

Chemical Safety Data Sheet MSDS / SDS

CROTONALDEHYDE

Revision Date:2026-05-31 Revision Number:1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product identifier

Product name : CROTONALDEHYDE
CBnumber : CB6733702
CAS : 4170-30-3
EINECS Number : 224-030-0
Synonyms : 2-Butenal, butenal

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

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.
Uses advised against : none

Company Identification

Company : Chemicalbook
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing
Telephone : 010-86108875

SECTION 2: Hazards identification

GHS Label elements, including precautionary statements

Symbol(GHS)



Signal word

Danger

Precautionary statements

P201 Obtain special instructions before use.
P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Hazard statements

H225 Highly Flammable liquid and vapour
H315 Causes skin irritation
H318 Causes serious eye damage
H330 Fatal if inhaled
H335 May cause respiratory irritation
H341 Suspected of causing genetic defects

H373 May cause damage to organs through prolonged or repeated exposure

H400 Very toxic to aquatic life

SECTION 3: Composition/information on ingredients

Substance

Product name	: CROTONALDEHYDE
Synonyms	: 2-Butenal, butenal
CAS	: 4170-30-3
EC number	: 224-030-0
MF	: C ₄ H ₆ O
MW	: 70.09

SECTION 4: First aid measures

Eye Contact

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

Skin Contact

Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation

Remove to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion

Do NOT induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects

Difficulty in breathing. Causes eye burns. . Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

Self-Protection of the First Aider

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

Notes to Physician

Treat symptomatically.

SECTION 5: Firefighting measures

Suitable Extinguishing Media

Water spray, carbon dioxide (CO₂), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.

Extinguishing media which must not be used for safety reasons

No information available.

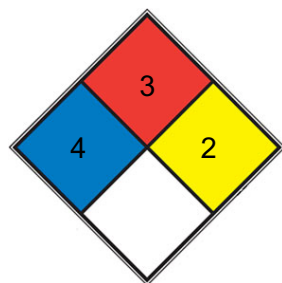
Specific Hazards Arising from the Chemical

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Do not allow run-off from fire-fighting to enter drains or water courses.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA 704



☒ HEALTH	4	Very short exposure could cause death or major residual injury (e.g. hydrogen cyanide, phosgene, methyl isocyanate, hydrofluoric acid)
☒ FIRE	3	Liquids and solids (including finely divided suspended solids) that can be ignited under almost all ambient temperature conditions . Liquids having a flash point below 22.8 °C (73 °F) and having a boiling point at or above 37.8 °C (100 °F) or having a flash point between 22.8 and 37.8 °C (73 and 100 °F). (e.g. gasoline, acetone)
☒ REACT	2	Undergoes violent chemical change at elevated temperatures and pressures, reacts violently with water, or may form explosive mixtures with water (e.g. white phosphorus, potassium , sodium)
☐ SPEC.		
☐ HAZ.		

SECTION 6: Accidental release measures

Personal Precautions

Use personal protective equipment as required. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges.

Environmental Precautions

Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained. See Section 12 for additional Ecological Information. Avoid release to the environment. Collect spillage.

Methods for Containment and Clean Up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: Handling and storage

Handling

Use only under a chemical fume hood. Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Use spark-proof tools and explosion-proof equipment. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance. Take precautionary measures against static discharges. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

Storage

Keep containers tightly closed in a dry, cool and well-ventilated place. Flammables area. Keep away from heat, sparks and flame.

Store under an inert atmosphere. Reacts with air to form peroxides. Should crystals form in a peroxidizable liquid, peroxidation may have occurred and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely by professionals.

Specific Use(s)

Use in laboratories

SECTION 8: Exposure controls/personal protection

Control Parameters

Component	China	Taiwan	Thailand	Hong Kong
Crotonaldehyde	Ceiling: 12 mg/m3	TWA: 2 ppm TWA: 5.7 mg/m3		-

Component	ACGIH TLV	OSHA PEL	NIOSH	The United Kingdom	European Union
Crotonaldehyde	Ceiling: 0.3 ppm Skin	(Vacated) TWA: 2 ppm (Vacated) TWA: 6 mg/m3 TWA: 2 ppm TWA: 6 mg/m3	IDLH: 50 ppm REL = 2 ppm (TWA) REL = 6 mg/m3 (TWA)	-	

Legend

ACGIH

- American Conference of Governmental Industrial Hygienists

OSHA

- Occupational Safety and Health Administration

NIOSH

NIOSH - National Institute for Occupational Safety and Health

Monitoring methods

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. MDHS70 General methods for sampling airborne gases and vapours MDHS 88

Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

Exposure Controls

Engineering Measures

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting equipment. Ensure adequate ventilation, especially in confined areas. Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source.

