



# Safety Data Sheet - Version 5.0

Preparation Date 3/10/2015

Latest Revision Date (If Revised)

## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product Identifier

Chemical Name E-Crotonoyl Chloride

Catalogue # C818810

### 1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Product Uses To be used only for scientific research and development. Not for use in humans or animals.

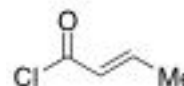
### 1.3 Details of the Supplier of the Safety Data Sheet

Company Toronto Research Chemicals  
2 Brisbane Road  
Toronto, ON M3J 2J8  
CANADA

Telephone +14166659696

FAX +14166654439

Email orders.trc@lgcgroup.com



### 1.4 Emergency Telephone Number

Emergency# +1(416) 665-9696 between 0800-1700 (GMT-5)

## 2. HAZARDS IDENTIFICATION

### 2.1/2.2 Classification of the Substance or Mixture and Label Elements

#### GHS Hazards Classification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

Flammable Liquids (Category 3)

Carcinogenicity (Category 2)

Specific Target Organ Toxicity, Single Exposure; Respiratory Tract Irritation (Category 3)

Sensitisation, Skin (Category 1)

Skin Corrosion (Category 1B)

Eye Damage/Irritation (Category 1)

Hazardous to the Aquatic Environment, Acute Hazard (Category 3)

Hazardous to the Aquatic Environment, Long-Term Hazard (Category 3)

#### GHS Hazards Identification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

Signal Word Danger



#### GHS Hazard Statements

H226 Flammable liquid and vapour.  
H351 Suspected of causing cancer.  
H335 May cause respiratory irritation.  
H317 May cause an allergic skin reaction.  
H314 Causes severe skin burns and eye damage.  
H318 Causes serious eye damage.  
H402 Harmful to aquatic life.  
H412 Harmful to aquatic life with long lasting effects.

#### GHS Precautionary Statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.

|                |                                                                                                                                  |
|----------------|----------------------------------------------------------------------------------------------------------------------------------|
| 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. |
| P308/P313      | IF exposed or concerned: Get medical advice/attention.                                                                           |

## 2.3 Unclassified Hazards/Hazards Not Otherwise Classified

Lachrymator.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Substances

**Molecular Formula:** C<sub>4</sub>H<sub>7</sub>ClO

**Molecular Weight:** 104.53

**CAS Registry #:** 625-35-4

**EC#:** 210-889-9

### Synonyms

(2E)-2-Butenoyl Chloride; (E)-2-Butenoyl Chloride; (E)-Crotonoyl Chloride; (E)-But-2-enoyl Chloride; (E)-Crotonic Acid Chloride; (E)-Crotonyl Chloride; trans-2-Butenoyl Chloride; trans-Crotonoyl Chloride; trans-Crotonyl Chloride

### 3.2 Mixtures

| Ingredient         | CAS#     | EC#       | Index-No.    | %Composition |
|--------------------|----------|-----------|--------------|--------------|
| Crotonoyl chloride | 625-35-4 | 210-889-9 | N/A          | <=100%       |
| Hydroquinone       | 123-31-9 | 204-617-8 | 604-005-00-4 | 0.15%        |

## 4. FIRST AID MEASURES

### 4.1 Description of First Aid Measures

#### General Advice

If medical attention is required, show this safety data sheet to the doctor.

#### If Inhaled

If inhaled, move casualty to fresh air. If not breathing, give artificial respiration and consult a physician.

#### In Case of Skin Contact

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

#### In Case of Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Keep eye wide open while rinsing. Do not rub affected area. Get medical attention if irritation develops and persists.

#### If Swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Do NOT induce vomiting unless advised to do so by a physician or Poison Control Center. Seek medical attention.

Self-protection of the first aider

Avoid contact with skin, eyes or clothing. Wear personal protective clothing (see section 8).

### 4.2 Most Important Symptoms and Effects, Both Acute and 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

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

### 5.2 Special Hazards Arising from the Substance or Mixture

Carbon oxides, Hydrogen chloride

### 5.3 Advice for Firefighters

Wear self contained breathing apparatus for fire fighting if necessary. Use personal protection equipment.

#### 5.4 Further Information

No data available.

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Use recommended personal protective equipment (see Section 8). Adequate ventilation must be provided to ensure vapours or mists are not inhaled. Vapours are heavier than air and may accumulate in low areas. All sources of ignition, including sources of static discharge, must be removed from area.

### 6.2 Environmental Precautions

Material should not be allowed to enter the environment. Prevent further spillage or discharge into drains, if safe to do so.

