

SAFETY DATA SHEET



FE-13 Fire Extinguishing Agent

Version	Revision Date:	SDS Number:	Date of last issue: 28.02.2017
6.0	27.11.2017	1325592-00031	Date of first issue: 27.02.2017

SECTION 1: Identification of the hazardous chemical and of the supplier

Product identifier

Product name	:	FE-13 Fire Extinguishing Agent
Chemical name	:	Trifluoromethane
CAS-No.	:	75-46-7
Product code	:	
SDS-Identcode	:	130000000355

Recommended use of the chemical and restrictions on use

Recommended use	:	Firefighting agent
Restrictions on use	:	For professional and industrial installation and use only.

Manufacturer or supplier's details


Company	:	The Chemours Malaysia Sdn. Bhd.
Address	:	Suite 20-01 & 20-02B, Level 20, The Pinnacle, Persiaran Lagoon, Bandar Sunway, Subang Jaya Selangor Darul Ehsan 47500 Malaysia
Telephone	:	+60 3 5624 4300
Emergency telephone number	:	1800-82-0055
Telefax	:	+60 3 2178 4719

SECTION 2: Hazards identification

Classification of the hazardous chemical

Gases under pressure	:	Liquefied gas
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Label elements

Hazard pictograms	:	
Signal word	:	Warning

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Hazard statements : H280 Contains gas under pressure; may explode if heated.

Precautionary statements : **Storage:**
P410 + P403 Protect from sunlight. Store in a well-ventilated place.

Other hazards which do not result in classification

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing.

Misuse or intentional inhalation abuse may cause death without warning symptoms, due to cardiac effects.

Rapid evaporation of the product may cause frostbite.

May displace oxygen and cause rapid suffocation.

SECTION 3: Composition and information of the ingredients of the hazardous chemical

Substance / Mixture : Substance

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Trifluoromethane*	75-46-7	>= 60 -<= 100

* Voluntarily-disclosed non-hazardous substance

SECTION 4: First aid measures

General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.

If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.

In case of skin contact : Thaw frosted parts with lukewarm water. Do not rub affected area.
Get medical attention immediately.

In case of eye contact : Get medical attention immediately.

If swallowed : Ingestion is not considered a potential route of exposure.

Most important symptoms and effects, both acute and delayed : Inhalation of high concentration may cause
Cardiac sensitisation
Anaesthetic effects
Light-headedness
Dizziness
confusion
Lack of coordination
Drowsiness
Unconsciousness

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	Contact with liquid or refrigerated gas can cause cold burns and frostbite.
Protection of first-aiders	: No special precautions are necessary for first aid responders.
Notes to physician	: Treat symptomatically and supportively.

SECTION 5: Firefighting measures**Extinguishing media**

Suitable extinguishing media	: Not applicable Will not burn
Unsuitable extinguishing media	: Not applicable Will not burn

Physicochemical hazards arising from the chemical

Specific hazards during fire-fighting	: Exposure to combustion products may be a hazard to health. If the temperature rises there is danger of the vessels bursting due to the high vapor pressure.
Hazardous combustion products	: No hazardous combustion products are known

Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters	: Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.
Specific extinguishing methods	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Fight fire remotely due to the risk of explosion. Use water spray to cool unopened containers. Remove undamaged containers from fire area if it is safe to do so. Evacuate area.
Hazchem Code	: 2T

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures	: Evacuate personnel to safe areas. Avoid skin contact with leaking liquid (danger of frostbite). Ventilate the area. Follow safe handling advice and personal protective equipment recommendations.
Environmental precautions	: Prevent further leakage or spillage if safe to do so. Retain and dispose of contaminated wash water.

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Methods and materials for containment and cleaning up : Ventilate the area.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

SECTION 7: Handling and storage**Handling****Precautions for safe handling**

Technical measures : Use equipment rated for cylinder pressure. Use a backflow preventative device in piping. Close valve after each use and when empty.

