

### SECTION 1: Identification

#### 1.1. Identification

|                               |   |
|-------------------------------|---|
| Product form                  | : Substance   |
| Substance name                | : 1,1-Difluoroethyl 2,2,3,3,3-pentafluoropropyl ether |
| CAS-No.                       | : 1365807-90-4  |
| Product code                  | : 2107-3-2C   |
| Formula                       | : C5H5F7O   |
| Other means of identification | : MFCD22123961  |

#### 1.2. Recommended use and restrictions on use

|                              |  |
|------------------------------|--|
| Use of the substance/mixture | : Laboratory chemicals<br>Manufacture of substances<br>Scientific research and development |
|------------------------------|--|

#### 1.3. Supplier

SynQuest Laboratories, Inc. Inc.  
 P.O. Box 309  
 Alachua, FL, Alachua, 32615  
 United States of America  
 T (386) 462-0788 - F (386) 462-7097  
[info@synquestlabs.com](mailto:info@synquestlabs.com) - [www.synquestlabs.com](http://www.synquestlabs.com)

#### 1.4. Emergency telephone number

|                  |   |
|------------------|---|
| Emergency number | : (844) 523-4086 (3E Company - Account 10069) |
|------------------|---|

### SECTION 2: Hazard(s) identification



#### 2.1. Classification of the substance or mixture

##### GHS US classification

|  |      |                                   |
|--|------|-----------------------------------|
| Flammable liquids Category 3   | H226 | Flammable liquid and vapor        |
| Skin corrosion/irritation Category 2   | H315 | Causes skin irritation            |
| Serious eye damage/eye irritation Category 2A  | H319 | Causes serious eye irritation     |
| Specific target organ toxicity – Single exposure, Category 3, Narcosis                     | H336 | May cause drowsiness or dizziness |
| Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation | H335 | May cause respiratory irritation  |
| Full text of H statements : see section 16   |      |                                   |

#### 2.2. GHS Label elements, including precautionary statements

##### GHS US labeling

|                            |   |   |
|----------------------------|---|---|
| Hazard pictograms (GHS US) | : |   |
| Signal word (GHS US)       | : | Warning   |
| Hazard statements (GHS US) | : | H226 - Flammable liquid and vapor<br>H315 - Causes skin irritation<br>H319 - Causes serious eye irritation  |

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|                                   |   |
|-----------------------------------|---|
| Precautionary statements (GHS US) | : H335 - May cause respiratory irritation<br>H336 - May cause drowsiness or dizziness<br>P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.<br>P233 - Keep container tightly closed.<br>P240 - Ground/Bond container and receiving equipment.<br>P241 - Use explosion-proof electrical/ventilating/lighting equipment<br>P242 - Use only non-sparking tools.<br>P243 - Take precautionary measures against static discharge.<br>P261 - Avoid breathing fumes, mist, spray, vapors.<br>P264 - Wash skin thoroughly after handling<br>P271 - Use only outdoors or in a well-ventilated area.<br>P280 - Wear protective gloves/protective clothing/eye protection/face protection.<br>P302+P352 - If on skin: Wash with plenty of soap and water<br>P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.<br>P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.<br>P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.<br>P312 - Call a POISON CENTER or doctor/physician if you feel unwell<br>P321 - Specific treatment (see supplemental first aid instructions on this label)<br>P332+P313 - If skin irritation occurs: Get medical advice/attention.<br>P337+P313 - If eye irritation persists: Get medical advice/attention.<br>P362+P364 - Take off contaminated clothing and wash it before reuse.<br>P370+P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish<br>P403+P233 - Store in a well-ventilated place. Keep container tightly closed.<br>P403+P235 - Store in a well-ventilated place. Keep cool.<br>P405 - Store locked up.<br>P501 - Dispose of contents/container to an approved waste disposal plant |
|-----------------------------------|---|

### 2.3. Other hazards which do not result in classification

No additional information available

### 2.4. Unknown acute toxicity (GHS US)

No additional information available

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Substance type : Mono-constituent

| Name  | Product identifier    | %     | GHS US classification  |
|---|-----------------------|-------|--|
| 1,1-Difluoroethyl 2,2,3,3,3-pentafluoropropyl ether<br>(Main constituent) | CAS-No.: 1365807-90-4 | ≤ 100 | Flam. Liq. 3, H226<br>Skin Irrit. 2, H315<br>Eye Irrit. 2A, H319<br>STOT SE 3, H336<br>STOT SE 3, H335 |

Full text of hazard classes and H-statements : see section 16

### 3.2. Mixtures

Not applicable

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### SECTION 4: First-aid measures

