Safety Data Sheet

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

Product Identification: 2,5-Lutidine 0026Gj Ghs09 Div.3 sds 2,5-Lutidine

Date of issue: February 16, 2024

Date of Compilation : September 11, 2013

Date of Revision : February 16, 2024

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Revision Number : 09

Version Number : 0026Gj Ghs09 Div.3 sds 2,5-Lutidine

Supersedes date : January 02, 2024

Supersedes version : 0026Gj Ghs08 Div.3 sds 2,5-Lutidine

SECTION 1.: IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY

1.1 Product identification: 2,5-Lutidine; CAS RN; 589-93-5; EC# 209-666-9

1.1.1. **Trade name:** 2,5-Lutidine

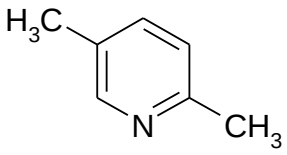
1.1.2. **Systematic Name:** 2,5-Dimethylpyridine; 2,5-Lutidine; Pyridine 2,5-dimethyl-

1.1.3. **Synonyms:** 2,5-Dimethylpyridine.

1.1.4. **Other Languages**: **De:** 2,5-Dimethylpyridin.
Es: 2,5-dimetilpiridina.
Fr: 2,5-diméthylpyridine

1.1.5 **Molecular Formula:** C_7H_9N

1.1.6. **Structural Formula:**



Identified uses: 2,5-Lutidine is used as an intermediate in the manufacturing of Active Pharmaceutical Drugs.

Uses advised against: None

1.3 Company / supplier: ***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.
PHONE NO: +91-120-4361000
FAX NO : +91-120- 4234881 / 84 / 85 / 87 / 95 / 96

Email: support@jubl.com
Website: www.jubilantingrevia.com

1.4 Emergency telephone:

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

GHS CLASSIFICATION

Flammable Liquid: Category 3	H226
Acute Toxicity Oral: category 4	H302
Acute Toxicity Dermal: Category 4	H312
Acute Toxicity Inhalation: Category 4	H332
Skin Corrosion/irritant: Category 2	H315
Eye damage/Irritation: Category 2	H319
STOT-Single exposure: Category 3	H335

Label elements

Pictograms:

GHS 02-Flammable

GHS 07-Exclamation mark

Signal word: Warning!

Hazard and precautionary statements:

Hazard Statements

- H226: Flammable liquid and Vapor.
- H302: Harmful if swallowed.
- H312: Harmful on contact with skin
- H332: Harmful if inhaled
- H315: Causes skin irritation.
- H319: Causes serious eye irritation
- H335: May cause respiratory irritation

PRECAUTIONARY STATEMENTS

- P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233: Keep container tightly closed.
- P240: Ground/bond container and receiving equipment.
- P243: Take precautionary measures against static discharge.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
- P264: Wash hands thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P271: Use only outdoors or in well ventilated area.
- P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P340: IF INHALED: Remove person to fresh air and keep 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.
- P370+P378: In case of fire: Use water for extinction.
- P337+P313: If eye irritation persists: Get medical advice/attention.
- P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- P330: Rinse mouth.
- P302+P352: IF ON SKIN: Wash with plenty of soap and water.
- P332+P313: If skin irritation occurs: Get medical advice/attention.
- P362+P364: Take off contaminated clothing and wash it before reuse.
- P403+P235: Store in a well-ventilated place. Keep cool.
- P501: Dispose of contents/container to local/regional/national/international regulations.

2.3 Other Hazards

- Substance is not classified as PBT nor as vPvB. For further details see section 12.

SECTION 3: COMPOSITION / INFORMATION ON INGERDIENTS

Substance	CAS No.	EINECS No.	Purity	GHS US CLASSIFICATION		
				Hazard Classes and categories	Pictograms Signal Words	Hazard Statements
2,5-Lutidine	589-93-5	209-666-9	≥98%	Flammable Liquid: Category 3 Acute Toxicity Oral: category 4 Acute Toxicity Dermal: category 4 Acute Toxicity Inhalation: category 4 Skin Corrosion/irritant: Category 2 Eye Damage/Irritation: Category 2 STOT-SE: Category 3	GHS 02 GHS 07	H226 H302 H312 H332 H315 H319 H335

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures.

