

ACETALDEHYDE

Safety Data Sheet

Supersedes: 02/05/2022

Revision: 1.2

Revision date: 12/12/2023

SECTION 1: Identification

1.1 Identification

| | | |
|------------------|---|--|
| Product form | : | Substance |
| Substance name | : | Acetaldehyde |
| CAS No | : | 75-07-0 |
| EC/ List No | : | 200-836-8 |
| Formula | : | C ₂ H ₄ O |
| Molecular weight | : | 44.05 g/mol |
| Synonyms | : | Acetic aldehyde, Ethanal, Ethyl aldehyde |

1.2 Relevant identified uses of the substance or mixture and uses advised against

| | | |
|------------------------------|---|--|
| Use of the substance/mixture | : | Chemical intermediate Pharmaceutical Agrochemical Laboratory chemical |
|------------------------------|---|--|

1.3 Details of the supplier of the safety data sheet

Godavari Biorefineries Ltd.
45/47, Somaiya bhavan,
Mahatma Gandhi Road,
Fort, Mumbai -400001, INDIA.
T 0091 22 22048272
Email: alka@somaiya.com
www.somaiya.com

1.4 Emergency telephone Number

| | | |
|------------------|---|---|
| Emergency number | : | 0091 2423 279308 0091 22 22048272 (Monday – Friday - 09.30 hrs to 18.00 hrs) |
|------------------|---|---|

SECTION 2: Hazard(s) identification

GHS classification.

2.1 Classification of the substance or mixture

| | | |
|---|---|------|
| Flammable liquid, Category 1 | : | H224 |
| Eye irritation Category 2A | : | H319 |
| Acute oral toxicity category 4 | : | H302 |
| Specific target organ toxicity - single exposure, Category 3 - Respiratory system | : | H335 |
| Carcinogenicity Category 1B | : | H350 |

2.2 GHS labeling

| | | | | |
|-------------------------|---|---|---|--|
| Hazard pictograms (GHS) | : |  |  |  |
| | | GHS02 | GHS07 | GHS08 |

Signal word (GHS) : Danger

Hazard statements (GHS) :

- H224 - Flammable liquids
- H302 - Harmful if swallowed.
- H319 - Causes serious eye irritation
- H335 - May cause respiratory irritation
- H351 - Suspected of causing cancer

ACETALDEHYDE

Safety Data Sheet

Supersedes: 02/05/2022

Revision: 1.2

Revision date: 12/12/2023

| | |
|---------------------------------------|--|
| Precautionary statements (GHS) | <ul style="list-style-type: none"> : P201 - Obtain special instructions before use. P210 - Keep away from heat, sparks, open flames, hot surfaces. - No smoking P241 - Use explosion-proof electrical, ventilating, lighting equipment P242 - Use only non-sparking tool P260 - Do not breathe mist, vapors, spray P280 - Wear protective clothing, protective gloves, eye protection, face protection P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P308 + P313 - IF exposed or concerned: Get medical advice/ attention P403+P233 - Store in a well-ventilated place. Keep container tightly closed P501 - Dispose of contents/container to comply with local, state and federal regulations. |
|---------------------------------------|--|

2.3 Other hazards

Other hazards not contributing to the classification None

2.4 Unknown acute toxicity

Not applicable.

SECTION 3: Composition/Information on ingredients

3.1 Substance

| Substance type | | Mono-constituent | |
|------------------------------------|---|------------------|---|
| Name | Product identifier CAS No EC No Index No | Concentration % | GHS classification |
| Acetaldehyde (Main constituent) | 75-07-0 200-836-8 605-003-00-6 | Minimum 99.5 | Flam. Liq. 1, H224; Acute Oral Toxi. 4, H302; Eye Irritation. 2A, H319; Specific TOT-SE 3, H335, Carc. 1B, H350 |

Full text of hazard classes and H-statements: see section 16

3.2 Mixture

Not applicable.

