



# Technical Bulletin 003 – Lifeline Zero 360

## Fire Suppressant

### Lifeline Zero ZERO Fire Suppressant

### Novec™ 1230 Fire Protection Fluid

## Safety Data Sheet

Rev3 24/12/2015

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This Safety Data Sheet has been prepared in accordance with the REACH Regulation (EC) 1907/2006 and its modifications.

## **SECTION 1: Identification of the substance/mixture and of the company/undertaking**

### **1.1. Product identifier**

Novac<sup>™</sup> 1230 Fire Protection Fluid [FK-5-1-12]

REACH registration number: 01-0000018239-65-0001

Product identification numbers  
98-0212-3203-2

### **1.2. Relevant identified uses of the substance or mixture and uses advised against**

Identified uses  
Streaming and flooding fire protection

### **1.3. Details of the supplier of the substance or mixture**

Address: Lifeline Fire & Safety Systems, Burnsall Road, Coventry, CV5 6BU  
E Mail: sales@lifeline-fire.co.uk  
Website: www.lifeline-fire.co.uk

### **1.4. Emergency telephone number**

+44 (0)2476 712999

## **SECTION 2: Hazard identification**

### **2.1. Classification of the substance or mixture**

CLP REGULATION (EC) No 1272/2008

CLASSIFICATION:  
Chronic Aquatic Toxicity: Category 3.

Dangerous substances (67/548/EEC)/preparations (1999/45/EC) directive

Indication of danger  
Dangerous for the environment; R52/53

For full text of R phrases, see Section 16.

### **2.2. Label elements**

CLP REGULATION (EC) No 1272/2008



Ingredient	CAS Nbr	% by Wt
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3- pentanone	756-13-8	> 99.9

**HAZARD STATEMENTS:**

H412

Harmful to aquatic life with long lasting effects.

**PRECAUTIONARY STATEMENTS**

Disposal:

P501

Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

Dangerous substances (67/548/EEC)/preparations (1999/45/EC) directive

Contains:

No ingredients are assigned to the label.

Risk phrases

R52/53

Harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Safety phrases

None.

**2.3. Other hazards**

None known.

**SECTION 3: Composition/information on ingredients**

Ingredient	CAS Nbr	EU Inventory	% by Wt	Classification
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3- pentanone	756-13-8	ELINCS 436-710-6	> 99.9	R52/53 (EU) Aquatic Chronic 3, H412 (CLP)

Please see section 16 for the full text of any R phrases and H statements referred to in this section

Please refer to section 15 for the any applicable Notas that have been applied to the above components

For information on ingredient occupational exposure limits or PBT or vPvB status, see sections 8 and 12 of this SDS

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

Eye contact



Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get Medical attention.

#### Skin contact

Wash with soap and water. If signs/symptoms develop, get medical attention.

#### Inhalation

No need for first aid is anticipated.

#### If swallowed

Rinse mouth. If you feel unwell, get medical attention.

### **4.2. Most important symptoms and effects, both acute and delayed**

See Section 11.1 Information on toxicological effects

### **4.3. Indication of any immediate medical attention and special treatment required**

Not applicable

## **SECTION 5: Fire-fighting measures**

### **5.1. Extinguishing media**

Product is a fire-extinguishing agent.

### **5.2. Special hazards arising from the substance or mixture**

Exposure to extreme heat can give rise to thermal decomposition.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide	During combustion
Carbon dioxide	During combustion
Hydrogen Fluoride	During combustion
Toxic vapour, gas, particulate	During combustion

### **5.3. Advice for fire-fighters**

When firefighting conditions are severe and total thermal decomposition of the product is possible, wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, tunic and trousers (leggings), bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

## **SECTION 6: Accidental release measures**

### **6.1. Personal precautions, protective equipment and emergency procedures**

Ventilate the area with fresh air. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.



### 6.2. Environmental precautions

Avoid release to the environment. For larger spills, cover drains and build dykes to prevent entry into sewer systems or bodies of water.

### 6.3. Methods and material for containment and cleaning up

Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a toxic, corrosivity or flammability hazard. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorised person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and Safety Data Sheet. Seal the container. Dispose of collected material as soon as possible.

### 6.4. Reference to other sections

Refer to Section 8 and Section 13 for more information

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. For industrial or professional use only. Do not use in a confined area or areas with little or no air movement.

### 7.2. Conditions for safe storage including any incompatibilities

Protect from sunlight. Store in a well-ventilated place. Store away from heat. Store away from other materials.

