



Safety Data Sheet

Material Name: ACETALDEHYDE**SDS ID: MAT00080**

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name

ACETALDEHYDE

Synonyms

MTG MSDS 104; ACETIC ALDEHYDE; ETHYL ALDEHYDE; ETHANAL; UN 1089; C2H4O

Chemical Family

aldehydes, aliphatic

Product Use

industrial.

Restrictions on Use

None known.

Details of the supplier of the safety data sheet

MATHESON TRI-GAS, INC.

150 Allen Road, Suite 302

Basking Ridge, NJ 07920

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Flammable Liquids - Category 1

Acute Toxicity - Oral - Category 4

Acute Toxicity - Inhalation - Dust/Mist - Category 4

Skin Corrosion/Irritation - Category 2

Serious Eye Damage/Eye Irritation - Category 2A

Skin Sensitization - Category 1

Germ Cell Mutagenicity - Category 1A

Carcinogenicity - Category 2

Reproductive Toxicity - Category 2

Specific target organ toxicity - Single exposure - Category 1

Specific target organ toxicity - Repeated exposure - Category 1

Specific target organ toxicity - Repeated exposure - Category 2

Hazardous to the Aquatic Environment - Acute - Category 2

Hazardous to the Aquatic Environment - Chronic - Category 2

GHS Label Elements**Symbol(s)****Signal Word**

Danger

Hazard Statement(s)



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Extremely flammable liquid and vapor.
Harmful if inhaled.
Harmful if swallowed.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
May cause genetic defects.
Suspected of causing cancer.
Suspected of damaging fertility or the unborn child.
Causes damage to organs. (central nervous system , respiratory system)
May cause respiratory irritation.
May cause drowsiness and dizziness.
Causes damage to organs through prolonged or repeated exposure. (respiratory tract , nervous system)
May cause damage to organs through prolonged or repeated exposure. (nose , kidneys , liver)
Toxic to aquatic life.

Precautionary Statement(s)**Prevention**

Keep away from heat, sparks, open flame, and 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 discharges.
Do not breathe vapor or mist.
Use only outdoors or in a well-ventilated area.
Wear protective gloves and eye/face protection.
Do not eat, drink or smoke when using this product.
Wash thoroughly after handling.
Contaminated work clothing should not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Use Personal Protective equipment as required.
Avoid release to the environment.

Response

In case of fire, use media appropriate for extinction.
IF exposed or concerned: Get medical advice/attention.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
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 SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
Rinse mouth.

Storage

Store in a well-ventilated place.
Keep cool.



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Keep container tightly closed.

Store locked up.

Disposal

Dispose in accordance with all applicable regulations.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
75-07-0	ACETALDEHYDE	100.0

Section 4 - FIRST AID MEASURES**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.

Skin

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.

Eyes

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

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.

Most Important Symptoms/Effects**Acute**

respiratory tract irritation, skin irritation, eye irritation, central nervous system depression, allergic reactions, central nervous system damage, respiratory system damage

Delayed

allergic reactions, mutagenic effects, cancer, Reproductive Effects, respiratory system damage, nervous system damage, kidney damage, liver damage

Note to Physicians

For inhalation, consider oxygen. For ingestion, consider gastric lavage and activated charcoal slurry.

Section 5 - FIRE FIGHTING MEASURES**Extinguishing Media****Suitable Extinguishing Media**

alcohol-resistant foam, carbon dioxide, regular dry chemical, water spray, Large fires: water spray or fog, alcohol-resistant foam

Unsuitable Extinguishing Media

Do not use high-pressure water streams.

Special Hazards Arising from the Chemical

Severe fire hazard. Vapor/air mixtures are explosive. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

Hazardous Combustion Products

Oxides of carbon

Fire Fighting Measures

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



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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.

Special Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Wear personal protective clothing and equipment. See Section 8 for personal protection information.

Methods and Materials for Containment and Cleaning Up

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. Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. 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).