#### 4.1. Description of first aid measures

|                                       |  |
|---------------------------------------|--|
| First-aid measures general            | : In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Move the affected personnel away from the contaminated area. |
| First-aid measures after inhalation   | : Remove person to fresh air and keep comfortable for breathing. If not breathing, give artificial respiration. Get medical advice/attention.                              |
| First-aid measures after skin contact | : Wash with plenty of soap and water. Get medical advice/attention.  |
| First-aid measures after eye contact  | : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.  |
| First-aid measures after ingestion    | : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get medical advice/attention.                                 |

#### 4.2. Most important symptoms and effects (acute and delayed)

|                                   |  |
|-----------------------------------|--|
| Symptoms/effects                  | : The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11. |
| Symptoms/effects after inhalation | : May cause drowsiness or dizziness.   |

#### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

### SECTION 5: Fire-fighting measures

#### 5.1. Suitable (and unsuitable) extinguishing media

|                              |  |
|------------------------------|--|
| Suitable extinguishing media | : Alcohol resistant foam. Carbon dioxide. Dry powder. Water spray. Use extinguishing media appropriate for surrounding fire. |
|------------------------------|--|

#### 5.2. Specific hazards arising from the chemical

|                  |   |
|------------------|---|
| Fire hazard      | : Thermal decomposition generates: Carbon oxides. Hydrogen fluoride.  |
| Explosion hazard | : Risk of explosion if heated under confinement. Use water spray or fog for cooling exposed containers. May form flammable/explosive vapor-air mixture. |

#### 5.3. Special protective equipment and precautions for fire-fighters

|                                |  |
|--------------------------------|--|
| Firefighting instructions      | : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.  |
| Protection during firefighting | : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus. For further information refer to section 8: "Exposure controls/personal protection". |

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

|                  |   |
|------------------|---|
| General measures | : Evacuate unnecessary personnel. Ensure adequate air ventilation. Do not breathe gas, fumes, vapor or spray. |
|------------------|---|

##### 6.1.1. For non-emergency personnel

|                      |   |
|----------------------|---|
| Emergency procedures | : Only qualified personnel equipped with suitable protective equipment may intervene. |
|----------------------|---|

##### 6.1.2. For emergency responders

|                      |  |
|----------------------|--|
| Protective equipment | : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".  |
| Emergency procedures | : Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level. Consider the risk of potentially explosive atmospheres. Eliminate every possible source of ignition. |

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### 6.2. Environmental precautions

Avoid release to the environment. Notify authorities if product enters sewers or public waters.

### 6.3. Methods and material for containment and cleaning up

- |                         |   |   |
|-------------------------|---|---|
| For containment         | : | Stop leak if safe to do so. Dike for recovery or absorb with appropriate material.  |
| Methods for cleaning up | : | Take up large spills with pump or vacuum and finish with dry chemical absorbent. Use explosion-proof equipment. Take up small spills with dry chemical absorbent. Sweep or shovel spills into appropriate container for disposal. Ventilate area. |
| Other information       | : | For disposal of solid materials or residues refer to section 13 : "Disposal considerations".  |

### 6.4. Reference to other sections

No additional information available

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- |                                   |   |   |
|-----------------------------------|---|---|
| Additional hazards when processed | : | Handle empty containers with care because residual vapors are flammable.  |
| Precautions for safe handling     | : | Do not handle until all safety precautions have been read and understood. Ensure good ventilation of the work station. Do not breathe fumes, mist, spray, vapors. Wear personal protective equipment. Avoid contact with skin and eyes. Keep away from ignition sources (including static discharges). Proper grounding procedures to avoid static electricity should be followed. Use only non-sparking tools. |
| Hygiene measures                  | : | Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.  |

### 7.2. Conditions for safe storage, including any incompatibilities

- |                        |   |   |
|------------------------|---|---|
| Technical measures     | : | Comply with applicable regulations.                                     |
| Storage conditions     | : | Keep container closed when not in use. Keep away from ignition sources. |
| Incompatible materials | : | Refer to Section 10 on Incompatible Materials.                          |
| Storage area           | : | Store in dry, cool, well-ventilated area.                               |

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### 1,1-Difluoroethyl 2,2,3,3,3-pentafluoropropyl ether (1365807-90-4)

No additional information available

### 8.2. Appropriate engineering controls

- |                                  |   |   |
|----------------------------------|---|---|
| Appropriate engineering controls | : | Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. |
|----------------------------------|---|---|

### 8.3. Individual protection measures/Personal protective equipment

#### Hand protection:

protective gloves. 29 CFR 1910.138: Hand Protection

#### Eye protection:

Chemical goggles or safety glasses. Face shield. 29 CFR 1910.133: Eye and Face Protection

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### Skin and body protection:

Wear suitable protective clothing

### Respiratory protection:

In case of inadequate ventilation wear respiratory protection. 29 CFR 1910.134: Respiratory Protection