### 7.3. Specific end use(s)

See information in Section 7.1 and 7.2 for handling and storage recommendations. See Section 8 for exposure controls and personal protection recommendations.

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Occupational exposure limits

Ingredient	CAS Nbr	Agency	Limit type	Additional comments
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone Health and Safety Comm. (UK) : UK Health and Safety Commission TWA: Time-Weighted-Average STEL: Short Term Exposure Limit ppm: parts per million mg/m <sup>3</sup> : milligrams per cubic metre CEIL: Ceiling	756-13-8	Manufacturer determined	TWA:150 ppm(1940 mg/m <sup>3</sup> )	



Derived no effect level (DNEL)

Ingredient	Degradation Product	Population	Human exposure pattern	DNEL

Predicted no effect concentrations (PNEC)

Ingredient	Degradation Product	Compartment	PNEC

## 8.2. Exposure controls

In addition, refer to the annex for more information.

### 8.2.1. Engineering controls

Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapours/spray. If ventilation is not adequate, use respiratory protection equipment.

### 8.2.2. Personal protective equipment (PPE)

Eye/face protection

Eye protection not required.

Skin/hand protection

Skin protection is not required.

Respiratory protection

If thermal decomposition occurs:

Wear respiratory protection if ventilation is inadequate to prevent overexposure.

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:

Half face piece or full face piece supplied-air respirator

For questions about suitability for a specific application, consult with your respirator manufacturer.

### 8.2.3. Environmental exposure controls

Refer to Annex

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	Liquid
Specific Physical Form:	Liquid
Appearance/Odour	Clear, colourless, low odour.
pH	Not applicable
Boiling point/boiling range	49 °C [ @ 101,324.72 Pa ]





Melting point	-108 °C
Flammability (solid, gas)	Not classified
Explosive properties	Not classified
Oxidising properties	Not classified
Flash point	No flash point
Autoignition temperature	Not applicable
Flammable Limits(LEL)	Not applicable
Flammable Limits(UEL)	Not applicable
Vapour pressure	40.4 kPa [ @ 25 °C ]
Relative density	1.6 [Ref Std:WATER=1]
Water solubility	Nil
Partition coefficient: n-octanol/water	Not applicable
Evaporation rate	> 1 [Ref Std:BUOAC=1]
Vapour density	11.6 [Ref Std:AIR=1]
Viscosity	0.001 Pa-s [ @ 25 °C ]

## 9.2. Other information

Volatile organic compounds (VOC)	1,600 g/l [Test Method: calculated SCAQMD rule 443.1]
Percent volatile	100 %
VOC less H2O & exempt solvents	1,600 g/l [Test Method: calculated SCAQMD rule 443.1]

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

This material may be reactive with certain agents under certain conditions - see the remaining headings in this section

### 10.2 Chemical stability

Stable.

### 10.3 Possibility of hazardous reactions

Hazardous polymerisation will not occur.

### 10.4 Conditions to avoid

Light.

### 10.5 Incompatible materials

Strong bases.

Amines.

Alcohols.

### 10.6 Hazardous decomposition products

Substance	Condition
None known.	





If the product is exposed to extreme conditions of heat from misuse or equipment failure, toxic decomposition products that include hydrogen fluoride and perfluoroisobutylene can occur.

## SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labelling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

### 11.1 Information on Toxicological effects

#### Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

#### Eye contact

Contact with the eyes during product use is not expected to result in significant irritation.

#### Skin contact

May be harmful in contact with skin.

#### Inhalation

No health effects are expected.

#### Ingestion

May be harmful if swallowed.

#### Toxicological Data

##### Acute Toxicity

Name	Route	Species	Value
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone	Dermal	Rat	LD50 >2000 mg/kg
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone	Inhalation-Vapor (4 hours)	Rat	LC50 > 1,227 mg/l
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone	Ingestion	Rat	LD50 >2000 mg/kg

ATE = acute toxicity estimate

##### Skin Corrosion/Irritation

Name	Species	Value
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1,1,1,2,2,4,5,5,5-Nonfluoro-4-(trifluoromethyl)-3-pentanone	Rabbit	No significant irritation
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### Serious Eye Damage/Irritation

Name	Species	Value
1,1,1,2,2,4,5,5,5-Nonfluoro-4-(trifluoromethyl)-3-pentanone	Rabbit	No significant irritation

### Skin Sensitisation

Name	Species	Value
1,1,1,2,2,4,5,5,5-Nonfluoro-4-(trifluoromethyl)-3-pentanone	Guinea Pig	Not sensitizing

