2-Cyanopyridine
Safety Data Sheet
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. Product identifier

PRODUCT NAME: 2-Cyanopyridine
CAS RN: 100-70-9
EC#: 202-880-3
SYNONYMS: 2-Pyridinecarbonitrile, 2-Pyridinecarboxylic acid, nitrile 2-Pyridyl nitrile, Picolinic acid nitrile, Picolinonitrile
SYSTEMATIC NAME: 2-Pyridinecarbonitrile, Picolinonitrile (8CI)
MOLECULAR FORMULA: C6H4N2

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

1.2.1. Relevant identified uses

It is used as an intermediate in the pharmaceutical industry for the manufacture of drugs like Bromazepam etc. and in the agrochemical industry. It is also used as an intermediate in the synthesis of Picolinic acid, Zinc picolinate etc.

Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Jubilant Life Sciences India
FACTORY & REGISTERED OFFICE: Jubilant Life Sciences Ltd., Bhartiagram, Gajraula, District: Amroha, Uttar Pradesh-244223, India
HEAD OFFICE: Jubilant Life Sciences Ltd., Plot 1-A, Sector 16-A, Institutional Area, Noida, Uttar Pradesh, 201301 - India
T: FACTORY & REGISTERED OFFICE: +91-5924-252353 to 252360, Contact Department-Safety: Ext. 7424
HEAD OFFICE: T +91-120-4361000 E-mail: support@jubl.com

1.4. Emergency telephone number

Emergency number: +91-9997022412; +91-9359674864

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Combustible liquid: Category 4
Skin corrosion / irritant: Category 3
Serious eye damage/eye irritant: Category 2A
Acute toxicity oral: Category 4

2.2. Label Elements

Hazard Pictogram: GHS 07
Signal Word: Warning!

HAZARD AND PRECAUTIONARY STATEMENTS:

HAZARD STATEMENTS
• H227: Combustible liquid.
• H316: Causes mild skin irritation.
• H319: Causes serious eye irritation.
• H302: Harmful if swallowed.

PRECAUTIONARY STATEMENTS
• P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking.
• P280: Wear protective gloves/protective clothing/eye protection/face protection.
• P264: Wash hands thoroughly after handling.
• P270: Do not eat, drink or smoke when using this product.
• P370+378: In case of fire: Use water for extinction.
• P305+P351+P338: IF IN EYES: Rinse cautiously 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.
• P332+P313: If skin irritation occurs: Get medical advice/attention.
• P501+P512: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
### SECTION 3: Composition/information on ingredients

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS #</th>
<th>Purity</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Cyanopyridine</td>
<td>100-70-9</td>
<td>&gt; 98%</td>
<td>Combustible liquid: Category 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin corrosion/irritant: Category 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Serious eye damage/eye irritant: Category 2A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute toxicity oral: Category 4</td>
</tr>
</tbody>
</table>

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

**Key symptoms**
- **Acute effects:** It is harmful if swallowed. May be harmful if inhaled or absorbed through skin. It is irritating to mucous membranes and upper respiratory tract, eye and skin.
- **Chronic effects:** To the best of our knowledge, the chronic health effects of this product have not been thoroughly investigated.

**FIRST AID**
- **Eyes:** If in eyes rinse cautiously with water for at least 15 minutes. Remove contact lenses if easy to do and 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.

### SECTION 5: FIRE-FIGHTING MEASURES

#### Extinguishing media
- **Appropriate extinguishing media:** Dry chemical powder, carbon dioxide, and alcohol resistant foam. Water spray may also be used. Water 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.

#### 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 harmful in contact with skin.
- Report any runoff of fire waters contaminated with this chemical as per local and federal procedures applicable.

#### Unusual fire and explosion hazard
- Toxic vapors may be released on thermal decomposition including nitrogen oxides, carbon monoxide and cyanide.
- 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

#### Minor Spills
- 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.
- Wear protective clothing, boots, impervious gloves and safety glasses.
- Wipe up.
- Decontaminate all equipment.
- Use non-sparking tools.

#### Major Spill
- Alert Emergency Responders and tell them location and nature of hazard.
- Shut off all possible sources of ignition and increase ventilation.
2-Cyanopyridine
Safety Data Sheet
according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

• Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
• Clear area of personnel and move upwind.
• 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.
• 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.

SECTION 7: HANDLING AND STORAGE

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.

