1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers
Product name: 1H,1H,11H,11H-PERFLUORO-3,6,9-TRIOXAUNDECANE-1,11-DIOL
Synonyms: Fluorinated tetraethylene glycol
Product number: C8GDIOL
CAS-No. 330562-44-2

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

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29CFR 1910 (OSHA HCS)
Skin Corrosion/ Irritation  (Category 2)  H315
Eye Damage/ Irritation  (Category 2b)  H319
Acute toxicity, Oral  (Category 4)  H302
Acute toxicity, Inhalation  (Category 4)  H332

2.2 GHS Label Elements, including precautionary statements

Pictogram

Signal word Warning

Hazard statement(s)
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statement(s)
P202 Do not handle until all safety precautions have been read and understood.
P233 Keep container tightly closed.
P260 Do not breathe vapors.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use in a well-ventilated area.
P280 Wear protective gloves and eye/face protection.
P308 IF EXPOSED or concerned: Get medical attention/advice.
P311 Call a POISON CENTER or doctor/physician if you feel unwell.
2.3 **Hazards not otherwise classified (HNOC) or not covered by GHS**

Burning produces obnoxious and toxic fumes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. The product will cause eye and skin irritation.

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### 3. COMPOSITION / INFORMATION ON INGREDIENTS

**3.1 Substances**

<table>
<thead>
<tr>
<th>Formula</th>
<th>Molecular Weight</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₈H₆F₁₂O₅</td>
<td>410.11 g/mol</td>
<td>330562-44-2</td>
<td>98%</td>
</tr>
</tbody>
</table>

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### 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.

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### 5. FIRE FIGHTING MEASURES

**5.1 Extinguishing media**
Water spray, 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
Do not allow material to enter drains. If necessary, dike ahead of the spill to prevent runoff into drains, sewers, or any natural waterway or drinking supply.

6.3 Methods and materials for containment and cleaning up
Prevent further leakage or spillage if safe to do so. 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.

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.

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

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
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 thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed. Store in a cool, dry, 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. Have appropriate fire extinguishers and spill clean-up equipment in or near storage area. 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
No occupational exposure limits have been established.

8.2 Exposure controls

Appropriate engineering controls
Use only in well-ventilated areas. Provide local exhaust or a process enclosure ventilation system. In case of insufficient ventilation, wear suitable respiratory equipment.

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**
If extensive exposure to product is possible, use resistant coveralls, apron and boots to prevent contact. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Wear a NIOSH (US) or CEN (EU)-approved respirator.

**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 thoroughly after handling. 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
  - White solid (melted product crystallizes slowly)
- **b)** Odor
  - Slight odor
- **c)** Odor threshold
  - no data available
- **d)** pH
  - no data available
- **e)** Melting/freezing point
  - 40–42°C
- **f)** Initial boiling point/range
  - 88°C (0.2 mmHg)
- **g)** Flash point
  - no data available
- **h)** Evaporation rate
  - no data available
- **i)** Flammability (solid, gas)
  - Nonflammable
- **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
  - Soluble in water
- **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

- no data available

### 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

Hazardous polymerization does not occur.

#### 10.4 Conditions to Avoid
Extreme heat

10.5 Incompatible materials
Metals, Strong oxidizing agents, Strong reducing agents, Strong acids, Strong bases

10.6 Hazardous decomposition products
Releases toxic fumes of carbon oxides and hydrogen fluoride.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
If ingested, may cause gastrointestinal irritation, nausea, diarrhea, and vomiting.

Skin corrosion/ irritation
Irritant effect for skin and mucous membranes.
May cause moderate to severe skin irritation and burning. Can be absorbed through the skin.

Serious eye damage/ irritation
Irritant effect. May cause moderate to severe irritation and burning of the eyes.

Respiratory or skin sensitization
No sensitizing effect known.
May cause respiratory irritation, coughing, and/or asthma. May cause headache, nausea, dizziness and other symptoms of central nervous system depression.

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
no data available

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 / IATA
Not classified as hazardous for transport.

15. REGULATORY INFORMATION

US federal information
This product is not listed on the TSCA Inventory. For R&D used 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.