



Safety Data Sheet

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

Product Identification: N-Formyl piperidine 0161Gj Ghs07 Div.3 sds N-Formyl piperidine

Date of issue: March 29, 2024

Date of Compilation : October 08, 2013

Date of Revision : March 29, 2024

Due Date of Revision : February, 2027

Revision Number : 06

Version Number : 0161Gj Ghs06 Div.3 sds N-Formyl piperidine

Supersedes date : January 02, 2024

Supersedes version : 0161Gj Ghs06 Div.3 sds N-Formyl piperidine



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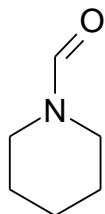
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Date of issue: March 29, 2024

SECTION 1: IDENTIFICATION

PRODUCT NAME N-Formyl piperidine
CAS RN 2591-86-8
EC# 219-986-0
SYNONYM piperidine-N-carbaldehyde;1-Piperidinecarboxaldehyde
SYSTEMATIC NAME N-Formyl piperidine
MOLECULAR FORMULA C₆H₁₁NO

STRUCTURAL FORMULA



FACTORY & REGISTERED OFFICE:

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1.3 CHEMTEL 24-HOUR EMERGENCY TELEPHONE NUMBERS:

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

Product Uses:

- N-Formyl piperidine is used as an intermediate in the pharmaceutical industry.

SECTION 2:

HAZARDS IDENTIFICATION

GHS CLASSIFICATION

Flammable Liquid: Category 4

Acute Toxicity Oral: Category 4

Acute Toxicity Dermal: Category 3

Skin corrosion/irritation: Category 2

Hazard Pictogram: GHS 06, GHS07

Signal Word: Danger!



HAZARD AND PRECAUTIONARY STATEMENTS:

HAZARD STATEMENTS

- H227: Combustible liquid.
- H302: Harmful if swallowed.
- H311: Toxic in contact with skin.
- H315: Causes skin irritation.

PRECAUTIONARY STATEMENTS

- P210: Keep away from flames and hot surfaces–No smoking
- P264: Wash hands, eyes and face thoroughly after handling.



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- P270: Do not eat, drink or smoke when using this product.
- P280: Wear protective gloves/clothing and eye/face protection.
- P301+312: 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.
- P312: Call a POISON CENTER or doctor/physician if you feel unwell.
- P361: Remove/Take off immediately all contaminated clothing.
- P363: Wash contaminated clothing before reuse.
- P332+313: If skin irritation occurs: Get medical advice/attention.
- P362: Take off contaminated clothing and wash before reuse.
- P370+P378: In case of fire: Use water 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.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Sr.No.	Chemical	CAS #	EC#	Purity
1.	N-Formyl piperidine	2591-86-8	219-986-0	>99 %

SECTION 4: FIRST AID MEASURES

Key symptoms

- **Acute effects:**
N-Formyl piperidine is harmful if swallowed and Toxic in contact with skin. It causes skin irritation and serious eye irritation. Breathing vapors can irritate the nose and throat causing coughing and wheezing. Exposure can cause nausea, vomiting, salivation, headache, dizziness, muscle weakness, depression and abdominal pain. It is harmful if swallowed.
- **Chronic effects:**
It may affect the liver and kidneys. There is limited evidence that it may damage the developing fetus.

FIRST AID:

- **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.



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- **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 MEASURES

Extinguishing media:

- *Appropriate extinguishing media:* Dry chemical powder, carbon dioxide, and alcohol resistant foam. Do not use water jet or fog (spray) to extinguish. 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.

Special Protective Equipment and Precautions for Fire Fighter:

- 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) 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.

Unusual fire and explosion hazard:

- Toxic vapors may be released on thermal decomposition including nitrogen oxides, carbon monoxide and carbon di-oxide.
- Piperidine evolves explosive concentrations of vapor at normal room temperatures. When heated to decomposition, it emits highly toxic fumes of nitrogen oxides. Dangerous, when exposed to heat, flame, or oxidizers.
- High vapor concentration may result in an explosion hazard.
- Vapors are heavier than air. May travel considerable distance from source and flashback.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

Minor Spills

- Clean up all spills immediately following relevant Standard Operating Procedures.
- Avoid breathing dust and contact with skin and eyes.
- Shut off leak source if possible.
- Shut off all possible sources of ignition.
- Wear protective clothing, boots, impervious gloves and safety glasses.
- Wipe up.
- Decontaminate all equipment.