Environmental Precautions

Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Keep away from heat, sparks, open flame, and hot surfaces - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Take precautionary measures against static discharges. Do not breathe vapor or mist. Use only outdoors or in a well-ventilated area. Wear protective gloves/eye protection/face protection. Do not eat, drink, or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use Personal Protective equipment as required. Avoid release to the environment. Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

Conditions for Safe Storage, Including any Incompatibilities

Store in a well-ventilated place.
Keep cool.
Keep container tightly closed.
Store locked up.
Store and handle 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 cool. Keep container tightly closed. Keep locked up. Store with flammable liquids. Do not evaporate or distill to dryness. May form explosive peroxides. Avoid contact with light. Monitor inhibitor content. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Keep separated from incompatible substances.

Incompatible Materials

Acids, combustible materials, amines, bases, halogens, oxidizing materials, halo carbons, Cyanides, reducing agents, metal salts, metals

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

ACETALDEHYDE	75-07-0
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ACGIH:	25 ppm Ceiling
NIOSH:	2000 ppm IDLH
OSHA (US):	200 ppm TWA ; 360 mg/m ³ TWA
Mexico:	25 ppm Ceiling ; 45 mg/m ³ Ceiling

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

There are no biological limit values for any of this product's components.

Engineering Controls

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.

Individual Protection Measures, such as Personal Protective Equipment**Eye/face protection**

Wear splash resistant safety goggles with a faceshield. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Skin Protection

Wear appropriate chemical resistant clothing.

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-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister. Any appropriate escape-type, self-contained breathing apparatus. 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.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	colorless liquid	Physical State	liquid
Odor	fruity odor	Color	colorless
Odor Threshold	0.067 ppm	pH	Not available
Melting Point	-121 °C (-186 °F)	Boiling Point	21 °C (70 °F)
Boiling Point Range	Not available	Freezing point	Not available
Evaporation Rate	49.1 (Butyl acetate = 1)	Flammability (solid, gas)	Not available
Autoignition Temperature	175 °C (347 °F)	Flash Point	-39 °C Closed Cup (-38 °F)



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Lower Explosive Limit	4 %	Decomposition temperature	>400 °C (>752 °F)
Upper Explosive Limit	60 %	Vapor Pressure	750 mmHg @ 20 °C
Vapor Density (air=1)	1.52	Specific Gravity (water=1)	0.7834
Water Solubility	(Soluble)	Partition coefficient: n-octanol/water	Not available
Viscosity	Not available	Kinematic viscosity	Not available
Solubility (Other)	Not available	Density	Not available
Log KOW	-0.34	Physical Form	Liquid
Volatility	100 %	Molecular Formula	C-H3-C-H-O
Molecular Weight	44.05	OSHA Flammability Class	IA

Solvent Solubility**Soluble**

alcohol, ether, acetone, Benzene, gasolines, Toluene, xylene, turpentine, naphtha

Section 10 - STABILITY AND REACTIVITY**Chemical Stability**

May polymerize. Avoid contact with light. Avoid storage and use above room temperature.

Possibility of Hazardous Reactions

May polymerize. Avoid contact with heat, light, air, water or incompatible materials. Closed containers may rupture violently.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.

Incompatible Materials

Acids, combustible materials, amines, bases, halogens, oxidizing materials, halo carbons, Cyanides, reducing agents, metal salts, metals

Hazardous decomposition products

Oxides of carbon

Section 11 - TOXICOLOGICAL INFORMATION**Information on Likely Routes of Exposure****Inhalation**

irritation, lack of sense of smell, nausea, vomiting, chest pain, difficulty breathing, headache, drowsiness, dizziness, loss of coordination, lung congestion, Disorientation, cancer

Skin Contact

irritation (possibly severe), allergic reactions

Eye Contact

irritation (possibly severe), tearing, eye damage

Ingestion

nausea, vomiting, diarrhea, stomach pain, irregular heartbeat, headache, drowsiness, dizziness, loss of coordination, lung congestion, coma, Disorientation

Acute and Chronic Toxicity



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Material Name: ACETALDEHYDE**SDS ID: MAT00080****Component Analysis - LD50/LC50**

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

ACETALDEHYDE (75-07-0)

Oral LD50 Rat 660 mg/kg

Dermal LD50 Rabbit 3540 mg/kg

Inhalation LC50 Rat 13000 ppm 4 h

Product Toxicity Data**Acute Toxicity Estimate**

Dermal	> 2000 mg/kg
Inhalation - Vapor	> 20 mg/L
Oral	660 mg/kg

Immediate Effects

respiratory tract irritation, skin irritation, eye irritation, central nervous system depression, allergic reactions, central nervous system damage, respiratory system damage

Delayed Effects

allergic reactions, mutagenic effects, cancer, Reproductive Effects, respiratory system damage, nervous system damage, kidney damage, liver damage

Irritation/Corrosivity Data

See component data.

