### 1. CHEMICAL PRODUCT & MANUFACTURER’S DETAILS

<table>
<thead>
<tr>
<th>PRODUCT NAME</th>
<th>1-(4-PYRIDYL)PYRIDINIUM CHLORIDE HYDROCHLORIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANUFACTURER</td>
<td>HEAD OFFICE: Jubilant Organosys Limited</td>
</tr>
<tr>
<td>うまく</td>
<td>Jubilant Organosys Limited</td>
</tr>
<tr>
<td>FACTORY &amp; REGISTERED OFFICE</td>
<td>HEAD OFFICE: Jubilant Organosys Limited</td>
</tr>
<tr>
<td>Bhartiagram, Gajraula</td>
<td>Plot 1-A, Sector 16-A,</td>
</tr>
<tr>
<td>Uttar Pradesh-244223, India</td>
<td>Institutional Area, Noida,</td>
</tr>
<tr>
<td>PHONE NO: +91-5924-252353 unto 252360</td>
<td>PHONE NO: +91-120-2516601</td>
</tr>
<tr>
<td>Contact Department-Safety: Extension 298</td>
<td>Contact department: EHS</td>
</tr>
<tr>
<td>FAX NO: 91-5924-252352</td>
<td>FAX NO: +91-120-2516629</td>
</tr>
<tr>
<td>EMERGENCY PHONE: +91-5924-268141</td>
<td>Email: <a href="mailto:support@jubl.com">support@jubl.com</a></td>
</tr>
</tbody>
</table>

### 2. CHEMICAL IDENTIFICATION

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>1-(4-PYRIDYL)PYRIDINIUM CHLORIDE HYDROCHLORIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SYNONYMS</td>
<td>1-(4-Pyridinyl)pyridinium chloride hydrochloride</td>
</tr>
<tr>
<td>1,4'-Bipyridinium, chloride, hydrochloride</td>
<td></td>
</tr>
<tr>
<td>SYSTEMATIC NAME</td>
<td>4-Pyridiniopyridinium dichloride</td>
</tr>
<tr>
<td>1,4'-Bipyridinium, chloride, hydrochloride</td>
<td></td>
</tr>
<tr>
<td>OTHER LANGUAGE NAMES</td>
<td>De : 4-Pyridiniopyridinium dichloride</td>
</tr>
<tr>
<td>Es : Dicloruro de 4-piridiniopiridinio</td>
<td></td>
</tr>
<tr>
<td>Fr : Dichlorure de 4-pyridiniopyridinium</td>
<td></td>
</tr>
<tr>
<td>CHEMICAL CLASSIFICATION</td>
<td>N Heterocyclic salt</td>
</tr>
<tr>
<td>CHEMICAL FORMULA</td>
<td>C_{10}H_{11}N_{2}.Cl. H Cl</td>
</tr>
<tr>
<td>C.A.S. NO</td>
<td>5421-92-1</td>
</tr>
<tr>
<td>EINECS</td>
<td>226-543-5</td>
</tr>
</tbody>
</table>

### 3. HAZARD IDENTIFICATION & HEALTH HAZARD

Overview: Brown to grayish brown crystalline powder. Hygroscopic salt. Caution: The toxicological and environmental properties of this material have not been investigated, hence due precaution is advised.

- EU Risk Phrases: None listed; EU Pictograms; Not listed
- Potential Health Effects
  - Eye: May cause eye irritation.
  - Skin: May cause skin irritation.
  - Ingestion: May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.
  - Inhalation: May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.
3. **HAZARD IDENTIFICATION & HEALTH HAZARD**

- Chronic: No information found.
- NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 0

4. **FIRST AID MEASURES**

**Eyes Contact:** If material enters the eyes wash immediately with plenty of water for at least 15 minutes. Remove contact lenses if easy to do so. Seek medical help if irritation persists.

**Inhalation:** Remove the person from the area and into fresh air. If the person is having difficulty breathing give oxygen. If the person is not conscious give artificial respiration. Seek prompt medical attention. Seek medical attention in case of any irritation.

**Skin Contact:** In case of contact immediately wash with plenty of water. If any irritation arises call medical services.

**Ingestion:** If swallowed do NOT induce vomiting. Seek medical attention. Never give anything by mouth to an unconscious person. Give water to rinse out mouth if the person is fully conscious and attentive.

Notes to physician: Treat symptomatically and supportively.

5. **FIRE FIGHTING MEASURES**

**Flash Point:** This material is a salt that is not classified as flammable or combustible. However, like any organic material it will burn in a fire. It may give off pungent and toxic gases. Run-off from fire control may cause pollution.

**Extinguishing media:** No restrictions on use of any media. In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam. Use agent most appropriate to extinguish fire. Avoid using water in direct jets in a chemical fire.

**Special fire fighting procedures:** Fire fighters to wear full protective gear and Self Contained Breathing Apparatus in the fire area.

