



# Pyridine-4-aldehyde

## Safety Data Sheet

According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

Date of Compilation : July 05, 2013  
Date of Revision : March 29, 2024  
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Version Name : 0110Gj Ghs09 Div.3 sds Pyridine-4-aldehyde  
Version Number : 09  
Supersedes Date : January 02, 2024  
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# Pyridine-4-aldehyde

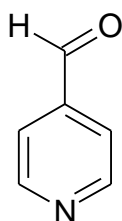
## Safety Data Sheet

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### SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/ UNDERTAKING

#### 1.1 Product Identifier

Product name	: Pyridine-4-aldehyde
CAS RN	: 872-85-5
EC#	: 212-832-3
Synonyms	: pyridine-4-carboxamide; Pyridine-4-carboxylic acid amide; 4-Pyridinecarboxamide; . Isonicotinic acid amide; 4-Carbamoylpyridine; gamma-Pyridine carboxamide, Isonicotinaldehyde
Technical Name	: Pyridine-4-carbaldehyde
Molecular Formula	: C <sub>6</sub> H <sub>5</sub> NO
Structural Formula	



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

##### Use of the substance:

It is used as an intermediate in the manufacturing of Active Pharmaceutical Ingredient like Donepezil which is a centrally acting reversible acetyl cholinesterase inhibitor. Its main therapeutic use is in the treatment of Alzheimer's disease where it is used to increase cortical acetylcholine. It has an oral bioavailability of 100% and easily crosses the blood-brain barrier.

#### 1.3. Details of the supplier of the safety data sheet

##### FACTORY & REGISTERED OFFICE:

Jubilant Ingrevia Limited, Bhartiagram, Gajraula, District: Amroha, Uttar Pradesh-244223, India  
T +91-5924-267437, +91-5924-267438

##### HEAD OFFICE:

Jubilant Ingrevia Limited  
Plot 1-A, Sector 16-A, Institutional Area, Noida, Uttar Pradesh, 201301 – India  
T +91-120-4361000 - F +91-120-4234881 / 84 / 85 / 87 / 95 / 96 [support@jubl.com](mailto:support@jubl.com) - [www.jubilantingrevia.com](http://www.jubilantingrevia.com)

#### 1.4. Emergency telephone number

For Chemical Emergency ONLY (in the case of fire, leak, spill, exposure or accident) Call  
Chemtrec: 1-800-424-9300 (US), 1-703-527-3887 (Outside U.S.)  
Chemtrec (India) : 000-800-100-7141

For ALL other emergencies call Emergency Control Room Gajraula at 99970 22412

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### SECTION 2: HAZARD(S) IDENTIFICATION

#### 2.1 Classification of the substance or mixture

##### GHS-US classification

Flammable Liquid-Category 4

Skin corrosion/ Irritation-Category 1B

Sensitization-Skin-Category 1

Eye Damage / Irritation -Category 1

Long-term (chronic) aquatic Hazard-Category 3

#### 2.2 Label Elements

Hazard Pictogram: GHS 05, GHS07

Signal Word: Danger!



GHS05

GHS 07

#### 2.3 Hazard and Precautionary Statements:

##### HAZARD STATEMENTS

H227: Combustible liquid

H314: Causes severe skin burns and eye damage.

H317: May cause an allergic skin reaction.

H412: Harmful to aquatic life with long lasting effects.

##### PRECAUTIONARY STATEMENTS

P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking.

P260: Do not breathe dusts or mists.

P264: Wash hands thoroughly after handling.

P280: Wear protective gloves, eye protection/ face protection.

P272: Contaminated work clothing should not be allowed out of the work place.

P273: Avoid release to the environment.

P301+P330+P331: IF SWALLOWED: Rinse mouth, do not induce vomiting.

P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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.

P333+P313: If skin irritation or rash occurs: Get medical advice/attention.

P363: Wash contaminated clothing before reuse.

P370+378: In case of fire: Use water for extinction.

P403: Store in well-ventilated place.

P405: Store locked up.

P501: Dispose of contents/ container in accordance with local/ regional/ national/ international regulations.



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### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Substance	CAS #	EC#	% Area	GHS Classification
Pyridine-4-aldehyde	872-85-5	212-832-3	NLT 98.0% (HPLC)	Flammable Liquid-Category 4 Skin corrosion/ Irritation-Category 1B Sensitization-Skin-Category 1 Eye Damage / Irritation -Category 1 Long-term (chronic) aquatic Hazard-Category 3

### SECTION 4: FIRST AID MEASURES

#### 4.1. Description of first aid measures

- **Inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
- **Skin contact:** Immediately take off all contaminated clothing. Quickly and gently blot or brush away excess chemical. Wash thoroughly with lukewarm, gently flowing water and non-abrasive soap for 15-20 minutes. Wash contaminated clothes before reuse. If irritation persists, obtain medical advice.
- **Eye contact:** Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 15-20 minutes, while holding the eyelid(s) open. Remove contact lenses if easy to do so. Continue rinsing. If irritation persists, seek medical attention.
- **Ingestion:** Get medical advice/attention if you feel unwell. Rinse mouth.

