Material Safety Datasheet

Chemical gas systems - FSL 1230™ / FSL 5112™

3M™ Novec / FK-5-1-12 pressurized with Nitrogen

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

1.1 Product identifier

Product code: ---
Trade name 3M™ NOVEC™ 1230 Fire Protection Fluid (FK 5-1-12) pressurized with Nitrogen
REACH Registration No Not applicable (mixture)
CAS No.: Not applicable (mixture)
EC No.: Not applicable (mixture)
Index No.: Not applicable (mixture)

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

Identified uses: Fire extinguishing agent

1.3 Details of the supplier of the safety data sheet

Supplier: Firetec Systems Ltd. Unit 6, The Business Center, Molly Millars Lane, Wokingham, RG41 2QZ, UK
E-mail address of competent person: sales@firetec-systems.com

1.4 Emergency telephone number: Tel.: +44 (0) 118 989 7910

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)
Press. Gas (Comp.); H280 Gases under pressure: Compressed gas
Aquatic Chronic 3; H412 Hazardous to the aquatic environment - Chronic Hazard, Category 3

2.2 Label elements

Label elements according to the Regulation (EC) No 1272/2008 (CLP)

Hazard pictograms:

GHS04

Signal word: Warning

Hazard statements:
H280 - Contains gas under pressure; may explode if heated..
H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements:

- Prevention: P273 - Avoid release to the environment.
- Response: --
- Storage: P410 + P403 - Protect from sunlight. Store in a well-ventilated place.

2.3 Other hazards Asphyxiant in high concentrations.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

CAS No.	EC No.	Index No.	REACH Registration No.	% [weight]	Substance name	Classification according to Regulation (EC) No 1278/2008 (CLP).
756-13-8	436-710-6	606-108-00-X	01-0000018239-65-0001	80 - 99	1,1,1,2,2,4,5,5,5-nonafluoro-4-(trifluoromethyl)-3-pentanone	Aquatic Chronic 3; H412)
7727-37-9	231-783-9	--	*1	< 20	Nitrogen	Press. Gas (Comp.): H280

Contains no other components or impurities which will influence the classification of the product.
*1: Listed in Annex IV / V REACH, exempted from registration

Unit 6, The Business Centre
Molly Millars Lane
Wokingham, Berkshire
RG41 2QZ, United Kingdom
+44 (0)118 9897910
sales@firetec-systems.com
www.firetec-systems.com

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation: Provide fresh air. If breathing is irregular or stopped, immediately seek medical assistance, and start first aid actions. Mouth to mouth resuscitation should be avoided. Use alternative methods, preferably with oxygen or compressed air driven apparatus.
Skin contact: Wash with plenty of soap and water.
Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue to rinse.
Ingestion: Ingestion is not considered a potential route of exposure. Rinse mouth. Do not induce vomiting. Get medical advice/attention if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.

4.3 Indication of any immediate medical attention and special treatment needed

Get medical advice/attention if you feel unwel.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: Water spray.
Unsuitable extinguishing media: Do not use water jet to extinguish.

5.2 Special hazards arising from the substance or mixture

Specific hazards: Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products: Hydrogen fluoride (HF).

5.3 Advice for firefighters

Specific methods: In case of fire and/or explosion do not breathe fumes. Cool endangered receptacles with water spray jet from a protected position. Cool the surrounding area with water (from a protected position) to contain the fire.
Special protective equipment for fire Firefighters should use standard protective equipment, including flame fighters: retardant overalls, helmet with face shield, gloves, rubber boots and, in enclosed spaces, SCBA self-contained breathing apparatus.
EN 469 Protective clothing for firefighters.
EN 15090 Footwear for use by firefighters for fire suppression.
EN 659 Protective gloves for firefighters.
EN 443 Helmets for firefighting in buildings and other structures.
EN 137 Self-contained open circuit compressed air breathing apparatus with full face mask.

Unit 6, The Business Centre
Molly Millars Lane
Wokingham, Berkshire
RG41 2QZ, United Kingdom
+44 (0)118 9897910
sales@firetec-systems.com
www.firetec-systems.com

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate air ventilation.
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Avoid entering sewers, basements, excavations, and areas where accumulation may be dangerous.
Monitor the concentration of the released product.
Evacuate area.

6.2 Environmental precautions

Try to stop release.
Retain contaminated washing water and dispose it.

6.3 Methods and material for containment and cleaning up

Ventilate area.
Cover with inorganic adsorbent material.

6.4 Reference to other sections

Information on personal protection and disposal is given in sections 8 and 13..

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Safe use of the product

Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.
Only experienced and properly instructed persons should handle gases under pressure.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Avoid suck back of water, acid and alkalis.
Ensure the complete gas system was (or is regularly) checked for leaks before use.

