CROTONIC ACID
Safety Data Sheet

Supersedes: 02/05/2024 Revision: 1.1 Revision date: 29/07/2024

SECTION 1: Identification

1.1 Identification

Product form	:	Substance
Substance name	:	Crotonic acid
CAS No	:	107-93-7
EC/ List No	:	203-533-9
Formula	:	$C_4H_6O_2$
Molecular weight	:	86.09 g/mol
Synonyms	:	trans-2-Butenoic acid

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture	:	Manufacturing of chemicals, laboratory chemicals.
Relevant identified uses	:	Manufacturing uses.

1.3 Details of the supplier of the safety data sheet

Godavari Biorefineries Ltd.
45/47, Somaiya bhavan,
Mahatma Gandhi Road,
Fort, Mumbai -400001, INDIA.
T 0091 22 22048272
Email: alka@somaiya.com
www.somaiya.com

1.4 Emergency telephone Number

Emergency number	:	0091 2423 279308 0091 22 22048272 (Monday – Friday - 09.30 hrs to 18.00 hrs)

SECTION 2: Hazard(s) identification

GHS classification

2.1 Classification of the substance or mixture

H318	:	Causes serious eye damage.

2.2: GHS labeling

Hazard pictograms (GHS)

GHS05

Signal word (GHS)	:	Danger

Hazard statements (GHS)

H318	:	Causes serious eye damage.

Precautionary Statements:

P280	:	Wear protective gloves / protective clothing / eye protection / face protection.
P305+P351+P338	:	IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P310	:	Immediately call a POISON CENTER or doctor / physician.

2.3 Other hazards

Other hazards not contributing to the Classification	:	No data available.

2.4 Unknown acute toxicity (GHS)

Not applicable.

SECTION 3: Composition/Information on ingredients

3.1 Substance

Substance type : Mono-constituent

Name	Product identifier CAS No EC No	Concentration %	GHS classification
Crotonic acid (Main constituent)	107-93-7 203-533-9	Min. 99.00%	Serious eye damage, Category 1, H318

Full text of hazard classes and H-statements: see section 16

3.2 Mixture

None.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information : Consult a physician and refer to the safety data sheet.

Inhalation : Keep at rest. Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

Skin contact : In case of contact with skin, wash off immediately with polyethylene glycol 400, then with plenty of water. If polyethylene glycol is not available, rinse of with plenty of water. Consult a doctor if skin irritation persists.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

Ingestion : Call a physician immediately. Do not induce vomiting without medical advice.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : None reported

Symptoms/injuries after skin contact : None reported

Symptoms/injuries after eye contact : Risk of serious damage to eyes

Symptoms/injuries after ingestion : Vomiting.

Chronic symptoms : None reported

4.3 Indication of any immediate medical attention and special treatment needed

Seek medical assistance. Treat symptomatically and supportively.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : water spray jet, carbon dioxide

Unsuitable extinguishing media : Foam.

5.2 Special hazards arising from the substance or mixture

Fire hazard : Source of combustible material for fire. In case of fire may be liberated: Carbon monoxide (CO), Carbon dioxide (CO2)

Explosion hazard	:	Organic products which are intentionally or unintentionally in powdered form have, in principle, the possibility of creating a dust explosion hazard. Avoid impact, friction and accumulation of electrostatic charge. Keep away from sources of ignition - refrain from smoking
Reactivity	:	No data available.

5.3 Advice for firefighters

Firefighting instructions	:	Firefighters must always wear appropriate protective equipment (helmet, boots, fireproof gloves and positive pressure self-contained breathing apparatus with facial protective screen)
Protection during firefighting	:	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA, respiratory protection.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Protective equipment	:	Eliminate all sources of ignition. Avoid contact with skin or inhalation of spillage, dust or vapor. Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them.
Emergency procedures	:	Structural firefighters protective clothing will only provide limited protection. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.

6.1.2 For Emergency responders

Protective equipment	:	Equip cleanup crew with proper protection.
Emergency procedures	:	Evacuate and isolate the area until complete dispersion of the substance, by limiting access only to trained personnel.

6.2 Environmental precautions

Retain and dispose of contaminated wash water. Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

6.3 Methods and material for containment and cleaning up

For containment	:	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10).
Methods for cleaning up	:	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities, clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations.

6.4 Reference to other sections

No additional information available.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Precautions for safe handling	:	Keep the formation and deposition of dust to a minimum. Provide good ventilation of the working area (local exhaust ventilation if necessary). Organic products which are intentionally or unintentionally in powdered form have, in principle, the possibility of creating a dust explosion hazard. Avoid impact, friction and accumulation of electrostatic charge. Keep away from sources of ignition - refrain from smoking.
Hygiene measures	:	Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.

