

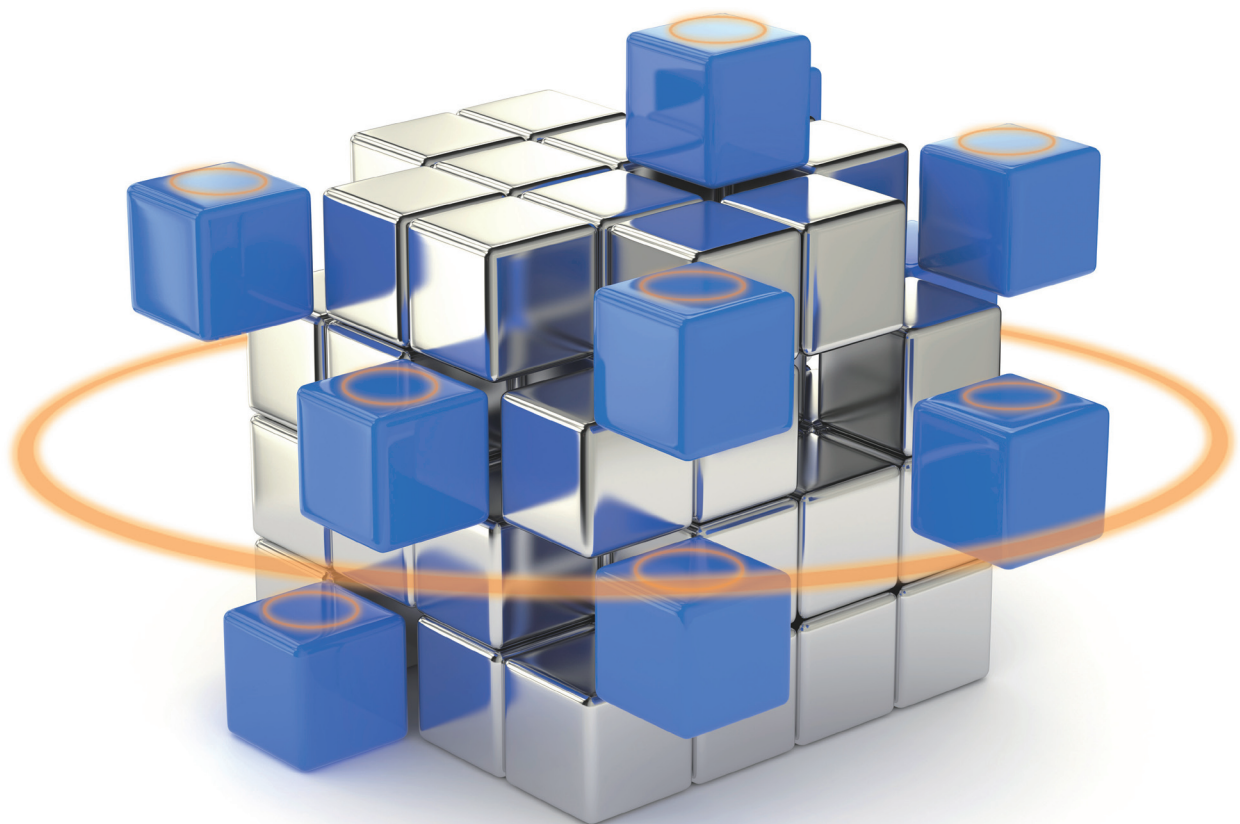
International patent pending

ERASE TUBE

Fire Extinguishing Device

**Super simple and reliable. State-of-the-art. No agent cylinder and power source required.
Integrated automatic Fire Extinguishing Device.**