SECTION 4: First aid measures

4.1 Description of first aid measures

| | |
|---------------------------------------|--|
| First-aid measures general | <ul style="list-style-type: none"> : Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. |
| First-aid measures after inhalation | <ul style="list-style-type: none"> : Remove the victim into fresh air. Immediately consult a doctor/medical service. |
| First-aid measures after skin contact | <ul style="list-style-type: none"> : Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. |
| First-aid measures after eye contact | <ul style="list-style-type: none"> : Rinse immediately with plenty of water for 15 minutes. Do not apply neutralizing agents. Take victim to an ophthalmologist. |
| First-aid measures after ingestion | <ul style="list-style-type: none"> : Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Do not give activated charcoal. Immediately consult a doctor/medical service. Ingestion of large quantities: immediately to hospital. Do not give chemical antidote. Doctor: gastric lavage is not recommended |

4.2 Most important symptoms and effects, both acute and delayed

| | |
|--------------------------------------|---|
| Symptoms/injuries after inhalation | <ul style="list-style-type: none"> : Irritation of the respiratory tract and nasal mucous membranes. Coughing. EXPOSURE TO HIGH CONCENTRATIONS: Corrosion of the upper respiratory tract. |
| Symptoms/injuries after skin contact | <ul style="list-style-type: none"> : Corrosion of the skin. |
| Symptoms/injuries after eye contact | <ul style="list-style-type: none"> : Corrosion of the eye tissue. Permanent eye damage. |
| Symptoms/injuries after ingestion | <ul style="list-style-type: none"> : Burns to the gastric/intestinal mucosa. Risk of aspiration pneumonia |
| Chronic symptoms | <ul style="list-style-type: none"> : On continuous / repeated exposure: Red skin. Slight irritation. Inflammation/damage of the eye tissue. Dry/sore throat. Possible inflammation of the respiratory tract. |

ACETALDEHYDE

Safety Data Sheet

Supersedes: 02/05/2022

Revision: 1.2

Revision date: 12/12/2023

4.3 Indication of any immediate medical attention and special treatment needed

Since this chemical is a known or suspected carcinogen you should contact a physician for advice regarding the possible long term health effects and potential recommendation for medical monitoring. Recommendations from the physician will depend upon the specific compound, its chemical, physical and toxicity properties, the exposure level, length of exposure, and the route of exposure.

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media : Water spray. Polyvalent foam. Alcohol-resistant foam. BC powder. Carbon dioxide.
- Unsuitable extinguishing media : DONOT Use water Jet.

5.2 Special hazards arising from the substance or mixture

- Fire hazard : DIRECT FIRE HAZARD. Flammable. Gas/vapor flammable with air within explosion limits. INDIRECT FIRE HAZARD. May be ignited by sparks
- Explosion hazard : DIRECT EXPLOSION HAZARD. Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. may be ignited by sparks
- Reactivity : Undergoes a vigorously exothermic condensation reaction in contact with strong acids, bases or traces of metals. Can react vigorously with oxidizing reagents such as dinitrogen pentoxide, hydrogen peroxide, oxygen, silver nitrate, etc. Upon combustion: CO and CO₂ are formed.

5.3 Advice for firefighters

- Firefighting instructions : Cool tanks/drums with water spray/remove them into safety location. Do not move the load if exposed to heat. Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

- Protective equipment : Gas-tight chemical suit. Corrosion-proof suit. Refer "Material-Handling" to select protective clothing.
- Emergency procedures : Keep upwind. Mark the danger area. Consider evacuation. Seal off low-lying areas. Close doors and windows of adjacent premises. Stop nearby engines and no smoking. No naked flames or sparks. Use Spark- and explosion-proof appliances and lighting equipment. Keep containers closed.
Wash contaminated clothes.

For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
- Emergency procedures : Stop leak if safe to do so. Ventilate area.

