

4-(Dimethylamino)pyridine 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 form	: Substance
Trade name	: 4-(Dimethylamino)pyridine
Chemical name	: N,N-dimethylpyridin-4-amine
CAS RN	: 1122-58-3
Formula	: C ₇ H ₁₀ N ₂

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

4-Dimethylaminopyridine is widely used as a hypernucleophilic acylation catalyst. It is also used as an intermediate in the pharmaceutical industry for the synthesis of Zidovudine, Abacavir, Lamivudine (anti- HIV treatment drugs), Alfentanil (an opioid analgesic), Cladribine (a chemotherapy drug) and Sufentanil, which is used as an analgesic for incident pain. It is also used in Agrochemical industry for the synthesis of the insecticide Chlorpyrifos.

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

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1.4. Emergency telephone number

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

SECTION 2 : HAZARDS IDENTIFICATION

GHS CLASSIFICATION

Acute toxicity (oral), Category 3	H301	Toxic if swallowed
Acute toxicity (dermal) Category 1	H310	Fatal in contact with skin
Skin corrosion/irritation Category 2	H315	Causes skin irritation
Serious eye damage/eye irritation, Category 2A	H319	Causes serious eye irritation
Specific target organ toxicity (single exposure) Category 3	H335	May cause respiratory irritation
Hazardous to the aquatic environment — Chronic Hazard, Category 3	H412	Harmful to aquatic life with long lasting effects

Full text of H statements : see section 16

2.2 Label elements

HAZARD PICTOGRAMS (GHS-US)

:



GHS 06

Signal Word (GHS-US)

: **Danger**

HAZARD STATEMENTS (GHS-US)

:H315: Causes skin irritation.
H301: Toxic if swallowed.
H310: Fatal in contact with skin.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
H412: Harmful to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS (GHS-US)

: P261: Avoid breathing dust
P264: Wash hand thoroughly after handling
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P273: Avoid release to the environment.
P312: Call a poison center or doctor/physician if you feel unwell.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove



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contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P332+P313: If skin irritation occurs: Get medical advice /attention.
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P405: Store locked up.
P501: Dispose of contents/container to...in accordance with local/regional/national/international regulations (to be specified).

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical	CAS #	%	GHS-US classification
4-(Dimethylamino)pyridine	1122-58-3	~100%	Acute toxicity 3 (oral), H301 Acute toxicity (dermal) 1, H310 Skin corrosion/irritation 2, H315 Serious eye damage/eye irritation, 2A H319 Specific target organ toxicity (single exposure) 3, H335 Aquatic environment — Chronic Hazard, 3 H412

Full text of H-statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

- **Acute effects:**
- **Eyes:** Irritating to skin and eyes and eyelids. More than ordinary care should be used to prevent eye contact.
- **Skin:** HIGHLY TOXIC via the dermal route. Extended contact with this material could be fatal. More than ordinary care should be used to prevent skin.
- **Ingestion:** This material is considered to be toxic via the oral route.
- **Inhalation:** Although data on inhalation toxicity are unavailable, it may be assumed that this material is toxic via inhalation. Symptoms of overexposure may include headache, nausea, disorientation, weakness and convulsions.
- **Chronic effects:**
- This material is readily absorbed from the gastrointestinal tract, the skin and the respiratory tract. Extended contact with this material could result in severe health effects or death.

4.2 Most important symptoms and effects, both acute and delayed

- **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. Do NOT induce vomiting by use of emetics. Seek medical attention.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: FIRE- FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray

Unsuitable extinguishing media : Do not use a heavy water stream

5.2. Special hazards arising from the substance or mixture

Fire hazard : Heavier than air, vapours may travel long distances along ground, ignite and flash back to source.

Explosion hazard : Risk of explosion with vapours in confined spaces, drainage and sewage system.



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Reactivity in case of fire : Thermal decomposition generates : Toxic vapours which could include nitrogen oxides, carbon monoxide and cyanide.

Hazardous decomposition products in case of fire: Hazardous decomposition products may be released during prolonged heating like **smokes, carbon dioxide, nitrogen oxides.**

5.3 Advice for firefighters

Precautionary measures fire : Appropriate self-contained breathing apparatus may be required.

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. In case of major fire, evacuate area.

