

Product name	Acetaldehyde		NAGH/EN
MSDS number	80001	Revision Date	Oct.05.2016
Revision Number	1	Issuing date	Oct.05.2016

1. Product and company identification

Trade Name

Acetaldehyde

Manufacturer, importer, supplier

Celanese Ltd.

222 W. Las Colinas Blvd., Suite 900N

Irving, TX 75039

United States

Phone: 972 443 4000

Internet: www.celanese.com

Transportation emergency phone numbers:

For Chemical Emergency: Spill Leak Fire Exposure or Accident

Call CHEMTREC Day or Night

DOMESTIC NORTH AMERICA: 800-424-9300

INTERNATIONAL, CALL +1 703-527-3887 (collect calls accepted)

Identified uses

Chemical intermediate

2. Hazard Identification

GHS Classification

Hazards

Flammable liquid

Acute oral toxicity

Serious eye damage/eye irritation

Carcinogenicity

Specific target organ systemic toxicity (single exposure)

Category

Category 1

Category 4

Category 2A

Category 2

Category 3 Respiratory

Label elements



Signal Word

Danger

Safety Data Sheet



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Hazard Statements

- Extremely flammable liquid and vapor
- Harmful if swallowed
- Causes serious eye irritation
- Suspected of causing cancer
- May cause respiratory irritation

Precautionary statements

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
In case of fire:
Use foam, dry chemical, carbon dioxide, or water spray to extinguish.
Do not eat, drink or smoke when using this product.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Wash face, hands and any exposed skin thoroughly after handling.
Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
Use only outdoors or in a well-ventilated area.
IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
Rinse mouth
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a POISON CENTER or doctor if you feel unwell.
IF exposed or concerned: Get medical advice/attention.
Store locked up.
Store in a well-ventilated place. Keep cool.
Dispose of contents/ container to an approved waste disposal plant.

3. Composition/information on ingredients

Components	CAS-No	Percent %
Acetaldehyde	75-07-0	> 99.5

4. First aid measures

General Information

Remove contaminated, soaked clothing immediately and dispose of safely. Pay attention to own protection. In any case show the physician the Safety Data Sheet.

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Skin

Wash off immediately with plenty of water for at least 15 minutes. Obtain medical attention.

Eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

Inhalation

Keep at rest. Move to fresh air. Call a physician immediately.

Ingestion

Rinse with plenty of water. If swallowed give 1-2 glasses of water to drink immediately. Call a physician immediately.

Notes to physician

Observe for latent pulmonary edema. Treat as an alkaline substance (similar to ammonia).

5. Fire-fighting measures

NFPA: **Health:** 2 **Flammability:** 4 **Instability:** 2

Suitable extinguishing media

Foam, Dry chemical, Carbon dioxide (CO₂), Water spray

Extinguishing media which must not be used for safety reasons

Do not use water jet, to avoid propagation of a fire.

Special exposure hazards arising from the substance or preparation itself, its combustion products, or released gases

Under conditions giving incomplete combustion, hazardous gases produced may consist of

Carbon monoxide

Carbon dioxide (CO₂)

Combustion gases of organic materials must in principle be graded as inhalation poisons

Special protective equipment for fire-fighters

self-contained breathing apparatus (EN 133).

Environmental precautions

Dike and collect water used to fight fire

Other Information

Cool containers / tanks with water spray.

6. Accidental release measures

Personal precautions

Avoid contact with the skin and the eyes. Keep away from heat and sources of ignition. Provide adequate ventilation.

Environmental precautions

Prevent further leakage or spillage. Do not discharge into the drains/surface waters/groundwater.

Methods for cleaning up

Soak up with inert absorbent material. Do not use rags, paper towels or combustible materials to clean up a spill, because spontaneous combustion can occur. Keep in suitable, closed containers for disposal. Dispose of in accordance with local regulations.

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Authority Notification

Within the United States, call the National Response Center (800-424-8802) and appropriate state and local authorities if the quantity released over 24 hours is equal to or greater than the reportable quantity listed below:

1000 lb/454kg

7. Handling and storage

Advice on safe handling

Vapors may form explosive mixtures with air. The pressure in sealed containers can increase under the influence of heat. Refill and handle product only in closed system. Provide sufficient air exchange and/or exhaust in work rooms.

