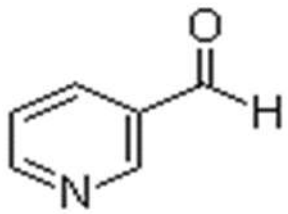
Date of Compilation	:	June 18, 2014
Date of Revision	:	February 11, 2021
Due Date of Revision	:	January, 2024
Revision Number	:	03
Version Number	:	0644Gj Ghs03 Div.03 sds 3-Pyridinealdehyde
Supersedes date	:	September 13, 2019
Supersedes version	:	0644Gj Ghs02 Div.03 sds 3-Pyridinealdehyde

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

1.1. Product identifier

PRODUCT NAME	: 3-Pyridinealdehyde; (Pyridine-3-carboxaldehyde)
CAS RN	: 500-22-1
EC#	: 207-900-4
SYNONYMS	: 3-Formylpyridine,Nicotinealdehyde, 3-Pyridinaldehyde, 3-Pyridinealdehyde,Pyridine-3-carbaldehyde,beta-. Pyridinecarbonaldehyde,3-Pyridinecarboxaldehyde, Nicotinic aldehyde,3-Pyridylaldehyde,3-Pyridylcarbox- . aldehyde, Rowalind
SYSTEMATIC NAME	: 3-Pyridinecarboxaldehyde
MOLECULAR FORMULA	: C_6H_5NO
STRUCTURAL FORMULA	



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

1.2.1. Relevant identified uses

3-Pyridinealdehyde is used as an intermediate in the pharmaceutical industry. It is also used in photography, lithography and as an intermediate in inks, agrochemicals and adhesives.
Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Jubilant Ingrevia Limited
FACTORY & REGISTERED OFFICE: Jubilant Ingrevia Limited., Bhartiagram, Gajraula, District: Amroha, Uttar Pradesh-244223, India.
T +91-5924-252353 to 252360 Contact Department-Safety: Ext. 7424.

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 - www.jubl.com

1.4. Emergency telephone number

CHEMTEL 24-HOUR EMERGENCY TELEPHONE NUMBERS :
North America: 1-800-255-3924
International: +1-813-248-0585
India: 000-800-100-4086
Brazil: 0-800-591-6042
Mexico: 01-800-099-0731

SECTION 2: HAZARD(S) IDENTIFICATION

2.1. Classification of the substance or mixture

GHS-US classification

Flammable Liquid: Category 3

Acute Toxicity Oral Hazard: Category 4

Skin Corrosion/Irritation: Category 2

Skin Sensitization: Category 1

Eye Damage/Irritation: Category 2

Specific target organ toxicity: Category 3 (After single exposure)

Hazardous to aquatic environment CHRONIC: Category 3

2.2. Label Elements

Hazard Pictogram: GHS 02, GHS 05, GHS 07

Signal Word: Danger!

HAZARD AND PRECAUTIONARY STATEMENTS:

HAZARD STATEMENTS

- H226: Flammable liquid and vapor.
- H302: Harmful if swallowed.
- H315: Causes skin irritation.
- H317: May cause an allergic skin reaction.
- H318: Causes serious eye damage
- H335: May cause respiratory irritation.
- H412: Harmful to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

- P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking.
- P233: Keep container tightly closed.
- P240: Ground/bond container and receiving equipment.
- P241: Use explosion-proof electrical/ventilating/light/…/equipment.
- P242: Use only non-sparking tools.
- P243: Take precautionary measures against static discharge.
- P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264: Wash hands thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P271: Use only outdoors or in a well-ventilated area.
- P272: Contaminated work clothing should not be allowed out of the workplace.
- P273: Avoid release to the environment.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- P310: Immediately call a POISON CENTER or doctor/physician.
- P330: Rinse mouth.
- P302+352: IF ON SKIN: Wash with soap and water.
- P333+313: If skin irritation or rash occurs: Get medical advice/attention.
- P362: Take off contaminated clothing and wash before reuse.
- P363: Wash contaminated clothing before reuse.
- P303+361+353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position 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.
- P370+378: In case of fire: Use water for extinction.
- P403+233: Store in a well ventilated place. Keep container tightly closed.
- P403+235: Store in a well ventilated place. Keep cool.
- P405: Store locked up.
- P501: Dispose of contents/container to local/regional/national/international regulations.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical	CAS #	EC#	Purity	GHS-US classification
3-Pyridinealdehyde	500-22-1	207-900-4	>98%	Flammable Liquid: Category 3 Acute Toxicity Oral Hazard: Category 4 Skin Corrosion/Irritation: Category 2 Skin Sensitization: Category 1 Eye Damage/Irritation: Category 2 Specific target organ toxicity: Category 3 (After single exposure) Hazardous to aquatic environment CHRONIC: Category 3

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Key symptoms

Acute effects

- 3-Pyridinealdehyde is harmful if ingested. Minimize exposure to this material. Severe overexposure can result in injury or death. Severely irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.

