





Material Safety Data Sheet

HAZARD WARNINGS	RISK PHRASES	PROTECTIVE CLOTHING
  	THIS MATERIAL IS TOXIC BY INHALATION. Highly toxic; do not ingest or inhale. Corrosive to eyes and skin on contact. Combustible material; avoid heat and sources of ignition. CARCINOGEN. MINIMIZE EXPOSURE. MUTAGEN. MINIMIZE EXPOSURE. Readily hydrolyzed. Lachrymator. Refrigerate.	

Section I. Chemical Product and Company Identification

Chemical Name	beta-Propiolactone		
Catalog Number	H0168	Supplier	TCI America 9211 N. Harborside St. Portland OR 1-800-423-8616
Synonym	2-Oxetanone		
Chemical Formula	C ₃ H ₄ O ₂		
CAS Number	57-57-8	In case of Emergency Call	Chemtrec® (800) 424-9300 (U.S.) (703) 527-3887 (International)

Section II. Composition and Information on Ingredients

Chemical Name	CAS Number	Percent (%)	TLV/PEL	Toxicology Data
beta-Propiolactone	57-57-8	Min. 95.0 (Tit.)	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a mutagen. There is no acceptable exposure limit for a mutagen.	Rat LC ₅₀ (inhalation) 25 ppm/6H Mouse LD ₅₀ (intraperitoneal) 405 mg/kg

Section III. Hazards Identification

Acute Health Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
Chronic Health Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic Effects. Rat TCLo Inhalation 5 ppm/6 hours/30 days intermittent. TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria. Sense Organs and Special Senses - Tumors. Rat TDLo Intratracheal 72 mg/kg/30 weeks intermittent. TOXIC Effects: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria. Lung, Thorax, or Respiration - Tumors. Lung, Thorax, or Respiration - Bronchiogenic carcinoma. Mouse TD Subcutaneous 648 mg/kg/54 weeks intermittent. TOXIC Effects: Tumorigenic - Neoplastic by RTECS criteria. Tumorigenic - Tumors at site of application. DEVELOPMENTAL TOXICITY : Not available. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section IV. First Aid Measures

Eye Contact	Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin Contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation	If the victim is not breathing, perform mouth-to-mouth resuscitation. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, oxygen can be administered. Seek medical attention if respiration problems do not improve.
Ingestion	DO NOT INDUCE VOMITING. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive.

Section V. Fire and Explosion Data

Flammability	Combustible.	Auto-Ignition	Not available.
Flash Points	70°C (158°F).	Flammable Limits	LOWER: 2.9%
Combustion Products	These products are toxic carbon oxides (CO, CO ₂).		
Fire Hazards	Not available.		
Explosion Hazards	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.		
Fire Fighting Media and Instructions	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. Consult with local fire authorities before attempting large scale fire-fighting operations.		


Section VI. Accidental Release Measures

Spill Cleanup Instructions	THIS MATERIAL IS TOXIC BY INHALATION. Highly toxic material. Corrosive material. Combustible material. Carcinogenic material. Mutagenic material. Readily hydrolyzed material. Lachrymator. Keep away from heat. Mechanical exhaust required. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside container. DO NOT touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Consult federal, state, and/or local authorities for assistance on disposal.
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Section VII. Handling and Storage

Handling and Storage Information	THIS MATERIAL IS TOXIC BY INHALATION. HIGHLY TOXIC. CORROSIVE. COMBUSTIBLE. CARCINOGEN. MUTAGEN. READILY HYDROLIZED. LACHRYMATORY. REFRIGERATE. Keep locked up. Keep container dry. Keep away from heat. Mechanical exhaust required. Avoid excessive heat and light. DO NOT ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Treat symptomatically and supportively. Always store away from incompatible compounds such as oxidizing agents, acids, alkalis (bases).
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Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash station and safety shower is proximal to the work-station location.
Personal Protection	Face shield. Lab coat. Vapor respirator. Boots. Gloves. A MSHA/NIOSH approved respirator must be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. 
Exposure Limits	This chemical is classified as a carcinogen. There is no acceptable exposure limit for a carcinogen. This compound is classified as a mutagen. There is no acceptable exposure limit for a mutagen.

Section IX. Physical and Chemical Properties

Physical state @ 20°C	Liquid. (Colorless Clear.)	Solubility	Soluble in water: 37% VOL/VOL. Miscible with alcohol, acetone, ether, chloroform, benzene, acetic acid.
Specific Gravity	1.146 (water=1)		
Molecular Weight	72.06	Partition Coefficient	Log P _{ow} : -1.36
Boiling Point	165°C (329°F)	Vapor Pressure	3.4 mmHg (@ 25°C)
Melting Point	-33°C (-27.4°F)	Vapor Density	2.5 (Air = 1)
Refractive Index	1.411-1.415	Volatility	Not available.
Critical Temperature	Not available.	Odor	Pungent, Slightly Sweetish.
Viscosity	Not available.	Taste	Not available.