New suggestion to safety and risk management



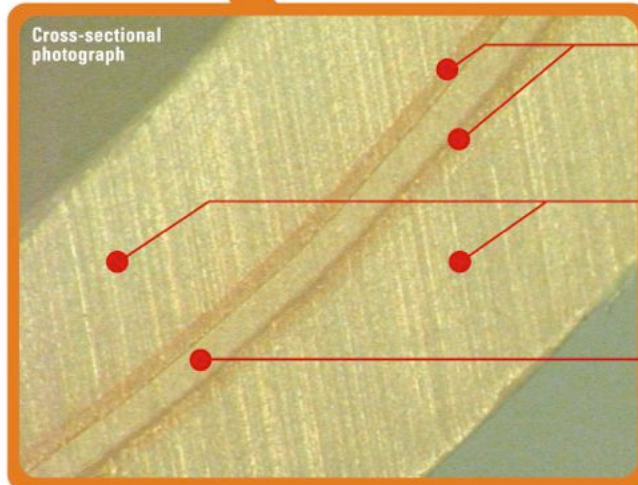


ERASE TUBE

Fire Extinguishing Device



Five-layered ERASE TUBE has improved gas barrier properties and activation temperature.



Cross-sectional photograph

Adhesion layer

Adhesive resins glue inner/outer layer and barrier layer.

Inner/outer layer

Designed to endure with inner pressure but to melt and rupture by the fire heat.

Gas barrier layer

The barrier resin layer is added to prevent the inner gas permeation and maintain required clean agent quantity.

Two outstanding features of ERASE TUBE

- The tube detects fire before temperature rises to 120°C due to abnormal heat generation of the lithium ion battery and releases extinguishing agent quickly.
- The tube uses PE-type resin for detecting fire and releasing fire extinguishing agent quickly; a resin layer specialized in barrier properties is provided to block the permeation and reduction in volume of fire extinguishing agent or N₂ gas in alert state.

**No need of power source, cylinder, or installation work!!
To serve lithium ion battery packs and distribution panels!!**

Features of the Fire Extinguishing Device

- No cylinder is required to be filled with fire extinguishing agent.
- No power source is required to activate the Fire Extinguishing Device.
- The tube is flexible, so the shape of an installation area constitutes no obstacle. Installation is easy within a housing or in a place difficult to access.
- Permeation of N₂ gas or fire extinguishing agent is not concerned, due to the gas barrier layer
- Maintenance-free has been realized by connecting tubes using electro-fusion (EF) joints in melt-to-integration process.
- Activation temperature of the tubes: 107 to 115°C (no flame)
- The device uses Novec1230-human-and eco-friendly fire extinguishing agent.
- The device does not influence electronic equipment, thanks to superior electrical insulation properties.



Activation temperature of the tubes:
107 to 115°C (no flame)

Installation reference

Early detection of abnormal heat generation and instantaneous release of fire extinguishing agent are required for initial fire fighting. The ERASE TUBE (as a Fire Extinguishing Device) is suitable for protecting local areas having a high risk of fire occurrence such as battery rack and distribution panel (it does not target to be installed in spacious areas such as data center or factory). As such, the ERASE TUBE (as a Fire Extinguishing Device) is a total flooding fire extinguishing system installed in a space to be protected with volume of less than 1 m³ to prevent expansion of fire or damage.



Lithium-ion battery rack and server rack



Thermostatic Oven



Electric control panel and distribution panel

Fire extinguishing sequence

~from breaking to extinction of fire~



Tube in 17×14mm
(Fire Extinguishing Device)



Fire break-out!!



Tube ruptures due to the heat of flame ...



Fire extinguishing agent blows out to extinguish the fire!!

