

## 1 Identification

### Product identifier

**Product name:** Crotonaldehyde, predominantly trans

**Stock number:** 96711

**CAS Number:**  
123-73-9

**EC number:**  
204-647-1

**Index number:**  
605-009-00-9

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

**Identified use:** SU24 Scientific research and development

### Details of the supplier of the safety data sheet

#### Manufacturer/Supplier:

Alfa Aesar  
Thermo Fisher Scientific Chemicals, Inc.  
30 Bond Street  
Ward Hill, MA 01835-8099  
Tel: 800-343-0660  
Fax: 800-322-4757  
Email: tech@alfa.com  
www.alfa.com

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

#### Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

## 2 Hazard(s) identification

### Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)



GHS02 Flame

Flam. Liq. 2 H225 Highly flammable liquid and vapor.



GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 3 H311 Toxic in contact with skin.

Acute Tox. 1 H330 Fatal if inhaled.



GHS08 Health hazard

Muta. 2 H341 Suspected of causing genetic defects.

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.



GHS07

Skin Irrit. 2 H315 Causes skin irritation.

STOT SE 3 H335 May cause respiratory irritation.

**Hazards not otherwise classified** No information known.

### Label elements

**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

### Hazard pictograms



GHS02 GHS06 GHS08

### Signal word

**Danger**

### Hazard statements

H225 Highly flammable liquid and vapor.

H301+H311 Toxic if swallowed or in contact with skin.

H330 Fatal if inhaled.

H315 Causes skin irritation.

H341 Suspected of causing genetic defects.

H335 May cause respiratory irritation.

H373 May cause damage to organs through prolonged or repeated exposure.

### Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor/...

P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P320 Specific treatment is urgent (see on this label).

P361 Take off immediately all contaminated clothing.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

### WHMIS classification

B2 - Flammable liquid

D1A - Very toxic material causing immediate and serious toxic effects

D2A - Very toxic material causing other toxic effects



<b>Product name: Crotonaldehyde, predominantly trans</b>	
<div>Classification system HMIS ratings (scale 0-4) (Hazardous Materials Identification System)</div> <div><div><div>HEALTH3</div><div>FIRE3</div><div>REACTIVITY1</div></div><div>Health (acute effects) = 3 Flammability = 3 Physical Hazard = 1</div></div> <div>Other hazards Results of PBT and vPvB assessment PBT: Not applicable. vPvB: Not applicable.</div>	
<b>3 Composition/information on ingredients</b>  Chemical characterization: Substances CAS# Description: 123-73-9 Crotonaldehyde, predominantly trans Identification number(s): EC number: 204-647-1 Index number: 605-009-00-9	
<b>4 First-aid measures</b>  Description of 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 Do not induce vomiting; immediately call for medical help. Information for doctor Most important symptoms and effects, both acute and delayed No further relevant information available. Indication of any immediate medical attention and special treatment needed No further relevant information available.	
<b>5 Fire-fighting measures</b>  Extinguishing media Suitable extinguishing agents Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam. Special hazards arising from the substance or mixture If this product is involved in a fire, the following can be released: Carbon monoxide and carbon dioxide Advice for firefighters Protective equipment: Wear self-contained respirator. Wear fully protective impervious suit.	
<b>6 Accidental release measures</b>  Personal precautions, protective equipment and emergency procedures Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation Keep away from ignition sources Environmental precautions: Do not allow material to be released to the environment without proper governmental permits. Methods and material for containment and cleaning up: Keep away from ignition sources. Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Dispose of contaminated material as waste according to section 13. Ensure adequate ventilation. Prevention of secondary hazards: Keep away from ignition sources. Reference to other sections See Section 7 for information on safe handling See Section 8 for information on personal protection equipment. See Section 13 for disposal information.	
<b>7 Handling and storage</b>  Handling Precautions for safe handling Keep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation at the workplace. Open and handle container with care. Information about protection against explosions and fires: Protect against electrostatic charges. Fumes can combine with air to form an explosive mixture. Keep ignition sources away. Conditions for safe storage, including any incompatibilities Storage Requirements to be met by storerooms and receptacles: Store in a cool location. Information about storage in one common storage facility: Store away from oxidizing agents. Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed containers. Specific end use(s) No further relevant information available.	
<b>8 Exposure controls/personal protection</b>  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.	

