



4-(Dimethylamino)pyridine

Safety Data Sheet

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

Date of compilation	: October 19, 2012
File Name	: 0053Gj Ghs19 Div.3 sds 4-(Dimethylamino) pyridine
Revision Number	: 19
Date of Issue of SDS	: January 31, 2024
Revision Due Date	: December, 2026
Supersedes date	: February 05, 2021

4-(Dimethylamino)pyridine

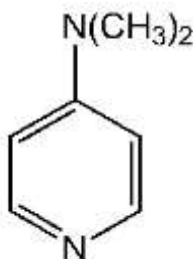
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Trade name	: 4-(Dimethylamino)pyridine
Chemical name	: N,N-dimethylpyridin-4-amine
EC no	: 214-353-5
CAS No	: 1122-58-3
Product code	: 10092015A
Formula	: C7H10N2



Chemical structure	:
Synonyms	: 4-Dimethylaminopyridine; / DMAP; / gamma-(Dimethylamino)pyridine; / Pyridine, 4-(dimethylamino)-; / 4-(dimethylamino)azabenzene / N,N-dimethyl-4-aminoazabenzene

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

1.2.1 Relevant identified uses

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.

1.2.2 Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Jubilant Ingrevia Limited

FACTORY & REGISTERED 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: Hazards identification

2.1. Classification of the substance or mixture

GHS US CLASSIFICATION

Acute toxicity (oral), Category 3	H301
Acute toxicity (dermal) Category 2	H310
Acute toxicity (inhalation) Category 3	H331
Skin corrosion/irritation Category 2	H315
Serious eye damage/eye irritation, Category 1	H318
Specific target organ toxicity (single exposure) Category 1	H370
Hazardous to the aquatic environment — Chronic Hazard, Category 2	H411

Full text of H statements : see section 16

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2.2 Label elements

GHS US CLASSIFICATION



Hazard pictograms	:	
Signal word	:	Danger
Hazard statements	:	H301 - Toxic if swallowed H310 - Fatal in contact with skin H315 - Causes skin irritation H318 - Causes serious eye damage. H331 - Toxic if inhaled H370 - Causes damage to organs (Central nervous system) H411 - Toxic to aquatic life with long lasting effects
Precautionary statements	:	P260 - Do not breathe dust/fume/gas/mist/vapours/spray. P264 - Wash hands 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 P280 - Wear eye protection, face protection, protective clothing, protective gloves P391: collect spillage. P301+P310 - IF SWALLOWED: immediately call a POISON CENTER or doctor/physician 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 P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P307+P311- If exposed: Call a POISON CENTER or doctor/physician. P312 - Call a POISON CENTER or doctor/physician if you feel unwell P330 - Rinse mouth P321: Specific treatment (see....on this label) P332+P313 - If skin irritation occurs: Get medical advice/attention P361+P364 - Take off immediately all contaminated clothing and wash it before reuse P362+P364 - Take off contaminated clothing and wash it before reuse P403+P233 - Store in a well-ventilated place. Keep container tightly closed P405 - Store locked up P501 - Dispose of contents/container to comply with applicable local, national and international regulation.
Child-resistant fastening	:	No
Tactile warning	:	No

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substance

Substance type	:	Mono-constituent
Name	:	4-(Dimethylamino)pyridine
CAS No	:	1122-58-3
EC no	:	214-353-5

Name	Product identifier	%
4-(Dimethylamino)pyridine	(CAS No) 1122-58-3 (EC no) 214-353-5	100

Full text of H-statements: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	:	Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation	:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a POISON CENTER or doctor/physician if you feel unwell.



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First-aid measures after skin contact	: Wash with plenty of soap and water. Take off immediately all contaminated clothing and wash it before reuse. Seek immediate medical advice.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Immediately get medical attention.
First-aid measures after ingestion	: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention. Immediately call a POISON CENTER or doctor/physician. Specific treatment (see Rinse mouth thoroughly with water., If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. on this label).

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

Symptoms/injuries after inhalation	: May cause respiratory irritation. Overexposure to vapours may result in headache, nausea.
Symptoms/injuries after skin contact	: Fatal in contact with skin. Causes skin irritation.
Symptoms/injuries after eye contact	: Causes serious eye irritation. Prolonged or repeated contact may worsen irritation.
Symptoms/injuries after ingestion	: Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.
Chronic symptoms	: 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.

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

Treat symptomatically.

SECTION 5: Firefighting 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.
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 monoxide and dioxide, nitrogen oxides (NOx).

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 and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion. If tank, rail car or tank truck is involved in a fire, ISOLATE in all directions; also, consider initial evacuation in all directions. Do not allow run-off from fire fighting to enter drains or water courses.
Protective equipment for firefighters	: Do not enter fire area without proper protective 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.
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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.



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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

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.

Precautions for Unique Hazards: This material may present a dust explosion hazard in solid form and is sensitive to ignition by electrostatic discharge. Maintain areas below flammable vapor / explosive dust concentrations.

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 at ambient temperature in a dry and 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.

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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
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

Not classified as dangerously reactive

10.2. Chemical stability

Stable at normal temperatures and pressures.

10.3. Possibility of hazardous reactions

Hazardous polymerisation does not occur. Will not autopolymerize.