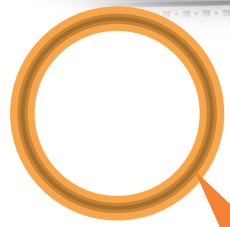


Discharge opening

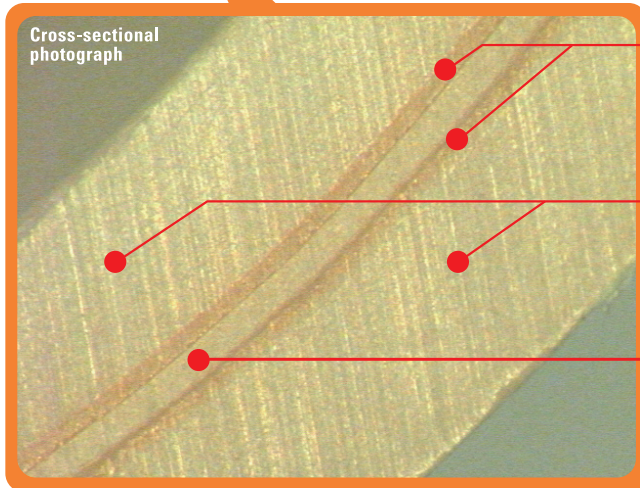


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Uses Novec1230 human- and eco-friendly fire extinguishing agent.

Zero ozone depletion potential, very low global warming potential, and short atmospheric life The 3M™ Novec™1230 fire extinguishing agent, as halogenide fire extinguishing agent, exercises superior fire extinguishing capability to provide enhanced cooling effect and control of combustion chain reaction. Furthermore, the actual use concentration is significantly lower than the no observed adverse effect level (NOAEL) to offer human-friendly fire extinguishing agent.

Environmental properties

Properties	Novec 1230	Halon 1301	HFC-227ea
Zero ozone depletion potential (ODP)	0.0	12.0	0.0
Global warming potential (GWP) IPCC	1	6900	3500
Atmospheric life (year)	0.014	65	33

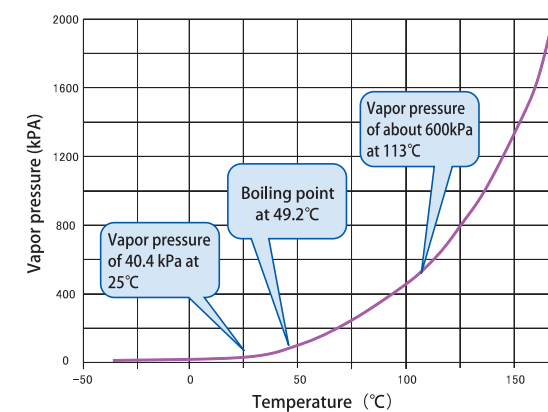
Safety

Agents	Novec 1230	Halon 1301	HFC-227ea
Design concentration	4—6%	5%	7.5—8.7%
NOAEL※	10%	5%	9%

* The maximum exposure amount of administered substances not showing any adverse effect on organs in a toxic test

Electrical insulation properties

The clean agent has superior electrical insulation properties, thereby giving no influence to electronic equipment (withstand voltage of 2.3 comparing to 1.0 of N₂ at 1 atm).TV and the cellular phone are connected in extinguishing agent.



Increase in vapor pressure due to change in temperature

The extinguishing agent is increased with the vapor pressure in case of abnormal heat generation and released by utilizing the pressure of its own without requiring no power source. It securely operates even at power outage.

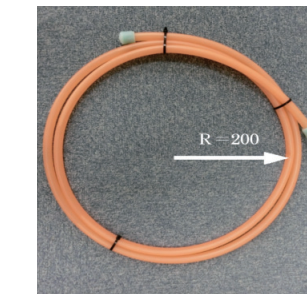
Applicable hazards



Notes on installation

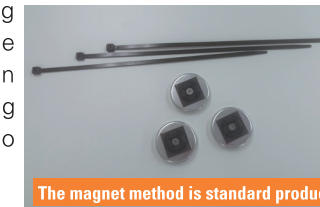
Minimum bend radius

The minimum bend radius is 200 mm. Never twist, bend, or crush the tube.



Easy instllation

There are two installation methods:magnet method and adhesive tape method. Please chose in one of two methods properly according to the material on the installation side. For the adhesive tape method, the tape must be installed to a setting side 10 hours before a Fire Extinguishing Device installation. For the magnet method, a Fire Extinguishing Device can be installed soon after attaching the magnet to a setting side.



