
Safety Data Sheet

4,4,5,5,5-pentafluoro-1-pentanol

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: 4,4,5,5,5-pentafluoro-1-pentanol

CAS number: 148043-73-6

Product code: VCPFP

Restrictions on use: Not for drug or household use

Company name: Valliscor LLC, 1110, NE Circle Blvd., Bldg. 11, Corvallis, OR 97330, USA

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2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910.1200 (OSHA Hazard Communication):

- Flammable liquids (Category 4)
- Eye irritation (Category 2A)

2.2 GHS label elements, including precautionary statements

Pictogram	
Signal Word	Warning!
Hazard Statement(s)	
H227	Combustible liquid
H314	Causes serious eye irritation
Precautionary Statement(s)	
P210	Keep away from heat/sparks/open flames/hot surfaces – No smoking
P264	Wash skin thoroughly after handling
P264	Wash skin thoroughly after handling
P280	Wear protective gloves / protective clothing / eye protection / face protection
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Use an emergency eye-wash station. Remove contact lenses, if present and easy to do and continue rinsing for several minutes.
P337+P313	If eye irritation persists: Get medical advice/attention
P370+P378	IN CASE OF FIRE: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents / container with an approved waste disposal plan.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

None

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Substance/Mixture: Substance
Formula : C₅H₇F₅O
Molecular Weight : 178.10 g/mol
CAS No. : 148043-73-6
EC No: 421-360-9

3.2 Hazardous Components

Component	Classification	Concentration
4,4,5,5,5-pentafluoro-1-pentanol	Flam. Liq. 4; Eye Irrit. 2A; H227, H319	<= 100%

4. FIRST AID MEASURES

4.1 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

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Immediately call a POISON CENTER or a physician.

4.2 Most important symptoms and effects, both acute and delayed

Acute: No data available

Delayed: No data available

4.3 Indication of any immediate medical attention and special treatment needed

No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media: Alcohol resistant foam, dry chemical, water spray, carbon dioxide.

5.2 Special hazards arising from the substance or mixture

WARNING: Highly toxic HF gas is produced during combustion. Carbon oxides produced during combustion.

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment (self-contained breathing apparatus). Keep people away from an upwind of spill/leak. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

6.2 Environmental precautions

Prevent product from entering drains. Prevent leakage or spillage if safe to do so.

6.3 Methods and materials for containment and cleaning up

Contain spillage with dry sand / inert absorbent, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place into airtight container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Handle in a well-ventilated location. Avoid contact with skin, eyes, and clothing. Avoid inhalation of vapor or mist. Use explosion-proof equipment. Keep away from sources of ignition. No smoking. Take measures to prevent the buildup of electrostatic charge. Use explosion-proof equipment.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool, dry, and well-ventilated place. Keep container tightly closed. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Handle and open container with care. Store away from incompatible materials such as oxidizing agents.

Storage class (TRGS 510): 10: Combustible liquids

7.3 Specific end use(s)

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters: Contains no substances with occupational exposure limit values

8.2 Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA – Final PELs
4,4,5,5,5-pentafluoro-1-pentanol	None Listed	None Listed	None Listed

8.2 Exposure controls

Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection

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

Skin protection

Handle with impervious 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, flame retardant, and antistatic protective 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

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls.

If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

a) Physical state (20 °C):	Liquid
b) Form/Color:	Clear / Colorless
b) Odor:	No data available
c) Odor threshold:	No data available
d) pH:	No data available
e) Melting point/freezing point:	- 78 °C (-109 °F)
f) Initial boiling point and boiling range:	62 - 64 °C (144 - 189 °F) at 47 hPa - lit.
g) Flash point:	63 °C (145 °F) - closed cup
h) Evaporation Rate:	No data available
i) Flammability (solid, gas):	No data available
j) Upper/lower flammability or explosive limits:	Explosion limits: upper, 10% (V); lower, 1.2% (V)
k) Vapor pressure:	0.276 hPa at 20 °C (77°F)
l) Vapor density:	6.15 – (Air = 1.0)
m) Relative density:	1.35 g/cm ³ at 25 °C (77 °F)

n) Water solubility:	Soluble
o) Partition coefficient: n-octanol/water:	log (Pow): 1.413
p) Auto-ignition temperature:	No data available
q) Decomposition temperature:	No data available
r) Viscosity:	No data available
s) Explosive properties:	No data available
t) Oxidizing properties:	No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Heat, flames, and sparks.

10.5 Incompatible materials

Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions: Carbon oxides, hydrogen fluoride

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

No data available

Dermal toxicity

No data available

Skin corrosion/irritation

No data available

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 probable, possible, or confirmed human carcinogen by ACGIH.

NTP: 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 NTP.

OSHA: 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 OSHA.

Reproductive toxicity

No data available

Target organ(s)

No data available

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity

No data available

12.2 Persistence and degradability

No data available

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Disposal of product

Recycle to process if possible. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and

non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. The product should not be allowed to enter the environment, drains, water ways, or the soil.

13.2 Disposal of contaminated packaging

Dispose of as unused product. Do not re-use empty containers.

13.3 Other considerations

Observe all federal, state, and local regulations when disposing of this product.

14. TRANSPORT INFORMATION

	UN Number	Proper Shipping Name	Class	Packing Group
DOT (US)	UN1993	Combustible liquid, n.o.s (4,4,5,5,5-pentafluoro-1-pentanol)	NONE	III
IATA	Not dangerous goods			
IMDG	Not dangerous goods			

15. REGULATORY INFORMATION

15.1 US Federal Regulations

Toxic Substance Control Act (TSCA 8b.):

This product is NOT on the EPA Toxic Substances Control Act (TSCA) inventory. The following notices are required by 40 CFR 720.36 (C) for those products not on the inventory list:

- (i) These products are supplied solely for use in research and development by or under the supervision of a technically qualified individual as defined in 40 CFR 720.0 et sec.
- (ii) The health risks of these products have not been fully determined. Any information that is or becomes available will be supplied on an SDS.

CERCLA Hazardous Substance and Reportable Quantity

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313: 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: Fire Hazard, Acute Health Hazard

State Right-to-Know Regulations

Massachusetts: Not listed.

New Jersey: Not listed.

Pennsylvania: Not listed.

California Prop. 65: Not listed.

16. OTHER INFORMATION

16.1 HMIS Rating

Health hazard: 2

Flammability: 2

Physical Hazard: 0

16.2 NFPA Rating

Health hazard: 2

Fire Hazard: 2

Reactivity Hazard: 0