Protection - fire and explosion:

Keep away from sources of ignition - No smoking. Vapours are heavier than air and may spread along floors. Take necessary action to avoid static electricity discharge. Ground and bond containers when transferring material. In case of fire, emergency cooling with water spray should be available.

Technical measures/Storage conditions

Keep tightly closed in a dry, cool and well-ventilated place. Handle an open container with care. Store under nitrogen.

Material storage

Store locked up.. The product will oxidize in air and release heat. Oxidization creates acids and peroxides, that may lead to corrosive damages in storage and handling equipment.

Incompatible products

Keep away from: Acids, Bases, amines, oxygen, oxidizing agents, reducing agents

8. Exposure controls / personal protection

OSHA Exposure Limits

Components	TWA
Acetaldehyde	200 PPM

Components	STEL
Acetaldehyde	150 PPM

ACGIH Exposure Limits

Components	Ceiling Limit Value:
Acetaldehyde	25 PPM

Components	2005 NIOSH IDLH
Acetaldehyde	10,000 ppm

Mexico National Exposure Limits

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Components	Mexican Carcinogen Category
Acetaldehyde	A3

Components	Mexican Ceiling Exposure Limit
Acetaldehyde	45 mg/m ³ 25 PPM

Exposure controls

Engineering measures

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Protective equipment

A safety shower and eyebath should be readily available.

General advice

Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Use only in an area equipped with a safety shower. Hold eye wash fountain available.

Respiratory protection

Based on workplace contaminant level and working limits of the respirator, use a respirator approved by NIOSH. The following is the minimum recommended equipment for an occupational exposure level. To estimate an occupational exposure level see Section 8 and Section 11.

For concentrations > 1 and < 100 times the occupational exposure level: Use Type C full facepiece supplied-air respirator operated in positive-pressure or continuous-flow mode.

For concentrations > 100 times the occupational exposure level or greater than the IDLH level or unknown concentrations (such as in emergencies): Use self-contained breathing apparatus with full facepiece in positive-pressure mode or Type C positive-pressure full facepiece supplied-air respirator with an auxiliary positive-pressure self-contained breathing apparatus escape system.

For escape: Use self-contained breathing apparatus with full facepiece or any respirator specifically approved for escape.

Skin protection:

Wear impervious clothing and gloves to prevent contact. Butyl rubber is recommended. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Unsuitable materials:

Latex

Eye/face protection:

Wear chemical goggles when there is a reasonable chance of eye contact.. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face..

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9. Physical and chemical properties

Appearance

Form	liquid
Color	colourless
Odor	pungent
Molecular Weight	44.05
Flash point	-39°C (-38.2°F)
Method	closed cup
Ignition temperature	175°C (347°F)
Decomposition Temperature	420 °C
Lower explosion limit	4 Vol. %
Upper explosion limit	60 Vol. % (-189.4°F)
Boiling point/range	20°C (68°F) @ 1013 hPa
pH	not determined
Viscosity	0.25 mPa*s @ 15°C
Vapor pressure	1203 hPa @ 25°C 2794 hPa @ 50°C
Vapor density	1.52 (Air=1)
Evaporation Rate	Not determined
Water solubility	miscible
Solubility in other solvents	miscible with, Ethanol, Diethyl ether, Benzene
Partition coefficient (n-octanol/water)	0.45 (measured)

10. Stability and reactivity

Chemical stability

Stable if protected from heat and exposure to air.

Conditions to avoid

Avoid any source of ignition. Avoid contact with heat, sparks, open flame, and static discharge.

Incompatible Materials

Keep away from:
oxygen
oxidizing agents
reducing agents
Acids
Bases

Hazardous Combustion or Decomposition Products:

In the presence of sufficient oxygen, combustion may produce oxides of nitrogen and carbon dioxide. Nitrogen oxides can react with water to produce nitric acid. Combustion under oxygen starved conditions may produce numerous toxic products including carbon monoxide, cyanides and nitriles., Thermal decomposition products may include oxides of carbon.