Storage
• Store in a cool, well ventilated place.
• Store away from incompatible materials.
• Keep container tightly closed.
• Keep securely closed when not in use.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

• Exposure Limits Values

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH</th>
<th>OSHA –Final PELs</th>
<th>NIOSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Cyanopyridine</td>
<td>None listed</td>
<td>None listed</td>
<td>None listed</td>
</tr>
</tbody>
</table>

• OSHA Vacated PELs: 2-Cyanopyridine: No OSHA Vacated PELs are listed for this chemical.

Exposure 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.

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.
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.

General Industrial hygiene:
• Immediately change contaminated clothing.
• Wash hands and face after working with the substance.
• Under no circumstances eat or drink at the workplace.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

• Information on basic physical and chemical properties.

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Parameter</th>
<th>Typical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Appearance</td>
<td>White to tan liquid/ solid</td>
</tr>
<tr>
<td>2</td>
<td>Odor</td>
<td>Almond like</td>
</tr>
<tr>
<td>3</td>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
</tbody>
</table>
### 2-Cyanopyridine

**Safety Data Sheet**

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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Melting point</td>
<td>26-28 °C</td>
</tr>
<tr>
<td>5 Boiling point</td>
<td>212-215 °C @760 mmHg</td>
</tr>
<tr>
<td>6 Flash point</td>
<td>89 °C</td>
</tr>
<tr>
<td>7 Evaporation rate (n-BuAc=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>8 Explosive limits</td>
<td>Not available</td>
</tr>
<tr>
<td>9 Vapor pressure</td>
<td>0.5 mm Hg@25 °C</td>
</tr>
<tr>
<td>10 Vapor density (air=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>11 Specific gravity (water=1)</td>
<td>1.081</td>
</tr>
<tr>
<td>12 Solubility</td>
<td>Immiscible in water</td>
</tr>
<tr>
<td>13 pH</td>
<td>8.4 at 100g/l H₂O</td>
</tr>
<tr>
<td>14 Log Pow (octanol/water)</td>
<td>0.45</td>
</tr>
<tr>
<td>15 Auto-ignition temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>16 Decomposition temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>17 Viscosity</td>
<td>Not available</td>
</tr>
<tr>
<td>18 Molecular Weight</td>
<td>104.11</td>
</tr>
<tr>
<td>19 pKa (@25°C)</td>
<td>-0.26 (Experimental)</td>
</tr>
<tr>
<td>20 Koc</td>
<td>98.14</td>
</tr>
<tr>
<td>21 Oxidizer</td>
<td>No</td>
</tr>
<tr>
<td>22 Corrosive material</td>
<td>No</td>
</tr>
<tr>
<td>23 Explosive material</td>
<td>No</td>
</tr>
</tbody>
</table>

**SECTION 10: STABILITY AND REACTIVITY**

- **Stability:** The product is stable at normal temperature and pressure.
- **Conditions to avoid:** Incompatible materials, ignition sources, excess heat, strong acids, oxidizing agents, strong bases.
- **Incompatible chemicals:** Strong oxidizing agents, Strong acids&Strong bases.
- **Hazardous decomposition:** Thermal decomposition may produce carbon monoxide and oxides of nitrogen, carbon dioxide & nitrogen and irritating and toxic fumes.
- **Hazardous Polymerization:** Not reported.

**SECTION 11: TOXICOLOGICAL INFORMATION**

#### 11.1. Information on toxicological effects

- **Acute toxicity**
  - It is harmful if swallowed. May be harmful if inhaled or absorbed through skin. It is irritating to mucous membranes and upper respiratory tract, eye and skin.

**TARGET ORGANS:**

- To the best of our knowledge, Toxicological properties of this product have not been thoroughly investigated.

**RTECS#:** Not listed

**LD50/LC50:** ACUTE ORAL LD50 = 970 mg/kg (Data taken from Nepera’s MSDS)

- **a) Skin irritation/ corrosion**
  - Causes skin irritation.
- **b) Serious Eye damage/ irritation**
  - Causes eye irritation.
- **c) Respiratory or skin sensitization**
  - Causes upper respiratory tract irritation.
d) **Germ cell Mutagenicity**
   - No data is available.

e) **Carcinogenicity**
   - Not listed by NTP, IARC and OSHA.
   - Not present on the EU CMR list.
   - According to information presently available 2-Cyanopyridine is not found to be carcinogenic.

f) **Reproductive toxicity**
   - No data is available.

g) **STOT-single exposure**
   - No data is available.

h) **STOT-repeated exposure**
   - No data available.

i) **Aspiration hazard.**
   - No data available.

SECTION 12: **ECOLOGICAL INFORMATION**

**Toxicity**
- Ecotoxicity:
  - Acute toxicity to fish, *Pimephales promelas* 96-hr-LC50= 726 mg/l.
  - Acute toxicity to invertebrates, EC50= 2624 mg/l.
  - Toxicity to aquatic plants EC50= 1492 mg/l.

