Pyridine-N-Oxide

Safety Data Sheet

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

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Pyridine-N-Oxide

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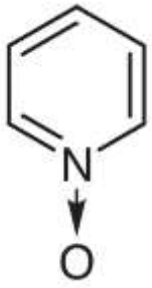
According to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

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

1.1. Identification

PRODUCT NAME	:	Pyridine-N-oxide
CAS RN	:	694-59-7
EC#	:	211-774-6
SYNONYMS	:	Pyridine-1-oxide
MOLECULAR FORMULA	:	C_5H_5NO
STRUCTURAL FORMULA	:	



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

1.2.1. Relevant identified uses

Pyridine-N-oxide is used as an intermediate in chemical industry**.**

Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Jubilant Ingrevia Limited
FACTORY 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-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

SECTION 2: HAZARD(S) IDENTIFICATION

2.1. Classification of the substance or mixture

GHS-US classification
Skin corrosion / irritation : Category 2
Serious eye damage/eye irritation - Category 2B
Specific target organ toxicity SE: Category 3

2.2. Label Elements

Hazard Pictogram: Hazard Pictogram: GHS 07
Signal Word: Warning!

HAZARD AND PRECAUTIONARY STATEMENTS:

HAZARD STATEMENTS

- H315: Causes skin irritation.
- H319: Causes serious eye irritation
- H335: May cause respiratory irritation.

PRECAUTIONARY STATEMENTS

- P261: Avoid breathing dust/fume/gas/mist/vapors/spray.

- P264: Wash hands thoroughly after handling
- P271: Use only outdoors or in a well- ventilated area.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P302+P352: IF ON SKIN: Wash with plenty of soap and water.
- P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P312: Call a POISON CENTER or doctor/physician if you feel unwell.
- P332+P313: If skin irritation occurs: Get medical advice/attention.
- P362: Take off contaminated clothing and wash before reuse.
- P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
- P337+313: If eye irritation persists: Get medical advice/attention
- P403+P233: Store in a well-ventilated place. Keep container tightly closed.
- P405: Store locked up.
- P501: Dispose of contents/container to local/regional/national/international regulations

2.3. Other Hazards

No information available

SECTION 3: COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical	CAS #	EC Number	Purity/Assay	GHS-US classification
Pyridine-N-oxide	694-59-7	211-774-6	99 %	Skin corrosion / irritation : Category 2 Serious eye damage/eye irritation - Category 2B Specific target organ toxicity SE: Category 3

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

- Remove affected person from danger area. Do not leave affected persons unsupervised. Seek medical treatment. First aid personnel should pay attention to their own safety. Take off all contaminated clothing immediately
- **Eyes**: If in eyes rinse cautiously with water for at least 15 minutes. Remove contact lenses if easy to do so. Continue rinsing. Seek medical attention.
- **Skin:** Immediately take off all contaminated clothing. Wash thoroughly with water for at least 15 minutes. Wash contaminated clothes before reuse. Seek immediate medical attention.
- **Inhalation**: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if you feel unwell.
- **Ingestion**: If swallowed call a poison center if you feel unwell. Rinse mouth. Do NOT induce vomiting by use of emetics. Seek medical attention.

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

- The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

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

- No data available

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media

- Water Spray, Dry chemical powder, carbon dioxide, and alcohol resistant foam. Water may also be used. Water sprays can be effective in cooling down the fire-exposed containers and knocking down the vapors.

5.2. Special hazards arising from the substance or mixture

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

5.3. Advice for firefighters

- 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).
- Report any run-off of firewater's contaminated with this chemical as per local and federal procedures applicable.

5.4. Further information

- No data available

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

- Spill should be handled by trained cleaning personnel properly equipped with respiratory and eye protection.
- Avoid dust formation. Avoid breathing vapors, mist or gas.
- Keep away from sources of ignition and heat- No smoking.
- Avoid contact with skin and eyes.
- Wear protective clothing, boots, impervious gloves and safety glasses.
- Alert Emergency Responders and tell them location and nature of hazard.
- Shut off source of leak if safe to do so.