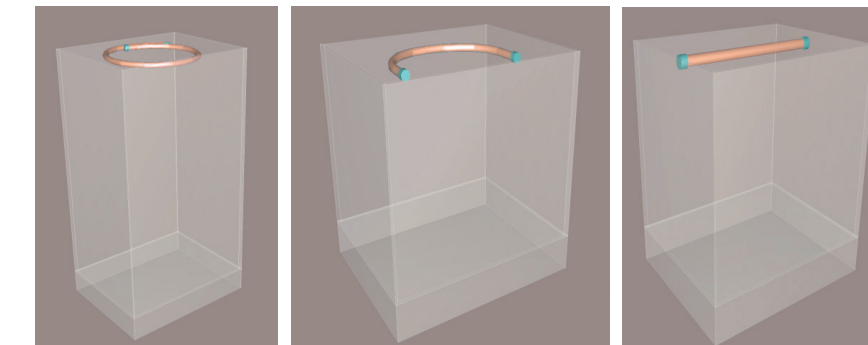
The magnet method is standard product.



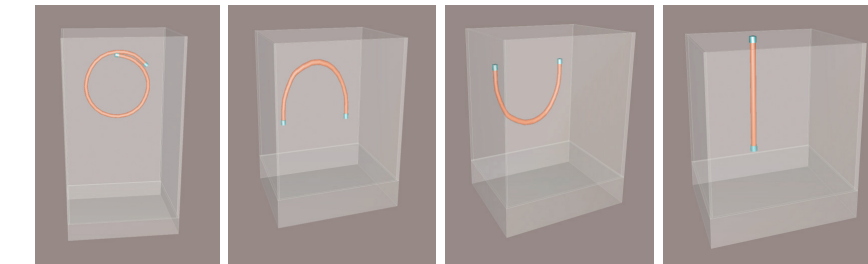
Dedicated mounting base and INSULOCK (standard product)

Installation example

Good case



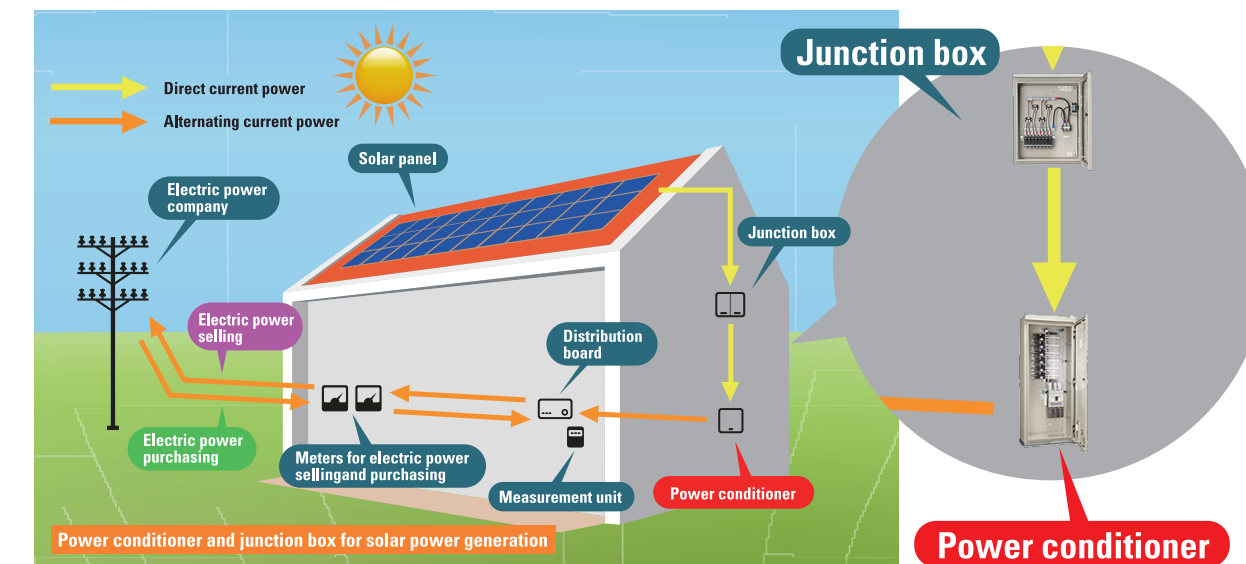
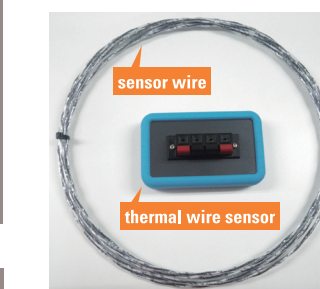
Bad case (Do not install the device vertically.)






