1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers
   - **Product name:** Tolylfluanid
   - **Product Number:** 32060
   - **Brand:** Sigma-Aldrich
   - **Index-No.:** 613-116-00-7
   - **CAS-No.:** 731-27-1

1.2 Relevant identified uses of the substance or mixture and uses advised against
   - **Identified uses:** Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet
   - **Company:** Sigma-Aldrich
     - 3050 Spruce Street
     - SAINT LOUIS MO 63103
     - USA
   - **Telephone:** +1 800-325-5832
   - **Fax:** +1 800-325-5052

1.4 Emergency telephone number
   - **Emergency Phone #:** +1-703-527-3887 (CHEMTREC)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
   - **GHS Classification in accordance with 29 CFR 1910 (OSHA HCS):**
     - Acute toxicity, Inhalation (Category 2), H330
     - Skin irritation (Category 2), H315
     - Eye irritation (Category 2A), H319
     - Skin sensitisation (Category 1), H317
     - Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
     - Specific target organ toxicity - repeated exposure (Category 1), H372
     - Acute aquatic toxicity (Category 1), H400
     - Chronic aquatic toxicity (Category 1), H410
   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):**
     - H315: Causes skin irritation.
     - H317: May cause an allergic skin reaction.
     - H319: Causes serious eye irritation.
     - H330: Fatal if inhaled.
     - H335: May cause respiratory irritation.
     - H372: Causes damage to organs through prolonged or repeated exposure.
Precautionary statement(s)
P260  Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264  Wash skin thoroughly after handling.
P270  Do not eat, drink or smoke when using this product.
P271  Use only outdoors or in a well-ventilated area.
P272  Contaminated work clothing should not be allowed out of the workplace.
P273  Avoid release to the environment.
P280  Wear eye protection/ face protection.
P280  Wear protective gloves.
P284  Wear respiratory protection.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P310 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P314  Get medical advice/ attention if you feel unwell.
P333 + P313  If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313  If eye irritation persists: Get medical advice/ attention.
P362  Take off contaminated clothing and wash before reuse.
P391  Collect spillage.
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
Formula : $C_{10}H_{13}Cl_2F_N_2O_2S_2$
Molecular weight : 347.26 g/mol
CAS-No. : 731-27-1
EC-No. : 211-986-9
Index-No. : 613-116-00-7

Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolyfluanid</td>
<td>Acute Tox. 2; Skin Irrit. 2; Eye Irrit. 2A; Skin Sens. 1; STOT SE 3; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1; H315, H317, H319, H330, H335, H372, H410</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

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

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
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 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

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
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Nitrogen oxides (NOx), Sulphur oxides, Hydrogen chloride gas, Hydrogen fluoride

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

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES
6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE
7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.

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 controls

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Personal protective equipment

Eye/face protection
Face shield and safety glasses 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.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals. 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 particle respirator type N100 (US) or type P3 (EN 143) 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. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Appearance Form: solid Colour: colourless</td>
<td></td>
</tr>
<tr>
<td>b) Odour No data available</td>
<td></td>
</tr>
<tr>
<td>c) Odour Threshold No data available</td>
<td></td>
</tr>
<tr>
<td>d) pH No data available</td>
<td></td>
</tr>
<tr>
<td>e) Melting point/freezing point 95 - 97 °C (203 - 207 °F)</td>
<td></td>
</tr>
<tr>
<td>f) Initial boiling point and boiling range No data available</td>
<td></td>
</tr>
<tr>
<td>g) Flash point No data available</td>
<td></td>
</tr>
</tbody>
</table>
h) Evaporation rate  No data available
i) Flammability (solid, gas)  No data available
j) Upper/lower flammability or explosive limits  No data available
k) Vapour pressure  No data available
l) Vapour density  No data available
m) Relative density  1.520 g/cm3
n) Water solubility  slightly soluble
o) Partition coefficient: n-octanol/water  log Pow: 3.93 at 21 °C (70 °F)
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 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
No data available

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 1,000 mg/kg
LC50 Inhalation - Rat - 4 h - 300 mg/m3
LD50 Dermal - Rat - 500 mg/kg
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available
Respiratory or skin sensitisation
Germ cell mutagenicity
Mouse
Result: negative
Dominant lethal test
Mammal
Result: negative
Micronucleus test

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
May cause respiratory irritation.

Specific target organ toxicity - repeated exposure
The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Aspiration hazard
No data available

Additional Information
RTECS: WO6560000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life.
13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 2811   Class: 6.1   Packing group: II
Proper shipping name: Toxic solids, organic, n.o.s. (Tolylfluanid)
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

IMDG
UN number: 2811   Class: 6.1   Packing group: II   EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (Tolylfluanid)
Marine pollutant:yes

IATA
UN number: 2811   Class: 6.1   Packing group: II
Proper shipping name: Toxic solid, organic, n.o.s. (Tolylfluanid)

15. REGULATORY INFORMATION

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
Tolylfluanid   CAS-No. 731-27-1

New Jersey Right To Know Components
Tolylfluanid   CAS-No. 731-27-1

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.
Acute Tox.  Acute toxicity
Aquatic Acute  Acute aquatic toxicity
Aquatic Chronic  Chronic aquatic toxicity

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Eye Irrit.    Eye irritation
H315       Causes skin irritation.
H317       May cause an allergic skin reaction.
H319       Causes serious eye irritation.
H330       Fatal if inhaled.
H335       May cause respiratory irritation.
H372       Causes damage to organs through prolonged or repeated exposure.
H400       Very toxic to aquatic life.
H410       Very toxic to aquatic life with long lasting effects.

**HMIS Rating**
Health hazard: 4
Chronic Health Hazard: 
Flammability: 0
Physical Hazard 0

**NFPA Rating**
Health hazard: 3
Fire Hazard: 0
Reactivity Hazard: 0

**Further information**
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Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

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