### Personal protective equipment symbol(s):



### Other information:

Safety shoes. 29 CFR 1910.136: Foot Protection.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

|   |                     |
|---|---------------------|
| Physical state                                  | : Liquid            |
| Color   | : No data available |
| Odor  | : No data available |
| Odor threshold                                  | : No data available |
| pH  | : No data available |
| Melting point                                   | : No data available |
| Freezing point                                  | : No data available |
| Boiling point                                   | : No data available |
| Flash point                                     | : No data available |
| Relative evaporation rate (butyl acetate=1)     | : No data available |
| Flammability (solid, gas)                       | : No data available |
| Vapor pressure                                  | : No data available |
| Relative vapor density at 20 °C                 | : No data available |
| Relative density                                | : No data available |
| Molecular mass                                  | : 214,08 g/mol      |
| Solubility                                      | : No data available |
| Partition coefficient n-octanol/water (Log Pow) | : No data available |
| Auto-ignition temperature                       | : No data available |
| Decomposition temperature                       | : No data available |
| Viscosity, kinematic                            | : No data available |
| Viscosity, dynamic                              | : No data available |
| Explosion limits                                | : No data available |
| Explosive properties                            | : No data available |
| Oxidizing properties                            | : No data available |

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

### 10.2. Chemical stability

The product is stable at normal handling and storage conditions.

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### 10.3. Possibility of hazardous reactions

No additional information available

### 10.4. Conditions to avoid

No additional information available

### 10.5. Incompatible materials

Strong oxidizing agents.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Hazardous decomposition products in case of fire, see Section 5.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

|                                   |  |
|-----------------------------------|--|
| Acute toxicity (oral)             | : Not classified   |
| Acute toxicity (dermal)           | : Not classified   |
| Acute toxicity (inhalation)       | : Not classified   |
| Skin corrosion/irritation         | : Causes skin irritation.  |
| Serious eye damage/irritation     | : Causes serious eye irritation.   |
| Respiratory or skin sensitization | : Not classified   |
| Germ cell mutagenicity            | : Not classified   |
| Carcinogenicity                   | : Not classified   |
| Reproductive toxicity             | : Not classified   |
| STOT-single exposure              | : May cause drowsiness or dizziness. May cause respiratory irritation.   |
| STOT-repeated exposure            | : Not classified   |
| Aspiration hazard                 | : Not classified   |
| Viscosity, kinematic              | : No data available  |
| Symptoms/effects                  | : The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11. |
| Symptoms/effects after inhalation | : May cause drowsiness or dizziness.   |

## SECTION 12: Ecological information

### 12.1. Toxicity

No additional information available

### 12.2. Persistence and degradability

#### 1,1-Difluoroethyl 2,2,3,3,3-pentafluoropropyl ether (1365807-90-4)

|                               |   |
|-------------------------------|---|
| Persistence and degradability | Not readily biodegradable. May cause long-term adverse effects in the environment. PBT - Persistent, Bioaccumulative and Toxic. |
|-------------------------------|---|

### 12.3. Bioaccumulative potential

#### 1,1-Difluoroethyl 2,2,3,3,3-pentafluoropropyl ether (1365807-90-4)

|                           |   |
|---------------------------|---|
| Bioaccumulative potential | Perfluorinated alkanes (PFAs, "forever chemicals") are long lasting, widely used chemicals that break down slowly over time. The potential hazards of PFAs are under investigation and have not been established. |
|---------------------------|---|

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### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

|  |   |
|--|---|
| Waste treatment methods                    | : Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber.   |
| Sewage disposal recommendations            | : See the EPA's Interim Guidance on PFAS Destruction and Disposal.  |
| Product/Packaging disposal recommendations | : Dispose of contents/container in accordance with licensed collector's sorting instructions.   |
| Additional information                     | : Recycle the material as far as possible.  |
| Ecology - waste materials                  | : This material is considered to be a "Forever chemical". Prevent any possible release to the environment. Do not discharge into drains. Take all necessary measures to prevent accidental discharge of products into drains and waterways due to the rupture of containers or transfer systems, or emergency response. |

## SECTION 14: Transport information

### 14.1. UN number

|               |                  |
|---------------|------------------|
| DOT NA No     | : UN3271         |
| UN-No. (TDG)  | : Not applicable |
| UN-No. (IMDG) | : 3271           |
| UN-No. (IATA) | : 3271           |

### 14.2. UN proper shipping name

|                             |                  |
|-----------------------------|------------------|
| Proper Shipping Name (DOT)  | : Ethers, n.o.s. |
| Proper Shipping Name (TDG)  | : Not applicable |
| Proper Shipping Name (IMDG) | : ETHERS, N.O.S. |
| Proper Shipping Name (IATA) | : Ethers, n.o.s. |

