

Material Safety Data Sheet

Version 3.4

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1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Acrolein

Product Number : 01679

Brand : Fluka

Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Flammable liquid, Target Organ Effect, Highly toxic by inhalation, Highly toxic by ingestion, Highly toxic by skin absorption, Corrosive, Carcinogen

Target Organs

Liver, Cardiovascular system., Lungs, Eyes, Kidney

GHS Classification

Flammable liquids (Category 2)
Acute toxicity, Oral (Category 2)
Acute toxicity, Inhalation (Category 1)
Acute toxicity, Dermal (Category 2)
Skin corrosion (Category 1B)
Serious eye damage (Category 1)
Skin sensitization (Category 1)
Carcinogenicity (Category 2)
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)

GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H225	Highly flammable liquid and vapour.
H300 + H310	Fatal if swallowed or in contact with skin
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H330	Fatal if inhaled.
H351	Suspected of causing cancer.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash hands thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P284 Wear respiratory protection.
P302 + P350 IF ON SKIN: Gently wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously 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.
P501 Dispose of contents/ container to an approved waste disposal plant.

HMIS Classification

Health hazard: 4
Chronic Health Hazard: *
Flammability: 3
Physical hazards: 0

NFPA Rating

Health hazard: 4
Fire: 3
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin May be fatal if absorbed through skin. Causes skin burns.
Eyes Causes eye burns.
Ingestion May be fatal if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 2-Propenal

Formula : C₃H₄O
Molecular Weight : 56.06 g/mol

Component		Concentration
Acrolein		
CAS-No.	107-02-8	-
EC-No.	203-453-4	
Index-No.	605-008-00-3	
Hydroquinone		
CAS-No.	123-31-9	0.1 - 1 %
EC-No.	204-617-8	
Index-No.	604-005-00-4	

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES**Conditions of flammability**

Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions**

Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

7. HANDLING AND STORAGE**Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature: 2 - 8 °C

Light sensitive. Store under inert gas. Over time, pressure may increase causing containers to burst. Handle and open container with care. Heat- and air-sensitive.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Basis
Acrolein	107-02-8	STEL	0.3 ppm 0.8 mg/m ³	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	0.1 ppm 0.25 mg/m ³	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

Remarks	The value in mg/m3 is approximate.			
		C	0.1 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Eye & Upper Respiratory Tract irritation Pulmonary edema Pulmonary emphysema Not classifiable as a human carcinogen Danger of cutaneous absorption			
		TWA	0.1 ppm 0.25 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	0.1 ppm 0.25 mg/m3	USA. NIOSH Recommended Exposure Limits
	See Appendix C			
		ST	0.3 ppm 0.8 mg/m3	USA. NIOSH Recommended Exposure Limits
	See Appendix C			
Hydroquinone	123-31-9	TWA	1 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Eye irritation Eye damage Confirmed animal carcinogen with unknown relevance to humans Sensitizer			
		TWA	2 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		TWA	2 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		C	2 mg/m3	USA. NIOSH Recommended Exposure Limits
	15 minute ceiling value			

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand 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 protection

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: > 30 min

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

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, 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 CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist 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.

Eye protection

Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals, Flame retardant antistatic protective clothing, The type of protective

equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Colour	no data available

Safety data

pH	6 at 100 g/l at 25 °C (77 °F)
Melting point/freezing point	Melting point/range: -87 °C (-125 °F) - lit.
Boiling point	53 °C (127 °F) - lit.
Flash point	-29 °C (-20 °F) - closed cup
Ignition temperature	220 °C (428 °F)
Autoignition temperature	no data available
Lower explosion limit	2.8 %(V)
Upper explosion limit	31 %(V)
Vapour pressure	1,090.4 hPa (817.9 mmHg) at 55 °C (131 °F) 279.2 hPa (209.4 mmHg) at 20 °C (68 °F)
Density	0.839 g/mL at 25 °C (77 °F)
Water solubility	soluble
Partition coefficient: n-octanol/water	no data available
Relative vapour density	1.94 - (Air = 1.0)
Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Vapours may form explosive mixture with air.

Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

Materials to avoid

Oxidizing agents, Oxygen, Bases, Strong acids

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

Other decomposition products - no data available

Contains the following stabiliser(s):

Hydroquinone (0.2 %)

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

LD50 Oral - rat - 26 mg/kg

Inhalation LC50

LC50 Inhalation - rat - 4 h - 18 mg/m³

Dermal LD50

LD50 Dermal - rabbit - 200 mg/kg

Other information on acute toxicity

no data available

Skin corrosion/irritation

Skin - rabbit - Severe skin irritation - 24 h - Draize Test

Serious eye damage/eye irritation

Eyes - rabbit - Severe eye irritation - 24 h

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

Genotoxicity in vitro - Human - fibroblast
DNA damage

Genotoxicity in vitro - Human - lymphocyte
Sister chromatid exchange

Genotoxicity in vivo - rat - Intraperitoneal
DNA inhibition

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: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Hydroquinone)

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Acrolein)

NTP: No component 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 identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

Reproductive toxicity - rat - Oral

Effects on Newborn: Growth statistics (e.g., reduced weight gain).

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Ingestion	May be fatal if swallowed.
Skin	May be fatal if absorbed through skin. Causes skin burns.
Eyes	Causes eye burns.

Signs and Symptoms of Exposure

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea

Synergistic effects

no data available

Additional Information

RTECS: AS1050000

12. ECOLOGICAL INFORMATION**Toxicity**

Toxicity to fish	LC50 - <i>Lepomis macrochirus</i> (Bluegill) - 0.08 - 0.12 mg/l - 96.0 h LC100 - <i>Leuciscus idus</i> (Golden orfe) - 0.3 - 4.2 mg/l - 48.0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - <i>Daphnia magna</i> (Water flea) - 0.04 - 0.10 mg/l - 48 h
Toxicity to algae	IC50 - Algae - 0.05 mg/l - 72 h

Persistence and degradability

Biodegradability	Biotic/Aerobic Biochemical oxygen demand within 5 days Biotic/Aerobic Biotic/Aerobic Chemical oxygen demand Biotic/Aerobic Biochemical oxygen demand within 5 days
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Bioaccumulative potential

Bioaccumulation	<i>Lepomis macrochirus</i> - 14 d Bioconcentration factor (BCF): 344
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Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS**Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 1092 Class: 6.1 (3) Packing group: I
Proper shipping name: Acrolein, stabilized
Reportable Quantity (RQ): 1 lbs
Marine pollutant: No
Poison Inhalation Hazard: Hazard zone A

IMDG

UN number: 1092 Class: 6.1 (3) Packing group: I EMS-No: F-E, S-D
Proper shipping name: ACROLEIN, STABILIZED
Marine pollutant: Marine pollutant

IATA

UN number: 1092 Class: 6.1 (3)
Proper shipping name: Acrolein, stabilized
IATA Passenger: Not permitted for transport
IATA Cargo: Not permitted for transport

15. REGULATORY INFORMATION

OSHA Hazards

Flammable liquid, Target Organ Effect, Highly toxic by inhalation, Highly toxic by ingestion, Highly toxic by skin absorption, Corrosive, Carcinogen

SARA 302 Components

The following components are subject to reporting levels established by SARA Title III, Section 302:

	CAS-No.	Revision Date
Hydroquinone	123-31-9	2007-07-01
Acrolein	107-02-8	1993-04-24

SARA 313 Components

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

	CAS-No.	Revision Date
Acrolein	107-02-8	1993-04-24

SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Hydroquinone	123-31-9	2007-07-01
Acrolein	107-02-8	1993-04-24

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Water	7732-18-5	
Hydroquinone	123-31-9	2007-07-01
Acrolein	107-02-8	1993-04-24

New Jersey Right To Know Components

	CAS-No.	Revision Date
Water	7732-18-5	
Acrolein	107-02-8	1993-04-24

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information

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