

SAFETY DATA SHEET

Version 6.9
Revision Date 03/02/2024
Print Date 05/12/2024

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifiers**

Product name : Crotonaldehyde, mixture of *cis* and *trans*

Product Number : 27980

Brand : Aldrich

Index-No. : 605-009-00-9

CAS-No. : 4170-30-3

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

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765

Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Flammable liquids (Category 2), H225

Acute toxicity, Oral (Category 3), H301

Acute toxicity, Inhalation (Category 2), H330

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Acute toxicity, Dermal (Category 3), H311
 Skin irritation (Category 2), H315
 Serious eye damage (Category 1), H318
 Germ cell mutagenicity (Category 2), H341
 Carcinogenicity (Category 2), H351
 Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
 Specific target organ toxicity - repeated exposure (Category 2), H373
 Short-term (acute) aquatic hazard (Category 1), H400

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal Word

Danger

Hazard Statements

H225	Highly flammable liquid and vapor.
H301 + H311	Toxic if swallowed or in contact with skin.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
H335	May cause respiratory irritation.
H341	Suspected of causing genetic defects.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
Precautionary Statements	
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe mist or vapors.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284	Wear respiratory protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391	Collect spillage.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Lachrymator.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Formula : C₄H₆O
Molecular weight : 70.09 g/mol

Component		Classification	Concentration
crotonaldehyde			
CAS-No.	4170-30-3	Flam. Liq. 2; Acute Tox. 3; Acute Tox. 2; Acute Tox. 3; Skin Irrit. 2; Eye Dam. 1; Muta. 2; Carc. 2; STOT SE 3; STOT RE 2; Aquatic Acute 1; H225, H301, H330, H311, H315, H318, H341, H351, H335, H373, H400 M-Factor - Aquatic Acute: 1	<= 100 %
EC-No.	224-030-0		
Index-No.	605-009-00-9		
butyl hydroxytoluene (BHT)			
CAS-No.	128-37-0	Aquatic Acute 1; Aquatic Chronic 1; H400, H410 M-Factor - Aquatic Acute: 1 - Aquatic Chronic: 1	>= 0.1 - < 1 %
EC-No.	204-881-4		
Registration number	01-2119565113-46-XXXX		

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO₂) Foam Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Carbon oxides

Combustible.

Pay attention to flashback.

Vapors are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Forms explosive mixtures with air at ambient temperatures.

5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage stability

 Recommended storage temperature

2 - 8 °C

Store under inert gas. Air sensitive.

Storage class

Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
crotonaldehyde	4170-30-3	C	0.3 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Confirmed animal carcinogen with unknown relevance to humans Danger of cutaneous absorption		
		TWA	2 ppm 6 mg/m ³	USA. NIOSH Recommended Exposure Limits
		TWA	2 ppm 6 mg/m ³	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		C	0.3 ppm	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		Skin		
butyl hydroxytoluene (BHT)	128-37-0	TWA	2 mg/m ³	USA. ACGIH Threshold Limit Values (TLV)
		Not classifiable as a human carcinogen		
		TWA	10 mg/m ³	USA. NIOSH Recommended Exposure Limits
		PEL	10 mg/m ³	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

8.2 Exposure controls

Appropriate engineering controls

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching 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.

Splash contact

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: 60 min

Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Flame retardant antistatic protective clothing.

Respiratory protection

Recommended Filter type: Filter A (acc. to DIN 3181) for vapours of organic compounds

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- | | |
|--|---------------------------|
| a) Appearance | Form: liquid |
| b) Odor | Stench. |
| c) Odor Threshold | No data available |
| d) pH | No data available |
| e) Melting point/freezing point | No data available |
| f) Initial boiling point and boiling range | 101 - 102 °C 214 - 216 °F |
| g) Flash point | 13 °C (55 °F) - c.c. |
| h) Evaporation rate | No data available |
| i) Flammability (solid, | No data available |

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	gas)	
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 15.5 %(V) Lower explosion limit: 2.1 %(V)
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	0.853 g/mL at 20 °C (68 °F)
	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Vapors may form explosive mixture with air.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Contains the following stabilizer(s):

butyl hydroxytoluene (BHT) (0.1 %)

water (1 %)

10.3 Possibility of hazardous reactions

Violent reactions possible with:

Oxidizing agents

Amines

Risk of explosion with:

butadiene

alkalines

Nitric acid

Acids

10.4 Conditions to avoid

Warming.

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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

Mixture

Acute toxicity

Acute toxicity estimate Oral - 80 mg/kg

(Calculation method)

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

LD50 Oral - Rat - 80 mg/kg

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Remarks: (RTECS)

Acute toxicity estimate Inhalation - 4 h - 0.5001 mg/l - vapor (Calculation method)

Symptoms: Possible symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages: damage of respiratory tract

Symptoms: mucosal irritations, Cough, Shortness of breath, damage of respiratory tract, Inhalation may lead to the formation of oedemas in the respiratory tract.

Inhalation: Irritating to respiratory system.

Acute toxicity estimate Dermal - 300 mg/kg

(Calculation method)

LD50 Dermal - Rabbit - 128 - 324 mg/kg

Remarks: (Lit.)

Skin corrosion/irritation

Remarks: Mixture causes skin irritation.

Skin - Rabbit

Result: Irritations

Remarks: (IUCLID)

Serious eye damage/eye irritation

Remarks: Mixture causes serious eye damage.

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

Evidence of genetic defects.

Suspected of causing genetic defects.

Test Type: Mutagenicity (mammal cell test): micronucleus.