- **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.
- **Ingestion**: If swallowed call a poison center if you feel unwell. Rinse mouth. Do NOT induce vomiting by use of emetics. Seek medical attention.

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

Acute effects:

- **Skin contact:** There may be irritation and redness at the site of contact.
- **Eye contact:** There may be irritation and redness. The eyes may water profusely.
- **Ingestion:** There may be soreness and redness of the mouth and throat. Nausea and stomach

pain may occur. There may be vomiting.

- **Inhalation:** There may be irritation of the throat with a feeling of tightness in the chest.

Chronic effects:

- No effects known.

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

- No data available.

SECTION 5 : FIRE-FIGHTING MEASURES

5.1. Extinguishing media.

- *Appropriate extinguishing media*: Dry chemical powder, carbon dioxide, and alcohol resistant foam. 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.

5.2. Special hazards arising from the substance or mixture.

- Carbon oxides
- Nitrogen oxides (NOx)
- Combustible.
- Vapors are heavier than air and may spread along floors.
- Forms explosive mixtures with air at elevated temperatures.
- Development of hazardous combustion gases or vapours possible in the event of fire.

5.3. Advice for firefighters.

- 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).
- Chemical is water-soluble. Report any run-off of firewater's contaminated with this chemical as per local and federal procedures applicable.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures.

6.1.1 For non-emergency personnel

- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Avoid breathing vapors and contact with skin and eyes.
- Shut off leak source if possible.
- Shut off all possible sources of ignition.
- Wipe up.
- Decontaminate all equipment.
- Use non-sparking tools.

6.1.2 For emergency personnel

- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Alert Emergency Responders and tell them location and nature of hazard.
- Shut off all possible sources of ignition and increase ventilation.
- Stop leaks if possible.
- Clean up all spills immediately following relevant Standard Operating Procedures.
- Avoid breathing vapors and contact with skin and eyes.

6.2. Environmental precautions.

- Clean up all spills immediately following relevant Standard Operating Procedures.
- Inform authorities in event of contamination of any public sewers, drains or water bodies.
- Wipe up.
- 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.

6.3. Methods and material for containment and cleaning up.

- Clean up all tools and equipment.
- Decontaminate all equipment.

6.4. Reference to other sections.

- For more information please refer to section 8 and 13.

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. Conditions for safe storage, including any incompatibilities

- Store at ambient temperature in a dry and well ventilated place.
- Store away from incompatible materials.
- Keep only in original container.
- Keep securely closed when not in use.

7.3. Specific end use(s)

- 2,5-Lutidine is used as an intermediate in the manufacturing of Active Pharmaceutical Drugs.

SECTION 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

8.1.1 Exposure Limits Values

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
2,5-Lutidine	None listed	None listed	None listed

8.1.2 Exposure Limits (International):

- Not available.

8.1.3 Derived No-Effect-Levels (DNEL) / Predicted No-effect-concentration (PNEC):

- DNEL and PNEC data not available.

8.2. <u>Exposure controls</u>

8.2.1 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.

8.2.2. 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 as describe below
  In full contact:
  Glove Material: Viton
  Layer thickness: 0.70 mm
  Breakthrough Time: >480 min

  In splash contact:
  Glove Material: butyl rubber
  Layer thickness: 0.70 mm
  Breakthrough Time: >30 min

  The protective gloves to be used must comply with the specifications of EC directives 89/686/EEC and the resultant standard EN374.

- **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.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties.

Sr.No.	Parameter	Typical value
1.	Appearance	Clear, colorless to pale yellow liquid
2.	Odor	Characteristic smell.
3.	Odor Threshold	Not available
4.	pH	Not Available
5.	Melting point/Freezing point	(-)15 °C
6.	Boiling Point	157 °C
7.	Flash point	48 °C – Closed cup
8.	Evaporation rate (n-BuAc=1)	Not available
9.	Flammability	Flammable
10.	Upper/lower flammability or Explosive limits	Not available
11.	Vapor pressure	3,2 hPa at 20 °C
12.	Vapor density (air=1)	Not available.
13.	Relative density	0.9260g/cm^3
14.	Solubility	Miscible in water.
15.	Partition coefficient : n-(Octonol / water)	1.9
16.	Auto-ignition temperature	Not available

17.	Decomposition temperature	Not available
18.	Viscosity	Not available
19.	Explosive property	No
20.	Oxidizing property	No

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

- Vapor/air-mixtures are explosive at intense warming.