Personal protective equipment

Eye Protection

Goggles (European standard - EN 166)

Hand Protection

Protective gloves

Neoprene

Natural rubber

PVC

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves.

(Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Butyl rubber	< 120 minutes	0.7 mm	Level 41	As tested under EN374-3 Determination of
Nitrile rubber			EN 374	Resistance to Permeation by Chemicals

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Large scale/emergency use

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

Recommended Filter type: Organic gases and vapours filter Type A Brown conforming to EN14387

Small scale/Laboratory use

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141

When RPE is used a face piece Fit Test should be conducted

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls

Prevent product from entering drains. Do not allow material to contaminate ground water system. Local authorities should be advised if significant spillages cannot be contained.

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Clear

Physical State

Liquid

Odor

pungent

Odor Threshold

0.0210 mg/l

pH

No information available

Melting Point/Range

74 °C / -101.2 °F

Softening Point

No data available

Boiling Point/Range

101 - 103 °C / 213.8 - 217.4 °F @ 760 mmHg

Flash Point

13 °C / 55.4 °F Method - CC (closed cup)

Evaporation Rate

No data available

Flammability (solid,gas)

Not applicable Liquid

Explosion Limits

Lower 2.1 vol%

Upper 15.5 vol%

Vapor Pressure

40 mbar @ 20 °C

Vapor Density

2.4 1 (Air = 1.0)

Specific Gravity / Density

0.858

Bulk Density

Not applicable Liquid

Water Solubility

150 g/l (20°C)

Solubility in other solvents

Miscible with alcohol, benzene, gasoline, kerosene, solvent naphtha, and toluene (Hawley, 1981)

Partition Coefficient (n-octanol/water)

No data available

Autoignition Temperature

155 °C / 311 °

F DIN 51794

Decomposition Temperature

No data available

Viscosity

0.27 mPa*s @ 20°C Calculated

Explosive Properties

Not applicable

Oxidizing Properties

Not applicable

Molecular Formula

C₄ H₆ O

Molecular Weight

70.09

Colour

Colourless

Henry's Law Constant

1.92×10^{-5} atm·m³/mol (Buttery et al., 1971)

SECTION 10: Stability and reactivity

Stability

Air sensitive.

Hazardous Reactions

May form explosive peroxides.

Hazardous Polymerization

Hazardous polymerization may occur.

Conditions to Avoid

Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition. Exposure to air.

Materials to avoid

Strong oxidizing agents. Strong reducing agents. Bases. Ammonia.

Hazardous Decomposition Products

Carbon monoxide (CO). Carbon dioxide (CO₂).

SECTION 11: Toxicological information

Product Information

(a) acute toxicity;

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Crotonaldehyde	174 mg/kg (rat) OECD 420	26 mg/kg (Guinea pig)	336 mg/m ³ (Rat) 4h (OECD 403)

(b) skin corrosion/irritation;

Category 2

Category 1

Respiratory

Based on available data, the classification criteria are not met

Skin

Based on available data, the classification criteria are not met

Category 2

Based on available data, the classification criteria are not met

The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	EU	UK	Germany	IARC
Crotonaldehyde				Group 2B

Based on available data, the classification criteria are not met

Category 3

Results / Target organs

Respiratory system

Category 2

Target Organs

Nasal Cavities.

Based on available data, the classification criteria are not met

Symptoms / effects, both acute and delayed

Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

SECTION 12: Ecological information

Ecotoxicity effects

The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

			Freshwater	
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Component	Freshwater Fish	Water Flea	Algae	Microtox
Crotonaldehyde	LC50: = 0.84 mg/L, 96h flow-through (Pimephales promelas) LC50: = 3.5 mg/L, 96h static (Lepomis macrochirus) LC50: = 0.65 mg/L, 96h flow-through (Oncorhynchus mykiss)	EC50: = 2 mg/L, 48h (Daphnia magna)		EC50 = 20 mg/L 48 h

Persistence and Degradability

Readily biodegradable

Persistence

Soluble in water, Persistence is unlikely, based on information available.