Local/Total ventilation : Use only with adequate ventilation.

Advice on safe handling : Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment
Wear cold insulating gloves/ face shield/ eye protection.
Prevent backflow into the gas tank.
Open the valves slowly to prevent pressure surges.
Close valve after each use and when empty. Do NOT change or force fit connections.
Prevent the intrusion of water into the gas tank.
Keep away from heat and sources of ignition.
Take precautionary measures against static discharges.
Take care to prevent spills, waste and minimize release to the environment.

Avoid breathing gas.
Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point.
Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.
Use a pressure reducing regulator when connecting cylinder to lower pressure (<3000 psig) piping or systems.
Never attempt to lift cylinder by its cap.
Do not drag, slide or roll cylinders.
Use a suitable hand truck for cylinder movement.

Storage**Conditions for safe storage, including any incompatibilities**

Conditions for safe storage : Cylinders should be stored upright and firmly secured to prevent falling or being knocked over.
Separate full containers from empty containers.
Do not store near combustible materials.

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		Avoid area where salt or other corrosive materials are present. Keep in properly labelled containers. Keep in a cool, well-ventilated place. Keep away from direct sunlight. Store in accordance with the particular national regulations.
Materials to avoid	:	Do not store with the following product types: Explosives
Recommended storage temperature	:	< 52 °C
Storage period	:	> 10 yr
Further information on storage stability	:	The product has an indefinite shelf life when stored properly.

SECTION 8: Exposure controls and personal protection**Control parameters**

|| Contains no substances with occupational exposure limit values.

Appropriate engineering controls	:	Ensure adequate ventilation, especially in confined areas. Minimize workplace exposure concentrations.
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Individual protection measures, such as personal protective equipment

Eye/face protection	:	Wear the following personal protective equipment: Chemical resistant goggles must be worn. Face-shield
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Skin protection	:	Skin should be washed after contact.
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Hand protection	:	
Material	:	Heat resistant gloves

Remarks	:	Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday. Breakthrough time is not determined for the product. Change gloves often!
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Respiratory protection	:	Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.
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Filter type	:	Organic gas and low boiling vapour type
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Hygiene measures : Ensure that eye flushing systems and safety showers are located close to the working place.
When using do not eat, drink or smoke.
Wash contaminated clothing before re-use.

SECTION 9: Physical and chemical properties

Appearance : Liquefied gas

Colour : colourless

Odour : slight, ether-like

Odour Threshold : No data available

pH : No data available

Melting point/freezing point : -155.1 °C

Initial boiling point and boiling range : -82.03 °C
(1,013 hPa)

Flash point : Not applicable

Evaporation rate : Not applicable

Flammability (solid, gas) : Will not burn

Upper explosion limit / Upper flammability limit : Upper flammability limit
Method: ASTM E681
None.

Lower explosion limit / Lower flammability limit : Lower flammability limit
Method: ASTM E681
None.

Vapour pressure : 47,054 hPa (25 °C)

Relative vapour density : 2.4
(Air = 1.0)

Density : 0.380 g/cm³ (25 °C)
(as liquid)

Solubility(ies)
Water solubility : 1.0 g/l (25 °C)

Partition coefficient: n-octanol/water : log Pow: 0.84 (25 °C)

Auto-ignition temperature : No data available

Decomposition temperature : No data available

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Viscosity	
Viscosity, kinematic	: Not applicable
Explosive properties	: Not explosive
Oxidizing properties	: The substance or mixture is not classified as oxidizing.
Particle size	: Not applicable

SECTION 10: Stability and reactivity

Reactivity	: Not classified as a reactivity hazard.
Chemical stability	: Stable if used as directed. Follow precautionary advice and avoid incompatible materials and conditions.
Possibility of hazardous reactions	: Can react with strong oxidizing agents.
Conditions to avoid	: Heat, flames and sparks.
Incompatible materials	: Oxidizing agents
Hazardous decomposition products	: No hazardous decomposition products are known.