Protective equipment for firefighters : Do not enter fire area without proper protection equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : For small spills, absorb or cover with dry earth, sand, or other inert non-combustible absorbent material and place into waste containers for later disposal. Avoid breathing dust. Avoid contact with skin, eyes and clothing. For larger spills, dike area and pump into waste containers. . Contain large spills to maximize product recovery or disposal. Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Remove all sources of ignition. Shovel material into a convenient waste disposal container. . Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified

in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or

wet sweeping may be used to avoid dust dispersal. Do not allow into drains or water courses or dispose of where ground or surface waters may be affected. If the product enters drains or sewers the local water company should be contacted immediately; in the case of contamination of streams, rivers or lakes, the National Rivers Authority. Use personal protective equipment as required. For further information refer to section 8: Exposure-controls/personal protection.

6.1.1. For non-emergency personnel

Protective equipment : Wear a NIOSH approved respirator if dust will be generated in clean-up. EN 166.

Emergency procedures : Evacuate unnecessary personnel. Avoid breathing dust.

Measures in case of dust release : Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting.

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : Take up mechanically (sweeping, shovelling) and collect in suitable container for disposal.

Methods for cleaning up : On land, sweep or shovel into suitable containers. Minimize generation of dust. Store away from other materials.

6.4. Reference to other sections

see Section 1 for emergency contact information. For disposal of residues refer to section 13 : Disposal considerations. For further information refer to section 8: Exposure- controls/personal protection.

SECTION 7: Handling and storage



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7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. Do not get in eyes, on skin, or on clothing. Avoid breathing dust. Use only outdoors or in a well-ventilated area.
- Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Ignition sources, Water, humidity, Incompatible materials. Keep container tightly closed.
- Packaging materials : High density polyethylene (HDPE). Keep only in the original container.

7.3. Specific end use(s)

refer to section 1.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

- Appropriate engineering controls : Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of mists and/or vapors below the recommended exposure limits. In case of inadequate ventilation wear respiratory protection. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Handle in accordance with good industrial hygiene and safety procedures.
- Personal protective equipment : Avoid all unnecessary exposure.
- Materials for protective clothing : According to the conditions of use, protective gloves, apron, boots, head and face protection must be worn. In case of repeated or prolonged exposure use Chemical resistant protective apron/clothing (tested to EN 14605 or equivalent); Chemical resistant gloves (according to European standard EN 374 or equivalent)
- Hand protection : Wash and dry hands.
The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. It is a good industrial hygiene practice to minimize skin contact
- Eye protection : Chemical goggles or safety glasses. (ANSI Z87.1 or approved equivalent). Eye protection, including both chemical splash goggles and face shield, must be worn when possibility exists for eye contact due to spraying liquid or airborne particles
- Skin and body protection : Use chemically protective clothing. Boots
- Respiratory protection : Wear appropriate mask. (NIOSH-approved). Respirators should be used in accordance with OSHA requirements (29 CFR 1910.134).
- Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Solid
- Appearance : crystalline
- Molecular mass : 122,17 g/mol
- Colour : white.
- Odour : Slightly amine like.
- Odour threshold : No data available
- pH : No data available



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pH solution	: 11 at 60mg/L aqueous solution @ 20 Deg. C
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: No data available
Melting point	: 110 - 113 °C
Freezing point	: No data available
Boiling point	: 162 °C at 50 mm Hg
Flash point	: 110 °C Closed Cup
Auto-ignition temperature	: 420 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: Non Flammable Not flammable, Non flammable
Vapour pressure	: 1 mm Hg at 25 Deg. C (Established)
Vapour pressure at 50 °C	: No data available
Critical pressure	: No data available
Relative vapour density at 20 °C	: No data available Relative
density	: 0,96 g/cm ³ at 20 Deg. C
Solubility	: Water: 76 g/l @ 20 Deg. C
Log Pow	: 1,34 Octanol-Water
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available.
Oxidising properties	: No data available.
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Product is not explosive.

10.2. Chemical stability

Stable at normal temperatures and pressures.

10.3. Possibility of hazardous reactions

Hazardous polymerisation does not occur. Reacts with : Incompatible materials.

10.4. Conditions to avoid

Keep away from extreme heat, sparks, open flame, and strongly oxidizing conditions. Avoid static electricity discharges. Avoid shock and friction. Protect from moisture.

10.5. Incompatible materials

Strong oxidizing agents. Strong acids. strong bases.

10.6. Hazardous decomposition products

Fume. Carbon monoxide. Carbon dioxide. Nitrogen oxides (NO_x).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Toxic if swallowed. Dermal: Fatal in contact with skin.