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(Contd. on page 3)

Product name: **Crotonaldehyde, predominantly trans**

Components with limit values that require monitoring at the workplace:

(Contd. of page 2)

Crotonaldehyde  
mg/m3  
Austria Suspected carcinogen  
France VME 6  
Germany Carcinogen (skin)  
Netherlands MAC-TGG 6  
Norway TWA 125  
Russia 0.5-STEL (skin)  
Switzerland MAK-W 6 (skin)  
United Kingdom 6-LTEL; 18-STEL  
USA PEL

Control parameters

Components with limit values that require monitoring at the workplace:

123-73-9 Crotonaldehyde, predominantly trans (100.0%)

PEL (USA) Long-term value: 6 mg/m³, 2 ppm  
REL (USA) Long-term value: 6 mg/m³, 2 ppm  
See Pocket Guide App. C  
TLV (USA) Ceiling limit value: 0.86 mg/m³, 0.3 ppm  
Skin

Additional information: No data

Exposure controls

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.

Maintain an ergonomically appropriate working environment.

**Breathing equipment:** Use self-contained respiratory protective device in emergency situations.

Protection of hands:

Impervious gloves

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

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

**Penetration time of glove material (in minutes)** Not determined

**Eye protection:** Safety glasses

**Body protection:** Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

Form: Liquid  
Odor: Not determined  
Odor threshold: Not determined.  
pH-value: Not determined.

Change in condition

Melting point/Melting range: -76 °C (-105 °F)  
Boiling point/Boiling range: 104 °C (219 °F)  
Sublimation temperature / start: Not determined

Flash point: 13 °C (55 °F)  
Flammability (solid, gaseous): Not determined.  
Ignition temperature: Not determined  
Decomposition temperature: Not determined  
Auto igniting: Not determined.

**Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures is possible.

Explosion limits:

Lower: Not determined  
Upper: Not determined  
Vapor pressure: Not determined  
Density at 20 °C (68 °F): 0.85 g/cm³ (7.093 lbs/gal)  
Relative density: Not determined.  
Vapor density: Not determined.  
Evaporation rate: Not determined.  
Solubility in / Miscibility with  
Water: Fully miscible  
Partition coefficient (n-octanol/water): Not determined.  
Viscosity:  
dynamic: Not determined.  
kinematic: Not determined.  
Other information: No further relevant information available.

10 Stability and reactivity

**Reactivity** No information known.

**Chemical stability** Stable under recommended storage conditions.

**Thermal decomposition / conditions to be avoided:** Decomposition will not occur if used and stored according to specifications.

**Possibility of hazardous reactions** No dangerous reactions known

**Conditions to avoid** No further relevant information available.

**Incompatible materials:** Oxidizing agents

**Hazardous decomposition products:** Carbon monoxide and carbon dioxide

USA

(Contd. on page 4)

Product name: Crotonaldehyde, predominantly trans

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11 Toxicological information

**Information on toxicological effects**  
**Acute toxicity:**  
Toxic in contact with skin.  
Toxic if swallowed.  
Fatal if inhaled.  
Danger through skin absorption.

**LD/LC50 values that are relevant for classification:**

Oral	LD50	240 mg/kg (mouse)
Dermal	LD50	380 mg/kg (rabbit)
Inhalative	LC50/4H	4 mg/m3/4H (rat)

**Skin irritation or corrosion:** Causes skin irritation.  
**Eye irritation or corrosion:** Irritating effect.  
**Sensitization:** No sensitizing effects known.  
**Germ cell mutagenicity:** Suspected of causing genetic defects.  
**Carcinogenicity:**  
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.  
EPA-C: Possible human carcinogen: limited evidence of carcinogenicity in animals in the absence of human data.  
IARC-3: Not classifiable as to carcinogenicity to humans.  
**Reproductive toxicity:** No effects known.  
**Specific target organ system toxicity - repeated exposure:** May cause damage to organs through prolonged or repeated exposure.  
**Specific target organ system toxicity - single exposure:** May cause respiratory irritation.  
**Aspiration hazard:** No effects known.  
**Other information (about experimental toxicology):**  
Mutagenic effects have been observed on tests with laboratory animals.  
Mutagenic effects have been observed on tests with mammals.  
**Subacute to chronic toxicity:**  
The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:  
Sense Organs and Special Senses (Eye) - lacrimation.  
Lungs, Thorax, or Respiration - other changes.  
Behavioral - excitement.  
Behavioral - convulsions or effect on seizure threshold.  
Behavioral - altered sleep time (including change in righting reflex).  
Behavioral - ataxia.  
Tumorigenic - active as anti-cancer agent.  
**Additional toxicological information:** To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.