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Possibility of hazardous reactions

May form explosive peroxides, Polymerization can occur, Polymerization is a highly exothermic reaction and may generate sufficient heat to cause thermal decomposition and/or rupture containers.

11. Toxicological information**Potential health effects**

Routes of exposure Skin, eyes, inhalation, ingestion.

Immediate effects

Skin	May cause skin irritation. Symptoms of overexposure include: Redness or discoloration, swelling, itching, burning or blistering of skin.
Eyes	Causes eye irritation. Symptoms of exposure may include: Eye irritation, burning sensation, pain, watering, and/or change of vision.
Inhalation	May cause irritation of respiratory tract. Symptoms of exposure may include: Nasal discharge, hoarseness, coughing, chest pain and breathing difficulty.
Ingestion	May be harmful if swallowed. Symptoms of exposure may include: Nausea, vomiting, loss of appetite, gastrointestinal irritation and/or diarrhea.
Other:	Acetaldehyde is listed as IARC 2B, possible carcinogen and an anticipated carcinogen by the National Toxicology Program (NTP)

Target organ effects Overexposure (prolonged or repeated exposure) may cause:
Injury to the eyes
Irritation of the respiratory tract

Medical conditions which may be aggravated by exposure: Significant exposure to this chemical may adversely affect people with acute or chronic disease of the:
Respiratory Tract
Skin
Eyes

Acetaldehyde

Acute oral toxicity	LD50: 660-1930 mg/kg
Acute dermal toxicity	no data available
Acute inhalation toxicity	LC50 (4h): 24040 mg/m ³
Method	OECD 403
Skin corrosion/irritation	slight irritant effect - does not require labelling
Species	rabbit
Method	OECD 404
Skin Sensitization	nonsensitizer

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	Species	guinea pig female
	Method	OECD 406
Serious eye damage/eye irritation		irritant
	Species	Humans
Carcinogenic effects		Suspected of causing cancer
	Species	rat
in vitro Mutagenicity		Ames Test: negative - with and without metabolic activation - Method: OECD 471 Cytotoxicity and micronucleos assay in human lymphoblastoid cells (TK6): positive - Method: OECD 487
Developmental effects		No teratogenic, maternal or developmental effects
	Routes of exposure	oral gavage
	Species	rat
		NOAEL: > 400 mg/kg bw/day
Repeated exposure		Caused slight hyperkeratosis in the forestomach
	Routes of exposure	oral gavage
	Species	rat
	Method	OECD 407
		NOAEL: 125 mg/kg bw/day
Repeated Exposure		Damage of the epithelium of the respiratory tract
	Routes of exposure	Inhalation
	Species	rat
		NOAEL: 270 mg/m ³

12. Ecological Information

Acetaldehyde

Acute fish toxicity		LC50: 124 mg/l (48h)
	Species:	Leuciscus idus (Golden orfe)
	Method	DIN 38412 T.15
Chronic fish toxicity		LC50 (14d): 35 mg/l
	Species:	Poecilia reticulata (guppy)
	Method	OECD 204
Acute daphnia toxicity		EC50: 57.4 mg/l (48h)
	Species:	Daphnia magna
	Method	OECD 202
Toxicity to aquatic plants		EC50: > 100 mg/l (72h)
	Species:	Pseudokirchneriella subcapitata
	Method	OECD 201
Toxicity to bacteria		NOEC: 82 mg/l
	Species:	Chilomonas paramecium
Biodegradation		Readily biodegradable
	Method	OECD 301 C
Other potential hazards		The substance does not meet the criteria for PBT / vPvB according to REACH, Annex XIII

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13. Disposal considerations

Disposal considerations

Dispose of spilled material in accordance with state and local regulations for hazardous waste. Recommended methods are incineration or biological treatment at a federally or state-permitted disposal facility. Note that this information applies to the material as manufactured; processing, use, or contamination may make this information inappropriate, inaccurate, or incomplete.

