

**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****Product identifier**

Product name Fire suppression clean agent FFT 1230 (FK-5-1-12)  
Chemical name 1,1,1,2,2,4,5,5,5- Nonafluoro-4-(Trifluoromethyl)-3-Pentanone  
CAS No 756-13-8  
REACH registration number 01-2120426966-44-XXXX

**Other means of identification**

Synonym Dodecafluoro-2-methyl-3-pentanone/Perfluoro(2-methyl-3-pentanone)

**Recommended use of the chemical and restrictions on use**

Recommended use Extinguishing agents, cleaning agents, solvents, heat transfer/cooling  
Uses advised against liquid No information available

**Details of the supplier of the safety data sheet**

Supplier Fire Fluid Technologies MHX Ltd  
Address Wuzhong, Suzhou, Jiangsu  
Postal code 215159  
Phone 0512-68560159  
E-mail rory@firefluids.com

**Emergency telephone number**

0512-68560159

**2. HAZARDS IDENTIFICATION**

**This SDS covers the product listed above as sold in pressurized and non-pressurized containers. GHS classifications are listed below for both forms.**

**GHS Classification - Pressurized****Classification of the substance or mixture**

Hazardous to the aquatic environment, long-term (chronic) Category 3  
Gas under pressure - Compressed gas

**Label elements**

Hazard Symbols

**Signal word**

Warning

**Hazard statements**

H412 - Harmful to aquatic life with long lasting effects  
Contents under pressure; may explode if heated.

**Precautionary statements**

P273 - Avoid release to the environment  
P501 - Dispose of contents/container in accordance with local regulation.

**Other hazards**

No information available

**GHS Classification - Unpressurized****Classification of the substance or mixture**

Hazardous to the aquatic environment, long-term (chronic) Category 3

**Label elements**

Hazard Symbols

None

**Signal word**

None

**Hazard statements**

H412 - Harmful to aquatic life with long lasting effects

**Precautionary statements**

P273 - Avoid release to the environment

P501 - Dispose of contents/container in accordance with local regulation.

**Other hazards**

No information available

**3. COMPOSITION/INFORMATION ON INGREDIENTS****Description Substance**

Chemical name	CAS No	Weight-%
1,1,1,2,2,4,5,5,5- Nonafluoro-4-(Trifluoromethyl)-3- Pentanone	756-13-8	>=99.90

**Note: Pressurized product uses nitrogen as the expellant.****4. FIRST AID MEASURES****Description of first aid measures**

General advice	Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapors/spray. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Administer oxygen if breathing is difficult Get medical advice/attention if you feel unwell.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation persists, call a physician.
Eye contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Ingestion	Not an expected route of exposure. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label. Never give anything by mouth to an unconscious person.

**Most important symptoms and effects, both acute and delayed**

No information available.

**Indication of any immediate medical attention and special treatment needed** Treat symptomatically.

## 5. FIRE-FIGHTING MEASURES

### Extinguishing media

Suitable extinguishing media The substance can be used as extinguishing agent. Wear suitable respiratory equipment to protect from harmful gases caused by thermal decomposition.  
Unsuitable extinguishing media No information available.

### Specific hazards arising from the chemical

Thermal decomposition can lead to release of irritating and toxic gases and vapors, such as carbon monoxide, carbon dioxide, hydrogen fluoride.

### Protective equipment and precautions for firefighters

Evacuate personnel to safe areas. Move containers from fire area if you can do it without risk. Cool drums with water spray. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Stay upwind. Ensure adequate ventilation, especially in confined areas.

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Remove all sources of ignition. Ensure adequate ventilation, especially in confined areas. Avoid contact with eyes and skin. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product Wash thoroughly after handling.

### Environmental precautions

Local authorities should be advised if significant spillages cannot be contained. Prevent entry into waterways, sewers, basements or confined areas.

### Methods and material for containment and cleaning up

Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid release to the environment

## 7. HANDLING AND STORAGE

### Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Do not handle until all safety precautions have been read and understood. Keep away from heat, sparks, flame and other sources of ignition. Ensure adequate ventilation, especially in confined areas. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product Wash thoroughly after handling.

### Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition. Keep locked up and out of reach of children. Keep away from food, drink and animal feeding stuffs. Store in accordance with local regulations.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

### Exposure limits

No data applicable

### Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas. Showers. Eyewash stations. Remove all sources of ignition.

### Individual protection measures, such as personal protective equipment

Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment
Hand protection	Wear protective gloves.
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin and body protection	Wear suitable protective clothing

## 9. PHYSICAL AND CHEMICAL PROPERTIES



**Information on basic physical and chemical properties**

<b>Appearance</b>	Liquid
<b>Color</b>	Colorless
<b>Odor</b>	Faint odor
<b>Odor threshold</b>	Not determined
<b>PH</b>	Not determined
<b>Melting point/freezing point</b>	-108.0 °C
<b>Boiling point / boiling range</b>	49.2 °C
<b>Flammability (solid, gas)</b>	Not flammable
<b>Flammability limit in air</b>	Not determined
<b>Flash point</b>	Not determined
<b>Autoignition temperature</b>	Not determined
<b>Decomposition temperature</b>	Not determined
<b>Kinematic viscosity</b>	Not determined
<b>Dynamic viscosity</b>	Not determined
<b>Solubility(ies)</b>	Practically insoluble in water
<b>Partition coefficient (LogPow)</b>	Not determined
<b>Vapor pressure</b>	0.3260 bar (20 °C)
<b>Density</b>	1.60 g/mL
<b>Relative density</b>	Not determined
<b>Vapor density</b>	11.6
<b>Evaporation rate</b>	Not determined
<b>Explosive properties</b>	Not an explosive
<b>Oxidizing properties</b>	Not determined

**Other information**

No information available

**10. STABILITY AND REACTIVITY**

**Reactivity**

No information available.