7.2 Conditions for safe storage, including any incompatibilities

Incompatible products	:	Strong bases.
Incompatible materials	:	Heat sources. Sources of ignition.
Prohibitions on mixed storage	:	Do not store or transport together with foodstuffs
Storage area	:	Keep the container tightly closed in a cool, well-ventilated place. Keep only in the original container
Special rules on packaging	:	As per Section 14

7.3 Specific end uses

No data available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.1.1 Occupational exposure limits:

Occupational exposure limit values (Workplace Exposure Limits) This information is not available.

8.2 Exposure controls

8.2.1 Appropriate engineering controls : Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment :


Protective goggles.


Gloves.


Protective clothing.

Materials for protective clothing : Nitrile gloves or Butyl rubber Butyl glycollate Type : Butoject (Company KCL) or comparable article; or refer to glove manufacturer's recommendation Evaluation : according to EN 374: level 6 Material thickness : approx 0.3 mm Break through time: 480 min Suitable material: butyl-rubber comparable article;

Eye protection : Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection : Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching the 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.

Respiratory protection : If ventilation is insufficient, suitable respiratory protection must be provided.

Thermal hazard protection : Wear appropriate thermal protective clothing, when necessary.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	Flakes
Appearance	:	White
Odour	:	Characteristic smell.
Colour	:	White to off white
pH	:	No Data Available.
Melting point / Freezing point	:	70 - 73°C
Initial boiling point/boiling range	:	185°C at 101,325 Pa
Flash Point	:	88 °C (Open cup)
Relative density	:	1,027 g/cm3 at 25 °C
Relative vapour density at 20ºC	:	Not determined.
Specific gravity/ density	:	No Data Available
Molecular mass	:	86.09 g/mol
Flammability(Solid, Gas)	:	No Data Available.
Upper/lower flammability or Explosive limit	:	Upper explosion limit: 15,1 %(V) Lower explosion limit: 2,2 %(V)
Solubility	:	Soluble in water 94 g/l at 25 °C
Vapor pressure	:	0.25 hPa at 20 °C
Partition coefficient n-octanol/water	:	n-octanol/water log Pow: 0,71 at 25 °C
Auto-ignition temperature	:	> 400 °C at 1.013 hPa
Decomposition temperature	:	No Data Available
Viscosity	:	No Data Available.
Oxidizing properties	:	No Data Available

9.2 Other information

No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity	:	Forms explosive mixtures with air on intense heating. A range from approx. 15 Kelvin below the flash point is to be rated as critical. The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.
10.2 Chemical Stability	:	Stable under recommended storage conditions.
10.3 Possibility of hazardous reactions	:	Violent reactions possible with: Strong oxidizing agents peroxi compounds alkalines, strong reducing agents
10.4 Conditions to avoid	:	Strong heating.
10.5 Incompatible materials	:	No Data Available.
10.6 Hazardous decomposition products	:	In the event of fire: See section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Likely routes of exposure	:	Ingestion, Inhalation; Skin and eye contact.
Acute toxicity	:	Not classified as acutely toxic.

Crotonic acid (107-93-7)		
LD50 oral toxicity	:	2610 mg/kg (Rat)
LC50 inhalation toxicity	:	No Data Available
LD50 dermal toxicity	:	2000 mg/kg bw (Rat)

Skin irritation	:	No skin irritation - 4 h (OECD Test Guideline 404)
Serious eye damage/irritation	:	The substance causes serious eye damage.
Respiratory or skin sensitization	:	No Data Available
Germ cell mutagenicity	:	No Data Available
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.
Reproductive toxicity	:	No Data Available
Specific target organ toxicity (single exposure)	:	No Data Available
Specific target organ toxicity (repeated exposure)	:	No Data Available
Aspiration hazard	:	No Data Available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Hazardous properties cannot be excluded but are unlikely when the product is handled appropriately. Handle in accordance with good industrial hygiene and safety practice.

11.2 Other hazards

No Data Available.

SECTION 12: Ecological information

12.1 Toxicity

Ecology – general	:	Based on available data, the test item is not classified for environmental hazards according to Regulation (EC) No 1272/2008
Ecology – air	:	No Data Available.
Ecology – water	:	Ksusp-water: 1.62 (according to EUSES) RHOsusp: 1150 kg/m3(According to the CSA Guidance document equation R10-2) PNECsediment-freshwater=(Ksusp-water/RHOsusp) * PNECfreshwater*1000 PNECsediment-freshwater= (1.62/1150) * 0.031 mg/L * 1000 PNECsediment-freshwater= 0.043 mg/kg wwt PNECsediment-freshwater= 0.2008 mg/kg dwt (factor 4.6) PNECsediment-marine water= (Ksusp-water/RHOsusp) * PNECmarine-water*1000 PNECsediment-marine water= (1.62/1150) * 0.0031 mg/L * 1000 PNECsediment-marine water= 0.0043 mg/kg wwt.

