

# Unrivalled expertise in Marine Gaseous Fire Suppression

For today, tomorrow and the future

---



The power behind **your mission**



# Johnson Controls Marine Services. Your next port of call for Gaseous Fire Suppression Systems



## 3M™ NOVEC™ 1230

### Gaseous Fire Extinguishing System

The phase out of Halon 1301 and the search for replacements has been on-going for over 15 years. Each alternative brings with it a unique set of properties. In an effort to match industry requirements, we believe that using Novec 1230 fluid will bring clients many advantages over current technologies

### Key Features

- Zero ozone depleting potential
- Negligible global warming potential
- Atmospheric lifetime of less than 5 days
- Existing Halon control system can be adapted for use with Novec 1230 fluid
- Requires minimal storage space
- Underwriters Laboratories/ Underwriters Laboratories Canada listed
- Listed by US E.P.A. programme SNAP "Significant New Alternatives Policy"
- Complies with the NFPA Standard 2001, "Standard for Clean Agent Fire Extinguishing Systems"

NOVEC 1230 is supplied in lightweight cylinders with a small footprint that requires minimal storage space. Novec 1230 fluid has a boiling point of 49 degrees C and therefore exists as a liquid at room temperature. It is super-pressurised with nitrogen to 25 bar and rapidly extinguishes a fire through a combination of heat absorption (its main action) and some chemical interference with the flame.

Although stored in liquid form, NOVEC 1230 fluid will vaporise easily upon discharge, making it an effective total flooding agent for a variety of hazards. As a clean agent, it leaves no residue and is therefore ideally suited for Marine applications where high margins of safety and long-term sustainability are considered as important features.

### Handling

One of the key advantages offered by Novec 1230 fluid is that it presents very low vapour pressures, enabling it to be transported in lightweight totes or drums as opposed to steel pressurised containers. This allows Novec 1230 fluid to be readily air freighted to a ship at port or dockyard. Because both initial filling and recharging operations are possible by simply pouring the fluid into containers, prior to super-pressurising, the filling operation is far simpler than with traditional high-pressure gases.

### Environmental Features

Novec1230 fluid contains neither bromine nor chlorine and has zero Ozone depleting potential. The atmospheric lifetime of Novec 1230 fluid is estimated to be in the range of 3 -5 days and with a global warming potential of 1, it is considered that the Novec 1230 fluid has no measurable impact on climate change. These attributes ensure that Novec 1230 fluid represents a truly sustainable technology.



We have a solution and system to protect every type of ship

As a preferred Marine Industry provider, Tyco Fire & Integrated Solutions have developed a complete range of gaseous fire suppression products and support services to safeguard the "Business Critical Schedules" of Commercial Passenger ships, LNG/LPG, Bulk Carriers, Container and Freight ships. We have also worked in partnership with over 25 of the world's Naval Armed Forces.

## INERGEN®

### Gaseous Fire Suppression System

INERGEN® gaseous fire suppression agent has been extensively used throughout the world for over 16 years and remains the longest surviving Halon replacement on the market to date.



INERGEN® is an inert gas that has the unique ability to rapidly extinguish a fire yet at the same time provides a safe environment for any person working within a "Non Immediate Evacuation Area" such as the Ship's Bridge or "Critical Area" process rooms.

INERGEN® is a mixture of 52% Nitrogen, 40% Argon and 8% CO<sub>2</sub>. However, in the event of a fire, when INERGEN® is discharged, it mixes with the air present in the room to create a mixture that comprises of 67.3% Nitrogen, 12.5% Oxygen, 17% Argon and 3.2% Carbon Dioxide.

Because the density of this mixture is closer to natural air, INERGEN® protects any person within the occupied area by actually

decreasing cardiac distress and oxygenation and mental performance in low oxygen levels. Also, it has the ability to remain within the protected enclosure for long periods. This provides superior holding times without extensive and costly room sealing or dedicated extract ducting.

INERGEN® inert gas can be stored remotely, up to 100metres from the protected risk. This means that a single bank of cylinders can protect a large number of "Multiple Areas" far more cost effectively when compared with the most popular chemical agents on typical systems.

#### Key Features

- Agent cylinders are not required to be located close to risk
- Single bank of cylinders can protect "Multiple Risk Areas"
- Refill cost of cylinders is relatively low
- Has been fully tested on people. The tests have been verified by independent medical authorities and have been recognised by the HSE
- Does NOT require dedicated extraction ducting

## CO<sub>2</sub> SYSTEMS

### Gaseous Fire Extinguishing System

Carbon Dioxide is the original "clean" agent that is traditionally used for marine applications to suppresses fires in unmanned areas.

CARBON DIOXIDE is an effective fire extinguishing agent that can be used on many types of fires. It is highly effective in extinguishing deep seated Class A fire risks.

Highly versatile, it can flood enclosed areas or be discharged directly onto burning surface fires involving flammable liquids and most solid combustible materials.

It expands at a ratio of 450 to 1 by volume. For fire suppression purposes, the discharge is designed to displace the air containing oxygen, which supports combustion, and results in fire extinguishment.

It is therefore essential that all personnel be trained on CO<sub>2</sub> systems to ensure their safety. They must be warned not to enter the hazard area during discharge, or until the area is cleared. Other attributes are its high degree of effectiveness, its excellent thermal stability, and its freedom from deterioration.

It is electrically non-conductive, and leaves no

residue to clean up after discharge.

Tyco Fire & Integrated Solutions can provide High Pressure cylinder systems and Low Pressure tank systems for the protection of engine rooms, pump rooms, machinery spaces and cargo holds.



#### Key Features

- Established technology and proven components
- Gas refill cost of cylinders is relatively low and is globally available
- Can be supplied as either a low or high pressure system
- Can be used for both Total Flood or Local Application protection



# Global Strength

## Local Expertise. At your service.

### European offices

#### Belgium

Tel: +32 (0)2 467 78 11  
Email: tms.be@tycoint.com

#### France

Tel: 01 30 69 54 00  
Email: tms.sr@tycoint.com

#### Germany

Tel: +49 (0) 4191 505 58  
Email: tms.de@tycoint.com

#### Holland

Tel: +31(0)10 258 48 48  
Email: tms.nl@tycoint.com

#### Italy

Tel: +39 02 81806 301  
Email: tms.it@tycoint.com

#### United Kingdom

Tel: +44 (0)1753 702350  
Email: tms.uk@tycoint.com

### APAC offices

#### Australia

Tel: +61 2 9638 8500  
Email: tms.au@tycoint.com

#### China

Tel: +86 21 6113 5588  
Email: tms.cn@tycoint.com

#### Korea

Tel: +82 51 633 9100  
Email: tms.kr@tycoint.com

#### India

Tel: +91 22 5597 9600  
Email: tms.nl@tycoint.com

#### Singapore

Tel: +65 6389 8888  
Email: tms.sg@tycoint.com

#### USA

Tel: +800 746 7539  
Email: tms.us@tycoint.com

To find out more about how Tyco Marine Services can help you to meet your fire protection challenges, please contact your local office listed above

[www.johnsoncontrols.co.uk](http://www.johnsoncontrols.co.uk)

### Tyco quality through excellence



Australian Government  
Australian Maritime Safety Authority

The power behind **your mission**