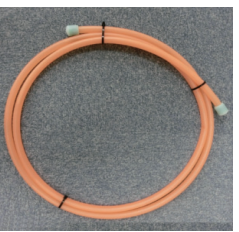
* Contact us if the protective area is in such a shape that the device should be installed vertically downward.

(Option)

● Activation alarm with a thermal wire sensor, activation alarm signal can be applied.



Length and protection volume of the Fire Extinguishing Device

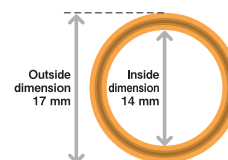
				
Length(m)	0.5	1.0	2.0	3.5
Amount of fire-extinguishing agent(kg)	0.1~0.13	0.17~0.26	0.34~0.51	0.63~0.84
Protection volume(m³)	0.1~0.15	0.2~0.3	0.4~0.6	0.75~1.0

■The Fire Extinguishing Device is prepared in length of 0.5 m or more at a step of 0.5 m.

■The device in length of 1 m or less is delivered as a straight tube, while that in length of 1.5 m or more is delivered as a looped tube.

Dimensions

Product name	Average outside diameter (mm)	Wall thickness (mm)	Average inside diameter (mm)
Fire Extinguishing Device	17.00	1.50	14.00



Most suitable temperature range of -20 to +50°C and service life of 8 years

Replacing the ERASE TUBE in eight years is recommended even though the service life varies depending on the installation environment and ambient temperatures.

Comparison of gas permeability

	Nitrogen	Oxygen	Carbon dioxide	Helium
	25°C	25°C	25°C	25°C
ERASE TUBE	0.017	0.27	0.81	160
Polyamide 6 (stretched)	12	38	205	2000
Polypropylene (stretched)	730	3400	9100	—
Low-density polyethylene	3100	12000	42000	28000

Unit: CC20 μ m/(m²·24hrs·atm)

Chemical resistance

Gas resistance

Materials	Adaptability
Ammonia	◎
Carbon dioxide gas	◎
Chlorine (dry)	△
Chlorine (wet)	△
Hydrogen	◎
Natural gas	◎
Nitrogen	◎
Oxygen	◎
Ozone	△
Water vapor (L) at lower than 150°C	△
Water vapor (H) at 150°C or higher	×
Sulfurous acid gas	○

Oil resistance

Materials	Adaptability
Liquefied petroleum gas	○
Benzine	△
Gasoline	○
Kerosene	×
Petroleum	△
Lubricant	△
Grease	△
Animal oil	◎

Patent

- The tube was co-developed with the MITSUI KAGAKU SANSHI Company.
- International patent pending

For any request or inquiry of the ERASE TUBE as Fire Extinguishing Device, contact us here :



Another emergency number for disaster prevention

NICHIBOU

<http://www.nitibou.co.jp>



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[Sales fields] Consulting, development, design, installation, and maintenance of fire prevention facilities, responding to emergency around the clock