Chronic effects

- There is no known effect from chronic exposure to this product. Repeated or prolonged exposure to this compound is not known to aggravate existing medical conditions

FIRST AID

- **Inhalation:** IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
- **Skin:** Wash with plenty of soap and water. If skin irritation or rash occurs, seek medical advice/attention. Wash contaminated clothing before reuse.
- **Ingestion:** IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
- **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.

SECTION 5 : FIRE-FIGHTING MEASURES

5.1. Extinguishing media

- *Appropriate extinguishing media*: Dry chemical powder, carbon dioxide, and alcohol resistant foam. Water sprays can be effective in cooling down the fire-exposed containers and knocking down the vapours. Water jets may be used to flush spills away and dilute the same to non-flammable mixtures fog or alcohol-resistant foam by directing streams to the periphery of the fires to prevent spread.

5.2. Special Protective Equipment and Precautions for Fire Fighter

- Evacuate the area and fight fires from a safe distance.
- If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions or as per locally valid procedures.
- Fire fighters must wear Self Contained Breathing Apparatus (SCBA) and full protective clothing. The chemical is fatal if inhaled.
- Report any run-off of fire waters contaminated with this chemical as per local and federal procedures applicable.

5.3. Unusual fire and explosion hazard

- Toxic vapors may be released on thermal decomposition including nitrogen oxides and carbon oxides.
- High vapor concentration may result in an explosion hazard.
- Vapors are heavier than air. May travel considerable distance from source and flashback.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Avoid breathing vapors and contact with skin and eyes.
- Shut off leak source if possible.
- Shut off all possible sources of ignition.

- Wipe up.
- Decontaminate all equipment.
- Use non-sparking tools.

6.1.2 For emergency personnel

- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Alert Emergency Responders and tell them location and nature of hazard.
- Shut off all possible sources of ignition and increase ventilation.
- Stop leaks if possible.
- Clean up all spills immediately following relevant Standard Operating Procedures.
- Avoid breathing vapors and contact with skin and eyes.
- Use non-sparking tools.

6.2. Environmental precautions

- Clean up all spills immediately following relevant Standard Operating Procedures.
- Inform authorities in event of contamination of any public sewers, drains or water bodies.
- Wipe up.
- Prevent, by any means available, spillage from entering drains or water and watercourses.
- Collect recoverable product into labeled containers for recycling, recovery or disposal.
- Contain spill with sand, earth or vermiculite.
- Spread area with lime or absorbent material, and leave for at least 1 hour before washing.

6.3. Methods and material for containment and cleaning up

6.3.1: Containment of the spill.

(a) Bunding, covering of drains.

- Alert Emergency Responders and tell them location and nature of hazard.
- Shut off all possible sources of ignition and increase ventilation.
- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Stop leaks if possible.
- Prevent, by any means available, spillage from entering drains or water and watercourses.
- Collect recoverable product into labeled containers for recycling, recovery or disposal.
- Contain spill with sand, earth or vermiculite.
- Clean up all tools and equipment.
- Inform authorities in event of contamination of any public sewers, drains or water bodies.

(b) Capping procedure.

- Clean up all spills immediately following relevant Standard Operating Procedures.
- Avoid breathing vapors and contact with skin and eyes.
- Shut off leak source if possible.
- Shut off all possible sources of ignition.
- Wipe up.
- Decontaminate all equipment.
- Use non-sparking tools.

6.3.2 Cleanup procedure (Any of the following)

(a) Neutralization techniques;
(b) Decontamination techniques;
(c) Adsorbent material;

- Spread area with lime or absorbent material, and leave for at least 1 hour before washing.

(d) Cleaning Techniques;
(e) Vacuuming techniques;
(f) Equipment required for containment/Cleanup (include the use of non-sparking tools and equipment where applicable).

6.4. Reference to other sections

- For more information please refer to section 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

- Do not breathe vapor or mist.
- Wear protective gloves/clothing and eye/face protection.
- Wash thoroughly after handling.
- Ground and secure containers when dispensing or pouring product.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Launder contaminated clothing before re-use.

- If on skin or hair, IMMEDIATELY remove all contaminated clothing and rinse/shower with plenty of water.
- Use in a well-ventilated place/Use protective clothing commensurate with exposure levels.

7.2. Conditions for safe storage, including any incompatibilities

- Store at ambient temperature in a dry and well ventilated place.
- Store away from heat sparks and flame..
- Store away from incompatible materials.
- Keep only in original container.
- Keep securely closed when not in use.