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- Use non-sparking tools.

Major Spill

- Alert Emergency Responders and tell them location and nature of hazard.
- Shut off all possible sources of ignition and increase ventilation.
- Wear protective clothing, full boots, impervious gloves, safety glasses and Self Contained Breathing Apparatus (SCBA), as may be deemed appropriate.
- Clear area of personnel and move upwind.
- Stop leaks if possible.
- 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.
- Clean up all tools and equipment.
- Inform authorities in event of contamination of any public sewers, drains or water bodies.

SECTION 7: HANDLING AND STORAGE

Handling

- Do not breathe dust 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.
- Use non-sparking tools.

Storage

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

SECTION 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure Limits Values

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Chemical name	ACGIH TLV	OSHA PEL	NIOSH
N-Formyl piperidine	Not available	Not available	Not available

Exposure Limits (International):

- Not available

Exposure controls

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.

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:** Wear appropriate protective gloves to prevent skin exposure.

In full Contact:

Glove material: butyl rubber
Layer thickness: 0.70 mm
Breakthrough Time: >480 Min

In Splash Contact:

Glove material: Nitrile Rubber
Layer thickness: 0.40 mm
Breakthrough Time: >120 Min

For emergency situations, wear a positive pressure, pressure-demand, full face piece self-contained breathing apparatus (SCBA) or pressure-demand supplied air respirator with escape SCBA and a fully-encapsulating, chemical resistant suit. (EPA, 1998).

General Hygiene and general comments:

- Wash hands and face after working with substance.
- Immediately change contaminated clothing.
- Apply skin protective barrier cream.

SECTION 9 : PHYSICAL AND CHEMICAL PROPERTIES



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- Information on basic physical and chemical properties.**

Sr.No.	Parameter	Typical value
1.	Appearance	Clear & colorless liquid.
2.	Odor	Odorless.
3.	Odor Threshold	Not available.
4.	pH	Not available
5.	Melting point/Freezing point	- 31 ⁰ C
6.	Boiling Point	222 ⁰ C @ 760 mm Hg
7.	Flash point	92 ⁰ C
8.	Evaporation rate (n-BuAc=1)	Not available
9.	Flammability	Combustible liquid
10.	Upper/lower flammability or Explosive limits	Not available
11.	Vapor pressure	0.1mBar @20 ⁰ C
12.	Vapor density (air=1)	3.90
13.	Relative density	1.02
14.	Solubility	Miscible in water
15.	Partition coefficient : n-(Octonol / water)	0.43 (Estimated)
16.	Auto-ignition temperature	355 ⁰ C
17.	Decomposition temperature	Not available



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18.	Viscosity	Not available
19.	Explosive property	No
20.	Oxidizing property	No

SECTION 10: STABILITY AND REACTIVITY

- **Stability:** Stable under normal temperature and pressures.
- **Conditions to avoid:** Keep away from heat, sparks, flame, high temperature and incompatible chemicals, dust generation. Not compatible with Acids, acid chlorides, acid anhydrides, carbon dioxide and strong oxidizing agents.
- **Incompatible chemicals:** Acids, acid chlorides, acid anhydrides, carbon dioxide, strong oxidizing agents.
- **Hazardous decomposition products:** Thermal decomposition may produce carbon monoxide and oxides of nitrogen, carbon dioxide and irritating & toxic fumes.
- **Hazardous Polymerization:** Not reported.

SECTION 11: TOXICOLOGICAL INFORMATION

a) Acute toxicity

- N-Formyl piperidine is harmful if swallowed and Toxic in contact with skin. It causes skin irritation and serious eye irritation. Breathing vapors can irritate the nose and throat causing coughing and wheezing. Exposure can cause nausea, vomiting, salivation, headache, dizziness, muscle weakness, depression and abdominal pain. It is harmful if swallowed.

