Material Safety Data Sheet

1. Product and Company Identification

Product name : **Acetaldehyde**

Chemical formula : C2H4O

Synonyms : Acetic Aldehyde, Ethyl Aldehyde, Ethanal, UN 1089

Company : Specialty Gases of America, Inc
6055 Brent Dr.
Toledo, OH 43611

Telephone : 419-729-7732

Emergency : 800-424-9300

2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Acetaldehyde	75-07-0	99+%

3. Hazards Identification

Emergency Overview

Flammable liquid and vapor. Vapor may cause flash fire. May polymerize. Containers may rupture or explode.
May cause respiratory tract irritation, skin irritation, eye irritation, central nervous system depression, allergic reactions, suspect cancer hazard (in animals).

Potential Health Effects

Inhalation : Irritation, lack of sense of smell, nausea, vomiting, chest pain, difficulty breathing, headache, drowsiness, symptoms of drunkenness, lung congestion. May cause disorientation and cancer in long term exposure.

Eye contact : Irritation (possibly severe), tearing, eye damage.

Skin contact : Irritation (possibly severe), allergic reactions.

Ingestion : Nausea, vomiting, diarrhea, stomach pain, irregular heartbeat, headache, drowsiness, symptoms of drunkenness, lung congestion, coma.

Chronic Health Hazard : None known.

4. First Aid Measures

General advice : None.

Eye contact : Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Skin contact : Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Ingestion : Contact local poison control center or physician immediately. Never make an unconscious person vomit or drink fluids. When vomiting occurs, keep head

lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately.

Inhalation	:	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.
Note to physicians	:	For inhalation, consider oxygen. For ingestion, consider gastric lavage and activated charcoal slurry.

5. Fire-Fighting Measures

Suitable extinguishing media	:	Alcohol-resistant foam, carbon dioxide, regular dry chemical, water. Large fires: Use alcohol-resistant foam or flood with fine water spray.
Specific hazards	:	Severe fire hazard. Vapor/air mixtures are explosive above flash point. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.
Fire fighting	:	Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible, then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile). Water may be ineffective.

6. Accidental Release Measures

Air release	:	Reduce vapors with water spray. Stay upwind and keep out of low areas.
Soil release	:	Dig holding area such as lagoon, pond or pit for containment. Dike for later disposal. Absorb with sand or other non-combustible material.
Water release	:	Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers. Add a reducing agent. Absorb with activated carbon. Collect spilled material using mechanical equipment.
Occupational spill/release	:	Avoid heat, flames, sparks and other sources of ignition. Remove sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry. Stay upwind and keep out of low areas. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).
Additional advice	:	None.

7. Handling and Storage

Handling

Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

Storage

Store in accordance with all current regulations and standards. Protect from physical damage. Refrigerate. Store under an inert atmosphere. Store and handle in a detached building. Store in a well-ventilated area. Avoid heat, flames, sparks and other sources of ignition. Keep separated from incompatible substances.

Store with flammable liquids. Do not evaporate or distill to dryness. May form explosive peroxides. Avoid contact with light. Monitor inhibitor content. Subject to storage regulation: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required.

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH	:	25 ppm Ceiling
OSHA (final)	:	200 ppm TWA; 360 mg/m3 TWA
OSHA (vacated)	:	150 ppm STEL; 270 mg/m3 STEL 100 ppm TWA; 180 mg/m3 TWA

IDLH

2000 ppm

Engineering measures/Ventilation

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal protective equipment

Respiratory protection	:	The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA. At any detectable concentration – Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Escape – Any air-purifying full-face respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister. Any appropriate escape-type, self-contained breathing apparatus. For unknown concentrations or immediately dangerous to life or health – Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode. Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Hand protection	:	Wear chemical resistant gloves.
Eye protection	:	Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.
Skin and body protection	:	Wear appropriate chemical resistant clothing.