SECTION 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

- **Exposure Limits Values**

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
2-Pyridinealdehyde	None listed	None listed	None listed

Exposure Limits (International):

- Not available.

8.2. Exposure controls

Appropriate Engineering Controls:

- Provide exhaust ventilation or other engineering controls to keep the relevant airborne concentrations below their respective occupational exposure limits. Local ventilation is usually preferred. Ensure that eyewash stations and safety showers are close to the workstation location.

8.3. 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.
- **Hands**: Wear appropriate protective gloves to prevent skin exposure.
  The protective gloves to be used must comply with the specifications of EC directives 89/686/EEC and the resultant standard EN374.
- **Eyes:** Safety goggles/ Chemical Safety glasses and Face shield.
- **Clothing:** Boots and clothing to prevent contact.
- **Respirator:** 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).

General Hygiene and general comments:

- Immediately change contaminated clothing.
- Apply skin protective barrier cream.
- Wash hands and face after working with the substance.
- Under no circumstances eat or drink at the workplace.
- Do not inhale substances, work under hood.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

- **Information on basic physical and chemical properties.**

Sr.No.	Parameter	Typical value
1)	Appearance	Yellow Clear liquid
2)	Odor	Pungent irritating
3)	Odor Threshold	Not available
4)	pH	5.5 to 6.5 (10% Solution in water)
5)	Melting point/Freezing point	8 °C (Melting point)
6)	Boiling Point	95-97 ºC (15 mmHg)

7)	Flash point	35 °C - closed cup
8)	Evaporation rate (n-BuAc=1)	Not available
9)	Flammability	Flammable
10)	Upper/lower flammability or Explosive limits	Not available
11)	Vapor pressure	0.56 mm Hg @25ºC
12)	Vapor density (air=1)	Not available
13)	Relative density	1.14
14)	Solubility	Miscible with water.
15)	Partition coefficient : n-(Octonol / water)	0.29
16)	Auto-ignition temperature	317ºC
17)	Decomposition temperature	Not available
18)	Viscosity	Not applicable
19)	Explosive property	No
20)	Corrosive material	Yes
21)	Oxidizing property	No

SECTION 10: STABILITY AND REACTIVITY

- **Reactivity:** No data available.
- **Stability:** Stable under normal temperature and pressures.
- **Conditions to avoid:** Keep away from High temperature, sparks, moist condition, mechanical shock, incompatible materials, ignition sources, excess heat. Strong Heating. Avoid prolonged exposure in air.
- **Incompatible chemicals:** Oxidizing and reducing agents. Strong acids, bases, and nitriles.
- **Hazardous decomposition products:** Thermal decomposition may produce carbon monoxide and oxides of nitrogen, carbon dioxide & nitrogen, irritating and toxic fumes.
- **Hazardous Polymerization**: Not reported

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

- ***Acute toxicity***
- 3-Pyridinealdehyde is harmful if ingested. Minimize exposure to this material. Severe overexposure can result in injury or death. Severely irritating to eyes and skin on contact. Inhalation causes irritation of the lungs and respiratory system. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Follow safe industrial hygiene practices and always wear proper protective equipment when handling this compound.
  RTECS: QS2980000

  Oral rat LD_{50} : 880.81 mg/kg (Predicted Oral rat LD50 from Consensus method)

Skin corrosion/irritation	:	Causes skin irritation.
Serious eye damage/irritation	:	Causes serious eye damage.
Respiratory or skin sensitization	:	May cause an allergic skin reaction..
Germ cell Mutagenicity	:	No data is available.
Carcinogenicity	:	Not listed by NTP, IARC and OSHA.

		Not present on the EU CMR list. According to information presently available 3-Pyridinealdehyde is not found to be carcinogenic.
Reproductive toxicity	:	No data available.
STOT-single exposure	:	May cause respiratory irritation.
STOT- repeated exposure	:	No data available.
Aspiration Hazards	:	No data available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Ecotoxicity:

- Fathead minnow LC_{50} (96 hr) : 16.40 mg/L (Experimental Fathead minnow LC50 (96 hr) from Ecotox/Consensus method)
- Daphnia magna LC_{50} (48 hr) : 37.02 mg/L (Predicted Daphnia magna LC50 (48 hr) from Consensus method)

3-Pyridinecarboxaldehyde is chronically harmful to fish.

Persistence and degradability

- 3-Pyridinecarboxaldehyde is estimated not to be persistent in the environment.

Bio accumulative potential

3-Pyridinealdehyde (500-22-1)	
Bio concentration factor	3.162 (Estimated)
Log Kow	0.29 (Estimated)

Based on the Log Kow and Bioconcentration factor value it is expected to have low potential to concentrate in fatty tissue of fish and aquatic organisms relative to its surroundings.