Safe handling of the gas receptacle

Refer to supplier's container handling instructions.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

7.2 Conditions for safe storage, including any incompatibilities

Keep cylinders below 50°C in a well ventilated place.
Containers should not be stored in conditions likely to encourage corrosion.
Containers should be stored in the vertical position and properly secured to prevent them from falling over.

7.3 Specific end use(s)

See subsections 1.2

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

[1,1,1,2,2,4,5,5,5-nonafluoro-4-(trifluoromethyl)-3- pentanone]

Unit 6, The Business Centre
Molly Millars Lane
Wokingham, Berkshire
RG41 2QZ, United Kingdom
+44 (0)118 9897910
sales@firetec-systems.com
www.firetec-systems.com

DNEL			
Threshold	Exposure	Users	
Hazard unknown	inhalation	Workers	Acute/short term - Systemic Effects
83,4 mg/m³	inhalation	Workers	Long-term - Systemic Effects
No hazard identified	inhalation	Workers	Long-term - Local Effects
11,8 mg/kg	dermal	Workers	Long-term - Systemic Effects

PNEC	
Effects in the environment	Threshold
Freshwater	6.4 - 6.78 µg/L
Intermittent releases (freshwater)	67.8 µg/L
Marine water	640 - 678 ng/L
Intermittent releases (marine water)	--
Sewage treatment plant (STP)	1 mg/L
Sediment (freshwater)	23-2 670 µg / kg di sediment dw
Sediment (marine water)	2.3 - 267 µg/kg sediment dw
Hazard for Air	200 ng/m³

Hazard for Terrestrial Organism 1.3 - 530 µg/kg soil dw
Hazard for Predators Secondary poisoning - No potential for bioaccumulation

8.2 Exposure controls

8.2.1 **Appropriate engineering controls**

Systems under pressure should be regularly checked for leakages.
Provide adequate general and local exhaust ventilation.
Consider work permit system e.g., for maintenance activities.

8.2.2 **Individual protection measures, e.g. personal protective equipment**

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered.
Wear safety glasses with side shields (Standard EN 166 - Personal eye-protection).
Wear working gloves when handling gas containers (Standard EN 388 - Protective gloves against mechanical risk).

8.2.3 **Environmental Exposure Control**

Refer to local legislation for restrictions on atmospheric emissions. See section 13 for waste treatment methods.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance:
Physical state Liquid pressurized
Colour Colorless

Unit 6, The Business Centre
Molly Millars Lane
Wokingham, Berkshire
RG41 2QZ, United Kingdom
+44 (0)118 9897910
sales@firetec-systems.com
www.firetec-systems.com

b) Odour: Odorless
c) Odour threshold: Odour threshold is subjective and inadequate to warn of overexposure
d) pH: Not applicable
e) Melting point / Freezing point: Novec™ 1230: - 108 °C
f) Boiling point: Novec™ 1230: 49 °C @ 101.324,72 pa
g) Flash point: Not applicable for gases and gas mixtures
h) Evaporation rate: Not applicable for gases and gas mixtures
i) Flammability (solid, gas): Non flammable

j) Explosive limits: Not classified

k) Vapour pressure: Novec™ 1230: 40,4 kPa @ 25 °C

l) Vapour density: Nitrogen: 1,1
Novec™ 1230: 11,6
m) Relative density, liquid (water=1): Nitrogen: 0,97
Novec™ 1230: 1,6 @ 20 °C
n) Water solubility: Nitrogen: 20 mg/l
o) Partition coefficient n-octanol/water: Not applicable
p) Auto-ignition temperature: Novec™ 1230: 590 °C @ 101.1 - 102.2 kPa
q) Decomposition temperature: Not applicable
r) Viscosity: Novec™ 1230: 0,6 mPa-s @ 25 °C
s) Explosive properties: Non-explosive
t) Oxidising properties: Not applicable

9.2 Other information

Critical temperature: Nitrogen: -147 °
Oxidizing power coefficient: Not applicable

SECTION 10: Stability and Reactivity

10.1 Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

None.

10.4 Conditions to avoid

Avoid humidity in systems.

10.5 Incompatible materials

Novec™ 1230: alcohols, amines and strong bases.

10.6 Hazardous decomposition products

Hydrofluoric acid - At high temperatures - Extreme heating conditions.

Unit 6, The Business Centre
Molly Millars Lane
Wokingham, Berkshire
RG41 2QZ, United Kingdom
+44 (0)118 9897910
sales@firetec-systems.com
www.firetec-systems.com

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

a) Acute Toxicity: Novec™ 1230 Dermal: LD50 estimated to be 5.000 mg/kg
Ingestion: LD50 estimated to be 5.000 mg/kg
Inhalation Vapour (4 hours): LC50 > 1.227 mg/l
b) Skin corrosion/irritation: Classification criteria are not met for this hazard class.
c) Serious eye damage/irritation: Classification criteria are not met for this hazard class.
d) Respiratory or skin sensitisation: Classification criteria are not met for this hazard class.
e) Germ cell mutagenicity: Classification criteria are not met for this hazard class.
f) Carcinogenicity: Classification criteria are not met for this hazard class.
g) Toxic for reproduction: Classification criteria are not met for this hazard class.
h) STOT-single exposure: Classification criteria are not met for this hazard class.
i) STOT-repeated exposure: Classification criteria are not met for this hazard class.
j) Aspiration hazard: Not applicable.

