

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 06/18/2009

Reviewed on 05/20/2009

1 Identification of substance:**Product details:****Product name:** beta-Propiolactone**Stock number:** B23197**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company
 Johnson Matthey Catalog Company, Inc.
 30 Bond Street
 Ward Hill, MA 01835-8099
 Emergency Phone: (978) 521-6300
 CHEMTREC: (800) 424-9300
 Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:**Chemical characterization:****Description: (CAS#)**

beta-Propiolactone (CAS# 57-57-8): 100%

Identification number(s):**EINECS Number:** 200-340-1**Index number:** 606-031-00-1**3 Hazards identification****Hazard description:**

T+ Very toxic

Information pertaining to particular dangers for man and environment

R 45 May cause cancer.

R 26 Also very toxic by inhalation.

R 36/38 Irritating to eyes and skin.

Classification system**HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	3
FIRE	2
REACTIVITY	1

Health (acute effects) = 3

Flammability = 2

Reactivity = 1

GHS label elements**Danger**

3.1/1 - Fatal if inhaled.

3.2/2 - Causes skin irritation.

3.3/2A - Causes serious eye irritation.

**Danger**

3.6/1A - May cause cancer.

Warning

2.6/4 - Combustible liquid.

Prevention:

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Do not breathe dust/fume/gas/mist/vapours/spray.

Wash thoroughly after handling.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

Use personal protective equipment as required.

Wear respiratory protection.

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Response:

IF ON SKIN: Wash with plenty of soap and water.
 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 IF exposed or concerned: Get medical advice/attention.
 Immediately call a POISON CENTER or doctor/physician.
 Specific treatment is urgent (see label).
 Specific treatment (see label).
 If skin irritation occurs: Get medical advice/attention.
 If eye irritation persists: Get medical advice/attention.
 Take off contaminated clothing and wash before reuse.
 In case of fire: Use for extinction: CO₂, powder or water spray.

Storage:

Store in a well-ventilated place. Keep container tightly closed.
 Store in a well-ventilated place. Keep cool.
 Store locked up.

Disposal:

Dispose of contents/container in accordance with local/regional/national/international regulations.

4 First aid measures**General information**

Immediately remove any clothing soiled by the product.
 Remove breathing apparatus only after contaminated clothing has been completely removed.
 In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm.
 Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.
 Seek immediate medical advice.

After eye contact

Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing Seek immediate medical advice.

5 Fire fighting measures

Suitable extinguishing agents CO₂, sand, extinguishing powder. Do not use water.

For safety reasons unsuitable extinguishing agents Water

Special hazards caused by the material, its products of combustion or resulting gases:

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

Protective equipment:

Wear self-contained respirator.
 Wear fully protective impervious suit.

6 Accidental release measures**Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

Additional information:

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling****Information for safe handling:**

Handle under dry protective gas.

Keep container tightly sealed.

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Ensure good ventilation at the workplace.

Open and handle container with care.

Information about protection against explosions and fires: Keep ignition sources away.**Storage****Requirements to be met by storerooms and receptacles:** Refrigerate**Information about storage in one common storage facility:**

Protect from heat.

Store away from water/moisture.

Do not store together with oxidizing and acidic materials.

Store away from strong bases.

Further information about storage conditions:

Store under dry inert gas.

This product is moisture sensitive.

Keep container tightly sealed.

Protect from humidity and water.

Refrigerate

8 Exposure controls and personal protection**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

beta-Propiolactone

	ppm
ACGIH TLV	0.5; Confirmed animal carcinogen
Austria	Carcinogen
Belgium TWA	0.5; Carcinogen
Denmark TWA	0.1
Finland	Carcinogen
France	Carcinogen
Germany	Carcinogen
Korea TLV	0.5; Confirmed animal carcinogen
Netherlands MAC-TGG	0.5; Carcinogen
Poland TWA	1 mg/m ³
Sweden	Carcinogen
Switzerland MAK-W	0.5; Carcinogen
United Kingdom	Carcinogen
USA PEL	Suspected carcinogen

Components with limit values that require monitoring at the workplace:**Additional information:** No data**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

Breathing equipment: Use suitable respirator when high concentrations are present.**Protection of hands:**

Check protective gloves prior to each use for their proper condition.

Impervious gloves

Material of gloves

The selection of suitable gloves not only depends on the material, but also on quality.

Quality will vary from manufacturer to manufacturer.