PNECsediment-marine water= 0.020088 mg/kg dwt (factor 4.6)

PNEC soil

Ksoil-water: 1.07 (according to EUSES)

RHOsoil: 1150 kg/m3(According to the CSA Guidance document equation R10-2)

PNECsoil= (Ksoil-water/RHOsoil) * PNECfreshwater*1000

PNECsoil= (1.07/1150) * 0.031 mg/L * 1000

PNECsoil= 0.0288 mg/kg dwt

PNECsoil= 0.0288 mg/kg soil dwt

Crotonic acid (107-93-7)				
	:	**Toxicity to Fish**	**Toxicity to aquatic invertebrates**	**Toxicity to Microorganisms**
Species		Pimephales promelas (fathead minnow)	Daphnia magna	Algae
Value	**:**	LC50	EC50	ErC50
Exposure time	**:**	31 mg/l - 96 h	150 mg/l - 48 h	> 57,5 mg/l - 72 h
Test method: OECD		According to a method similar to the OECD 203	According to a method similar to the OECD 202 guideline	According to a method similar to the OECD 201 guideline

12.2 Persistence and degradability

Crotonic acid (107-93-7)

Persistence and degradability	**:**	Aerobic - Exposure time 28 day Result: 100 % - Readily biodegradable. (OECD Test Guideline 301F)

12.3 Bioaccumulative potential

Crotonic acid (107-93-7)

Log Pow	**:**	The substance is readily biodegradable, is very water soluble, has a LogPow < 4 and is not expected to bioaccumulate.A potential for bioaccumulation of Crotonic acid is not expected due to the log Pow of 0.85 (no B).
Bioaccumulative potential	**:**	The study on bioaccumulation in aquatic species, preferably fish, does not need to be conducted because the substance's log Pow of 0.85 indicates a low potential for bioaccumulation.

12.4 Mobility in soil

Crotonic acid (107-93-7)

Surface tension	**:**	No Data Available.
Ecology – soil	**:**	No Data Available.

12.5 Results of PBT and vPvB assessment

Regarding all available data on biotic and abiotic degradation, bioaccumulation and toxicity it can be stated that Crotonic acid does neither fulfill the PBT nor the vPvB criteria.

12.6 Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste disposal recommendations	:	Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

SECTION 14 : TRANSPORT INFORMATION

Marine transport (IMDG)

UN/ID No.	:	UN 2823
Proper shipping name	:	Crotonic acid, solid
Hazard Class	:	8
Subsidiary Risk	:	-
Packing group	:	III
Marine pollutant	:	-
Hazard Labels	:	
EMS Code	:	F-A, S-B

Air transport ICAO/IATA

UN number	:	UN 2823
Proper shipping name	:	Crotonic acid, solid
Hazard Class	:	8
Subsidiary Risk	:	-
Packing group	:	III
Hazard Labels	:	

Department of Transportation (DOT)

UN number	:	UN 2823
Proper shipping name and description	:	Crotonic acid, solid
Class	:	8
Packaging group	:	III
Reportable Quantity (RQ)	:	-
Poison Inhalation Hazard	:	-
Hazard labels	:	

SECTION 15: Regulatory information

15.1 National regulations

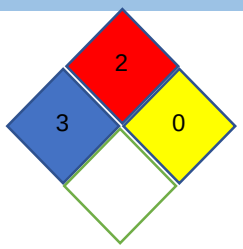
Country/State of regulations	National Inventories	Listing
US Federal Regulations	TSCA	Listed
Japan	Existing Chemical Substances	Listed
EU	ECSI	Listed
New Zealand	NZIoC	Listed
China	IECSC	Listed

SECTION 16: Other information

16.1 Hazard Statement

H318 : Causes serious eye damage.

16.2 NFPA Rating



16.3 Abbreviations and acronyms :

PBT =Persistent Bioaccumulative and Toxic

vPvB= Very Persistent and Very Bioaccumulative

SCBA= Self Contained Breathing Apparatus

NIOSH REL= National Institute for Occupational Safety and Health Recommended Exposure Limit

OSHA PEL=Occupational Safety and Health Adminstration Permissible Exposure Limit

OELTWA= Occupational Exposure Limit Time Weighted Averages

IDLH= Immediately Dangerous to Life or Health

UEL= Upper Explosive Limit

LEL= Lower Explosive Limit

RTECS= Registry of Toxic Effects of Chemical Substances

NTP=National Toxicology Programm

IARC= International Agency for Research on Cancer

EPA=Environmental Protection Agency

TSCA= Toxic Substances Control Act

NFPA= National Fire Protection Association

CSR=Chemical Safety Report

BCF = Bio Concentration Factor

DNEL = Derived No Effect Level

PNEC = Predicted No Effect Concentration

TLV = Threshhold Limit Value

ACGIH = American Conference of Governmental Industrial Hygienist

REACH = Registration, Evaluation. Authorisation and Restriction of Chemicals

CLP = Classification, Labelling and Packaging

LD / LC = Lethal Doses / Lethal Concentration

GHS = Globally Harmonised System

ADR = Accord europeen relative au transport international de marchandises

IMDG-Code = International Maritime Code for Dangerous Goods

EmS = Emergency measures on Sea

16.4 Further information:

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