**Unusual fire and explosion hazard:** It may give off smoke and pungent and toxic gases.

6. **ACCIDENTAL RELEASE MEASURES**

**General Information:** Use protective equipment in section 8.

**Spills / Leaks:**
- Vacuum and dry clean up large spills into labeler containers. Avoid dusty conditions.
- Clean up area with soap and water subsequently.
- All metal equipment to be cleaned at the end of operation.
- Provide ventilation
- Wash up in case of any physical contact with the material.
- Prevent entry of material into environmental bodies. Follow local regulations.
### 7. HANDLING AND STORAGE

**Handling:**
- Wash thoroughly after handling or if there is any direct contact.
- Remove contaminated clothing immediately and launder before reuse.
- Use with adequate ventilation.
- Minimize dust generation.
- Avoid contact with eyes, skin, and clothing.
- Keep container tightly closed.
- Avoid ingestion and inhalation.

**Storage:**
- Store in a tightly closed container.
- Store in a cool, dry, well-ventilated area away from incompatible substances.
- The material is hygroscopic Store protected from moisture.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Exposure controls:** Use with local mechanical exhaust. In the laboratory use in a fume hood. Facilities will be provided with emergency showers and eye-baths.

**Personal Protection**
- General: Wash thoroughly after handling and immediately after use.
- Eyes: Goggles or eye-glass required.
- Hands: Gloves required.
- Body: Standard work or laboratory clothing.
- Respiratory: Use a respirator only when inadequate exposure controls exist. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**Exposure Limits:** Not available.
9. PHYSICOCHEMICAL PROPERTIES & FIRE/EXPLOSION HAZARD DATA

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICAL STATE</td>
<td>Solid</td>
</tr>
<tr>
<td>APPEARANCE</td>
<td>Brown to grayish brown crystalline powder</td>
</tr>
<tr>
<td>ODOUR</td>
<td>Data not available</td>
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<tr>
<td>BOILING POINT</td>
<td>Data not available</td>
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<tr>
<td>MELTING POINT</td>
<td>140-180°C</td>
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<tr>
<td>FLASH POINT</td>
<td>Data not available</td>
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<tr>
<td>VAPOUR PRESSURE</td>
<td>Data not available</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY (WATER=1)</td>
<td>Data not available</td>
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<tr>
<td>VAPOR DENSITY (AIR=1)</td>
<td>Data not available</td>
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<tr>
<td>SOLUBILITY IN WATER</td>
<td>Soluble</td>
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<tr>
<td>pH (2% aq. Suspension)</td>
<td>Data not available</td>
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<td>FLAMMABILITY</td>
<td>Data not available</td>
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<tr>
<td>LEL</td>
<td>Data not available</td>
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<tr>
<td>UEL</td>
<td>Data not available</td>
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<tr>
<td>CORROSIVE MATERIAL</td>
<td>Data not available</td>
</tr>
<tr>
<td>MOLECULAR WEIGHT</td>
<td>229.11</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

- **Chemical stability**: Stable under normal temperature and pressure.
- **Conditions to avoid**: Avoid heat, flames, sparks & other source of ignition. Avoid moist conditions.
- **Incompatibilities with other materials**: Oxidising agents, moisture.
- **Hazardous decomposition products**: hydrogen chloride, nitrogen oxides, carbon monoxide, carbon dioxide and toxic fumes.

11. TOXICOLOGICAL INFORMATION

**ACUTE EFFECTS**: No data available

**CHRONIC EFFECTS**: No data available

**TOXICITY**:

- RTECS# CAS RN 5421-92-1: Unavailable
- ORL RAT LD₅₀ : Unavailable
- DERMAL LD₅₀ : Unavailable
- INHALATION LD₅₀ : Unavailable

**CARCINOGENICITY, MUTAGENICITY, REPRODUCTIVE TOXICITY**:

- Not listed by NTP, IARC, OSHA
- No studies available
12. **ECOLOGICAL INFORMATION**

No data available.

13. **DISPOSAL CONSIDERATION**

Dispose as per local and federal laws applicable.

14. **TRANSPORT INFORMATION**

Not regulated as per IMDG?IMO/IATA/US DOT

15. **REGULATORY INFORMATION**

European Information: EC#226-543-5

Pictogram:

Indication of danger:

Risk Phrases

There are no risk phrases assigned.

Safety Phrases

S 22  Do not breathe dust.
S 24/25  Avoid contact with skin and eyes.
S 28  After contact with skin, wash immediately with plenty of water.
S 45  In case of accident or if you feel unwell, seek medical advice immediately

WGK (Water Danger/Protection) CAS# 5421-92-1: No information available.

US Regulatory Information

TSCA Inventory: Listed

CAA 112(r): CAS RN 5421-92-1 not listed; CAA Threshold (lbs.): Not applicable

CERCLA Chemical: CAS RN 5421-92-1 not listed; CERCLA RQ (lbs.): Not applicable

EPCRA EHS Chemical: CAS RN 5421-92-1 not listed; EPCRA TPQ (lbs.): Not applicable

EPCRA Section 313 Chemical: CAS RN 5421-92-1 not listed

Canada DSL and NDSL list: Not on the DSL; Present on the NDSL.

16. **OTHER INFORMATION**

Information contained in this MSDS is believed to be correct but no representation, guarantee or warranties of any kind are made as to its accuracy, suitability for a particular application or results to be obtained from them. This MSDS shall be used as a guide only. JUBILANT ORGANOSYS LIMITED makes no warranties expressed or implied of the adequacy of this document for any particular purpose.

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Date: 02 December 2005.

Revision Number: 00