### 14.3. Transport hazard class(es)

#### DOT

|                                  |     |
|----------------------------------|-----|
| Transport hazard class(es) (DOT) | : 3 |
| Hazard labels (DOT)              | : 3 |



#### TDG

|                                  |                  |
|----------------------------------|------------------|
| Transport hazard class(es) (TDG) | : Not applicable |
|----------------------------------|------------------|

#### IMDG

|                                   |     |
|-----------------------------------|-----|
| Transport hazard class(es) (IMDG) | : 3 |
| Hazard labels (IMDG)              | : 3 |



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### IATA

Transport hazard class(es) (IATA) : 3  
Hazard labels (IATA) : 3



### 14.4. Packing group

Packing group (DOT) : III  
Packing group (TDG) : Not applicable  
Packing group (IMDG) : III  
Packing group (IATA) : III

### 14.5. Environmental hazards

Other information : No supplementary information available.

### 14.6. Special precautions for user

#### DOT

UN-No.(DOT) : UN3271  
DOT Special Provisions (49 CFR 172.102) : B1 - If the material has a flash point at or above 38 C (100 F) and below 93 C (200 F), then the bulk packaging requirements of 173.241 of this subchapter are applicable. If the material has a flash point of less than 38 C (100 F), then the bulk packaging requirements of 173.242 of this subchapter are applicable.  
IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 55 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).  
T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3)  
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling =  $97 / 1 + a (tr - tf)$  Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.  
TP29 - A portable tank having a minimum test pressure of 1.5 bar (150.0 kPa) may be used provided the calculated test pressure is 1.5 bar or less based on the MAWP of the hazardous materials, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.  
DOT Packaging Exceptions (49 CFR 173.xxx) : 150  
DOT Packaging Non Bulk (49 CFR 173.xxx) : 203  
DOT Packaging Bulk (49 CFR 173.xxx) : 242  
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 60 L  
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 220 L  
DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

#### TDG

No data available

#### IMDG

Special provision (IMDG) : 223, 274  
Limited quantities (IMDG) : 5 L  
Excepted quantities (IMDG) : E1  
Packing instructions (IMDG) : P001, LP01  
IBC packing instructions (IMDG) : IBC03



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|                                |   |
|--------------------------------|---|
| Tank instructions (IMDG)       | : T4  |
| Tank special provisions (IMDG) | : TP1, TP29   |
| EmS-No. (Fire)                 | : F-E - FIRE SCHEDULE Echo - NON-WATER-REACTIVE FLAMMABLE LIQUIDS |
| EmS-No. (Spillage)             | : S-D - SPILLAGE SCHEDULE Delta - FLAMMABLE LIQUIDS               |
| Stowage category (IMDG)        | : A   |

### IATA

|  |        |
|--|--------|
| PCA Excepted quantities (IATA)               | : E1   |
| PCA Limited quantities (IATA)                | : Y344 |
| PCA limited quantity max net quantity (IATA) | : 10L  |
| PCA packing instructions (IATA)              | : 355  |
| PCA max net quantity (IATA)                  | : 60L  |
| CAO packing instructions (IATA)              | : 366  |
| CAO max net quantity (IATA)                  | : 220L |
| Special provision (IATA)                     | : A3   |
| ERG code (IATA)                              | : 3L   |

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

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory, except for:

|   |                      |      |
|---|----------------------|------|
| 1,1-Difluoroethyl 2,2,3,3,3-pentafluoropropyl ether | CAS-No. 1365807-90-4 | 100% |
|---|----------------------|------|

### 15.2. International regulations

#### CANADA

No additional information available

#### EU-Regulations

No additional information available

#### National regulations

No additional information available

### 15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

## SECTION 16: Other information

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Revision date : 18.12.2023

| Full text of H-phrases |                               |
|------------------------|-------------------------------|
| H226                   | Flammable liquid and vapor    |
| H315                   | Causes skin irritation        |
| H319                   | Causes serious eye irritation |

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| Full text of H-phrases |                                   |
|------------------------|-----------------------------------|
| H335                   | May cause respiratory irritation  |
| H336                   | May cause drowsiness or dizziness |

NFPA health hazard

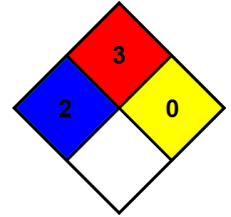
: 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

NFPA fire hazard

: 3 - Liquids and solids (including finely divided suspended solids) that can be ignited under almost all ambient temperature conditions.

NFPA reactivity

: 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating

Health

: 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability

: 3 Serious Hazard - Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 F and boiling points above 100 F. as well as liquids with flash points between 73 F and 100 F. (Classes IB IC)

Physical

: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Safety Data Sheet (SDS), USA