**Persistence and degradability**
- Under anaerobic conditions, this compound is not expected to be persistent.
- The biodegradability of the 2-Cyanopyridine has been adequately characterized.

**Bioaccumulative potential (Predicted)**
- BCF = 3.162
- Log Kow = 0.45
- Based on environmental modeling, this material is not expected to be persistent in the environment, has a low potential to bio accumulate.

**Mobility in soil**
- Henry’s Law constant: 0.0653 E-12 atm-m3/mole.
- Log Pow=0.45. Low potential to bioaccumulate.

**Other adverse effects**
- Environment Fate:
  - Based on environmental modeling, this material is not expected to be persistent in the environment, has a low potential to bioaccumulate. The biodegradability of the substance has been adequately characterized (American Chemistry Council, Pyridine and Pyridine Derivatives HPV work group).
  - 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**

**Waste treatment methods**
- Burn in a chemical incinerator equipped with an afterburner and scrubber.
- 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 rinsates.

SECTION 14: **Transport information**

This substance is considered to be Non Hazardous for transport by Air/Rail/Road and Sea and thus not regulated by IATA/ICAO/ARD/RID/IMO/IMDG.

**Environmental hazards**
- It is expected that this chemical is not a marine pollutant and is not Harmful to the Aquatic environment.

SECTION 15: **REGULATORY INFORMATION**

**European Union Information**

Classification as per CLP Regulation 1272/2008:
- **Hazards Class and Category:** Acute Tox.Oral Cat.4, Serious eye damage Cat.2
- **Hazard Statements:** H302; H319
2-Cyanopyridine
Safety Data Sheet
according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

US information

- **TSCA**
  - CAS# 100-70-9 is listed on the TSCA inventory.
- **Health & Safety Reporting List**
- **Chemical Test Rules**
  - None of the chemicals in this product are under a Chemical Test Rule.
- **Section 12b**
  - None of the chemicals are listed under TSCA Section 12b.
- **TSCA Significant New Use Rule**
  - None of the chemicals in this material have a SNUR under TSCA.
- **CERCLA Hazardous Substances and corresponding RQs**
  - None of the chemicals in this material have an RQ.
- **SARA Section 302 Extremely Hazardous Substances**
  - None of the chemicals in this product have a TPQ.
- **Section 313**
  - No chemicals are reportable under Section 313.
- **Clean Air Act:**
  - This material does not contain any hazardous air pollutants.
  - This material does not contain any Class 1 Ozone depletors.
  - This material does not contain any Class 2 Ozone depletors.
- **Clean Water Act:**
  - None of the chemicals in this product are listed as Hazardous Substances under the CWA.
  - None of the chemicals in this product are listed as Priority Pollutants under the CWA.
  - None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
- **OSHA:**
  - None of the chemicals in this product are considered highly hazardous by OSHA.
- **STATE**
  - CAS# 100-70-9 is not present on state lists from CA, PA, MN, MA, FL, or NJ.
- **California Prop 65**
  - California No Significant Risk Level: None of the chemicals in this product are listed.

**SECTION 16: OTHER INFORMATION**

a) Compilation information of safety data sheet

| Date of compilation | : March 26,2012 |
| Chemical            | : 2-Cyanopyridine |
| CAS #               | :100-70-9 |
| File Name           | : 0020Gj Ghs08 Div.2sds 2-Cyanopyridine |
| Revision Number     | : 08 |
| Date of Revision    | : January 14, 2016 |
| Revision Due Date   | : December, 2017 |
| Supersedes date     | : September 10,2015 |

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

- PST = 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 Program.
- IARC = International Agency for Research on Cancer.
- EPA = Environmental Protection Agency.
- TSCA = Toxic Substances Control Act.
- SARA = Superfund Amendments and Reauthorization Act.
- DSL/NDSL = Domestic/Non-Domestic Substances List.
- CSR = Chemical Safety Report.
2-Cyanopyridine  
Safety Data Sheet  
according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

- 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, Authorisation and Restriction of Chemicals.
- CLP = Classification, Labelling and Packaging.
- LD / LC = Lethal Doses / Lethal Concentration.
- GHS = Globally Harmonised System.
- ADR = Accord européen relative au transport international de marchandises.
- 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

- CLP REG (regulation) (EC) no. 1272/2008, last modification by regulation (EC) no. 790/2009
- DIR 67/548/EWG, last modification by DIR 2009/2/EC

#### 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)