### 6.3 Methods and Materials for Containment and Cleaning Up

Contain the spill and then collect using non-combustible absorbent material (such as clay, diatomaceous earth, vermiculite or other appropriate material). Place material in a suitable, sealable container and then dispose according to local/national regulations and guidance (see Section 13).

### 6.4 Reference to Other Sections

For protective equipment, refer to Section 8. For disposal, see Section 13.

## 7. HANDLING AND STORAGE

### 7.1 Precautions for Safe Handling

Avoid contact with skin and eyes. Ventilation and proper handling are to be used to prevent the formation of vapours and mists. Remove all sources of ignition and take precautionary measures to prevent the buildup of electrostatic discharge (ground and bond containers as appropriate). No smoking, eating or drinking around this material. Wash hands after use.

### 7.2 Conditions for Safe Storage, Including any Incompatibilities

Ensure container is kept securely closed before and after use. Keep in a well ventilated area and do not store with strong oxidizers or other incompatible materials (see Section 10).

Storage conditions:

### 7.3 Specific End Uses

For scientific research and development only. Not for use in humans or animals.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control Parameters

#### Components with workplace control parameters

| Component    | CAS#     | Value | Control Parameters | Basis                                              |
|--------------|----------|-------|--------------------|----------------------------------------------------|
| Hydroquinone | 123-31-9 | TWAEV | 2.000000 mg/m3     | Canada. Ontario OELs                               |
|              |          | TWA   | 2.000000 mg/m3     | Canada. Alberta,<br>Occupational Health and Safety |
|              |          | TWA   | 1.000000mg/m3      | Canada. British Columbia OEL                       |
|              |          | TWAEV | 2 mg/m3            | Québec. Regulation respecting OHSA                 |

### 8.2 Exposure Controls

#### Appropriate Engineering Controls

A laboratory fumehood or other appropriate form of local exhaust ventilation should be used to avoid exposure.

#### Personal Protective Equipment

All recommendations below are advisory in nature and a risk assessment should be performed by the employer/end user prior to use of this product. The type of protective equipment must be selected based on the amount and concentration of the dangerous material being used in the workplace.

#### Eye/Face Protection

Safety glasses or safety goggles. All equipment should have been tested and approved under appropriate standards, such as NIOSH (US), CSA (Canada), or EN 166 (EU).

#### Skin Protection

Gloves should be used when handling this material. Gloves are to be inspected prior to use. Contaminated gloves are to be removed using proper glove removal technique so that the outer surface of the glove does not contact bare skin. Dispose of contaminated gloves after use in compliance with good laboratory practices and local requirements.

Gloves used for incidental exposures (splash protection) should be designated as "low chemical resistant" or "waterproof" by EU standard EN 374. Unrated gloves are not recommended.

Suggested gloves: AnsellPro nitrile gloves style 92-500 or 92-600, 5 mil thickness.

Penetration time has not been determined.

Gloves used for prolonged direct exposure (immersion) should be designated “chemical resistant” as per EN 734 with the resistance codes corresponding to the anticipated use of the material.

Suggested gloves: AnsellPro Viton/Butyl gloves style 38-612, 4/8 mil thickness.

Penetration time has not been determined.

These recommendations may not apply if the material is mixed with any other chemical, or dissolved into a solution. A risk assessment must be performed to ensure the gloves will still offer acceptable protection.

### Body Protection

Fire resistant (Nomex) lab coat or coveralls.

### Respiratory Protection

Recommended respirators are NIOSH-approved OV/Multi-Gas/P95 or CEN-approved ABEK-P2 respirators. These are to be only used as a backup to local exhaust ventilation or other engineering controls. If the respirator is the only means of protection, a full-face supplied air respirator must be used.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information on Basic Physical and Chemical Properties

#### A) Appearance

liquid

#### C) Odour Threshold

No Data Available

#### E) Melting Point/Freezing Point

No Data Available

#### G) Flash point

No Data Available

#### I) Flammability (Solid/Gas)

No Data Available

#### K) Vapour Pressure

No Data Available

#### M) Relative Density

No Data Available

#### O) Partition Coefficient: n-octanol/water

No Data Available

#### Q) Decomposition Temperature

No Data Available

#### S) Explosive Properties

No Data Available

#### B) Odour

No Data Available

#### D) pH

No Data Available

#### F) Initial Boiling Point/Boiling Range

No Data Available

#### H) Evaporation Rate

No Data Available

#### J) Upper/Lower Flammability/Explosive Limits

No Data Available

#### L) Vapour Density

No Data Available

#### N) Solubility

No Data Available

#### P) Auto-Ignition Temperature

No Data Available

#### R) Viscosity

No Data Available

#### T) Oxidizing Properties

No Data Available

### 9.2 Other 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

Heat, flames and sparks.

