SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

PRODUCT NAME : 3-Aminopyridine
CAS RN : 462-08-8
EC# : 207-322-2
SYNONYMS: 3-Aminopyridine; 3-Pyridinamine, Beta-Aminopyridine, 3-pyridylamine
MOLECULAR FORMULA : C₅H₆N₂

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

1.2.1. Relevant identified uses

3-Aminopyridine is used as an intermediate in the pharmaceutical industries.

Uses advised against: None

1.3. Details of the supplier of the safety data sheet

Jubilant Life Sciences Limited

FACTORY & REGISTERED OFFICE: Jubilant Life Sciences Ltd., Bhartiagram, Gajraula, District: Amroha, Uttar Pradesh-244223, India
T +91-5924-252353 to 252360  Contact Department-Safety: Ext. 7424  F +91-5924-252352

HEAD OFFICE: Jubilant Life Sciences Ltd., 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@jubi.com - www.jubi.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
Acute toxicity Oral: Category 2
Acute Toxicity Dermal: Category 3
Acute Toxicity Inhalation: Category 3
Skin corrosion / Irritants: Category 2
Serious eye damage/eye irritation: Category 2A
Specific target organ toxicity: Category 3
(After single exposure)
Hazardous to the Aquatic Environment: Category 2
(Chronic)

2.2. Label Elements

Hazard Pictogram: GHS 06, GHS 09
Signal Word: Danger!

HAZARD AND PRECAUTIONARY STATEMENTS:

HAZARD STATEMENTS
• H300: Fatal if swallowed.
• H311: Toxic in contact with skin.
• H331: Toxic if inhaled.
• H315: Causes skin irritation.
• H319: Causes serious eye irritation.
• H335: May cause respiratory irritation.
• H411: Harmful to aquatic life.

PRECAUTIONARY STATEMENTS
• P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
• P262: Do not get in eyes, on skin, or on clothing.
• P264: Wash clothes thoroughly after handling.
• P280: Wear protective gloves/protective clothing/eye protection/face protection.
• P270: Do not eat, drink or smoke when using this product.
3-Aminopyridine
Safety Data Sheet
according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

- P271: Use only outdoors or in a well-ventilated area.
- P273: Avoid release to the environment.
- P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
- P301+310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P330: Rinse mouth.
- P302+352: IF ON SKIN: Wash with plenty of soap and water.
- P361: Remove/ Take off immediately all contaminated clothing.
- P363: Wash contaminated clothing before reuse.
- P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P391: Collect spillage.
- 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

<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS #</th>
<th>Purity</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Aminopyridine</td>
<td>462-08-8</td>
<td>≥98%</td>
<td>Acute toxicity Oral: Category 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Toxicity Dermal: Category 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Toxicity Inhalation: Category 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin corrosion / irritant: Category 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Serious eye damage/eye irritation: Category 2A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Specific target organ toxicity: Category 3 (After single exposure)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hazardous to the Aquatic Environment: Category 2 (Chronic)</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1. Description of first aid measures

Key symptoms

Acute effects:
- **Eyes**: Irritation, redness, pain, burns, loss of vision.
- **Skin**: Irritation, pain, redness, burns. Behavioral somnolence observed in test animals.
- **Ingestion**: Abdominal pain, burning sensation, diarrhea, shock or collapse, sore throat or vomiting. May include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. Exposure can cause gastrointestinal disturbance.
- **Inhalation**: Sore throat, cough, burning sensation, shortness of breath, labored breathing, headache, nausea and vomiting. Exposure can cause headache, dizziness, heaviness and weakness of the arms and legs. Continued exposure may progress to convulsions and death.

Chronic effects
- To the best of our knowledge, the chronic health effects of this product have not been fully investigated.

FIRST AID
- **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. Monitor for respiratory distress. Apply artificial respiration if not breathing. Do not use mouth-to-mouth methods if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- **Ingestion**: If swallowed call a poison center if you feel unwell. Rinse mouth. Make victim drink plenty of water and induce vomiting. Seek medical attention

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing media
- **Appropriate extinguishing media**: 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 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).
- Report any run-off of fireswater’s 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, 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.

Major Spill
- 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.
- 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

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. Storage

- Store in a cool, dry and ventilated place.
- Store away from incompatible materials.
- Keep securely closed when not in use.
- Keep only in original container.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>WEL 8hr TWA (ppm)</th>
<th>STEL (ppm)</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-Aminopyridine</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
<td>Not available</td>
</tr>
</tbody>
</table>

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.
- 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.