Result: negative

Remarks: (National Toxicology Program)

Test Type: Ames test

Test system: Salmonella typhimurium

Result: positive

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Remarks: (National Toxicology Program)

Carcinogenicity

Evidence of a carcinogenic effect.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (crotonaldehyde)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

Mixture may cause respiratory irritation.

Specific target organ toxicity - repeated exposure

Mixture may cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

No data available

11.2 Additional Information

RTECS: GP9499000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Handle in accordance with good industrial hygiene and safety practice.

After absorption:

Headache

Dizziness

somnolence

Kidney injury may occur.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Components

crotonaldehyde

Acute toxicity

LD50 Oral - Rat - 80 mg/kg

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Remarks: (RTECS)

Symptoms: mucosal irritations, Cough, Shortness of breath, damage of respiratory tract, Inhalation may lead to the formation of oedemas in the respiratory tract.

Inhalation: Irritating to respiratory system.

LD50 Dermal - Rabbit - 128 - 324 mg/kg

Remarks: (Lit.)

Skin corrosion/irritation

Skin - Rabbit

Result: Irritations

Remarks: (IUCLID)

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

Suspected of causing genetic defects.

Test Type: Mutagenicity (mammal cell test): micronucleus.

Result: negative

Remarks: (National Toxicology Program)

Test Type: Ames test

Test system: Salmonella typhimurium

Result: positive

Remarks: (National Toxicology Program)

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

May cause respiratory irritation.

Acute oral toxicity - Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute inhalation toxicity - mucosal irritations, Cough, Shortness of breath, damage of respiratory tract, Inhalation may lead to the formation of oedemas in the respiratory tract.

Specific target organ toxicity - repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

No data available

butyl hydroxytoluene (BHT)

Acute toxicity

LD50 Oral - Rat - male and female - > 6,000 mg/kg

(OECD Test Guideline 401)

Inhalation: No data available

LD50 Dermal - Rat - male and female - > 2,000 mg/kg

(OECD Test Guideline 402)

Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation

(OECD Test Guideline 405)

Respiratory or skin sensitization

Patch test: - In vitro study

Result: negative

Remarks: (ECHA)

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Remarks: (ECHA)

Test Type: In vitro mammalian cell gene mutation test

Test system: rat hepatocytes

Result: negative

Remarks: (ECHA)

Test Type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: Chinese hamster ovary cells

Result: negative

Remarks: (ECHA)

Species: Mouse - male and female - Bone marrow

Result: negative

Remarks: (ECHA)

Species: Rat - male - Bone marrow

Result: negative

Remarks: (ECHA)

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
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NTP:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated
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carcinogen by NTP.

OSHA:

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

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

SECTION 12: Ecological information

12.1 Toxicity

Mixture

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 0.65 mg/l - 96 h Remarks: (IUCLID)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 2 mg/l - 48 h Remarks: (IUCLID)
Toxicity to algae	IC50 - algae - 0.88 mg/l - 72 h Remarks: (External MSDS)
Toxicity to bacteria	EC10 - Bacteria - 14 mg/l - 72 h Remarks: (Lit.) EC5 - E.coli - 15,000 mg/l Remarks: (Lit.) (maximum permissible toxic concentration)

12.2 Persistence and degradability

Biodegradability	Result: 30 % - Not readily biodegradable. (OECD Test Guideline 301E) Result: > 95 % - Readily eliminated from water (OECD Test Guideline 302B)
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12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

No data available

Components

crotonaldehyde

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 0.65 mg/l - 96 h Remarks: (IUCLID)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 2 mg/l - 48 h Remarks: (IUCLID)
Toxicity to algae	IC50 - algae - 0.88 mg/l - 72 h Remarks: (External MSDS)
Toxicity to bacteria	EC10 - Bacteria - 14 mg/l - 72 h Remarks: (Lit.) EC5 - E.coli - 15,000 mg/l Remarks: (Lit.) (maximum permissible toxic concentration)

butyl hydroxytoluene (BHT)

Toxicity to fish	semi-static test LC50 - Danio rerio (zebra fish) - > 0.57 mg/l - 96 h (Directive 67/548/EEC, Annex V, C.1.)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 0.48 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - Desmodesmus subspicatus (green algae) - > 0.4 mg/l - 72 h (Regulation (EC) No. 440/2008, Annex, C.3)
Toxicity to bacteria	static test EC50 - activated sludge - > 10,000 mg/l - 3 h (OECD Test Guideline 209)
Toxicity to fish(Chronic toxicity)	NOEC - Oryzias latipes - 0.053 mg/l - 30 d (OECD Test Guideline 210)
Toxicity to daphnia and other aquatic invertebrates(Chronic)	EC50 - Daphnia magna (Water flea) - 0.096 mg/l - 21 d (OECD Test Guideline 211)

toxicity)

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

DOT (US)

UN number: 1143 Class: 6.1I (3) Packing group: I
Proper shipping name: Crotonaldehyde, stabilized
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: Hazard Zone B

IMDG

UN number: 1143 Class: 6.1 (3) Packing group: I EMS-No: F-E, S-D
Proper shipping name: CROTONALDEHYDE, STABILIZED
Marine pollutant : yes
Marine pollutant : yes

IATA

UN number: 1143 Class: 6.1 (3)
Proper shipping name: Crotonaldehyde
IATA Passenger: Not permitted for transport
IATA Cargo: Not permitted for transport

SECTION 15: Regulatory information

SARA 302 Components

crotonaldehyde

CAS-No.
4170-30-3

Revision Date
2007-03-01

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

crotonaldehyde

CAS-No.
4170-30-3

Revision Date
2007-03-01

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SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
crotonaldehyde	4170-30-3	2007-03-01
water	7732-18-5	

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
crotonaldehyde	4170-30-3	2007-03-01

SECTION 16: Other information**Further information**

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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