12 Ecological information

**Toxicity**  
**Aquatic toxicity:** No further relevant information available.  
**Persistence and degradability** No further relevant information available.  
**Bioaccumulative potential** No further relevant information available.  
**Mobility in soil** No further relevant information available.  
**Ecotoxicological effects:**  
**Remark:** Very toxic for aquatic organisms  
**Additional ecological information:**  
**General notes:**  
Do not allow material to be released to the environment without proper governmental permits.  
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.  
Also poisonous for fish and plankton in water bodies.  
Avoid transfer into the environment.  
Very toxic for aquatic organisms  
**Results of PBT and vPvB assessment**  
**PBT:** Not applicable.  
**vPvB:** Not applicable.  
**Other adverse effects** No further relevant information available.

13 Disposal considerations


**Waste treatment methods**  
**Recommendation** Consult state, local or national regulations to ensure proper disposal.  
**Uncleaned packagings:**  
**Recommendation:** Disposal must be made according to official regulations.  
**Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

UN-Number	UN1143
DOT, IMDG, IATA	
UN proper shipping name	Crotonaldehyde, stabilized
DOT	CROTONALDEHYDE, STABILIZED
IMDG, IATA	
Transport hazard class(es)	
DOT	
	
	
Class	6.1 Toxic substances.
Label	6.1+3
Class	6.1 (TF1) Toxic substances
Label	6.1+3

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USA



<b>Product name: Crotonaldehyde, predominantly trans</b>	
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<b>IMDG, IATA</b>	
	
<b>Class Label</b>	6.1 Toxic substances. 6.1+3
<b>Packing group DOT, IMDG, IATA</b>	I
<b>Environmental hazards:</b>	Environmentally hazardous substance, liquid
<b>Special precautions for user</b>	Warning: Toxic substances
<b>Poison inhalation hazard:</b>	Yes
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	Not applicable.
<b>Transport/Additional information:</b>	
<b>DOT</b>	
<b>Marine Pollutant (DOT):</b>	No
<b>Remarks:</b>	This material is poisonous by inhalation in Hazard Zone B.
<b>UN "Model Regulation":</b>	UN1143, Crotonaldehyde, stabilized, 6.1 (3), I

**15 Regulatory information**

**Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**GHS label elements** The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)  
**Hazard pictograms**



GHS02 GHS06 GHS08

**Signal word** Danger

**Hazard statements**

H225 Highly flammable liquid and vapor.  
H301+H311 Toxic if swallowed or in contact with skin.  
H330 Fatal if inhaled.  
H315 Causes skin irritation.  
H341 Suspected of causing genetic defects.  
H335 May cause respiratory irritation.  
H373 May cause damage to organs through prolonged or repeated exposure.

**Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor/...  
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P320 Specific treatment is urgent (see on this label).  
P361 Take off immediately all contaminated clothing.  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

**National regulations**

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.  
All components of this product are listed on the Canadian Domestic Substances List (DSL).

**SARA Section 313 (specific toxic chemical listings)** Substance is not listed.

**California Proposition 65**

**Prop 65 - Chemicals known to cause cancer** Substance is not listed.

**Prop 65 - Developmental toxicity** Substance is not listed.

**Prop 65 - Developmental toxicity, female** Substance is not listed.

**Prop 65 - Developmental toxicity, male** Substance is not listed.

**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.

**Other regulations, limitations and prohibitive regulations**

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.** Substance is not listed.

**The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.**

Substance is not listed.

**Annex XIV of the REACH Regulations (requiring Authorisation for use)** Substance is not listed.

**Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

**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 SDS:** Global Marketing Department

**Date of preparation / last revision** 11/23/2015 / -

**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)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

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

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

vPvB: very Persistent and very Bioaccumulative

ACGIH: American Conference of Governmental Industrial Hygienists (USA)

OSHA: Occupational Safety and Health Administration (USA)

NTP: National Toxicology Program (USA)

IARC: International Agency for Research on Cancer

EPA: Environmental Protection Agency (USA)