6.2. Environmental precautions

- Place waste in an appropriately labeled, sealed container for disposal. Care should be taken to avoid environmental release.
- Prevent, by any means available, spillage from entering drains or water and watercourses.
- Collect recoverable product into labeled containers for recycling, recovery or disposal.

6.3. Methods and materials for containment and cleaning up

- Wipe up spillage or collect spillage using a high-efficiency vacuum cleaner. Avoid breathing dust.
- Place spillage in appropriately labeled container for disposal. Wash spill site.
- Contain spill with sand, earth or vermiculite.
- Spread area with lime or absorbent material, and leave for at least 1 hour before washing.
- Clean up all tools and equipment.
- Inform authorities in event of contamination of any public sewers, drains or water bodies.

6.4. Reference to other sections

- For disposal see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

- Avoid contact with incompatible materials.
- Provide appropriate exhaust/ventilation at machinery
- Avoid contact with skin, eyes, and personal clothing.
- Wash hands thoroughly after handling.
- Do not breathe dust.
- Use only with adequate ventilation.
- Wear suitable protective clothing, gloves, and eye/face protection.
- Minimize dust generation and accumulation.
- Keep container tightly closed.
- Open and handle container with care.
- Do not eat, drink, or smoke while handling.
- If on skin or hair, IMMEDIATELY remove all contaminated clothing and rinse/shower with plenty of water.
- Since material is hygroscopic consider usage of freshly distilled material (95–98°C/0.5 mm.).
- Handle in accordance with good industrial hygiene and safety procedures. Avoid Prolonged or repeated exposure. Take precautionary measures against electrostatic discharge

7.2 Conditions for safe storage, including any incompatibilities

- Store under inert atmosphere as the material is highly hygroscopic
- Store at ambient temperature in a dry and well-ventilated place.
- Keep container tightly closed when not in use.
- Keep away from all heat sources, including direct sun-light, open flame, source of ignition, sparks etc.

7.3 Specific end use(s)

- Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

- **Exposure Limits Values**

Chemical name	STEL (ppm)	NIOSH	ACGIH	OSHA
Pyridine-N-Oxide	None listed	None listed	None listed	None listed

8.2 Exposure controls

Appropriate engineering controls

- General industrial hygiene practice.

Personal protective equipment

- **Hand Protection:** Wear suitable gloves resistant to chemical penetration
- **Eye Protection:** Chemical safety goggles
- **Body Protection:** Wear suitable protective clothing.
- **Respiratory protection:** Where respirators are deemed necessary to reduce or control occupational exposure, use NIOSH-approved respiratory protection and have an effective respirator program in place.

Control of environmental exposure

- Do not let product enter drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Sr.No.	Parameter	Typical value
1	Appearance	Brown powder
2	Odor	Not available
3	Odour Threshold	Not available
4	pH	Not available
5	Melting point	62 - 67 °C - lit
6	Boiling point	270 °C - lit.
7	Flash point	143 °C - closed cup
8	Evaporation rate (n-BuAc=1)	Not available
9	Explosive limits	Not available
10	Vapor pressure	Not available
11	Solubility	Soluble in water
12	Log Kow (octanol/water)	0.32 (predicted)
13	Auto-ignition temperature	Not available
14	Particle retention on mesh 20 ASTM /18 BSS (%w/w)	Not available
15	Viscosity	Not available
16	Molecular Weight	95.1
17	PKa (@25^{0}C)	Not available
18	Corrosive material	Not available
19.	Explosive material	No

9.2 Other safety information

- No data available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

- Not available

10.2 Chemical stability

- Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

- **Hazardous Polymerization**: Not reported.

10.4 Conditions to avoid

- Exposure to air or moisture over prolonged periods.