10.2. Chemical stability

- The product is chemically stable under standard ambient conditions (room temperature) .

10.3. Possibility of hazardous reactions

- Hazardous Polymerization: Not reported.

10.4. Conditions to avoid

- Keep away from High temperature, mechanical shock, sparks, incompatible materials, ignition sources, excess heat, and moisture.

10.5. Incompatible materials

- Acid chlorides, anhydrides, oxidizing agent and strong acids.

10.6. Hazardous decomposition products

- Thermal decomposition may produce carbon monoxide and oxides of nitrogen, carbon dioxide & nitrogen, Hydrogen chloride, hydrogen cyanide and irritating and toxic fumes.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

a) Acute toxicity

- High concentrations of 2,5-Lutidine are extremely destructive to tissues of the mucous membranes and upper respiratory tract, eyes and skin.
- **RTECS#**: OK9625000

1. **Type of Test:** LD50 – Lethal dose, 50 percent kill.

Route of Exposure: Oral.
Species Observed: Rodent –rat.
Dose Data: 800 mg/kg.
Toxic Effects: Details of toxic effects not reported other than lethal dose.

2. **Type of Test:** LD50 – Lethal dose, 50 percent kill.
Route of Exposure: Oral.
Species Observed: Rodent –mouse.
Dose Data: 670 mg/kg.
Toxic Effects: Details of toxic effects not reported other than lethal dose.

3. **Type of Test:** LD50 – Lethal dose, 50 percent kill.
Route of Exposure: Oral
Species Observed: guinea pig
Dose Data: 827 mg/kg
Toxic Effects: Details of toxic effects not reported other than lethal dose.
Reference: HYSAAV Hygiene and Sanitation (USSR). English translation of GISAAA. (Springfield, VA) 1964- 71. Discontinued. Volume (issue)/page/year: 33(10- 12), 341,1968.

4. **Inhalation:** No data available
LC50 Inhalation - 4 h - 11 mg/l - vapor
(Acute toxicity estimate)

5. **Dermal:** No data available
LD50 Dermal - 1.100 mg/kg

b) Skin corrosion/irritation

- Causes skin irritation.

c) Serious eye damage/irritation

- Causes eye irritation.

d) Respiratory or skin sensitization

- No data is available.

e) Germ cell Mutagenicity

- No data is available.

f) Carcinogenicity

- Not listed by NTP, IARC and OSHA.
- Not present on the EU CMR list.
- According to information presently available 2,5-Lutidine is not found to be carcinogenic.

g) Reproductive toxicity

- No data is available.

h) STOT-single exposure

- May cause respiratory irritation.

i) *STOT- repeated exposure*

- No data available.

j) Aspiration Hazards

- No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

12.1.1 Ecotoxicity:

- Fathead minnow LC_{50} (96 hr)- 154.88 mg/L (Predicted Fathead minnow LC50 (96 hr) for 589-93-5 from Consensus method)
- Daphnia magna LC_{50} (48 hr)-26.89 mg/L (Predicted Daphnia magna LC50 (48 hr) from Consensus method)
- It is expected to be Non-Toxic to Fish and other aquatic organisms.

12.2. Persistence and degradability

- It is expected to be biodegradable in aerobic and anaerobic conditions.

12.3. Bio accumulative potential (Predicted)

- BCF = 8.318

- Log Kow = 1.9

Based on the Log Kow and Bioconcentration factor value it is expected to have negligible potential to concentrate in fatty tissue of fish and aquatic organisms relative to its surroundings.

12.4. Mobility in soil (Estimated)

- Log Koc= 2.152 (estimated). Low sorption.
- Henry's Law Constant 8.68 $X10^{-6}$ atm/m^3 mole at 25 degrees. It is volatile from aqueous bodies.
- Log Kow = 1.9 (estimated). Low potential to bioaccumulate.