SECTION 11: Toxicological information

Information on likely routes of exposure	: Inhalation Skin contact Eye contact
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Acute toxicity

|| Not classified based on available information.

Components:

Trifluoromethane:	
Acute inhalation toxicity	: LC50 (Rat): > 663000 ppm Exposure time: 4 h Test atmosphere: gas
	Lowest observed adverse effect concentration (Dog): > 500000 ppm Test atmosphere: gas Symptoms: Cardiac sensitisation
	No observed adverse effect concentration (Dog): 500000 ppm Test atmosphere: gas Symptoms: Cardiac sensitisation
	Cardiac sensitisation threshold limit (Dog): > 172,414 mg/m ³

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Test atmosphere: gas
Symptoms: Cardiac sensitisation

Skin corrosion/irritation

Not classified based on available information.

Serious eye damage/eye irritation

Not classified based on available information.

Respiratory or skin sensitisation**Skin sensitisation**

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Germ cell mutagenicity

Not classified based on available information.

Components:**Trifluoromethane:**

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

Components:**Trifluoromethane:**

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity

STOT - single exposure

Not classified based on available information.

STOT - repeated exposure

Not classified based on available information.

Components:**Trifluoromethane:**

Assessment: No significant health effects observed in animals at concentrations of 250 ppmV/6h/d or less.

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Repeated dose toxicity**Components:****Trifluoromethane:**

Species: Rat
NOAEL: 10000 ppm
LOAEL: >10000 ppm
Application Route: inhalation (gas)
Exposure time: 90 d
Remarks: No significant adverse effects were reported

Aspiration toxicity

|| Not classified based on available information.

SECTION 12: Ecological information**Ecotoxicity****Components:****Trifluoromethane:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 633.26 mg/l
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 323.05 mg/l
aquatic invertebrates Exposure time: 48 h

Toxicity to algae : EC50 (algae): 154.54 mg/l
Exposure time: 96 h

Persistence and degradability**Components:****Trifluoromethane:**

Biodegradability : Result: Not readily biodegradable.

Bioaccumulative potential**Components:****Trifluoromethane:**

Bioaccumulation : Bioconcentration factor (BCF): 3.2

Partition coefficient: n- : log Pow: 0.84
octanol/water

Mobility in soil

No data available

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Other adverse effects**Product:**

Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

SECTION 13: Disposal information**Disposal methods**

Waste from residues : Disposal of waste to be in accordance with the Environmental Quality (Scheduled Wastes) Regulations and other guidelines issuance by DOE and/or local authorities.

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
Empty pressure vessels should be returned to the supplier.
If not otherwise specified: Dispose of as unused product.

SECTION 14: Transport information**International Regulations****UNRTDG**

UN number : UN 1984
 Proper shipping name : TRIFLUOROMETHANE
 Class : 2.2
 Packing group : Not assigned by regulation
 Labels : 2.2

IATA-DGR

UN/ID No. : UN 1984
 Proper shipping name : Trifluoromethane
 Class : 2.2
 Packing group : Not assigned by regulation
 Labels : Non-flammable, non-toxic Gas
 Packing instruction (cargo aircraft) : 200
 Packing instruction (passenger aircraft) : 200

IMDG-Code

UN number : UN 1984
 Proper shipping name : TRIFLUOROMETHANE
 Class : 2.2
 Packing group : Not assigned by regulation
 Labels : 2.2
 EmS Code : F-C, S-V
 Marine pollutant : no

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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

|| Not applicable for product as supplied.

|| Hazchem Code : 2T

SECTION 15: Regulatory information

Safety, health, and environmental regulations specific for the hazardous chemical

|| Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013.
|| Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

SECTION 16: Other information

|| Other information : Chemours™ and the Chemours Logo are trademarks of The Chemours Company.
Before use read Chemours safety information.
For further information contact the local Chemours office or nominated distributors.

Further information

|| Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

Date format : dd.mm.yyyy

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECl - Korea Existing Chemi-

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icals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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 is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

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