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>Yellow to brown solid</td>
</tr>
<tr>
<td>2.</td>
<td>Odor</td>
<td>Characteristic</td>
</tr>
<tr>
<td>3.</td>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>4.</td>
<td>pH</td>
<td>8.5 (10% solution in water)</td>
</tr>
<tr>
<td>5.</td>
<td>Melting point/Freezing point</td>
<td>60-63°C (Melting point)</td>
</tr>
<tr>
<td>6.</td>
<td>Boiling Point</td>
<td>248 °C</td>
</tr>
<tr>
<td>7.</td>
<td>Flash point</td>
<td>124 °C</td>
</tr>
<tr>
<td>8.</td>
<td>Evaporation rate (n-BuAc=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>9.</td>
<td>Flammability</td>
<td>Non Flammable</td>
</tr>
<tr>
<td>10.</td>
<td>Upper/lower flammability or Explosive limits</td>
<td>Not available</td>
</tr>
<tr>
<td>11.</td>
<td>Vapor pressure</td>
<td>Not available</td>
</tr>
<tr>
<td>12.</td>
<td>Vapor density (air=1)</td>
<td>Not available</td>
</tr>
<tr>
<td>13.</td>
<td>Relative density/Bulk density</td>
<td>0.75g/cm³</td>
</tr>
<tr>
<td>14.</td>
<td>Solubility</td>
<td>Soluble in water.</td>
</tr>
<tr>
<td>15.</td>
<td>Partition coefficient : n-(Octonol / water)</td>
<td>Not available</td>
</tr>
<tr>
<td>16.</td>
<td>Auto-ignition temperature</td>
<td>628 °C</td>
</tr>
<tr>
<td>17.</td>
<td>Decomposition temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>18.</td>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
<tr>
<td>19.</td>
<td>Explosive property</td>
<td>No</td>
</tr>
<tr>
<td>20.</td>
<td>Oxidizing property</td>
<td>No</td>
</tr>
</tbody>
</table>

SECTION 10: STABILITY AND REACTIVITY

- Stability: Stable under normal temperature and pressure.
- Conditions to avoid: Keep away from High temperature, sparks, moist condition, mechanical shock, incompatible materials, ignition sources, excess heat. Strong Heating.
- Incompatible chemicals: Strong oxidizing agents, strong acid, acid chlorides and acid anhydrides.
3-Aminopyridine
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according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

- Hazardous decomposition products: Thermal decomposition may produce carbon monoxide and oxides of nitrogen, carbon dioxide, Hydrogen bromide gas and irritating and toxic fumes.
- Hazardous Polymerization: Has not been reported.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

- Acute toxicity
  - 3-Aminopyridine causes skin, and serious eye irritation. It may cause respiratory tract irritation. It is fatal if swallowed, and toxic in contact with skin and if inhaled. High concentrations are extremely destructive to tissues of mucus membrane and upper respiratory tract. May cause convulsion. The detailed of toxic effects are mentioned in section 4 of MSDS.

  Target organ: Damage to the nervous system.

  RTECS#: US1650000
  ACUTE ORAL LD₅₀ = 21 mg/kg
  a) Skin corrosion/irritation
     - Causes skin irritation.
  b) Serious eye damage/irritation
     - Causes serious eye irritation.
  c) Respiratory or skin sensitization
     - May causes irritation to respiratory system.
  d) Germ cell Mutagenicity
     - No data is available.
  e) Carcinogenicity
     - No data is available.
  f) Reproductive toxicity
     - No data is available.
  g) STOT-single exposure
     - No data available.
  h) STOT- repeated exposure
     - No data available.
  i) Aspiration Hazards
     - No data available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

- Ecotoxicity:
  - Fish ChV (mg/l) : 2.3
  - 3-Pyridinamine is chronically toxic to fish.

Persistence and degradability

- 3-Aminopyridine is estimated to be persistent in the environment.

Bio accumulative potential

- BCF = 3.2
- Log Kow = 0.11 at 25 °C
- 3-Aminopyridine is not expected to bioaccumulate in the food chain because it does not exceed the BCF criteria.

Mobility in soil

- Koc = 35 (Estimated).
- Henry's Law Constant = 0.0000000025atm/m³ mole at 25 degrees. It is non-volatile from aqueous bodies.
- Log Kow = 0.11 (Estimated)

Other adverse effects.

- Environment Fate:
  - Based on the environmental modeling, 3-Aminopyridine is not expected to bioaccumulate in the food chain and is estimated to be persistent in the environment. It is chronically toxic to fish. 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 combustible.
- 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.