Eye protection: Safety glasses**Body protection:** Protective work clothing.**9 Physical and chemical properties:****General Information**

Form:	Liquid
Color:	Colorless
Odor:	Pungent

Change in condition

Melting point/Melting range:	-34°C (-29°F)
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Boiling point/Boiling range:	161-163°C (322-325°F)
Sublimation temperature / start:	Not determined
Flash point:	70°C (158°F)
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	2.9 Vol %
Upper:	Not determined
Vapor pressure at 20°C (68°F):	3 hPa (2 mm Hg)
Density at 20°C (68°F):	1.146 g/cm ³
Solubility in / Miscibility with	
Water at 20°C (68°F):	370 g/l (hydrolyses slowly)

10 Stability and reactivity**Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided:

Oxidizing agents

Heat

Water/moisture

Acids

Amines

Bases

Halogens

Dangerous reactions Danger of polymerization**Dangerous products of decomposition:** Carbon monoxide and carbon dioxide**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**

Inhalative	LC50/6H	25 ppm/6H (rat)
		75 mg/m ³ /6H (rat)

Primary irritant effect:**on the skin:** Irritant to skin and mucous membranes.**on the eye:** Irritating effect.**Sensitization:** No sensitizing effects known.**Other information (about experimental toxicology):**

Tumorigenic effects have been observed on tests with laboratory animals.

Mutagenic effects have been observed on tests with bacteria.

Mutagenic effects have been observed on tests with insects.

Mutagenic effects have been observed on tests with human and/or animal DNA cells.

Mutagenic effects have been observed with human fibroblast.

Mutagenic effects have been observed on tests with human lymphocytes.

Mutagenic effects have been observed on tests with laboratory animals.

Mutagenic effects have been observed with human hela cells.

Subacute to chronic toxicity:**Subacute to chronic toxicity:**

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Gastrointestinal - tumors.

Gastrointestinal - colon tumors.

Skin and Appendages - tumors.

Liver - tumors.

Sense Organs and Special Senses (Olfaction) - tumors.

Lungs, Thorax, or Respiration - tumors.

Lungs, Thorax, or Respiration - bronchiogenic carcinoma.

Tumorigenic - carcinogenic by RTECS criteria.

Tumorigenic - tumors at site of application.

Tumorigenic - neoplastic by RTECS criteria.

Tumorigenic - equivocal tumorigenic agent by RTECS criteria.

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Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals.

NTP-2: Reasonably anticipated to be a carcinogen: limited evidence from studies in humans or sufficient evidence from studies in experimental animals.

Carcinogen as defined by OSHA.

ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) not considered relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

12 Ecological information:**General notes:**

Do not allow product to reach ground water, water course or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into the ground.

Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations**Product:**

Recommendation Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

14 Transport information**DOT regulations:**

Hazard class: 6.1
Identification number: UN3382
Packing group: I
Poison inhalation hazard: Yes
Proper shipping name (technical name): TOXIC BY INHALATION LIQUID, N.O.S. (beta-Propiolactone)
Label: 6.1

Land transport ADR/RID (cross-border)

ADR/RID class: 6.1 (T1) Toxic substances
Danger code (Kemler): 66
UN-Number: 3382
Packaging group: I
Description of goods: 3382 TOXIC BY INHALATION LIQUID, N.O.S. (beta-Propiolactone)

Maritime transport IMDG:

IMDG Class: 6.1
UN Number: 3382
Label: 6.1
Packaging group: I

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Product name: beta-Propiolactone

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EMS Number:	F-A,S-A
Proper shipping name:	TOXIC BY INHALATION LIQUID, N.O.S. (beta-Propiolactone)

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class:	6.1
UN/ID Number:	3382
Label	6.1
Packaging group:	I
Proper shipping name:	TOXIC BY INHALATION LIQUID, N.O.S.

UN "Model Regulation": UN3382, TOXIC BY INHALATION LIQUID, N.O.S., 6.1, I**15 Regulations****Product related hazard informations:****Hazard symbols:**

T+ Very toxic

Risk phrases:

45 May cause cancer.

26 Also very toxic by inhalation.

36/38 Irritating to eyes and skin.

Safety phrases:

53 Avoid exposure - obtain special instructions before use.

45 In case of accident or if you feel unwell, seek medical advice immediately.

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

This product contains a chemical known to the state of California to cause cancer or reproductive toxicity.

All components of this product are listed on the Canadian Non-Domestic Substances List (NDSL).

Information about limitation of use:

For use only by technically qualified individuals.

This product is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

16 Other information:

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

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