1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier
- Product name: 1-(Perfluorobutyl)pentane
- Catalog number: FC12-T4Pentane
- Brand: Fluoryx Labs
- CAS number: 1190430-21-7

Relevant Identified Uses of the Substance or Mixture and Uses Advised Against
- Identified uses: Laboratory chemicals. Synthesis of substances.

Details of the Supplier of the Safety Data Sheet
- Company: Fluoryx Labs
  - 3650 Research Way, #22
  - Carson City, NV 89706
  - USA
  - +1 (510) 329-9149 (Telephone)
  - +1 (510) 686-8799 (Fax)
  - www.fluoryx.com

Emergency Call (ChemTel)
- +01-813-248-0585 (International)
- +1-800-255-3924 (USA)

2. HAZARDS INFORMATION

Classification of the substance or mixture
- GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
  - Acute toxicity (category 4), H302+312+332
  - Eye irritant (category 2), H319
  - Skin irritant (category 2), H315
  - Specific target organ toxicity – single exposure (Category 3), respiratory system, H335

GHS Label elements, including precautionary statements
- Pictogram: Exclamation mark
- Signal word: Warning

Hazard statement(s)
- H302+312+332: Harmful if swallowed, in contact with skin or if inhaled.
- H315: Causes skin irritation.
- H319: Causes serious eye irritation.
- H335: May cause respiratory irritation.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/eye protection/face protection.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P332 + P313 If skin irritation occurs: Get medical advice/attention.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents/container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Synonyms
1,1,1,2,2,3,3,4,4-Nonafluorononane; 1-(Perfluorobut-1-yl)pentane; F4H5; Nonane, 1,1,1,2,2,3,3,4,4-nonafuoro-

Chemical formula:
C9H11F9
CF3CF2CF2CH2CH2CH2CH3

Molecular Weight
290.17 g/mol

CAS Number
1190430-21-7

EC Number
None

Hazardous Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-(Perfluorobutyl)hexane</td>
<td>Ac. Tox. 4; STOT SE 3; Skin Irrit. 2; Eye Irrit. 2A; H302+312+332, H335, H315, H319</td>
<td>≤100%</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

Description of First Aid Measures

General advice Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact Wash off with soap and plenty of water. Consult a physician.

In case of eye contact Rinse cautiously with water for several minutes.
FC12-T4 Pentane SDS

If swallowed

Remove contact lenses, if present and easy to do. Continue rinsing for 15 minutes. Consult a doctor.

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most Important Symptoms and Effects, Both Acute and Delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indications of Any Immediate Medical Attention

No data available.

5. FIREFIGHTING MEASURES

Extinguishing Media

Suitable extinguishing media

"Alcohol" foam, dry chemical, or carbon dioxide. Cool all affected containers with flooding quantities of water.

Special hazards arising from the substance

Emits toxic fumes: carbon oxides and hydrogen fluoride (HF).

Advice for firefighters

Wear self-contained breathing apparatus for firefighting. Wear protective clothing to prevent contact with skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental Precautions

Do not let product enter drains.

Methods for Cleaning Up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Avoid contact with skin and eyes. Avoid formation of mist or respirable particles. Provide appropriate exhaust ventilation at places where mist or vapors are formed. Normal measures for preventive fire protection. Keep away from open flames and heated surfaces above 200 °C (392 °F).

Conditions for Safe Storage

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Specific End Use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Components with Workplace Control Parameters

Contains no substances with occupational exposure limit values.

Engineering Measures

Ensure there is sufficient ventilation of the area.