4-(Dimethylamino)pyridine (1122-58-3)	
LD50 oral rat	250 mg/kg National Technical Information Service. Vol. OTS0536502
LD50 dermal rabbit	13 mg/kg National Technical Information Service. Vol. OTS0536502,

Skin corrosion/irritation : Causes skin irritation.



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Serious eye damage/irritation	: Causes serious eye irritation
Respiratory or skin sensitisation	: Not classified Inhalation of dust may cause irritation of the respiratory system. Based on available data, the classification criteria are not met
Germ cell mutagenicity	: No information is available and no adverse mutagenic effects are anticipated
Carcinogenicity	: Not classified (This product is not known to contain any components at concentrations above 0.1% which are considered carcinogenic by OSHA, IARC or NTP.) Based on available data, the classification criteria are not met
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: May cause respiratory irritation.
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Toxic if swallowed. Fatal in contact with skin. Irritating to eyes, respiratory system and skin

SECTION 12: Ecological information

12.1. Toxicity

4-(Dimethylamino)pyridine (1122-58-3)	
LC50 fish 1	11,6 mg/l Danio rerio (zebra fish) 96h
EC50 other aquatic organisms 1	> 100 mg/l Daphnia magna (Water flea) 48h
EC50 72h algae (1)	1,82 - 4,22 mg/l Pseudokirchneriella subcapitata (green algae)
NOEC (acute)	5 mg/l Danio rerio (zebra fish) 96h
NOEC chronic algae	0,4 mg/l Pseudokirchneriella subcapitata (green algae) 72h

12.2. Persistence and degradability

4-(Dimethylamino)pyridine (1122-58-3)

Persistence and degradability No data available.

12.3. Bioaccumulative potential

4-(Dimethylamino)pyridine (1122-58-3)	
Bioconcentration factor (BCF REACH)	2,17 estimated
Log Pow	1,34 Octanol-Water

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

Additional information : Avoid release to the environment

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to comply with applicable local, national and international regulation.

Ecology - waste materials : Avoid release to the environment. Hazardous waste due to toxicity.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN2811 Toxic,Solid, organic, n.o.s. (4-Dimethylaminopyridine) 6.1

UN-No.(DOT) : UN2811

Proper Shipping Name (DOT) : Toxic,Solid, organic, n.o.s.

Transport hazard class(es) (DOT) : 6.1 - Class 6.1 - Poisonous materials

Hazard labels (DOT) : 6.1 – Poison





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Packing group (DOT) : I
Dangerous for the environment : No
Marine pollutant : No

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

4-(Dimethylamino)pyridine is not on the REACH Candidate List

4-(Dimethylamino)pyridine is not on the REACH Annex XIV List

15.1.2. National regulations

Germany

12th Ordinance Implementing the Federal : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Immission Control Act - 12.BImSchV

Netherlands

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting : The substance is not listed
giftige stoffen – Borstvoeding

NIET-limitatieve lijst van voor de voortplanting : The substance is not listed
giftige stoffen – Vruchtbaarheid

NIET-limitatieve lijst van voor de voortplanting : The substance is not listed
giftige stoffen – Ontwikkeling



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Denmark

Classification remarks : Emergency management guidelines for the storage of flammable liquids must be followed

Recommendations Danish Regulation : Young people below the age of 18 years are not allowed to use the product

Pregnant/breastfeeding women working with the product must not be in direct contact with the product

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Abbreviations and acronyms:

IARC	International Agency for Research on Cancer
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
PBT	Persistent Bioaccumulative Toxic
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
LD50	Median lethal dose
LC50	Median lethal concentration
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rai
vPvB	Very Persistent and Very Bioaccumulative
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
SDS	Safety Data Sheet

Sources of Key data : Data arise from reference works and literature and from information from providers of the used chemicals. REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. Handle in accordance with good industrial hygiene and safety practices. The information on this sheet is not a specification and does not guarantee specific properties. The information is intended to provide general knowledge as to health and safety based upon our knowledge of handling, storage, and use of the product. It is not applicable to unusual or non-standard uses of the product or where instruction or recommendations are not followed. None.

Full text of H- and EUH-statements:

Acute Tox. 1 (Dermal)	Acute toxicity (dermal) Category 1
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Acute Tox. 3 (Oral)	Acute toxicity (oral), Category 3
Aquatic Chronic 3	Hazardous to the aquatic environment — Chronic Hazard, Category 3
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H301	Toxic if swallowed
H310	Fatal in contact with skin
H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H412	Harmful to aquatic life with long lasting effects

SDS US (GHS HazCom2012)

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.