Mobility in soil

3-Pyridinealdehyde (500-22-1)	
Log Koc	1.033 (estimated). Low sorption.
Henry's Law constant	1.50E-07 atm-m^3/ mole (Experimental)). It is non-volatile from aqueous bodies.
Log Kow	0.29 (estimated). Low potential to bio accumulate.

Other adverse effects

- **Environment Fate:**
  Based on the environmental modeling, this material has a low potential to get absorbed in the organic matter of soil and is expected to be non-volatile from aqueous bodies. Since this is an estimated result it is recommended that the material should not be disposed into the environment. The material should never be disposed into the sewage.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

- 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 containers and equipment reinstates.

SECTION 14: TRANSPORT INFORMATION

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

S. No	Agency	UN Number	Shipping name	Hazard Class	Packing Group
Land Transport	ADR/RIC	1993	Flammable Liquids N.O.S. (3-Pyridinealdehyde)	3	III

Maritime Transport	IMDG	1993	Flammable Liquids N.O.S. (3-Pyridinealdehyde)	3	III
Air Transport	IATA	1993	Flammable Liquids N.O.S. (3-Pyridinealdehyde)	3	III
Hazard Label	Flammable Liquids				

Environmental hazards:

- Marine pollutant: No

SECTION 15: REGULATORY INFORMATION

Classification as per CLP Regulation 1272/2008:

- Hazards Class and Category: Flam Liq Cat 3; Acute Tox Oral Cat. 4; Eye irrit Cat 1, Skin Irrit Cat 2, STOT SE Cat3,Skin sens. Cat 1, Aquatic chronic Cat 3
- Hazard Statements: H326; H302;H317,H315,H335,H318,H411

Chemical Inventory Lists:	Status
TSCA:	Not listed
EINECS:	207-900-4
Canada(DSL/NDSL):	Listed/DSL
Japan:	5-6320
Korea:	Not Listed
Australia:	Not Listed
China: IECSC	Not Listed

US information

TSCA

- Section 8(b) Inventory: CAS RN 500-22-1 Present.
- Significant New Use Rule SNUR: CAS RN 500-22-1 absent
- Export Notification 12 (b): CAS RN 500-22-1 absent

SARA

- SECTION 304 (RQ): CAS RN 500-22-1 absent
- SECTION 302 (TPQ): CAS RN 500-22-1 absent
- SECTION 313: CAS RN 500-22-1 absent

CERCLA RQ:

- CAS RN 500-22-1 absent
- CLEAN AIR ACT Sec 112 (r): CAS RN 500-22-1 absent; Not listed as Ozone Class 1 or Class 2 depletor.
- CLEAN WATER ACT: CAS RN 500-22-1 absent

TSCA

- CAS# 500-22-1 is not listed on the TSCA inventory.

(i) These products are supplied solely for use in research and development by or under the supervision of a technically qualified individual as defined in 40 CFR 720.0 et sec.
(ii) The health risks of these products have not been fully determined. Any information that is or becomes available will be supplied on an MSDS sheet.

WHIMS Canada – NDSL/DSL

- CAS# 500-22-1 is not listed in NDSL.
- All components of this product are on the Canadian DSL list.

OSHA Hazards

- Compressed Gas

SARA 302

- No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313

- This material does not contain any chemical components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.

California Prop. 65 Components

- This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16: OTHER INFORMATION

a) Compilation information of safety data sheet

Date of compilation	: July 18, 2014
Chemical	: 3-Pyridine aldehyde.
CAS #	: 500-22-1
File Name	: 0644Gj Ghs03 Div.03 sds 3-Pyridinealdehyde
Revision Number	: 03
Date of Issue of SDS	: February 11, 2021
Revision Due Date	: Janaury, 2024
Supersedes date	: September 13, 2019

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.
- 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.
- SARA= Superfund Amendments and Reauthorization Act.
- WHIMS= Workplace Hazardous Materials Information System.
- DSL/NDSL= Domestic/Non-Domestic Substances List.
- BCF = Bio Concentration Factor.
- 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.
- ADR = Accord European relative au transport international de merchandises.
- 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.
- CLP REG (regulation) (EC) no. 1272/2008, last modification by regulation (EC) no. 790/2009.
- REG (EC) no. 1907/2006, last modification by REG (EC) Nr. 830/2015..

Internet

- APCISS
- Pubchem

d) List of hazard statements

Hazards Statements	• H226: Flammable liquid and vapor. • H302: Harmful if swallowed. • H315: Causes skin irritation. • H317: May cause an allergic skin reaction. • H318: Causes serious eye damage • H335: May cause respiratory irritation. • H412: Harmful to aquatic life with long lasting effects.

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)