

Prepared in the format conforming to the Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (OJ of EU no L 203 of 26 June 2020)

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

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

1,1,1,2,2,4,5,5,5-nonafluoro-4-(trifluoromethyl)-3-pentanone
Index No.: 606-108-00-X

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

Identified uses: Extinguishing agent.

Uses advised against: Not identified.

1.3 Details of the supplier of the safety data sheet:

Supplier:

ENTALPIA EUROPE Sp. z o.o.

P.O.W 64a Str.

98-200 Sieradz, Poland

Tel.: + 48 630 71 30

E- mail address: info@entalpiaeuropa.eu

1.4 Emergency telephone number

+48 12 411 99 99 (Poland, Toxicological Information Center UJ CM)

Date of compilation: 2021.03.17

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 with later amendments:

Hazardous to the aquatic environment — Chronic Hazard, Category 3 (Aquatic Chronic 3)

Harmful to aquatic life with long lasting effects. (H412)

Harmful effects on human health:

In case of high concentrations of vapours or direct contact with eyes may cause irritation, redness, lacrimation, burning, pain. Contamination of the skin may cause redness and itching. Inhalation of vapours may irritate the respiratory system, mucous membranes of the nose and mouth, and cause cough. After ingestion, irritation of the gastrointestinal mucosa, vomiting and diarrhea may occur.

Environmental effects:

Harmful to aquatic life with long lasting effects.

Adverse effects associated with physico-chemical properties:

Not identified.

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2.2 Label elements

Pictograms: Not required.

Signal Word: Not required.

Hazard Statements:

H412 - Harmful to aquatic life with long lasting effects.

Precautionary Statements:

P273 - Avoid release to the environment.

P501 - Dispose of contents/container to a designated waste recipient.

2.3 Other hazards

The substance meets neither PBT nor vPvB criteria. The substance does not disrupt the functioning of the endocrine system.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Name	Index No	CAS No	EC No	% mass fraction
1,1,1,2,2,4,5,5,5-nonafluoro-4-(trifluoromethyl)-3-pentanone	606-108-00-X	756-13-8	436-710-6	≤ 99

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: Remove casualty from exposure site to fresh air, place in reclining or sitting position, keep at rest and protect against heat loss. If necessary, consult a physician.

Skin contact: Immediately flush skin with water, then wash with plenty of soap and water. Take off contaminated clothing. If necessary, call a doctor.

Eye contact: Rinse immediately with plenty of lukewarm, running water for at least 15 min. Remove contact lenses. To avoid cornea damage, don't use jet stream. If irritation persists, seek ophthalmologist's advice.

Ingestion: If swallowed, don't provoke vomiting. Rinse mouth with water, give the casualty plenty of water to drink (unless unconscious). Provide medical attention immediately.

4.2 Most important symptoms and effects, both acute and delayed

In case of high concentrations of vapours or direct contact with eyes may cause irritation, redness, lacrimation, burning, pain. Contamination of the skin may cause redness and itching. Inhalation of vapours may irritate the respiratory system, mucous membranes of the nose and mouth, and cause cough. After ingestion, irritation of the gastrointestinal mucosa, vomiting and diarrhea may occur.

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- 4.3 Indication of any immediate medical attention and special treatment needed
No special recommendations. Apply symptomatic treatment.

SECTION 5: FIREFIGHTING MEASURES

- 5.1 Extinguishing media
Suitable extinguishing media:
The substance is an extinguishing agent. Fire in the surroundings should be extinguished with agents suitable for burning media.
Unsuitable extinguishing media:
Do not use a solid water jet.
- 5.2 Special hazards arising from the substance or mixture
During fire, due to the thermal decomposition carbon oxides, hydrogen fluoride, perfluoroisobutylene may form.
- 5.3 Advice for firefighters
Wear gas-tight protective suit and breathing apparatus independent of ambient air.