Respiratory Sensitization

No data available.

Dermal Sensitization

Component data indicate the substance is sensitizing.

Component Carcinogenicity

ACETALDEHYDE	75-07-0
ACGIH:	A2 - Suspected Human Carcinogen
IARC:	Monograph 100E [2012] (associated with consumption of alcoholic beverages) (Group 1 (carcinogenic to humans))
IARC:	Monograph 71 [1999] ; Supplement 7 [1987] ; Monograph 36 [1985] (Group 2B (possibly carcinogenic to humans))
NTP:	Reasonably Anticipated To Be A Human Carcinogen
DFG:	Category 5 (low carcinogenic potency)
OSHA:	Present
NIOSH:	potential occupational carcinogen

Germ Cell Mutagenicity

Available data characterizes this substance as mutagenic.

Tumorigenic Data



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No data available

Reproductive Toxicity

Available data characterizes components of this product as reproductive hazards.

Specific Target Organ Toxicity - Single Exposure

central nervous system, Respiratory system

Specific Target Organ Toxicity - Repeated Exposure

respiratory tract, nervous system, nose, kidneys, liver

Aspiration hazard

No information available for the product.

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.

Section 12 - ECOLOGICAL INFORMATION

Ecotoxicity

Toxic to aquatic life.

Component Analysis - Aquatic Toxicity

ACETALDEHYDE	75-07-0
Fish:	LC50 96 h Pimephales promelas 28 - 34 mg/L [flow-through]; LC50 96 h Lepomis macrochirus 53 mg/L [static]; LC50 96 h Oncorhynchus mykiss 1.8 - 2.4 mg/L [static]; LC50 96 h Pimephales promelas 39.8 - 46.8 mg/L [static]
Invertebrate:	EC50 48 h Daphnia magna 3.64 - 6.15 mg/L [Static] EPA ; EC50 48 h Daphnia magna 48.3 mg/L IUCLID

Persistence and Degradability

Biodegradable.

Bioaccumulative Potential

Bioconcentration potential in aquatic organisms is low based on a BCF value of 3.

Mobility

Expected to have high mobility in soil.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations.

Component Waste Numbers

ACETALDEHYDE	waste number U001 (Ignitable waste)
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Section 14 - TRANSPORT INFORMATION

US DOT Information:

Shipping Name: ACETALDEHYDE

Hazard Class: 3

UN/NA #: UN1089

Packing Group: I

Required Label(s): 3

Marine pollutant



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IMDG Information:

Shipping Name: ACETALDEHYDE

Hazard Class: 3

UN#: UN1089

Packing Group: I

Required Label(s): 3

Marine pollutant

International Bulk Chemical Code

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (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
SARA 313:	0.1 % de minimis concentration
CERCLA:	1000 lb final RQ ; 454 kg final RQ
TSCA 12b:	Section 4 , 0.1 % de minimus concentration
OSHA (safety):	2500 lb TQ

SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories

Flammable; Carcinogenicity; Acute toxicity; Reproductive Toxicity; Skin Corrosion/Irritation; Respiratory/Skin Sensitization; Serious Eye Damage/Eye Irritation; Specific Target Organ Toxicity; Germ Cell Mutagenicity

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
ACETALDEHYDE	75-07-0	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

ACETALDEHYDE	75-07-0
Carc:	carcinogen , 4/1/1988

Canada Regulations

Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

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	1 %
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WHMIS Classification

BD2

Component Analysis - Inventory

ACETALDEHYDE (75-07-0)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

NFPA Ratings

Health: 2 Fire: 4 Reactivity: 2

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

Updated: 05/01/2015

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL), KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; Ne - Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL - Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH - Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA - Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit



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Value; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

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