6.2 Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers, water bodies

6.3 Methods and material for containment and cleaning up

- For containment : Contain released substance, transfer (pump) into suitable containers. Use compatible material of containers. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute combustible/toxic gases/vapours with water spray. Provide equipment/receptacles with earthing. Do not use compressed air for pumping over spills.
- Methods for cleaning up : Take up liquid spill into inert absorbent material, e.g.: sand, earth, vermiculite, powdered limestone. Scoop absorbed substance into closing containers. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/ authorized disposal facility. Wash clothing and equipment after handling.

6.4 Reference to other sections

No additional information available.

ACETALDEHYDE

Safety Data Sheet

Supersedes: 02/05/2022

Revision: 1.2

Revision date: 12/12/2023

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Precautions for safe handling : Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Keep the substance free from contamination. Use corrosion proof equipment. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Use spark-/explosion proof appliances and lighting system.
Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Keep container tightly closed. Measure the concentration in the air regularly. Work under local exhaust/ventilation. Exhaust gas must be neutralized.
- Hygiene measures : Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2 Conditions for safe storage, including any incompatibilities

- Storage temperature : Recommended storage temperature 2 - 8 °C with Nitrogen blanketing
- Heat-ignition : KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
- Prohibitions on mixed storage : KEEP SUBSTANCE AWAY FROM: combustible materials. oxidizing agents. (strong) bases. metals. alcohols. amines. water/moisture.
- Storage area : Store in a dry area. Ventilation at floor level. Keep out of direct sunlight. Fireproof storeroom. Keep locked up. Meet the legal requirements.
- Special rules on packaging : SPECIAL REQUIREMENTS: closing. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packaging's in solid containers.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

| | | | |
|-------|---|----------------------|----------------------|
| ACGIH | : | ACGIH TWA (ppm) | 100 ppm |
| ACGIH | : | ACGIH STEL (ppm) | 150 ppm (15 Minutes) |
| OSHA | : | OSHA PEL (TWA) (ppm) | 100 ppm |
| OSHA | : | OSHA STEL (ppm) | 150 ppm |
| IDLH | : | IDLH (ppm) | 2000 ppm |

8.2 Exposure controls

- Appropriate engineering controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Material should be handled safely.

Personal protective equipment :



Protective goggles. Gloves. Protective clothing. Face shield. Gas mask with filter

- Materials for protective clothing : GIVE EXCELLENT RESISTANCE: Butyl Rubber. Polyethylene/Ethylene Vinyl Alcohol. Viton. GIVE GOOD RESISTANCE: Neoprene. GIVE LESS RESISTANCE: Natural Rubber. PVC. GIVE POOR RESISTANCE: Polyethylene. PVA.

Hand protection :

Gloves.

Eye protection :

Safety glasses.

Skin and body protection :

Head/neck protection. Corrosion-proof clothing.

Respiratory protection :

Wear gas mask with filter type A if conc. in air > exposure limit. High vapour/ gas concentration: self-contained respirator.

Thermal hazard protection :

None.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|---|---|
| Physical state | : Liquid |
| Appearance | : Liquid |
| Colour | : Colourless |
| Odour | : Pungent |
| pH | : 5 @20°C |
| Melting point/ Freezing point | : -123.5 °C |
| Initial boiling point/boiling range | : 21 °C |
| Flash Point | : -38 °C |
| Relative evaporation rate | : No Data Available |
| Relative density | : 0.78 g/cm ³ at (18 °C) |
| Relative vapour density at 20°C | : 1.52 (air = 1) |
| Specific gravity/ density | : No Data Available |
| Molecular mass | : 44.05 g/mol |
| Flammability(Solid, Gas) | : Flammable liquids |
| Upper/lower flammability or Explosive limit | : No Data Available |
| Solubility | : Completely Miscible in water |
| Vapor pressure | : 1.202 hPa (25 °C) |
| Vapour density | : No Data Available |
| Evaporation Rate | : No Data Available |
| Partition coefficient n-octanol/water | : log Pow: 0.45 (Experimental value; 20 °C, |
| Auto-ignition temperature | : 175 °C |
| Decomposition temperature | : No Data Available |
| Viscosity | : 0.2456 mPa (15°C) Dynamic |
| Explosive Limits | : 4 – 60 vol % |
| Oxidizing properties | : No Data Available |