SECTION 6: ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures
Provide appropriate ventilation. Do not breathe vapours. Wear protective clothing made of natural fabrics (cotton) or synthetic fibres, safety gloves made of butyl (thickness 0.4 ± 0.05 mm, breakthrough time ≥ 480 min) and safety goggles. Remove from the affected area unprotected persons who do not participate in removal of the failure.
- 6.2 Environmental precautions
Protect from releasing to sewage system, surface and ground water, soil.
- 6.3 Methods and materials for containment and cleaning up
Secure sewage sinks. Damaged packaging place in the replacement packaging. Small amounts absorb into chemically inert binding material (sand, diatomaceous earth), transfer to tight containers and pass to disposal. Wash contaminated surface with plenty of water.
- 6.4 Reference to other sections
Remove according to the recommendations listed in section 13.

SECTION 7: HANDLING AND STORAGE

- 7.1 Precautions for safe handling
It is recommended to take special precautions during work with the substance in order to avoid contact with eyes and skin. Do not breathe vapours. Do not eat, drink or smoke while handling. Wash hands during intervals and after finishing work. Take off contaminated clothing and wash it before reusing.
- 7.2 Conditions for safe storage, including any incompatibilities
Store in original, properly labelled, tightly closed containers; in a dry, properly ventilated storage premise. Protect from sunlight.
- 7.3 Specific end use(s)
No information about the applications other than those mentioned in subsection 1.2.

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Controls parameters
No EU exposure limits.

8.2 Exposure controls

8.2.1 *Appropriate engineering controls*

Provide local and general ventilation at workplace.

8.2.2 *Individual protective measures such as personal protective equipment*

Respiratory protection	Not necessary under normal conditions. In the case of high concentration of vapours, use respiratory protection with a particle filter marked white and the symbol P2.
Skin and hands protection	Wear protective clothing made of natural fabrics (cotton), safety gloves made of butyl (thickness 0.4 ± 0.05 mm, breakthrough time ≥ 480 min).
Eyes protection	Under industrial conditions wear safety goggles protecting against drops of liquid.
Occupational hygiene	General industrial hygiene rules apply. Don't allow exceeding occupational exposure levels. After finishing work remove contaminated clothes. Wash hands and face before work breaks. Wash entire body after finishing work. Do not drink, eat and smoke during work.

8.2.3 *Environmental exposure controls*

Prevent from draining to a municipal sewage system and watercourses.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Liquid.
Colour	Colourless.
Odour	Not determined.
Melting point/freezing point	-108 °C
Boiling point or initial boiling point and boiling range	49,2 °C
Flammability	Non-combustible substance.
Lower and upper explosion limit	No data available.
Flash point	The substance does not ignite up to 49 °C, at which it starts to boil.
Auto-ignition temperature	590 °C.
Decomposition temperature	No data available.
pH	No data available.
Kinematic viscosity	0.3922 mm ² /s at 24.93°C.
Solubility	No data available.
Partition coefficient n-octanol/water (log value)	No data available.
Vapour pressure	31 kPa (20 °C)
Density and/or relative density	1.6 (water = 1)
Relative vapour density	No data available.

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Particle characteristics	Not applicable.
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9.2 Other information

9.2.1. Information with regard to physical hazard classes

Explosives	Not applicable.
Flammable gases	Not applicable.
Aerosols	Not applicable.
Oxidising gases	Not applicable.
Gases under pressure	Not applicable.
Flammable liquids	Not applicable.
Flammable solids	Not applicable.
Self-reactive substances and mixtures	Not applicable.
Pyrophoric liquids	Not applicable.
Pyrophoric solids	Not applicable.
Self-heating substances and mixtures	Not applicable.
Substances and mixtures, which emit flammable gases in contact with water	Not applicable.
Oxidising liquids	Not applicable.
Oxidizing solids	Not applicable.
Organic peroxides	Not applicable.
Corrosive to metals	Not applicable.
Desensitised explosives	Not applicable.

9.2.2. Other safety characteristics

mechanical sensitivity	No data.
self-accelerating polymerisation temperature	No data.
formation of explosible dust/air mixtures	Not applicable.
acid/alkaline reserve	No data.
evaporation rate	No data.
miscibility	No data.
conductivity	No data.
corrosiveness	No data.
gas group	Not applicable.
redox potential	No data.
radical formation potential	No data.
photocatalytic properties	No data.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

No reactivity if stored and used as intended.

10.2 Chemical stability

Stable in standard conditions of storage and use.

10.3 Possibility of hazardous reactions

Not recognized.

