



## **2,4-Lutidine**

### **Safety Data Sheet**

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

Date of Compilation: July 03, 2012

Date of Revision: February 16, 2024

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Revision Number: 09

Version Number: 0124Gj Ghs09 Div.3 sds 2,4-Lutidine

Supersedes date: January 02, 2023

Supersedes version: 0124Gj Ghs08 Div.3 sds 2,4-Lutidine

## 2,4-Lutidine

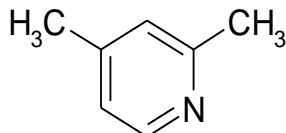
### Safety Data Sheet

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 identification	: 2,4-Lutidine;
CAS RN	: 108-47-4
EC#	: 203-586-8
Trade name	: 2,4-Lutidine
Systematic Name	: 2,4-Dimethylpyridine; 2,4-Lutidine; Pyridine 2,4-dimethyl-
Synonyms	: 2,4-Dimethylpyridine
Molecular Formula	: C <sub>7</sub> H <sub>9</sub> N
Structural Formula	:



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

###### 1.2.1. Relevant identified uses

2,4-Lutidine is used as an intermediate in the manufacturing of pharmaceutical drugs like arqatroban and implitapide.

**Uses advised against:** None

##### 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](mailto:support@jubl.com) - [www.jubilantingrevia.com](http://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: Hazard(s) identification

##### 2.1. Classification of the substance or mixture

###### GHS US Classification

Flammable Liquid: Category 3	H226
Acute toxicity Oral: Category 3	H301
Skin corrosion / irritant: Category 2	H315
Serious eye damage/ irritation: Category 2	H319

##### 2.2. Label Elements

###### GHS US Classification



**Pictograms:** GHS02, GHS06



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**Signal word:** Danger!

### **HAZARD AND PRECAUTIONARY STATEMENTS**

#### **Hazard Statements**

- H226: Flammable liquid and vapor.
- H301: Toxic if swallowed.
- H315: Causes skin irritation.
- H319: Causes serious eye irritation.

#### **PRECAUTIONARY STATEMENTS**

- P210: Keep away from heat/sparks/open flame– No smoking.
- P233: Keep container tightly closed.
- P240: Ground /bond container and receiving equipments.
- P241: Use explosion-proof electrical/ventilating/ lighting/equipment.
- P242: Use only non-sparking tools.
- P243: Take precautionary measures against static discharge.
- P264: Wash hands thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P280: Wear protective gloves/clothing and eye/face protection.
- P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P302+P352: IF ON SKIN: Wash with plenty of soap and water.
- P303+P361+P353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
- P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P321: Specific treatment reference to supplemental first aid instruction if immediate administration of antidote is required.
- P332+P313: If skin irritation occurs: Get medical advice attention.
- P330: Rinse mouth.
- P337+P313: If eye irritation persists: Get medical advice/attention.
- P362: Take off contaminated clothing and wash before reuse.
- P370+P378: In case of fire, use appropriate media as specified by the manufacturer for extinction.
- P403 + P235: Store in a well-ventilated place. Keep cool.
- P405: Store locked up.
- 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 ingredients**

Substance	CAS No.	EINECS No.	Purity
2,4-Lutidine	108-47-4	203-586-8	99.5 %
2,5-Lutidine	589-93-5	209-666-9	0.3%
Gamma Picoline	108-89-4	203-626-4	0.2%

### **SECTION 4: First aid measures**

#### **4.1. Description of first aid measures**

4.1.1 *Route of exposure:* inhalation, skin, eye and ingestion.

4.1.2 *Advice*

- Rinse eyes cautiously with water for at least 15 minutes. Remove contact lenses if easy to do so. Continue rinsing. Seek medical attention.
- Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Call a POISON CENTER or doctor/physician if you feel unwell.

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

- **Acute effects:**  
2,4-Lutidine is toxic if swallowed. It is irritating to skin, eyes and respiratory system.
- **Chronic effects:**  
To the best of our knowledge, the chronic health effects of this product have not been fully investigated.

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

- **Eyes:** Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 15-20 minutes, while holding the eyelid(s) open. Remove contact lenses if easy to do so. Continue rinsing. If irritation persists, seek medical attention.
- **Skin:** Immediately take off all contaminated clothing. Wash thoroughly with lukewarm, gently flowing water and non-abrasive soap for 15-20 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.