**Chemical stability**

Stable under recommended storage conditions.

**Possibility of hazardous reactions**

Hazardous polymerization does not occur.

**Conditions to avoid**

No information available.

**Incompatible materials**

None known based on information supplied.

**Hazardous decomposition products**

Carbon monoxide, carbon dioxide, hydrogen fluoride.

**11. TOXICOLOGICAL INFORMATION**

**Acute toxicity**

Chemical name	Route	Species	Value
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone	Oral	Rat	LD50 > 2000 mg/kg
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	Rat(4 hours)	LC50 > 5000 mg/m <sup>3</sup>
--------------------------------------------------------------	------------	--------------	-------------------------------

### Skin corrosion/irritation

Chemical name	Species	Value
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone	Rabbit	Non-irritating to the skin.

### Serious eye damage/eye irritation

Chemical name	Species	Value
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone	Rabbit	No eye irritation

### Sensitization

Chemical name	Species	Value
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone	guinea pig	No sensitization responses were observed.

### Germ cell mutagenicity (Mammalian Chromosome Aberration Test & Mammalian Cell Gene Mutation Test)

Chemical name	Route	Value (to somatic cell)
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone	In Vitro	Not mutagenic

### Carcinogenicity

No information available.

### Reproductive toxicity

No information available.

### STOT - single exposure

No information available.

### STOT ■ repeated exposure (28-Day (Subacute) Inhalation Toxicity Study)

Chemical name	Route	Target organ	Species	Test result	Exposure duration
1,1,1,2,2,4,5,5,5-Nonafluoro-4-(trifluoromethyl)-3-pentanone	Inhalation	liver   kidney and/or bladder   heart   endocrine system   hematopoietic system   muscles   nervous system   respiratory system   vascular system	Rat	NOAEL 3000000 mg/m <sup>3</sup> (6h/d, 5d/w)	28days

### Aspiration hazard

No information available.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

Chemical name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50

3-Pentanone, 1,1,1,2,2,4,5,5,5-nonafluoro-4-(trifluoromethyl)- (CAS #: 756-13-8)	10.6 mg/L 96h Pseudokirch neriella subcapitata	> 1 070 mg/L 96h Pimephales promelas	> 1 080 mg/L 48h Daphnia magna
-------------------------------------------------------------------------------------	------------------------------------------------------	--------------------------------------------	-----------------------------------

**Persistence and degradability** Not readily biodegradable.

**Bioaccumulation**  
BCF = 1.2-4.8

**Mobility**  
No information available.

**Other adverse effects**  
No information available.

### 13. DISPOSAL CONSIDERATIONS

#### Waste treatment methods

Waste from residues/ unused products	Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated packaging	Disposal should be in accordance with applicable regional, national and local laws and regulations.
EU waste code (product as sold)	07 01 03* Organic halogenated solvents, washing liquids and other mother liquors 14 06 02* Other halogenated solvents and solvent mixtures

### 14. TRANSPORT INFORMATION

Safety Data Sheet information is intended to address a specific material and not various forms or states of containment.

#### Pressurized Containers

**DOT CFR 172.101** Data Fire extinguishers, 2.2, UN1044

**UN Proper Shipping Name** Fire extinguishers

**UN Class** (2.2)

**UN Number** UN1044

**UN Packaging Group** Not applicable

**Classification for AIR** Consult current IATA Regulations prior to shipping by air.

#### **Transportation (IATA)**

**Classification for Water** Consult current IMDG Regulations prior to shipping by water.

#### **Transport IMDG**

#### Non-pressurized Containers

**DOT CFR 172.101 Data** Not Regulated

**UN Proper Shipping Name** Not Regulated

**UN Class** None.

**UN Number** None.

**UN Packaging Group** None.

**Classification for AIR** Consult current IATA Regulations prior to shipping by air.

**Transportation (IATA)**

**Classification for Water** Consult current IMDG Regulations prior to shipping by water.

**Transport IMDG**

This section is believed to be accurate at the time of preparation. It is not intended to be a complete statement or summary of the applicable laws, rules, or hazardous material regulations, and is subject to change. Users have the responsibility to confirm compliance with all laws, rules, and hazardous material regulations in effect at the time of shipping.

## 15. REGULATORY INFORMATION

### International inventories

Component	AICS	DSUNDSL	EINECS/ ELINCS	ENCS	IECSC	KECL	PICCS	TSCA
3-Pentanone, 1,1,1,2,2,4,5,5,5-nonafluoro-4- (trifluoromethyl)- 756-13-8 (>=99)	X	X	X	X	X	X		X

Not Listed "X" Listed

## 16. OTHER INFORMATION

### Key or legend to abbreviations and acronyms used in the safety data sheet

**TWA** - TWA (Time Weighted Average)

**STEL** - STEL (Short Term Exposure Limit)

**Ceiling** - Maximum limit value

**TSCA** - Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List

**IECSC** - Chinese Inventory of Existing Chemical Substances

**EINECS/ELINCS** - European Inventory of Existing Commercial chemical Substances/European List of Notified Chemical Substances

**ENCS** - Japanese Existing and New Chemical Substances

**KECL** - Korea Existing Chemicals List

**NZIoC** - New Zealand Inventory of Chemicals

**PICCS** - The Philippine Inventory of Chemicals and Chemical Substances

**AICS** - The Australian Inventory of Chemical Substances

### Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and



**fire fluid**  
TECHNOLOGIES

Safety Data Sheet: FFT-1230™  
According to UN GHS, Annex 4 - Guidance on the Preparation of SDS

is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

---

End of Safety Data Sheet