1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name: PERFLUORO-3,6-DIOXAOCTANEDIOYL DIFLUORIDE
Product number: C6GDIACF
CAS-No.: 24647-19-6

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

Identified uses: For R&D use only.

1.3 Details of the supplier of the safety data sheet

Company: Exfluor Research Corporation
2350 Double Creek Drive
ROUND ROCK, TEXAS 78664
USA

Telephone: +1 512-310-9044

1.4 24-hour Emergency telephone number

Contact INFOTRAC at:
1-800-535-5053 (US, Canada)
1-352-323-3500 (International)
ER # 84263

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, dermal	(Category 1)	H311
Skin corrosion	(Category 1A)	H314
Serious eye damage	(Category 1)	H318
Specific organ toxicity – single exposure, Respiratory system	(Category 3)	H335

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

2.2 GHS Label Elements, including precautionary statements

Pictogram

Signal word: Danger

Hazard statement(s)

H310	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage
H335	May cause respiratory irritation.

Precautionary statement(s)

P261	Avoid breathing dust/ fume/ gas /mist/ vapor/ spray.
P264	Wash hands thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.

P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284	Wear respiratory protection.
P301 + P330 + P331	IF SWALLOWED: rinse mouth Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ take off immediately all contaminated clothing. Rinse skin with water/ shower
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.
P310	Immediately call a POISON CENTER or doctor/ physician.
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.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

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

none

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms:	Perfluoropolyether diacyl fluoride (n=1)
Formula:	$C_6F_{10}O_4$
Molecular Weight:	326 g/mol

Component:

CAS-No.:	24647-19-6
Concentration:	98%

4. FIRST AID MEASURES

4.1 Description of first-aid measures

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

If inhaled
Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

In case of skin contact
Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

In case of eye contact
Immediately flush eyes with plenty of water for at least 15 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers.

If swallowed
Do not induce vomiting. Never give anything by mouth to an unconscious person. Allow victim to rinse his mouth with water. Allow victim to drink 2 – 4 cupfuls of water. Call Poison Control center.

4.2 Most important symptoms and effects, both acute and delayed

See § 2.2 and § 11.

4.3 Indication of any immediate medical attention and special treatment needed
Note to physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media
Carbon dioxide, dry chemical powder, or polymer foam.

5.2 Special hazards arising from the substance or mixture
Releases toxic fumes of carbon oxides and hydrogen fluoride.

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment, and emergency measures
Use personal protective equipment. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Keep people away from and upwind of spill/ leak. Restrict access to area until completion of clean-up.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not allow material to enter drains. If necessary, dike ahead of spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.

If applicable: If a spill/ release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the US at 1-800-424-8802.

6.3 Methods and materials for containment and cleaning up
Soak up the spill with an inert absorbent material. Contaminated absorbent material may pose the same hazards as the spilled product. Place in container for disposal according to local regulations.

6.4 Reference to other sections
Refer to protective measures listed in § 7 and § 8.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
For precautions, see § 2.2.
Do not handle until all safety precautions have been read and understood. Wear protective gloves and eye/face protection. Use only in well-ventilated areas. Avoid inhalation of vapor or mist. Avoid contact with skin, eyes, and clothing. Keep away from heat and open flames. Do not eat, drink, or smoke when using this product. Wash hands thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed. Store in cool, dry, and well-ventilated place. Empty containers retain residue (powder and/or vapor) and can be dangerous. Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances (see § 10.5).

7.3 Specific use(s)
Apart from the uses mentioned in § 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 controls

Appropriate engineering controls
Use only in well-ventilated areas. Provide local exhaust or a process enclosure ventilation system. Avoid contact with skin, eyes and clothing.

Personal protective equipment

Eye/face protection
Wear safety glasses or chemical safety goggles and face shield. Provide an emergency eye wash station and quick drench shower in the immediate work area.

Skin protection
Handle with appropriate chemical-resistant 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
The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
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.

General hygiene considerations
Do not breathe vapors. Avoid contact with skin, eyes, and clothing. Do not eat, drink, or smoke when using this product. Wash hands before breaks and immediately after handling the product. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	clear liquid
b)	Odor	no data available
c)	Odor threshold	no data available
d)	pH	no data available
e)	Melting/freezing point	no data available
f)	Initial boiling point/range	81.8 C^o
g)	Flash point	no data available
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapor pressure	no data available
l)	Vapor density	no data available
m)	Relative density	no data available
n)	Solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available
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

9.2 Other safety information
none

10. STABILITY AND REACTIVITY

10.1 Reactivity
No unusual reactivity. See § 10.5.

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reaction
Reacts violently with water.

10.4 Conditions to avoid
Fumes strongly in moist air.
Exposure to moisture.

10.5 Incompatible materials
Water, alcohol, alkalis, strong bases

10.6 Hazardous decomposition products
Hazardous polymerization does not occur.
Releases toxic fumes of carbon oxides and hydrogen fluoride.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available

Skin corrosion/ irritation
No data available

Serious eye damage/ 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 – single exposure
No data available

Specific target organ toxicity -- repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional information
To the best of our knowledge, the acute and chronic toxicity of this substance is not fully known.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
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
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects
No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Refer to protective measures listed in § 7 and § 8.
Dispose of in accordance with all applicable federal, state, and local regulations.
Place in a chemical secured landfill or incinerate at 1200°C with a 2 second dwell time or at 1600°C with a 1.5 second dwell time. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Empty containers retain residue and can be dangerous. Disposal must be made according to official regulations.

14. TRANSPORTATION INFORMATION

DOT (US) / IMDG

Proper Shipping Name:	Toxic by inhalation liquid, corrosive, n.o.s. Perfluoro-3,6-dioxaoctanedioyl difluoride
UN / ID #:	UN 3389
Hazard Class:	6.1
Packing Group:	I
Hazard Zone	A
Labels:	6.1

IATA
Forbidden

15. REGULATORY INFORMATION

US federal information
Not on TSCA Inventory. For R&D use only.

16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Exfluor Research Corporation shall not be held liable for any damage resulting from handling or from contact with the above product.