#### SECTION 5 : FIRE-FIGHTING MEASURE

##### 5.1. Extinguishing media

- *Appropriate extinguishing media:* Dry chemical powder, carbon dioxide, and alcohol resistant foam. Water may also be used. 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 nonflammable 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

- Toxic vapors may be released on thermal decomposition including nitrogen oxides, carbon monoxide and carbon dioxides.
- High vapor concentration may result in an explosion hazard.
- Vapors are heavier than air. May travel considerable distance from source and flashback.

##### 5.3. Advice for firefighters

- Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Do not breathe vapors.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Always stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
- 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.
- Fire fighters must wear Self Contained Breathing Apparatus (SCBA) and full protective clothing. The chemical is harmful in contact with skin.
- Report any run-off of fire waters 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.



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#### 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.
- Laundry 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 in a flame proof area
- Store away from incompatible materials.
- Keep securely closed when not in use

##### 7.3. Specific end use(s)

- 2,4-Lutidine is used as an intermediate in the manufacturing of pharmaceutical drugs like arqatroban and implitapide.

#### SECTION 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

##### 8.1. Control parameters

###### 8.1.1 Exposure Limits Values

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
2,4-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. Exposure controls

###### 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.
- 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.
- Hands:**

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

##### General Industrial hygiene:

- Immediately change contaminated clothing.
- Apply skin protective barrier cream.

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- Wash hands and face after working with the substance.
- Under no circumstances eat or drink at the workplace.
- Do not inhale substances, work under hood.

#### SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES

##### 9.1. Information on basic physical and chemical properties.

Sr.No.	Parameter	Typical value
1.	Appearance	Colorless to pale Yellow liquid
2.	Odor	Pungent odor.
3.	Odor Threshold	Not Available
4.	pH	Not available
5.	Melting point/Freezing point	-60°C
6.	Boiling Point	159 deg C @ 760.00mm Hg
7.	Flash point	37°C (Tag 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	3.559000 mmHg @ 25.00 °C. (est)
12.	Vapor density (air=1)	3.69
13.	Relative density	0.927 g/cm3
14.	Solubility	Soluble in water (15 g/100 g (20°C)), Soluble in alcohol.
15.	Partition coefficient : n-(Octonol / water)	1.9 (Estimated)
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

- No data available.

##### 10.2. Chemical stability

- Stable under normal conditions of temperature and pressure.

##### 10.3. Possibility of hazardous reactions

- None under normal processing.



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#### 10.4. Conditions to avoid

- Keep away from open flames, hot surfaces and sources of ignition. Incompatible products. Exposure to moist air or water.

#### 10.5. Incompatible materials

- Acid chlorides, chloroformates, anhydrides, oxidizing agent.

#### 10.6. Hazardous decomposition products

- Thermal decomposition may produce carbon monoxide and oxides of nitrogen, carbon dioxide, irritating and toxic fumes.

### SECTION 11: TOXICOLOGICAL INFORMATION

#### 11.1. Information on toxicological effects

##### a) Acute toxicity

- 2,4-Lutidine is toxic if swallowed. It is irritating to skin, eyes and respiratory system.

##### • RTECS#: OK9400000.

##### • LD50 Rat : 200mg/kg.

- Reference NTIS\*\* National Technical Information Service. (Springfield, VA 22161) Formerly U.S. Clearinghouse for Scientific & Technical Information. Volume (issue)/page/year: PB85-143766

##### b) Skin corrosion/irritation

- Causes skin irritation.

##### c) Serious eye damage/irritation

- Causes serious eye irritation.

##### d) Respiratory or skin sensitization

- No data available.

##### e) Germ cell Mutagenicity

Type of Test	Sex chromosome loss and non disjunction
Route of Exposure	
Species Observed Yeast	Saccharomyces cerevisiae
Dose Data	5000 ppm
Reference	MUREAV Mutation Research. (Elsevier Science Pub. B.V., POB 211, 1000 AE Amsterdam, Netherlands) V.1- 1964- Volume(issue)/page/year: 163,23,1986.

##### f) Carcinogenicity

- Not listed by NTP, IARC and OSHA.
- Not present on the EU CMR list.
- According to information presently available 2,4-Lutidine is not found to be carcinogenic.

