Section 1 - Product and Company Information

Product Name                       TIGLIC ACID
Product Number                     89450
Brand                              FLUKA
Company                            Sigma-Aldrich Canada, Ltd
Street Address                     2149 Winston Park Drive
City, State, Zip, Country          Oakville ON L6H 6J8 CA
Technical Phone:                   905-829-9500
Emergency Phone:                   800-424-9300
Fax:                               905-829-9292

Section 2 - Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS #</th>
<th>SARA 313</th>
</tr>
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<tbody>
<tr>
<td>TIGLIC ACID</td>
<td>80-59-1</td>
<td>No</td>
</tr>
</tbody>
</table>

Formula         C5H8O2
Synonyms        2-Butenoic acid, 2-methyl-, (E)- (9CI) * Cevadic acid * (E)-2,3-Dimethylacrylic acid * trans-alpha, beta-Dimethylacrylic acid * trans-2,3-Dimethylacrylic acid * (E)-2-Methyl-2-butenoic acid * trans-2-Methyl-2-butenoic acid * (E)-2-Methylcrotonic acid * trans-2-Methylcrotonic acid * Tiglic acid * Tiglinic acid
RTECS Number:   GQ5430000

Section 3 - Hazards Identification

EMERGENCY OVERVIEW
Corrosive.
Causes burns.
Vesicant.

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

INHALATION EXPOSURE
If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

DERMAL EXPOSURE
In case of contact, immediately wash skin with soap and copious amounts of water.
Contamination of the eyes should be treated by immediate and prolonged irrigation with copious amounts of water.

Contamination of the eyes should be treated by immediate and prolonged irrigation with copious amounts of water.

**Section 5 - Fire Fighting Measures**

**EXPLOSION DATA**
Dust Potential: This material, like most materials in powder form, is capable of creating a dust explosion.

**FLASH POINT**
N/A

**AUTOIGNITION TEMP**
N/A

**FLAMMABILITY**
N/A

**EXTINGUISHING MEDIA**
Suitable: Carbon dioxide, dry chemical powder, or appropriate foam. Water spray.

**FIREFIGHTING**
Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

**EXPOSURE HAZARD(S)**

**Section 6 - Accidental Release Measures**

**PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL**
Evacuate area.

**PROCEDURE(S) OF PERSONAL PRECAUTION(S)**
Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

**METHODS FOR CLEANING UP**
Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

**Section 7 - Handling and Storage**

**HANDLING**
User Exposure: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

**STORAGE**
Suitable: Keep tightly closed.

**Section 8 - Exposure Controls / PPE**

**ENGINEERING CONTROLS**
Use only in a chemical fume hood. Safety shower and eye bath.
PERSONAL PROTECTIVE EQUIPMENT
Other: Wear appropriate government approved respirator, chemical-resistant gloves, safety goggles, other protective clothing.

GENERAL HYGIENE MEASURES
Wash thoroughly after handling. Wash contaminated clothing before reuse.

Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>At Temperature or Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular Weight</td>
<td>100.12 AMU</td>
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<tr>
<td>pH</td>
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<tr>
<td>BP/BP Range</td>
<td>198.5 °C</td>
<td>760 mmHg</td>
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<tr>
<td>MP/MP Range</td>
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<tr>
<td>Freezing Point</td>
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<tr>
<td>Vapor Pressure</td>
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<tr>
<td>Odor Threshold</td>
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</tr>
<tr>
<td>Volatile%</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>Water Content</td>
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<tr>
<td>Solvent Content</td>
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<td>Evaporation Rate</td>
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<td>Viscosity</td>
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<td>Surface Tension</td>
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<tr>
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<tr>
<td>Flash Point</td>
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<td>Explosion Limits</td>
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<td>Flammability</td>
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<td>Autoignition Temp</td>
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<td>Refractive Index</td>
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<td>Optical Rotation</td>
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<td>Miscellaneous Data</td>
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<tr>
<td>Solubility</td>
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</tbody>
</table>

N/A = not available

Section 10 - Stability and Reactivity

STABILITY
Materials to Avoid: Bases, Oxidizing agents, Reducing agents.

HAZARDOUS DECOMPOSITION PRODUCTS
Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

Section 11 - Toxicological Information

ROUTE OF EXPOSURE
Skin Contact: Causes blisters on contact with skin.
Multiple Routes: Harmful if swallowed, inhaled, or absorbed through skin.
SIGNS AND SYMPTOMS OF EXPOSURE
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

CONDITIONS AGGRAVATED BY EXPOSURE
The toxicological properties have not been thoroughly investigated.

TOXICITY DATA

Oral
Rat
> 5000 mg/kg
LD50

Skin
Rabbit
> 5000 mg/kg
LD50

IRRITATION DATA

Skin
Rabbit
500 mg
24H
Remarks: Severe irritation effect

Section 12 - Ecological Information
No data available.

Section 13 - Disposal Considerations
APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT
Proper Shipping Name: Corrosive solid, acidic, organic, n.o.s.
UN#: 3261
Class: 8
Packing Group: Packing Group II
Hazard Label: Corrosive
PIH: Not PIH

IATA
Proper Shipping Name: Corrosive solid, acidic, organic, n.o.s.
IATA UN Number: 3261
Hazard Class: 8
Section 15 - Regulatory Information

EU ADDITIONAL CLASSIFICATION
Symbol of Danger: C
Indication of Danger: Corrosive.
R: 34
Risk Statements: Causes burns.
S: 26 36/37/39 45
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

US CLASSIFICATION AND LABEL TEXT
Indication of Danger: Corrosive.
Risk Statements: Causes burns.
Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection. US Statements: Vesicant.

UNITED STATES REGULATORY INFORMATION
SARA LISTED: No
TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION
WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes
NDSL: No

Section 16 - Other Information

DISCLAIMER
For R&D use only. Not for drug, household or other uses.