Personal Protective Equipment

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and
approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Body protection**
Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Control of Environmental Exposure**
Do not let product enter drains.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**
- **Form**: Liquid, clear
- **Color**: Colorless

**Safety Data**
- **pH**: Neutral
- **Melting point/freezing point**: No data available
- **Boiling point**: 115 °C at 760 mm Hg (measured)
- **Flash point**: No data available
- **Ignition temperature**: No data available
- **Auto-ignition temperature**: No data available
- **Lower explosion limit**: No data available
- **Upper explosion limit**: No data available
- **Vapor pressure**: No data available
- **Density**: 1.29 g/mL @ 20 °C (measured)
- **Water solubility**: Negligible
- **Partition coefficient (n-octanol/water)**: No data available
- **Relative vapor density (air = 1)**: > 1
- **Odor**: No data available
- **Odor threshold**: No data available
- **Evaporation rate**: No data available
- **Viscosity**: 1.05 mPa @ 25 °C (literature)
- **Oxidizing properties**: No data available
- **Surface tension**: 17.4 mN/m (literature)

### 10. STABILITY AND REACTIVITY

**Reactivity**
No data available
Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions:
No data available.

Conditions to Avoid
Keep away from open flames and heated surfaces above 200 °C (392 °F).

Incompatible Materials
Avoid strong oxidizing agents and strong bases.

Hazardous Decomposition Products
Decomposition temperature > 200 °C. Hazardous decomposition products formed under fire conditions - carbon oxides and hydrogen fluoride.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
- Oral LD50: No data available
- Inhalation LC50: No data available
- Dermal LD50: No data available
- Other information on acute toxicity: Predicted Acute Toxicity (category 4)

Skin Corrosion/Irritation
Not corrosive. Predicted to be irritating.

Serious Eye Damage/Eye Irritation
No data available

Respiratory or Skin Sensitization
No data available

Germ Cell Mutagenicity
No data available

Carcinogenicity
- IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
- NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive Toxicity
No data available

Specific Target Organ Toxicity (Globally Harmonized System)
- Single exposure: Inhalation – may cause respiratory irritation
- Repeated exposure: No data available

Aspiration Hazard
No data available

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic Effects
No data available

Additional Information
RTECS: Not available.

12. ECOLOGICAL INFORMATION

Toxicity
No data available

Persistence and Degradability
Persistent chemical (predicted).

Bioaccumulative Potential
No data available
Mobility in Soil  No data available
PBT and vPvB Assessment  This substance is not identified as a PBT substance.
Other Adverse Effects  No data available

13. DISPOSAL CONSIDERATIONS

Product  Offer non-recyclable solutions to a licensed disposal company or contact Fluoryx to return unused product.
Contaminated Packaging  Dispose of as unused product.

14. TRANSPORTATION INFORMATION

DOT (US)  Not dangerous goods
IMDG  Not dangerous goods
IATA  Not dangerous goods

15. REGULATORY INFORMATION

TSCA Status  Not on the inventory.
SARA 302 Components  No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components  This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards  Acute health hazard.
Massachusetts Right to Know Components  No components are subject to the Massachusetts Right to Know Act.
Pennsylvania Right to Know Components  No components are subject to the Pennsylvania Right to Know Act.
New Jersey Right to Know Components  No components are subject to the New Jersey Right to Know Act.
California Prop. 65 Components  This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Full Text of H-Statements Referred to Under Sections 2 and 3.

Ac. Tox.  Acute toxicity
STOT SE  Specific target organ toxicity - single exposure.
Skin Irrit.  Skin irritation.
Eye Irrit.  Eye irritation.
H302+312+332  Harmful if swallowed, in contact with skin or if inhaled.
H315  Causes skin irritation.
H319  Causes serious eye irritation.
H335  May causes respiratory irritation.

HMIS Rating

Health hazard  2
Flammability  0
Physical hazards  0
NFPA Rating

<table>
<thead>
<tr>
<th>hazard</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health hazard</td>
<td>3</td>
</tr>
<tr>
<td>Fire</td>
<td>0</td>
</tr>
<tr>
<td>Reactivity hazard</td>
<td>0</td>
</tr>
</tbody>
</table>

Further Information

Not for drug, household, or other uses. The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. Unless noted to the contrary, the technical information applies only to pure product.

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End of SDS