##### g) Reproductive toxicity

- No data is available.

##### h) STOT-single exposure

- No data is available.

##### i) STOT- repeated exposure

- No data available.

##### j) Aspiration Hazards

- No data available.

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#### SECTION 12: ECOLOGICAL INFORMATION

##### 12.1. Toxicity

###### 12.1.1 Ecotoxicity:

Fathead minnow LC<sub>50</sub> (96 hr): 153.55 mg/L  
Daphnia magna LC50 (48 hr): 18.44 mg/L

##### 12.2. Persistence and degradability:

Soluble in water, Persistence is unlikely, based on information available

##### 12.3. Bio accumulative potential: (Predicted)

- BCF = 5.785
- 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. Bioaccumulation is unlikely.

##### 12.4. Mobility in soil (Estimated):

- Log Koc=2.152 Low sorption.  
Henry's Law constant: 6.74e-006 atm-m<sup>3</sup>/mole.
- Log Kow=1.9 Low potential to bioaccumulate.
- The product is water soluble, and may spread in water systems. Will likely be mobile in the environment due to its water solubility. Highly mobile in soils

##### 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 environmental modeling, this material is not expected to be persistent in the environment, is not expected to bioaccumulate, and is not expected to be chronically toxic to fish. It is not expected to biodegrade readily. 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 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

- UN1992

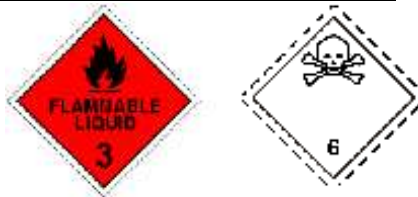
##### 14.2. UN proper shipping name

- FLAMMABLE LIQUIDS, TOXIC, N.O.S(2,4-Lutidine)

##### 14.3. Transport hazard class (es)

- Flammable class 3.
- Hazard class 6
- Sub class, Toxic 6.1
- Hazard Label.

##### 14.4. Packing group







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- 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.

- European/International Regulations.

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

- **Hazards Class and Category:** Flamm.Liq.Cat.3, Skin Irrit. Cat2, Eye Irrit.Cat.2,Acute Tox Oral Cat 3
- **Hazard Statements:** H226; H315; H319;H301

##### Status in Global Chemical Inventories-

<u>Chemical Inventory Lists:</u>	<u>Status</u>
TSCA:	Listed (Active)
EC/ List No.	Listed
Canada(DSL/NDSL):	Listed (DSL)
Japan (ENCS):	Listed
Korea:	Not Listed
Australia:	Listed
China: IECSC	Listed
Taiwan	Listed
Philippines	Listed
New Zealand	Listed

##### US information

##### **CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):**

2,4-Lutidine not listed

**SARA 302/304 :** 2,4-Lutidine not listed

**SARA 311/312 :** See section 2 for more information

**California Prop. 65:** 2,4-Lutidine not listed

**CAA (Clean Air Act):** 2,4-Lutidine not listed

**CWA (Clean Water Act):** 2,4-Lutidine not listed

##### EU Information

**Water hazard class (WGK):** WGK 3 (Severe hazards to water)

**Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006:** 2,4-Lutidine not listed

#### SECTION 16: OTHER INFORMATION

##### (a) Compilation information of safety data sheet

**Chemical:** 2,4-Lutidine



## 2,4-Lutidine

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**CAS #:** 108-47-4

**File Name:** 0124Gj Ghs09 Div.3 sds 2,4-Lutidine

**Revision Number:** 09

**Date of Revision:** February 16, 2024

**Revision Due Date:** January 2027

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**(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.
- 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 = Threshold 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
- MUREAV Mutation Research. (Elsevier Science Pub. B.V., POB 211, 1000 AE Amsterdam, Netherlands) V.1- 1964- Volume(issue)/page/year: 163,23,1986.

**Internet**

- RTECS
- ESIS

**List of Hazard statements**

Hazards Statements	
	<ul style="list-style-type: none"><li>• H226: Flammable liquid and vapor.</li><li>• H315: Causes skin irritation.</li><li>• H319: Causes serious eye irritation.</li><li>• H301: Toxic if swallowed.</li></ul>



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#### **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)

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