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- 10.4 Conditions to avoid
Direct sunlight (UV radiation).
- 10.5 Incompatible materials
Strong bases, amines, alcohols.
- 10.6 Hazardous decomposition products
Not known.

SECTION 11: TOXICOLOGICAL INFORMATION

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

Acute toxicity	Based on available data, the classification criteria are not met.
Skin corrosion/irritation	Based on available data, the classification criteria are not met.
Serious eye damage/irritation	Based on available data, the classification criteria are not met.
Respiratory or skin sensitisation	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity:	Based on available data, the classification criteria are not met.
STOT-single exposure	Based on available data, the classification criteria are not met.
STOT-repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.

11.2 Information on other hazards

11.2.1. Endocrine disrupting properties

No information about endocrine disrupting properties.

11.2.2. Other information

No data.

SECTION 12: ECOLOGICAL INFORMATION

- 12.1 Toxicity
Harmful to aquatic life with long lasting effects.

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- 12.2 Persistence and degradability
No data available.
- 12.3 Bioaccumulative potential
Bioaccumulation is not expected.
Partition coefficient octanol/water (K_{ow}): No data available.
Bioconcentration factor (BCF): No data available.
- 12.4 Mobility in soil
No data available.
- 12.5 Results of PBT and vPvB assessment
The substance meets neither PBT nor vPvB criteria.
- 12.6 Endocrine disrupting properties
No data available.
- 12.7 Other adverse effects
No data.

SECTION 13: DISPOSAL CONSIDERATIONS

- 13.1 Waste treatment methods
Do not dispose together with municipal waste. Do not enter into the sewers. Do not allow contamination of groundwater and surface water.
Used packaging (after emptying it thoroughly) should be recycled.
- Special precautions:
None.

SECTION 14: TRANSPORT INFORMATION

- ADR/RID, IMDG, IATA
- 14.1 UN number or ID number
Not applicable.
- 14.2 UN proper shipping name
Not applicable.
- 14.3 Transport hazard class(es)
Not applicable.
- 14.4 Packing group
Not applicable.
- 14.5 Environmental hazards
The product is not hazardous to the environment according to the UN Model Regulations.
- 14.6 Special precautions for user
Not applicable.
- 14.7 Maritime transport in bulk according to IMO instruments
Not applicable.

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SECTION 15: REGULATORY INFORMATION

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC (OJ EU L396 of December 30 2006 with later amendments);
REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ EU L353 of December, 31 2008, with later amendments ATP 1-15).
- 15.2 Chemical safety assessment
Supplier has not assessed the chemical safety of the substance.

SECTION 16: OTHER INFORMATION

This Safety Data Sheet was developed in the **Lukasiewicz – Industrial Chemistry Institute in Warsaw**.

The information contained in this safety data sheet describes the product exclusively from the safety requirements perspective. The user is responsible for setting up the conditions for safe use of the product and bears a sole responsibility for the consequences of its incorrect use.

Abbreviations:

vPvB	very Persistent, very Bioaccumulative substance.
PBT	Persistent, Bioaccumulative and Toxic substance.
LC ₅₀	Lethal concentration, median concentration where 50 % of test subjects dies.
EC ₅₀	The effective concentration of substance that causes 50% of the maximum response.
DNEL	Derived No-Effect Level.
PNEC	Predicted No Effect Concentration.
OECD	Organization for Economic Co-operation and Development.
NOEL	No observed Effect Level.
BCF	Bioconcentration factor.
ADR	Agreement on Dangerous Goods by Road.
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail.
IMDG	International Maritime Dangerous Goods Code.
IATA	International Air Transport Association.
CAS number	number assigned to a chemical substance in <i>Chemical Abstracts Service</i> Registry.
EC number	seven-digit number, an identifier of substances commercially available within the European Union listed in EC Inventory (EINECS – <i>European Inventory of Existing Chemical Substances</i> , ELINCS - <i>European List of Notified Chemical Substances</i> or „ <i>No-longer polymers</i> “ list).
UN number	United Nations number - the four-digit identification number of the UN Dangerous Goods list, derived from the UN Model Regulations, to which the individual material, mixture or article is classified.

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