9. Physical and Chemical Properties

Form	:	Liquid gas.
Color	:	Colorless.
Odor	:	Fruity odor.
Vapor pressure	:	750 mmHg @ 20°C
Vapor density	:	1.52 (Air = 1)
Boiling point	:	21°C
Melting point	:	-121°C

Specific gravity	:	0.7834 (water = 1)
Evaporation rate	:	49.1 (Butyl acetate = 1)
Water solubility	:	Soluble
Solvent solubility	:	Soluble: alcohol, ether, acetone, benzene, gasolines, toluene, xylene, turpentine, naphtha

10. Stability and Reactivity

Stability	:	May polymerize. Avoid contact with light or storage and use above room temperature.
Conditions to avoid	:	Avoid heat, flames, sparks or other sources of ignition. Containers may rupture or explode if exposed to heat.
Materials to avoid	:	Acids, combustible materials, amines, bases, halogens, oxidizing materials, halo carbons, cyanides, reducing agents, metal salts, metals.
Hazardous decomposition products	:	Thermal decomposition products: oxides of carbon.

11. Toxicological Information

The components of this material have been reviewed in various sources and the following endpoints are published:

ACETALDEHYDE (75-07-0)	:	Oral LD50 Rat: 1930 mg/kg

Acute Toxicity Level

ACETALDEHYDE (75-07-0)	:	Moderately toxic: Inhalation, ingestion Slightly toxic: Dermal absorption

Component Carcinogenicity

ACGIH	:	A3 – Confirmed Animal Carcinogen with Unknown Relevance to Humans
IARC	:	Monograph 71 [1999]; Supplement 7 [1987]; Monograph 36 [1985] (Group 2B (possibly carcinogenic to humans))
DFG	:	Category 5 (low carcinogenic potency) Present Reasonably Anticipated To Be A Human Carcinogen

Local Effects

ACETALDEHYDE (75-07-0)	:	Irritant: Inhalation, skin, eye

Target Organs

ACETALDEHYDE (75-07-0)	:	Immune system (sensitizer), central nervous system

Medical Conditions Aggravated by Exposure

Kidney disorders, liver disorders, respiratory disorders, skin disorders and allergies.

Additional Data

May be excreted in breast milk. Alcohol may enhance the toxic effects.

12. Ecological Information

Aquatic Toxicity

ACETALDEHYDE (75-07-0)	:	Fish: 96 Hr LC50 Pimephales promelas: 28.0 – 34.0 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 53 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss:

1.8 – 2.4 mg/L [static]; 96 Hr LC50 Pimephales promelas: 39.8 – 46.8 mg/L [static]
Algae: 120 Hr EC50 Nitzschia linearis: 237 – 249 mg/L
Invertebrate: 48 Hr EC50 Daphnia magna: 3.64 – 6.15 mg/L [static]; 48 Hr EC50 Daphnia magna: 48.3 mg/L

13. Disposal Considerations

Waste from residues / unused products	:	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): U001.
Contaminated packaging	:	Return cylinder to supplier.
Component Waste Numbers	:	RCRA: waste_number U001 (Ignitable waste)

14. Transport Information

DOT (US only)

Proper shipping name	:	Acetaldehyde
Class	:	3, Packing Group I
UN/ID No.	:	UN1089
Labeling	:	Flammable liquid

15. Regulatory Information

U.S. Federal Regulations

This material contains one or more of the following chemicals required under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

ACETALDEHYDE (75-07-0)	:	1000 lb final RQ; 454 kg final RQ SARA 313: 0.1% de minimis concentration CERCLA: 1000 lb final RQ; 454 kg final RQ OSHA (safety): 2500 lb TQ

SARA 311/312

Acute: Yes
Chronic: Yes
Fire: Yes
Reactive: Yes
Pressure: No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
ACETALDEHYDE	75-07-0	Yes	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):
WARNING! This product contains a chemical known to the state of California to cause cancer.

16. Other Information

Prepared by : Specialty Gases of America, Inc.

For additional information, please visit our website at www.americangasgroup.com.