10.5 Incompatible materials

- Strong oxidizing agents

10.6 Hazardous decomposition products

- **Other decomposition products -** Thermal decomposition may produce nitrogen oxides, carbon dioxide and carbon monoxide.

- In the event of fire: see section 5

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

RTECS: UT6410000

Acute toxicity	: ivn-mus LD50:180 mg/kg
Skin corrosion/irritation	: Causes skin irritation
Serious eye damage/eye irritation	: Causes serious eye irritation
Respiratory or skin sensitization	: No data available
Germ cell mutagenicity	: No data available
Carcinogenicity	: Not listed by NTP, IARC and OSHA. Not present on the EU CMR list.
Specific target organ toxicity - single exposure	: May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	: Not available
Aspiration hazard	: Not available

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity:

- Insufficient data available
- LD_{50} Wild bird: 1000mg/kg (RTECS)

12.2 Persistence and degradability

- Not readily biodegradable

12.3 Bio accumulative potential

Pyridine-N-oxide	
Bio concentration factor	3.162 (Estimated)
Log Kow	0.32 (Estimated)

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12.4 Mobility in soil

Pyridine-N-oxide	
Log koc	1.728 (estimated). Low sorption.
Henry's Law constant	1.217E-006 atm-m3/mole at 25 degrees.
Log Kow	0.32 (estimated). Negligible potential to bioaccumulate.

12.5 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 non-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

- Contact a licensed professional waste disposal service to dispose of this material. Dispose in a safe manner in accordance with local/national regulation. Observe all federal, state and local environmental regulation

SECTION 14: TRANSPORT INFORMATION

ADR/ RID/ DOT	IMDG	IATA
14.1. UN number		
Not applicable	Not applicable	Not applicable
14.2. UN proper shipping name		
Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)		
Not applicable	Not applicable	Not applicable
14.4. Packing group		
Not applicable	Not applicable	Not applicable
14.5. Environmental hazards		
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No
No supplementary information available		

14.6 Special precautions for user

- No data available

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

- **European Union Information**
  Classification as per CLP Regulation 1272/2008:

Skin corrosion/irritant: Category 2
Serious eye damage/eye irritation: Category 2
Specific target organ toxicity SE: Category 3

Hazard Statements: H315, H319, H335

Chemical Inventory Lists:	Status
TSCA:	Listed
EINECS:	Listed
Canada(DSL/NDSL):	Listed (NDSL)
Japan:	Listed
Korea:	Not listed
Australia:	Listed
China: IECSC	Listed
Philippines	Not listed

US information

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

Pyridine-N-oxide is not listed

SARA 302/304 : Pyridine-N-oxide is not listed

SARA 311/312 : See section 2 for more information

California Prop. 65: Pyridine-N-oxide is not listed

CAA (Clean Air Act): Pyridine-N-oxide is not listed

CWA (Clean Water Act): Pyridine-N-oxide is not listed

EU Information

Water hazard class (WGK): WGK 3

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

SECTION 16: OTHER INFORMATION

a) Compilation information of safety data sheet

Date of compilation	:	17-03-2006
Chemical	:	Pyridine-N-Oxide
CAS #	:	694-59-7
File Name	:	0307Gj Ghs01 Div.3 sds Pyridine-N-oxide
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b) A key or legend to aberrations and acronyms used in the safety data sheet

- 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.
- RTECS= Registry of Toxic Effects of Chemical Substances.
- NTP=National Toxicology Program.
- IARC= International Agency for Research on Cancer.
- CLP=Classification, Labeling and Packaging.
- LD / LC = Lethal Doses / Lethal Concentration.
- GHS = Globally Harmonized System.
- ADR = Accord European relative au transport international de merchandises.
- US DOT = United States Department of Transportation.
- IMDG-Code = International Maritime Code for Dangerous Goods.
- ICAO = International Civil Aviation Organization.
- IATA/DGR= International Air Transport Association/Dangerous Goods Regulation

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)