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Emergency phone number (800) 424-9300

Section X. Stability and Reactivity Data

Stability	This material is stable if stored under proper conditions. (See Section VII for instructions)
Conditions of Instability	Avoid excessive heat and light.
Incompatibilities	Reactive with strong oxidizing agents, strong acids, strong alkalis (bases), halogens, thiocyanates, thiosulfates.

Section XI. Toxicological Information

RTECS Number	RQ7350000
Routes of Exposure	Eye Contact. Ingestion. Inhalation. Skin contact.
Toxicity Data	Rat LC ₅₀ (inhalation) 25 ppm/6H Mouse LD ₅₀ (intraperitoneal) 405 mg/kg
Chronic Toxic Effects	CARCINOGENIC EFFECTS : Not available. MUTAGENIC EFFECTS : Not available. TERATOGENIC EFFECTS : Tumorigenic Effects. Rat TCLo Inhalation 5 ppm/6 hours/30 days intermittent. TOXIC Effects: Tumorigenic - Carcinogenic by RTECS criteria. Sense Organs and Special Senses - Tumors. Rat TDLo Intratracheal 72 mg/kg/30 weeks intermittent. TOXIC Effects: Tumorigenic - Equivocal tumorigenic agent by RTECS criteria. Lung, Thorax, or Respiration - Tumors. Lung, Thorax, or Respiration - Bronchiogenic carcinoma. Mouse TD Subcutaneous 648 mg/kg/54 weeks intermittent. TOXIC Effects: Tumorigenic - Neoplastic by RTECS criteria. Tumorigenic - Tumors at site of application. DEVELOPMENTAL TOXICITY : Not available. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.
Acute Toxic Effects	Corrosive to skin, eyes, and respiratory system. Liquid or spray mist may produce tissue damage, particularly in mucous membranes of the eyes, mouth and respiratory tract. Skin contact may produce burns. Eye contact can result in corneal damage or blindness. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Corrosive materials may cause serious injury if ingested. Toxic if ingested or inhaled. Avoid prolonged contact with this material. Overexposure may result in serious illness or death. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.


Section XII. Ecological Information

Ecotoxicity	Not available.
Environmental Fate	beta-Propiolactone may be released to the environment in waste streams from factories where it is made or used. If released to water, hydrolysis will be the dominant environmental fate process. The aqueous hydrolysis half-life at 25 deg C is approximately 3.5 hr. If released to soil, relatively rapid hydrolysis can be expected to occur in the presence of moisture. Significant evaporation may occur from dry surfaces. If released to the atmosphere, beta-propiolactone is expected to exist in the gas-phase where it may be relatively persistent. The half-life for the reaction with photochemically produced hydroxyl radicals can be estimated to occur at the relatively slow rate of 45 days in the atmosphere. Physical removal from air via wet deposition may be possible since beta-propiolactone is very water soluble. Occupational exposure may be possible through inhalation and dermal contact at sites where beta-propiolactone is used as a chemical intermediate.

Section XIII. Disposal Considerations

Waste Disposal	Recycle to process, if possible. Consult your local regional authorities. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. Observe all federal, state and local regulations when disposing of the substance.
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Section XIV. Transport Information

DOT Classification	THIS MATERIAL IS TOXIC BY INHALATION DOT Class 6.1: Toxic material.
PIN Number	UN3382
Proper Shipping Name	Toxic by inhalation, liquid, n.o.s.
Packing Group (PG)	I (Zone B)
DOT Pictograms	

Section XV. Other Regulatory Information and Pictograms

TSCA Chemical Inventory (EPA)	This compound is ON the EPA Toxic Substances Control Act (TSCA) inventory list.
WHMIS Classification (Canada)	CLASS B-3: Combustible liquid with a flash point between 37.8 °C (100 °F) and 93.3 °C (200 °F). CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS E: Corrosive liquid. On NDSL.
EINECS Number (EEC)	200-340-1
EEC Risk Statements	R10- Flammable. R18- In use, may form flammable/explosive vapor-air mixture. R23- Toxic by inhalation. R26/27/28- Very toxic by inhalation, in contact with skin and if swallowed. R34- Causes burns. R45- May cause cancer. R46- May cause heritable genetic damage. R47- May cause birth defects.
Japanese Regulatory Data	ENCS No. (5)-11

Section XVI. Other Information**Version 1.0****Validated on 4/27/2007.****Printed 4/27/2007.****Notice to Reader**

TCI laboratory chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our MSDS sheets are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated MSDS sheets for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, facial mask, fume hood). For proper handling and disposal, always comply with federal, state, and local regulations.

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