Jubilant Life Sciences Limited  Page 5 of 7
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.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Agency</th>
<th>UN Number</th>
<th>Proper Shipping name</th>
<th>Hazard Class</th>
<th>Packing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Land Transport</td>
<td>ADR/RIC</td>
<td>UN 2671</td>
<td>Aminopyridines(o-; m-; p-)</td>
<td>6(6.1)</td>
</tr>
<tr>
<td></td>
<td>Maritime Transport</td>
<td>IMDG</td>
<td>UN 2671</td>
<td>Aminopyridines(o-; m-; p-)</td>
<td>6(6.1)</td>
</tr>
<tr>
<td></td>
<td>Air Transport</td>
<td>IATA</td>
<td>UN 2671</td>
<td>Aminopyridines(o-; m-; p-)</td>
<td>6(6.1)</td>
</tr>
</tbody>
</table>

**Environmental hazards:**
- Marine pollutant: Yes

SECTION 15: REGULATORY INFORMATION

- **European Union Information**
  - Classification as per CLP Regulation 1272/2008:
    - Hazards Class and Category: Acute Tox Oral Cat 2; Acute ToxDermal/Inhalation Cat.3; Eye irrit Cat 2, Skin Irrit Cat 2, STOT SE Cat3, Aquatic chronic Cat 2
    - Hazard Statements: H300; H311;H331;H319,H315,H335,H411

<table>
<thead>
<tr>
<th>Chemical Inventory Lists:</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA:</td>
<td>Present</td>
</tr>
<tr>
<td>EINECS:</td>
<td>207-322-2</td>
</tr>
<tr>
<td>Canada(DSL/NDSL):</td>
<td>Not available</td>
</tr>
<tr>
<td>Japan:</td>
<td>5-725</td>
</tr>
<tr>
<td>Korea:</td>
<td>KE-29926</td>
</tr>
<tr>
<td>Australia:</td>
<td>Not listed</td>
</tr>
<tr>
<td>China: IECSC:</td>
<td>Listed</td>
</tr>
</tbody>
</table>

**US information**

- **TSCA**
  - It is listed in EPA TSCA chemical inventory.
- **TSCA section 12**
  - None of the chemicals in this product are listed under TSCA section 12b.
- **SARA Section 302 RQ**
  - None of the chemicals in this product have an RQ under SARA Section 302 RQ.
- **SARA Section 302 TPQ**
  - None of the chemicals in this product have an TPQ under SARA Section 302 TPQ
- **SARA Section 313**
  - None of the chemicals in this product are reported under SARA Section 313

- **Clean Air Act**
  - None of the chemicals in this product contain any class1 & class2 ozone depletors , neither contain any hazardous air pollutants under ‘Clean Air Act’

- **Clean Water Act**
  - None of the chemicals in this product are listed as Hazardous substances or priority pollutants or Toxic substances list under ‘Clean Water Act’
3-Aminopyridine
Safety Data Sheet
according to the federal final rule of hazard communication revised on 2012 (HazCom 2012)

SECTION 16:  OTHER INFORMATION

a) Compilation information of safety data sheet

Date of compilation: October 19, 2012
Chemical: 3-Aminopyridine
CAS #: 462-08-8
File Name: 0151Gj Ghs05 Div.3 sds 3-Aminopyridine
Revision Number: 05
Date of Issue of SDS: December 22, 2015
Revision Due Date: November, 2017
Supersedes date: October 06, 2015

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

- 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.
- RTECS = Registry of Toxic Effects of Chemical Substances.
- NTP = National Toxicology Program.
- IARC = International Agency for Research on Cancer.
- DSL = Domestic Substances List.
- NDSL = Non-Domestic Substances List.
- CSR = Chemical Safety Report.
- BCF = Bio Concentration Factor.
- DNEL = Derived No Effect Level.
- PNEC = Predicted No Effect Concentration.
- TLV = Threshold Limit Value.
- AGIWH = American Conference of Governmental Industrial Hygienists.
- REACH = Registration, Evaluation, Authorization and Restriction of Chemicals.
- CLP = Classification, Labelling and Packaging.
- LD / LC = Lethal Doses / Lethal Concentration.
- GHS = Globally Harmonized System.
- ADR = Accord européen relatif au transport international de marchandises.
- EmS = Emergency measures on Sea.
- ICAO = International Civil Aviation Organization.
- IATA/DGR = International Air Transport Association/Dangerous Goods Regulation.

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)