690       |
| Critical Density, kg/m <sup>3</sup>                 | 621       | 745        |
| Vapor Pressure @ 20 °C, bar                         | 4.57      | 13.72      |
| Freezing Point, °C                                  | - 131.1   | -168.0     |
| Viscosity of Liquid @ 25 °C, centipoises            | 0.184     | 0.159      |
| Solubility of Water in Agent @ 21 °C, % by weight   | 0.06      | 0.0095     |
| Specific Heat of Liquid @ 25 °C, kJ/kg °C           | 1.184     | 0.87       |
| Heat of Vaporization @ Boiling Point at 25°C, kJ/kg | 132.6     | 118.8      |

### NAF S 227 - Safe Human Exposure Time Limits

| Concentration by volume (% v/v) | Safe Human Exposure Time (minutes) NAF S 227 |
|---------------------------------|--|
| 7.0                             | 5.00   |
| 7.5                             | 5.00   |
| 8.0                             | 5.00   |
| 8.5                             | 5.00   |
| 9.0                             | 5.00   |
| 9.5                             | 5.00   |
| 10.0                            | 5.00   |
| 10.5                            | 5.00   |
| 11.0                            | 1.13   |
| 11.5                            | 0.60   |
| 12.0                            | 0.49   |



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