### Respiratory Sensitisation

Name	Species	Value
1,1,1,2,2,4,5,5,5-Nonfluoro-4-(trifluoromethyl)-3-pentanone		No data available

### Germ Cell Mutagenicity

Name	Species	Value
1,1,1,2,2,4,5,5,5-Nonfluoro-4-(trifluoromethyl)-3-pentanone	In Vitro	Not mutagenic
1,1,1,2,2,4,5,5,5-Nonfluoro-4-(trifluoromethyl)-3-pentanone	In vivo	Not mutagenic

### Carcinogenicity

Name	Route	Species	Value
1,1,1,2,2,4,5,5,5-Nonfluoro-4-(trifluoromethyl)-3-pentanone			No data available

### Reproductive Toxicity

#### Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
1,1,1,2,2,4,5,5,5-Nonfluoro-4-(trifluoromethyl)-3-pentanone	Inhalation	Not toxic to reproduction and/or development	Rat	NOAEL 20,000 ppm	28 days
1,1,1,2,2,4,5,5,5-Nonfluoro-4-(trifluoromethyl)-3-pentanone	Inhalation	Not toxic to female reproduction	Rat	NOAEL 3,000 ppm	pre mating & during gestation
1,1,1,2,2,4,5,5,5-Nonfluoro-4-(trifluoromethyl)-3-pentanone	Inhalation	Not toxic to male reproduction	Rat	NOAEL 3,000 ppm	pre mating & during gestation



3- pentanone					
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3- pentanone	Inhalation	Not toxic to development	Rat	NOAEL 3,000 ppm	pre mating & during gestation

### Target Organ(s)

#### Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3- pentanone	Inhalation	Nervous system	All data are negative	Rat	NOAEL 100,000 ppm	2 hours
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3- pentanone	Inhalation	Cardiac sensitization	All data are negative	Dog	Sensitization Negative	

#### Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3- pentanone	Inhalation	Respiratory System	Some positive data exist but the data are not sufficient for classification	Rat	NOAEL 40,000 ppm	28 days
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3- pentanone	Inhalation	Liver	Some positive data exist but the data are not sufficient for classification	Rat	LOAEL 40,000 ppm	28 days
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3- pentanone	Inhalation	Muscles   vascular system	All data are negative	Rat	NOAEL 3,000 ppm	90 days
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3- pentanone	Inhalation	Heart   endocrine system   hematopoietic system   kidney and/or bladder	All data are negative	Rat	NOAEL 20,000 ppm	28 days
1,1,1,2,2,4,5,5,5-Nonafluoro-4-	Inhalation	Nervous system	All data are negative	Rat	NOAEL 100,000 ppm	2 hours



(trifluoromethyl)-  
3- pentanone

Aspiration Hazard

Name	Value
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone	Not an aspiration hazard

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

## SECTION 12: Ecological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. Additional information leading to material classification in Section 2 is available upon request. In addition, environmental fate and effects data on ingredients may not be reflected in this section because an ingredient is present below the threshold for labelling, an ingredient is not expected to be available for exposure, or the data is considered not relevant to the material as a whole.

### 12.1. Toxicity

Acute aquatic hazard:

GHS Acute 2: Toxic to aquatic life with long lasting effects.

Chronic aquatic hazard:

Not chronically toxic to aquatic life by GHS criteria.

No product test data available.

No component test data available.

### 12.2. Persistence and degradability

No test data available.

### 12.3. Bioaccumulative potential

No test data available.

### 12.4. Mobility in soil

Please contact manufacturer for more details

### 12.5. Results of the PBT and vPvB assessment

No information available at this time, contact manufacturer for more details

### 12.6. Other adverse effects

No information available.



## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations

Incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Combustion products will include halogen acid (HCl/HF/HBr). Facility must be capable of handling halogenated materials. As a disposal alternative, utilize an acceptable permitted waste disposal facility. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

The coding of a waste stream is based on the application of the product by the consumer. Since this is out of the control of Lifeline, no waste code(s) for products after use will be provided. Please refer to the European Waste Code (EWC - 2000/532/EC and amendments) to assign the correct waste code to your waste stream. Ensure national and/or regional regulations are complied with and always use a licensed waste contractor.

EU waste code (product as sold)

- 070103\* Organic halogenated solvents, washing liquids and mother liquors
- 14 06 02\* other halogenated solvents and solvent mixtures

## SECTION 14: Transportation information

98-0212-3203-2

Not hazardous for transportation

ADR / IMDG / IATA: Not restricted for transport.