9.2 Other information

| | |
|-----------------------|---------------------|
| Surface Tension | : No data available |
| Specific conductivity | : No data available |
| VOC content | : No data available |
| Other properties | : No data available |

SECTION 10: Stability and reactivity

| | |
|--|--|
| 10.1 Reactivity | : Undergoes a vigorously exothermic condensation reaction in contact with strong acids, bases or traces of metals. Can react vigorously with oxidizing reagents such as dinitrogen pentoxide, hydrogen peroxide, oxygen, silver nitrate, etc. Contamination often leads either to reaction with the contaminant or polymerization, both with the evolution of heat. Can react violently with acid anhydrides, alcohols, ketones, phenols, ammonia, hydrogen cyanide, hydrogen sulfide, halogens, phosphorus, isocyanates, concentrated sulfuric acid, and aliphatic amines |
| 10.2 Chemical Stability | : Stable under normal conditions of handling, use and transportation |
| 10.3 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. |
| 10.4 Conditions to avoid | : Heat, flames and sparks. Extremes of temperature and direct sunlight. |

ACETALDEHYDE

Safety Data Sheet

Supersedes: 02/05/2022

Revision: 1.2

Revision date: 12/12/2023

10.5 Incompatible materials : Oxidizing agents, Reducing agents, acids, Nitric acid, Peroxides, Bases, Sodium Hydroxide, Amines, Ammonia, Oxygen,
Warning: acetaldehyde is oxidized rapidly and exothermically by air, to acetic acid, Acid anhydrides, Alcohols, Halogens, Ketones, Phenol, Hydrogen sulfide gas, Hydrogen peroxide

10.6 Hazardous decomposition products : Carbon dioxide. Carbon monoxide.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Likely routes of exposure : Inhalation; Skin and eye contact

Acute toxicity : Not classified

LD50 oral toxicity : 660 mg/kg body weight (Rat)

LD50 dermal toxicity : 3540 mg/kg. Mild skin irritation (Rabbit) (Draize Test)

LC50 inhalation toxicity : 24.4 mg/l Exposure time: 4 h (Rat)

Skin corrosion/irritation : Slightly irritant.

Serious eye damage/irritation : Lacrimal irritation due to vapours. conjunctivitis

Respiratory or skin sensitization : No sensitizing effect known

Germ cell mutagenicity : Not data available

Carcinogenicity : ARC: 2B - Group 2B: Possibly carcinogenic to humans
NTP: RAHC - Reasonably anticipated to be a human carcinogen
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 : Not data available

Teratogenicity : No data available

Specific target organ toxicity (single exposure) : Inhalation - May cause respiratory irritation

Specific target organ toxicity (repeated exposure) : Not data available

Aspiration hazard : No data available

SECTION 12: Ecological information

12.1 Toxicity

Ecology – water : Slightly Harmful to aquatic life.

| | Toxicity to Fish | Toxicity to aquatic plants | Toxicity to aquatic invertebrates |
|---------------|--------------------------|---------------------------------|-----------------------------------|
| Species | Leuciscus idus melanotus | Pseudokirchneriella subcapitata | Daphnia magna (Water flea) |
| Value | 125.9 mg/l | >100 mg/l | 48.3mg/l |
| Exposure time | 48 h | 24 h | 48h |

12.2 Persistence and degradability

Persistence and degradability : Aerobic Biochemical oxygen demand - Exposure time 14 d
Result: 80 % - Readily biodegradable.(OECD Test Guideline 301C) .

12.3 Bio-accumulative potential

Bio-accumulative potential : No data available

12.4 Mobility in soil

Ecology – soil : Data not available.

12.5 Other adverse effects

Data not available.