SECTION 12: Ecological information

12.1 Toxicity

Novec™ 1230
– SHORT–TERM TOXICITY TO FISH: LC50 (4 days) 1.07 g/L
– SHORT–TERM TOXICITY TO AQUATIC INVERTEBRATES: EC50 (48 h) 1.08 g/L
– TOXICITY TO AQUATIC ALGAE AND CYANOBACTERIA: EC50 (4 days) 6.78 - 10.6 mg/L
– TOXICITY TO AQUATIC PLANTS OTHER THAN ALGAE: EC50 (7 days) 17.7 mg/L
– TOXICITY TO MICROORGANISMS: EC50 (3 h) 10 g/L - NOEC (30 min) 100 mg/L

12.2 Persistence and degradability

Novec™ 1230
BIODEGRADATION IN WATER - SCREENING TESTS: Not readily biodegradable

12.3 Bioaccumulative potential

Novec™ 1230
ADSORPTION/DESORPTION: Koc 3 904 L/kg

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6 Other adverse effect

Effect on ozone layer: 0
Effect on the global warming: -
Global warming potential (GWP) -

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Do not discharge into any place where its accumulation could be dangerous.
List of hazardous waste codes:
NITROGEN: 160505: Gases in pressure containers other than those mentioned in 160504*.
Novec™ 1230: 070103* Organic halogenated solvents, washing liquids and mother liquors
140602* Other halogenated solvents and solvent mixtures

Contact the supplier if instructions for use are deemed necessary.

Unit 6, The Business Centre
Molly Millars Lane
Wokingham, Berkshire
RG41 2QZ, United Kingdom
+44 (0)118 9897910
sales@firetec-systems.com
www.firetec-systems.com

3M™ Novec / FK-5-1-12 pressurized with Nitrogen

SEZIONE 14: informazioni sul trasporto

14.1 UN Number	3500
14.2 UN Proper Shipping Name	UN 3500 CHEMICAL UNDER PRESSURE, N.O.S. (contain FK5-1-12 with nitrogen)
14.3 Transport Hazard Class (es)	2.2
14.4 Packing Group	Not applicable
14.5 Environmental hazards	Not applicable
14.6 Special precautions for user	Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting: – Ensure there is adequate ventilation. – Ensure that containers are firmly secured. – Ensure cylinder valve is closed and not leaking. – Ensure valve outlet cap nut or plug (where provided) is correctly fitted. – Ensure valve protection device (where provided) is correctly fitted.

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Seveso directive 2012/18/UE (Seveso III): Not covered.

15.2 Chemical safety assessment
Chemical Safety Assessment has been carried out for Novec™ 1230 by the supplier in accordance with Regulation (EC) No 1907/2006 (REACH) and its subsequent amendments

SECTION 16: Others information

16.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

i) Indication of changes
Safety Data Sheet review according to Regulation EC No 2015/830

ii) Abbreviations and acronyms
ATE = Acute Toxicity Estimate
CAS: Chemical Abstract Service
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008] CSA: Chemical Safety Assessment
EUH statement = CLP-specific Hazard statement RRN = REACH Registration Number
DNEL = Derived No Effect Level
PBT - Persistent, Bioaccumulative and Toxic PNEC = Predicted No Effect Concentration
vPvB - very Persistent and very Bioaccumulative

iii) Key literature references and sources for data
Regulation (EC) No. 1907/2006 [REACH]
Regulation (EC) No. 1272/2008 [CLP] ECHA: European Chemical Agency

Unit 6, The Business Centre
Molly Millars Lane
Wokingham, Berkshire
RG41 2QZ, United Kingdom
+44 (0)118 9897910
sales@firetec-systems.com
www.firetec-systems.com

iv) *In the case of mixtures, an indication of which of the methods of evaluating information referred to in Article 9 of Regulation (EC) No 1272/2008 was used for the purpose of classification*

Classification in accordance with calculation methods

v) *Relevant H tips (number and full text)*

See sub-section 2.2

vi) *advice on any training appropriate*

Make sure operators understand the dangers associated with using the product.

vii) *Other information*

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

Unit 6, The Business Centre
Molly Millars Lane
Wokingham, Berkshire
RG41 2QZ, United Kingdom
+44 (0)118 9897910
sales@firetec-systems.com
www.firetec-systems.com