NOTE: The transportation information above relates to the Novec extinguishing agent as shipped in bulk containers, and not when contained in Fire Extinguishers or a Fire Suppression System. When shipped in a Fire Extinguisher or a Fire Suppression System, as compressed or liquefied gas the proper shipping name shall be **"Fire Extinguisher"** and the UN designation is UN 1044. The DOT hazard class is 2.2 Non-Flammable Gas. Packing Group – N/A.

## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Global inventory status

Contact 3M for more information. One or more of the components of this product have been notified to ELINCS (European List of Notified or New Chemical Substances). Certain restrictions apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information. The



components of this material are in compliance with the provisions of Japan Chemical Substance Control Law. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information. The components of this product are in compliance with the new substance notification requirements of CEPA. The components of this product are in compliance with the chemical notification requirements of TSCA.

## 15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out for the relevant substances in this material by the registrant in accordance with regulation (EC) No 1907/2006

## SECTION 16: Other information

List of relevant H statements

H412

Harmful to aquatic life with long lasting effects.

List of relevant R-phrases

R52/53

Harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

## Annex

1. Title	
Free short title	Deluge in Fire Emergencies
Identified uses	PROC 11, SU 22;
Processes, tasks and activities covered	Spraying during a fire.
2. Operational conditions and risk management measures	
Operating Conditions:	Physical state: Liquid. General operating conditions: Duration of exposure per day at workplace [for one worker]: < 15 min task; Frequency of exposure at workplace [for one worker]; Indoor use without Local Exhaust Ventilation; Intermittent release; Medium sized room or workshop ( 100 m <sup>3</sup> - 500 m <sup>3</sup> );
Risk management measures	Under the operational conditions described above the following risk management measures apply: General risk management measures: Human health: None needed; Environmental: None needed;
Waste management measures	Do not release to waterways or sewers; Incinerate in a permitted hazardous waste incinerator;
3. Prediction of exposure	
Prediction of exposure	Human exposures are not expected to exceed the DNELs when the identified risk management measures are



adopted. Environmental exposures are not expected to exceed the PNECs when the identified risk management measures are adopted.

<b>1. Title</b>	
Free short title	Industrial Use in Closed Systems
Identified uses	PROC 01, SU 03; PROC 01, SU 03, SU 22;
Processes, tasks and activities covered	Mixing and filling processes, by machines and application tools. Transfer of substances/mixtures into large containers e.g. vessels, drums or reservoirs. Use as heat and pressure transfer fluids.
<b>2. Operational conditions and risk management measures</b>	
Operating Conditions	Physical state: Liquid. General operating conditions: Closed process; Duration of exposure per day at workplace [for one worker]: 8 hours/day; Fraction of applied product lost from process/use to waste: 980,030 kg; Fraction of applied product lost from process/use to waste gas: 0.0001 ; Fraction of applied product lost from process/use to waste water: 0 ; Frequency of exposure at workplace [for one worker]: 220 days/year; Indoor use without Local Exhaust Ventilation; Intermittent release; Large factory building (> 500 m <sup>3</sup> );
Risk management measures	Under the operational conditions described above the following risk management measures apply: General risk management measures: Human health: None needed; Environmental: None needed;
Waste management measures	Do not release to waterways or sewers; Incinerate in a permitted hazardous waste incinerator;
<b>3. Prediction of exposure</b>	
Prediction of exposure	Human exposures are not expected to exceed the DNELs when the identified risk management measures are adopted. Environmental exposures are not expected to exceed the PNECs when the identified risk management measures are adopted.

<b>1. Title</b>	
Free Short Title	Professional Use in Closed Systems





Processes, tasks and activities covered	Draining material from closed systems.
2. Operational conditions and risk management measures	
Operating Conditions	Physical state: Liquid General operating conditions: Closed process; Duration of exposure per day at workplace [for one worker]: 8 hours/day; Frequency of exposure at workplace [for one worker]: 220 days/year; Intermittent release; Outdoor use;
Risk management measures	Under the operational conditions described above the following risk management measures apply: General risk management measures: Human health: None needed; Environmental: None needed;
Waste management measures	Do not release to waterways or sewers; Incinerate in a permitted hazardous waste incinerator;
3. Prediction of exposure	
Prediction of exposure	Human exposures are not expected to exceed the DNELs when the identified risk management measures are adopted. Environmental exposures are not expected to exceed the PNECs when the identified risk management measures are adopted.

DISCLAIMER: The information on this Safety Data Sheet is based on our experience and is correct to the best of our Knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.