ACETALDEHYDE

Safety Data Sheet

Supersedes: 02/05/2022

Revision: 1.2

Revision date: 12/12/2023

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Waste disposal recommendations : Remove and dispose waste in accordance with local and/or national regulations. Recommended practice of distillation, physico-chemical/biological treatment and authorized waste incinerator for solvents with energy recovery. Do not discharge into drains or the environment.

SECTION 14: Transport Information

Marine transport (IMDG)

UN number : 1089
 Proper shipping name and description : Acetaldehyde
 Class : 3
 Packaging group : I
 Hazard Identification Number : -
 EmS code : F-E, S-D
 Marine pollutant : No
 Air transport ICAO/IATA : Not permitted for air transport

Department of Transportation (DOT)

UN number : 1089
 Proper shipping name and description : Acetaldehyde
 Class : 3
 Packaging group : I
 Reportable Quantity (RQ) : 1000 lbs
 Poison Inhalation Hazard : No
 3 - Flammable liquid

Hazard labels (DOT) :



SECTION 15: Regulatory information

15.1 National regulations

| Country | National Inventories | Listing |
|-------------|----------------------|---------|
| AUSTRALIA | AICS | Listed |
| CANADA | DSL | Listed |
| CHINA | IECSC | Listed |
| EUROPE | EC | Listed |
| NEWZEALAND | NZIoC | Listed |
| PHILIPPINES | PICCS | Listed |
| SOUTH KOREA | KECI | Listed |
| TAIWAN | TCSI | Listed |
| USA | TSCA | Listed |

ACETALDEHYDE

Safety Data Sheet

Supersedes: 02/05/2022

Revision: 1.2

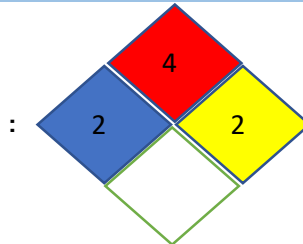
Revision date: 12/12/2023

SECTION 16: Other information

16.1 Hazard statements

- : H224- Extremely flammable liquid and vapor
- H302- Harmful if swallowed
- H319- Causes serious eye irritation
- H335- May cause respiratory irritation
- H350- May cause cancer

16.2 NFPA Rating



16.3 Abbreviations and acronyms

PBT =Persistent Bioaccumulative and Toxic
 vPvB= Very Persistent and Very Bioaccumulative
 SCBA= Self Contained Breathing Apparatus
 NIOSH REL= National Institute for Occupational Safety and Health Recommended Exposure Limit
 OSHA PEL=Occupational Safety and Health Administration Permissible Exposure Limit
 OELTWA= Occupational Exposure Limit Time Weighted Averages
 IDLH= Immediately Dangerous to Life or Health
 UEL= Upper Explosive Limit
 LEL= Lower Explosive Limit
 RTECS= Registry of Toxic Effects of Chemical Substances
 NTP=National Toxicology Programm
 IARC= International Agency for Research on Cancer
 EPA=Environmental Protection Agency
 TSCA= Toxic Substances Control Act
 NFPA= National Fire Protection Association
 CSR=Chemical Safety Report
 BCF = Bio Concentration Factor
 DNEL = Derived No Effect Level
 PNEC = Predicted No Effect Concentration
 TLV = Threshold Limit Value
 ACGIH = American Conference of Governmental Industrial Hygienist
 REACH = Registration, Evaluation .Authorisation and Restriction of Chemicals
 CLP = Classification, Labelling and Packaging
 LD / LC = Lethal Doses / Lethal Concentration
 GHS = Globally Harmonised System
 ADR = Accord europeen relative au transport international de marchandises
 IMDG-Code = International Maritime Code for Dangerous Goods
 EmS = Emergency measures on Sea
 ICAO = International Civil Aviation Organization
 IATA/DGR= International Air Transport Association/Dangerous Goods Regulation

16.4 Further information:

Information in this SDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and Godavari Biorefineries Ltd. assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.