12.5. Results of PBT and vPvB assessment

- The substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII

12.6. Other adverse effects.

- **Environment Fate:**
  Based on the environmental modeling, this material has a moderate potential to get absorbed in the organic matter of soil and is volatile from water bodies. 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 flammable.
- 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 Hazardous for transport by Air/Rail/Road and Sea and thus regulated by IATA/ICAO/ARD/RID/IMO/IMDG.

Mode of Transport	Agency
Land transport	ADR/RID

Maritime Transport	IMDG
Air Transport	IATA

14.1. UN number

- UN1993

14.2. UN proper shipping name

- Flammable liquid, N.O.S (2,5-Lutidine).

14.3. Transport hazard class (es)

- Flammable class 3.
- Hazard Label.

14.4. Packing group

- III.

14.5. 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

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

Classification (as per Regulation (EC) No 1272/2008):

- **Hazards Class and Category**: Flamm.Liq.Cat.3, Acute Tox.Oral Cat.4, Acute Tox.Dermal Cat.4, Acute Tox. Inhalation Cat.4, Skin Irrit.cat.2, Eye Irrit.cat 2, STOT-SE Cat.3
- **Hazard Statements:** H226; H302; H312; H332; H315; H319; H335

Chemical Inventories

Chemical Inventory Lists:	**Status**
TSCA:	Listed (Active)
EINECS:	207-988-4
Canada(DSL/NDSL):	Listed/NDSL
Japan:	Listed
Korea:	Not Listed
Australia:	Listed
China: IECSC	Not Listed
Philippines	Not Listed
New Zealand	Not Listed

US information

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act): 2,5-Lutidine is not listed

SARA 302/304 : 2,5-Lutidine is not listed

SARA 311/312 : See section 2 for more information

California Prop. 65: 2,5-Lutidine is not listed

CAA (Clean Air Act): 2,5-Lutidine is not listed

CWA (Clean Water Act): 2,5-Lutidine is not listed

EU Information

Water hazard class (WGK): No Information available.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006:

2,5-Lutidine is not listed

SECTION 16: OTHER INFORMATION

(a) Compilation information of safety data sheet

Chemical: 2,5-Lutidine
CAS #: 589-93-5
File Name: 0026Gj Ghs09 Div.3 sds 2,5-Lutidine
Revision Number: 09
Date of Issue of SDS: February 16, 2024
Revision Due Date: January, 2027

(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 Adminstration 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 Programm.
- IARC= International Agency for Research on Cancer.
- EPA=Environmental Protection Agency.
- TSCA= Toxic Substances Control Act.
- CERCLA= Comprehensive Environmental Response, Compensation, and Liability Act.
- SARA= Superfund Amendments and Reauthorization Act.
- NFPA= National Fire Protection Association.
- WHIMS= Workplace Hazardous Materials Information System.
- DSL/NDSL= Domestic/Non-Domestic Substances List.
- CSR=Chemical Safety Report.
- BCF = Bio Concentration Factor.
- DNEL = Derived No Effect Level.

- PNEC = Predicted No Effect Concentration.
- TLV = Threshhold 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 europeen relative au transport international de marchandises.
- IMDG-Code = International Maritime Code for Dangerous Goods.
- 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
- REG (EC) no. 1907/2006, last modification by REG (EC) Nr. 453/2009
- HYSAAV Hygiene and Sanitation (USSR). English translation of GISAAA. (Springfield, VA) 1964- 71. Discontinued. Volume (issue)/page/year: 33(10- 12), 341,1968.

Internet

- RTECS

(d) List of Hazard statements.

Hazards Statements	• H226: Flammable liquid and Vapor. • H302: Harmful if swallowed. • H312: Harmful on contact with skin • H332: Harmful if inhaled • H315: Causes skin irritation. • H319: Causes serious eye irritation • H335: May cause respiratory irritation

Company's Declaration:

Information contained in this SDS 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

SDS shall be used as a guide only. Jubilant Ingrevia Limited makes no warranties expressed or implied of the adequacy of this document for any particular purpose.

(End of Safety Data Sheet)