### 10.5 Incompatible Materials

Strong oxidizing agents, Strong bases

### 10.6 Hazardous Decomposition Products

No Data Available

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on Toxicological Effects

**A) Acute Toxicity**

No Data Available

**B) Skin Corrosion/Irritation**

No data available

**C) Serious Eye Damage/Irritation**

Corrosive - causes skin and eye burns. May also cause respiratory tract damage.

**D) Respiratory or Skin Sensitization**

May cause an allergic skin reaction.

**E) Germ Cell Mutagenicity**

No data available

**F) Carcinogenicity**

Evidence of a carcinogenic effect.

This compound has been designated by the IARC as Group 2B: Possibly carcinogenic to humans.

**G) Reproductive Toxicity/Teratogenicity**

No data available

**H) Single Target Organ Toxicity - Single Exposure**

Moderate respiratory tract irritation.

**I) Single Target Organ Toxicity - Repeated Exposure**

No data available

**J) Aspiration Hazard**

No data available

**K) Potential Health Effects and Routes of Exposure**

**Inhalation**

May be harmful if inhaled. Causes respiratory tract irritation.

**Ingestion**

May be harmful if swallowed.

**Skin**

May be harmful if absorbed through skin. Causes skin irritation.

**Eyes**

Causes severe eye burns and possible permanent eye damage.

**L) Signs and Symptoms of Exposure**

No data available

To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been thoroughly investigated.

**M) Additional Information**

RTECS: Not listed

## **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**

**A) Product**

Product may be burned in an incinerator equipped with afterburner and scrubber. Excess and expired materials are to be offered to a licensed hazardous material disposal company. Ensure that all Federal and Local regulations regarding the disposal and destruction of this material are followed.

**B) Contaminated Packaging**

Dispose of as above.

**C) Other Considerations**

## 14. TRANSPORT INFORMATION

### 14.1 UN Number

DOT (US): 2920

IATA: 2920

IMDG: 2920

ADR/RID: 2920

### 14.2 UN Proper Shipping Name

DOT (US)/IATA:

Corrosive liquids, flammable, n.o.s. (Crotonoyl Chloride)

IMDG/ARD/RID:

CORROSIVE LIQUIDS, FLAMMABLE, N.O.S. (Crotonoyl Chloride)

### 14.3 Transport Hazard Class(es)

DOT (US): 8 (3)

IATA: 8 (3)

IMDG: 8 (3)

ADR/RID: 8 (3)

### 14.4 Packing Group

DOT (US): II

IATA: II

IMDG: II

ADR/RID: II

### 14.5 Environmental Hazards

DOT (US): None

IATA: None

IMDG: None

ADR/RID: None

### 14.6 Special Precautions for User

None

## 15. REGULATORY INFORMATION

This safety data sheet complies with the requirements of WHMIS (Canada), OSHA 1910.1200 (US), and EU Regulation EC No. 1907/2006 (European Union).

### 15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

#### A) Canada

**DSL/NDSL Status:** This product or a component of this product is registered on the Canadian DSL/NDSL.

#### B) United States

**TSCA Status:** This product is not listed on the US EPA TSCA.

#### C) European Union

**ECHA Status:** This product is not registered with the EU ECHA.

### 15.2 Chemical Safety Assessment

No data available

## 16. OTHER INFORMATION

### 16.1 Revision History

Original Publication Date: 3/10/2015

### 16.2 List of Abbreviations

|       |                                                                                       |
|-------|---------------------------------------------------------------------------------------|
| LD50  | Median lethal dose of a substance required to kill 50% of a test population.          |
| LC50  | Medial lethal concentration of a substance required to kill 50% of a test population. |
| LDLo  | Lowest known lethal dose                                                              |
| TDLo  | Lowest known toxic dose                                                               |
| IARC  | International Agency for Research on Cancer                                           |
| NTP   | National Toxicology Program                                                           |
| RTECS | Registry of Toxic Effects of Chemical Substances                                      |

### 16.3 Further Information

Copyright 2015. Toronto Research Chemicals Inc. Copies may be made for internal use only. The above information is believed to be correct to the best of our knowledge, but is to be only used as a guide. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Please take all due care when handling this product.