#### 4.2. Most important symptoms and effects, both acute and delayed

- **Acute effects:**  
Pyridine-4-aldehyde is corrosive to skin, may cause an allergic skin reaction and causes serious eye damage eyes. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
- **Chronic effects:**  
Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions.

#### 4.3. Indication of any immediate medical attention and special treatment needed

- No data available

### SECTION 5: FIRE-FIGHTING MEASURES

#### 5.1 Extinguishing media

- Suitable extinguishing agents: CO<sub>2</sub>, powder or water spray. Fight larger fire with alcohol resistant foam.

#### 5.2 Special hazards arising from the substance or mixture

- Take care as it may decompose upon combustion or in high temperatures to generate poisonous fume.
- Hazardous combustion products: These products include: Carbon monoxide, Carbon dioxides, Nitrogen

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oxides etc.

## 5.3 Advice for firefighters

- Wear self-contained breathing apparatus for firefighting if necessary.
- Do not inhale explosion gases or combustion gases.
- Wear self-contained respiratory protective device.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### 6.1 Personal precautions, protective equipment and emergency procedures

- Wear protective equipment. Keep unprotected persons away.
- Keep away from ignition sources.
- Mount respiratory protective device.

### 6.2 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.

### 6.3 Methods and materials for containment and cleaning up

- Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- Dispose contaminated material as waste according to disposal considerations.
- Send for recovery or disposal in suitable receptacles.

## SECTION 7: HANDLING AND STORAGE

### 7.1 Precautions for safe handling

- Handling should be performed in a well ventilated place.
- Wear suitable protective equipment.
- Do not breathe vapour or mist.
- Wash hands and face thoroughly after handling.
- Prevent formation of aerosols.
- Avoid contact with skin, eyes and clothing.
- Avoid repeated or prolonged exposure.
- Keep ignition sources away - Do not smoke.
- Fumes can combine with air to form an explosive mixture.
- Protect against electrostatic charges.

### 7.2 Conditions for safe storage, including any incompatibilities

- Store in flame proof area.
- Store in original container.
- Protect from exposure to the light.
- Keep container tightly sealed.
- Protect from humidity and water.
- Store in cool, dry and well-ventilated area. The product is hygroscopic.

## SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

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### 8.1 Control parameters

- **Occupational Exposure limit values**  
No data available
- **Biological limit values**  
No data available

### 8.2 Exposure controls

#### Appropriate Engineering Controls:

- Follow safe industrial engineering/laboratory practices when handling any chemical. Install a closed system or local exhaust as possible so that workers should not be exposed directly. Also install safety shower and eye bath.
- The use of local exhaust is recommended to avoid dust emissions.

### 8.3 Individual protection measures, such as personal protective equipment

#### Personal Protection:

- Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled. The resistance of the protective clothing to chemicals should be ascertained with the respective supplier.

#### Eye protection:

- Chemical safety goggles with side shields. Use equipment for eye protection tested and approved under government standards such as NIOSH (US) or EN166 (EU)

#### Hand protection:

- The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN374 derived from it.
- Material of gloves :
  - Butyl rubber, BR ,Recommended material strength:  $\geq 0.5$  mm
  - Fluorocarbon rubber (Viton) ,Recommended thickness of the material:  $\geq 0.4$  mm
  - Penetration time of glove material : Penetration time  $\geq 8$  h
  - The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- Not suitable are gloves made of the following materials:
  - Natural rubber, NR
  - Chloroprene rubber, CR
  - Nitrile rubber, NBR
  - PVC gloves
  - Leather gloves
  - Strong material gloves
- Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### Body Protection/Skin protection

Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of dangerous substance at the specific workplace.



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### Respiratory protection

- Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.
- For emergency situations, wear a positive pressure, pressure-demand, full-face piece self-contained breathing apparatus (SCBA) or pressure-demand supplied air respirator with escape SCBA and a fully-encapsulating, chemical resistant suit. (EPA, 1998).

### 8.4 General hygiene considerations

- Avoid contact with skin, eyes and clothing.
- Ensure that eyewash stations and safety showers are close to the workstation location.
- When using do not eat, drink or smoke.