Degradation in sewage

Contains substances known to be hazardous to the environment or not degradable in waste

treatment plant

water treatment plants.

Bioaccumulative Potential

Bioaccumulation is unlikely; Bioaccumulation is unlikely

Mobility in soil

The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility Highly mobile in soils

Endocrine Disruptor Information

This product does not contain any known or suspected endocrine disruptors

Persistent Organic Pollutant

This product does not contain any known or suspected substance

Ozone Depletion Potential

This product does not contain any known or suspected substance

SECTION 13: Disposal considerations

Waste from Residues/Unused Products

Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging

Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

Other Information

Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Can be landfilled or incinerated, when in compliance with local regulations. Do not empty into drains. Do not let this chemical enter the environment.

SECTION 14: Transport information

Road and Rail Transport

UN-No

UN1143

Proper Shipping Name

CROTONALDEHYDE

Hazard Class

6.1

Subsidiary Hazard Class

3

Packing Group

I

IMDG/IMO**UN-No**

UN1143

Proper Shipping Name

CROTONALDEHYDE

Hazard Class

6.1

Subsidiary Hazard Class

3

Packing Group

I

IATA

FORBIDDEN FOR IATA TRANSPORT

UN-No

UN1143

Proper Shipping Name

CROTONALDEHYDE FORBIDDEN FOR IATA TRANSPORT

Hazard Class

6.1

Subsidiary Hazard Class

3

Packing Group

I

Special Precautions for User

No special precautions required

SECTION 15: Regulatory information

International Inventories

X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

Component	The Inventory of Hazardous Chemicals (2015 Edition)	List of dangerous goods GB 12268 - 2012	TCSI	IECSC	EINECS	TSCA	DSL	PICCS	ENCS	ISHL	AICS	KECL
Crotonaldehyde	X	X	X	X	224-030-0	X	X	X	X	X	X	KE-05-0370

National Regulations

Component	Toxic Chemical Substances Control Act
Crotonaldehyde 4170-30-3 (> 95)	Class IV (1 wt%)

SECTION 16: Other information

Prepared By

Health, Safety and Environmental Department

Creation Date

02-Jun-2009

Revision Date

07-Sep-2025

Revision Summary

Not applicable.

Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

First aid for chemical exposure, including the use of eye wash and safety showers.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Chemical incident response training.

Legend

CAS

Chemical Abstracts Service

TSCA

United States Toxic Substances Control Act Section 8(b)

Inventory

EINECS/ELINCS

European Inventory of Existing Commercial Chemical

Substances/EU List of Notified Chemical Substances

DSL/NDSL

Canadian Domestic Substances List/Non-Domestic

Substances List

PICCS

Philippines Inventory of Chemicals and Chemical Substances

ENCS

Japanese Existing and New Chemical Substances

IECSC

Chinese Inventory of Existing Chemical Substances

AICS

Australian Inventory of Chemical Substances

KECL

Korean Existing and Evaluated Chemical Substances

NZIoC

New Zealand Inventory of Chemicals

WEL

Workplace Exposure Limit

TWA

Time Weighted Average

ACGIH

American Conference of Governmental Industrial Hygienists

IARC

International Agency for Research on Cancer

DNEL

Derived No Effect Level

PNEC

Predicted No Effect Concentration

RPE

Respiratory Protective Equipment

LD50

Lethal Dose 50%

LC50

Lethal Concentration 50%

EC50

Effective Concentration 50%

NOEC

No Observed Effect Concentration

POW

Partition coefficient Octanol:Water

PBT

Persistent, Bioaccumulative, Toxic

vPvB

very Persistent, very Bioaccumulative

ICAO/IATA

International Civil Aviation Organization/International Air
Transport Association

IMO/IMDG

International Maritime Organization/International Maritime
Dangerous Goods Code

ADR

European Agreement Concerning the International Carriage of
Dangerous Goods by Road

MARPOL

International Convention for the Prevention of Pollution from
Ships

OECD

Organisation for Economic Co-operation and Development

ATE

Acute Toxicity Estimate

BCF

Bioconcentration factor

VOC

(Volatile Organic Compound)

Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Disclaimer

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