Note that this handling and disposal information may also apply to empty containers, liners and rinsate. State or local regulations or restrictions are complex and may differ from federal regulations. This information is intended as an aid to proper handling and disposal; the final responsibility for handling and disposal is with the owner of the waste.

14. Transport information

US Department of Transportation

UN/NA Number:	UN 1089
Proper Shipping Name	Acetaldehyde
Hazard class	3
Packing Group	I
Reportable Quantity (RQ)	1000 lb/454kg
Emergency Resp. Guide	129

TDG

UN/NA Number:	UN 1089
Proper Shipping Name	ACETALDEHYDE
Class:	3
Packing Group:	I

Mexico Transport Information

UN-No.	UN 1089
Proper Shipping Name	Acetaldehyde
Hazard Class	3
Packing Group	I
Emergency Response Guide	129

ICAO/IATA

UN-No.	UN 1089
Proper Shipping Name	Acetaldehyde
Hazard Class	3
Packing group	I

IMDG

UN/ID No.	UN 1089
Proper Shipping Name	Acetaldehyde
Hazard Class	3
Packing group	I
Marine pollutant	no

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EmS Code

F-E, S-D

15. Regulatory Information

US State Regulations

Chemicals associated with the product which are subject to the state right-to-know regulations are listed along with the applicable state(s):

Acetaldehyde 75-07-0

Pennsylvania	Listed
New York	Listed
New Jersey	Listed
Illinois	Listed
Massachusetts	Listed
Rhode Island	Listed

California Prop. 65

WARNING: This product contains the following chemicals that are known to the State of California to cause cancer, birth defects or other reproductive harm.

Acetaldehyde 75-07-0

Listed

U.S. FEDERAL REGULATIONS

TSCA Inventory:

We certify that all components are either on the TSCA inventory or qualify for an exemption.

Environmental Regulations:

Acetaldehyde 75-07-0

EPCRA Section 313	Listed
CERCLA Hazardous Substance	Listed

SARA 311:

Acute health:	Yes
Chronic health:	Yes
Fire:	Yes
Sudden release of pressure:	No
Reactive:	Yes

INTERNATIONAL REGULATIONS

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International Inventories

Listed on the chemical inventories of the following countries or qualifies for an exemption:

Australia (AICS)
 Canada (DSL)
 China (IECSC)
 Europe (EINECS)
 Japan (ENCS)
 Korea (KECI)
 New Zealand (NZIoC)
 Philippines (PICCS)
 United States (TSCA)

16. Other information

NFPA:	Health: 2	Flammability: 4	Instability: 2
HMIS:	Health: 2*	Flammability: 4	Physical Hazard: 2

Prepared By

Product Stewardship Department
 Celanese

Sources of key data used to compile the datasheet

Information contained in this safety data sheet is based on Celanese owned data and public sources deemed valid or acceptable.. The absence of data elements required by ANSI or 1907/2006/EC indicates that no data meeting these requirements is available..

Other Information:

Observe national and local legal requirements

Changes against the previous version are marked by ***

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Abbreviation and Acronym:

ADR = Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

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

CLP = Classification, Labelling and Packaging

DNEL = Derived No Effect Level

EINECS = European Inventory of Existing Commercial Chemical Substances

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

IATA = International Air Transport Association

ICAO = International Civil Aviation Organization

IMDG = International Maritime Code for Dangerous Goods

LC50 = Lethal Concentration

LD50 = Lethal Dose

LOAEC = Low Observed Adverse Effect Concentration

LOAEL = Low Observed Adverse Effect Level

LOEL = Low Observed Effect Level

NOAEC = No Observed Adverse Effect Concentration

NOAEL = No Observed Adverse Effect Level

NOEC = No Observed Effect Concentration

NOEL = No Observed Effect Level

PBT = Persistent, Bioaccumulative and Toxic

PNEC = Predicted No Effect Concentration

RCR = Risk Characterization Ratio

RID = Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

STOT SE = Specific Target Organ Toxicity Single Exposure

STP = Sewage Treatment Plant

vPvB = very Persistent and very Bioaccumulative