### 8.5 Additional Information

- No data available

### 8.6 Control of environmental exposure

- Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

- Information on basic physical and chemical properties.

Sr. No.	Parameter	Typical value
1.	Appearance	Yellow-brown clear liquid
2.	Odor	Pungent & irritating
3.	Odor Threshold	No data available
4.	pH	No data available
5.	Melting point	-3 °C to - 2°C
6.	Boiling Point	192 -195°C (at 1013 mbar)
7.	Flash point	77.8 °C
8.	pKa (@25°C)	No data available
9.	Evaporation rate (n-BuAc=1)	No data available
10.	Flammability	No data available
11.	Upper/lower flammability or Explosive limits	No data available
12.	Vapor pressure	0.02 mbar (20°C)
13.	Vapor density (air=1)	No data available
14.	Density	1.14 g/cm <sup>3</sup> (20°C)
15.	Solubility in water	20 g/L at 20°C
16.	Partition coefficient : n-(Octonol / water)	0.12 at 20°C
17.	Auto-ignition temperature	185°C
18.	Decomposition temperature	No data available
19.	Viscosity	No data available
20.	Explosive property	No data available
21.	Oxidizing property	No data available

## SECTION 10: STABILITY AND REACTIVITY

### 10.1 Reactivity



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- Forms explosive mixtures with air on intense heating. A range from approx. 15 Kelvin below the flash point is to be rated as critical.

### 10.2 Chemical stability

- No decomposition if used according to specifications.

### 10.3 Possibility of hazardous reactions

- Reacts with strong acids, alkalines, cyanides and oxidizing agents.
- Reacts with reducing agents.

### 10.4 Conditions to avoid

- Keep away from heat, moisture and incompatible chemicals. Avoid excessive heat light, exposure to air.

### 10.5 Incompatible materials

- Reacts with strong acids, alkalines, oxidizing agents & Reducing agents.
- Light, air and warmth sensitive.

### 10.6 Hazardous decomposition products

- Hazardous decomposition products: toxic fumes of carbon oxide (CO), carbon dioxide (CO<sub>2</sub>) and nitrogen oxides (NO<sub>x</sub>).

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity:

**LD50 (Oral)**-2355 mg/kg

#### LDLo (Oral) data-

- Type of Test : LDLo –Lowest published lethal dose
- Route of Exposure : Oral
- Species Observed : Rodent –mouse.
- Dose Data : 1600 mg/kg
- Toxic Effects : Details of toxic effects not reported other than Lethal dose value
- Reference : AECTCV Archives of Environmental Contamination and Toxicology. (Springer-Verlag New York, Inc., Service Center, 44 Hartz Way, Secaucus, NJ 070944) V.1- 1973- Volume (issue)/page/year: 14,111,1985

**LC50 (Inhalation)-Rat**- >5.14 mg/L

**LD50 (Dermal)-Rat**- > 2000 mg/kg

**Skin irritation / corrosion:** Corrosive to skin, causes skin burns.

**Eye irritation:** Pyridine-4-aldehyde was found to cause a severe irritation when applied to the rabbit eye mucosa

**Skin sensitisation:** Pyridine-4-aldehyde is regarded as a sensitizer in the Local Lymph Node Assay

**Repeated dose toxicity:** oral: No data available.

**Repeated dose toxicity:** No data available.

**Repeated dose toxicity:** No data available.

**Genetic toxicity:** Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation





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Method: OECD Test Guideline 471

Result: Negative

**Carcinogenicity:** IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Reproductive and Developmental toxicity:** No data available.

**STOT-single exposure:** No data available.

**STOT- repeated exposure:** No data available.

**Aspiration Hazards:** No data available.

**RTECS#:** NR9400000

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1 Toxicity

- Short-term toxicity to fish  
LC50 (96 h): 18 mg/L
- Short-term toxicity to aquatic invertebrates  
EC50 (48 h) : 49 mg/L
- Toxicity to aquatic algae and cyanobacteria  
Estimated EC50 (96 h) : 392.663 mg/L

### 12.2 Persistence and degradability

- It is expected to be readily biodegradable in aerobic and anaerobic conditions.

### 12.3 Bio accumulative potential

- BCF (aquatic species): 3.162 L/kg ww (When BCF<500: No bioconcentration expected)

### 12.4 Mobility in Soil

- Estimated Koc from MCI: 5.455 L/kg
- Henry's Law Constant: 1.77E-007 atm/m<sup>3</sup> mole It is slightly volatile from aqueous bodies.
- Estimated accumulative potential in soil and in sediments: Very low (coefficient Koc: between 0 and 50 L/kg )

### Environmental Fate:

- Based on the environmental modeling, this material has a moderate potential to get absorbed in the organic matter of soil and is slightly volatile from water bodies. Since this is an estimated result it is recommended that the material should be disposed into the environment. The material should never be disposed into the sewage.