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, dust generation.

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

Acute Oral LD50	: 140 mg/kg (rat), 250 mg/kg (rat) 100 - 119 mg/kg (rat)	Key Study
Acute Dermal LD50	: 90 mg/kg (rabbit) 100 - 200 mg/kg (guinea pig) 167 - 250 mg/kg (rabbit)	Key Study

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	50 - 200 mg/kg (rabbit)
Acute LC50 Inhalation	: 0.53 mg/l (Data from structural analogue, 4-Aminopyridine)
Skin Irritation	: Irritating to the skin. (Weight of evidence)
Eye Irritation	: Corrosive to eyes.
Mutagenicity	: This product was found to be non-mutagenic in various Ames assays, both with and without metabolic activation.
Reproductive / Developmental Toxicity	: No data available. Validated QSAR models show DMAP is inactive for developmental toxic effects.
Carcinogenicity	: This material is not listed by IARC, NTP or OSHA as a carcinogen. No test data is available that indicates this material is a carcinogen.
Target Organs	: Central nervous system - DMAP and 4-Aminopyridine both stimulated the secretion of phosphatidylcholine from cultured rat type II pneumocytes in vitro. This is consistent with blockage of K ⁺ channels, which activates the secretory process through an increase in intracellular calcium ions.
Aspiration Hazard	: Based on physical properties, not likely to be an aspiration hazard.
Primary Route(s) of Exposure	: Skin contact and absorption, eye contact, and inhalation. Ingestion is not likely to be a primary route of exposure.
Most important symptoms and effects, both acute and delayed	: DMAP is irritating to the respiratory tract and severely irritating to the eyes and eyelids. Absorption can occur from the gastrointestinal tract, the skin and the respiratory tract. 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. DMAP is HIGHLY TOXIC via the dermal route. Extended contact with this material could be fatal. More than ordinary care should be used to prevent skin and eye contact. This material is considered to be toxic via the oral route. Delayed 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.

Additive or Synergistic effects: None known.

SECTION 12: Ecological information

12.1. Toxicity

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

LC50 (48 h) Daphnia > 100 mg/L

LC50 (96 h) Brachydanio rerio (Zebra fish) = 11.6 mg/L

EC50 (72 h) Pseudokirchneriella subcapitata (algae) = 4.22 mg/L

NOEC (96 h) Brachydanio rerio (Zebra fish) = 5 mg/L

NOEC (72 h) Pseudokirchneriella subcapitata (algae) = 0.4 mg/L

12.2. Persistence and degradability

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

Persistence and degradability	Based on results from ready biodegradability test, this material is expected to biodegrade very slowly (weeks to months)
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12.3. Bioaccumulative potential

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

Bioaccumulative potential	Based on the log Kow, bioconcentration is not expected to occur.
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12.4. Mobility in soil

Expected to be mobile in soil.

12.5. Results of PBT and vPvB assessment

This substance is not a PBT or vPvB.

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

In accordance with ADR / RID / IMDG / IATA / AND




	ADR	IMDG	IATA
14.1. UN number			

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2811	2811	2811
14.2. UN proper shipping name		
TOXIC SOLID, ORGANIC, N.O.S.	TOXIC SOLID, ORGANIC, N.O.S.	Toxic solid, organic, n.o.s.
Transport document description		
UN 2811 TOXIC SOLID, ORGANIC, N.O.S., 6.1, II, (C/E)	UN 2811 TOXIC SOLID, ORGANIC, N.O.S., 6.1, II	UN 2811 TOXIC SOLID, ORGANIC, N.O.S., 6.1, II
14.3. Transport hazard class(es)		
6.1	6.1	6.1

ADR	IMDG	IATA
		
14.4. Packing group		
II	II	II
14.5. Environmental hazards		
Dangerous for the environment : Yes	Dangerous for the environment : Yes Marine pollutant : yes	Dangerous for the environment : Yes
No supplementary information available		

14.6. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

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 Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

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 giftige stoffen – Borstvoeding : giftige stoffen – Vruchtbaarheid

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling

NIET-limitatieve lijst van voor de voortplanting : The substance is not listed

: The substance is not listed

: The substance is not listed



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Chemical Inventory Lists:	Status	Unique identifier:
TSCA:	Listed	Unique identifier:
EC/ List No.	Listed	EC No. 214-353-5
Canada(DSL/NDL):	Listed (DSL)	Unique identifier: No
Korea:	Listed (KECI)	Unique identifier: KE No. (KE-11197)
Australia:	Listed (AICS)	Unique identifier: No
Taiwan	Listed (TCSI)	Unique identifier: No
New Zealand	Listed (NZIoC)	Unique identifier: No
Philippines	Listed (PICCS)	Unique identifier: No
China: IECSC	Listed	Unique identifier: No
Japanese ENCS	Listed	MITI No. ((5)-5479)

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

(a) Compilation information of safety data sheet

Date of compilation	: October 19, 2012
Chemical	: 4-(Dimethylamino) pyridine
CAS #	: 1122-58-3
File Name	: 0053Gj Ghs19 Div.3 sds 4-(Dimethylamino) pyridine
Revision Number	: 19
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(b) 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

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)