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1 Waste treatment methods

#### Product

- Burn in a chemical incinerator equipped with an afterburner and scrubber.
- Exert extra care in igniting, as this material is flammable.
- Dispose of this material in accordance with standard practice for disposal of potentially hazardous materials as required by applicable federal, state or local laws. Note that disposal regulations may also apply to empty




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containers and equipment rinsates

### SECTION 14: TRANSPORT INFORMATION

- This substance is considered to be Hazardous for transport by Air/Rail/Road and Sea and thus regulated by TDG/ US DOT/ IATA/ ICAO/ IMO/ IMDG.

ADR/ RID/ DOT	IMDG	IATA
<b>14.1 UN number</b>		
1760	1760	1760
<b>14.2 UN proper shipping name</b>		
CORROSIVE LIQUID, N.O.S(Pyridine-4-aldehyde)	CORROSIVE LIQUID, N.O.S(Pyridine-4-aldehyde)	CORROSIVE LIQUID, N.O.S(Pyridine-4-aldehyde)
<b>14.3 Transport hazard class(es)</b>		
8	8	8
<b>14.4 Packing group</b>		
III	III	III
<b>14.5 Pictogram</b>		
		
<b>14.6 Environmental hazards</b>		
Dangerous for the environment: -No	Dangerous for the environment: No Marine pollutant: No	Dangerous for the environment: No
No supplementary information available		

### SECTION 15: REGULATORY INFORMATION

#### Classification as per CLP Regulation 1272/2008:

- Hazards Class and Category:** Skin corrosion/ Irritation-Category 1B, Sensitization-Skin-Category 1  
Eye Damage / Irritation -Category 1, Long-term (chronic) aquatic Hazard-Category 3
- Hazard Statements:** H314; H317; H318, H412

Chemical Inventory Lists:	Status
TSCA:	Listed
EC Inventory	Listed (212-832-3)
Canada(DSL/NDSL):	Listed (DSL)
China Catalog of Hazardous chemicals 2015	Not Listed
New Zealand Inventory of Chemicals (NZIoC)	Listed
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed
Inventory of Existing and New Chemical Substances (ENCS)	Not Listed
Japan ISHL Existing Substances List (ISHL)	Not Listed



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China: IECSC	Listed
Existing Chemicals List (KECI)	Not Listed
Australian Inventory of Chemical Substances (AICS)	Not Listed

## US Information

**CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):** Pyridine-4-aldehyde is not listed

**SARA 302/304:** Pyridine-4-aldehyde is not listed

**SARA 311/312:** See section 2 for more information

**California Prop. 65:** Pyridine-4-aldehyde is not listed

**CAA (Clean Air Act):** Pyridine-4-aldehyde is not listed

**CWA (Clean Water Act):** Pyridine-4-aldehyde is not listed

## EU Information

**Water hazard class (WGK):** WGK 1 (Slightly hazardous to water)

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006:** Pyridine-4-aldehyde is not listed

### a) : Compilation information of safety data sheet

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### b) A key or legend to aberrations and acronyms used in the safety data sheet

- PBT =Persistent Bio accumulative and Toxic.
- vPvB= Very Persistent and Very Bio accumulative.
- 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 Program
- IARC= International Agency for Research on Cancer.
- EPA=Environmental Protection Agency.
- TSCA= Toxic Substances Control Act.
- CERCLA= Comprehensive Environmental Response, Compensation, and Liability Act.
- SARA= Superfund Amendments and Reauthorization Act.
- NFPA= National Fire Protection Association.
- WHIMS= Workplace Hazardous Materials Information System.
- DSL/NDSL= Domestic/Non-Domestic Substances List.
- CSR=Chemical Safety Report.



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- BCF = Bio Concentration Factor.
- DNEL = Derived No Effect Level.
- PNEC = Predicted No Effect Concentration.
- TLV = Threshold Limit Value.
- ACGIH = American Conference of Governmental Industrial Hygienists.
- REACH = Registration, Evaluation, Authorization and Restriction of Chemicals.
- CLP = Classification, Labeling and Packaging.
- LD / LC = Lethal Doses / Lethal Concentration.
- GHS = Globally Harmonized System.
- 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.

### c) Key Literature reference and sources for data

#### Biographical reference and data sources

- Globally Harmonized System of Classification and Labelling of Chemicals.

#### SDS US (GHS HazCom 2012)

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

(End of Safety Data Sheet)