RTECS#: TN0380000

LD50/LC50 :

ACUTE ORAL LD50 RAT = 870 μ L/ kg
ACUTE DERMAL LD50 Rabbit = 840 μ L /kg

b) Skin corrosion/irritation

- It causes skin irritation.

c) Serious eye damage/irritation

- No data is available.

d) Respiratory or skin sensitization

- No data is available.

e) Germ cell Mutagenicity

- No data is available.

f) Carcinogenicity



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- Not listed by NTP, IARC and OSHA.
- Not present on the EU CMR list.
- According to the information presently available N-Formyl piperidine has not been tested for its ability to cause cancer in animals.

g) Reproductive toxicity

Piperidine, 1-formyl- was studied for its reproductive toxicity potential in rats. For Piperidine, 1-formyl- at a dose level of 6600 mg/kg bw the following toxic effects were reported :

Reproductive - Fertility - postimplantation mortality (e.g. dead and/or resorbed implants per total number of implants)

Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus)

h) STOT-single exposure

- No data is available.

i) STOT-repeated exposure

- No data available.

j) Aspiration Hazards

- No data available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity :

Ecotoxicity (Estimated)

- Fathead minnow LC₅₀ (96 hr)-358.61 mg/L (Predicted Fathead minnow LC₅₀ (96 hr) from Consensus method)
- Daphnia magna LC₅₀ (48 hr)- 432.72 mg/L (Predicted Daphnia magna LC₅₀ (48 hr) from Consensus method)
- It is expected to be non toxic to aquatic organisms with long lasting effects.

Persistence and degradability

- It is persistent in the environment and is non-biodegradable.

Bio accumulative potential

- Log Kow = 0.43
- BCF =3.162

Based on the Log Kow and Bio concentration factor value it is expected to have high potential to concentrate in fatty tissue of fish and aquatic organisms. The PBT Profiler estimates that is unexpected to bioaccumulation in the food chain because it does not exceed the BCF criteria.

Mobility in soil

- Log Koc = 0.89 (estimated). Moderate Sorption
- Henry's Law Constant = 7.61×10^{-08} atm-m³/mole. It is non-volatile from aqueous bodies.
- Log Kow = 0.43 (estimated).



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Other adverse effects.

- **Environment Fate:**
- Based on the environmental modeling, this material has a low potential to get absorbed in the organic matter of soil and is non 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

- Burn in a chemical incinerator equipped with an afterburner and scrubber.
- Exert extra care in igniting, as this material is combustible.
- 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.

S.No	Agency	UN Number	Proper Shipping name	Hazard Class	Packing Group
Land Transport	ADR/RID	UN 2810	Toxic Liquid, Organic, N.O.S.(N-Formyl Piperidine)	6.1	III
Maritime Transport	IMDG	UN 2810	Toxic Liquid, Organic, N.O.S.(N-Formyl Piperidine)	6.1	III
Air Transport	IATA	UN 2810	Toxic Liquid, Organic, N.O.S.(N-Formyl Piperidine)	6.1	III




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Hazard Label	Toxic	
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Environmental hazards:

- Marine pollutant: No

SECTION 15: REGULATORY INFORMATION

Classification as per CLP Regulation 1272/2008:

- **Hazards Class and Category:** Acute Tox Oral Cat 4, Acute Tox Dermal Cat 3, Skin Irrit.Cat2
- **Hazard Statements:** H302; H311; H315

Global International Inventories

Chemical Inventory Lists:	Status
TSCA:	Listed (Active)
EINECS:	219-986-0
Canada(DSL/NDSL):	Listed (NDSL)
Japan:	Not listed
Korea:	Not listed
Australia:	Not listed
China: IECSC	Not listed
Taiwan	Listed
Philippines	Listed
New Zealand	Listed

US information

- **CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):** N-Formylpiperidine is not listed
- **SARA 302/304 :** N-Formylpiperidine is not listed



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- **SARA 311/312 :** See section 2 for more information
- **California Prop. 65:** N-Formylpiperidine is not listed
- **CAA (Clean Air Act):** N-Formylpiperidine is not listed
- **CWA (Clean Water Act):** N-Formylpiperidine is not listed

EU Information

- **Water hazard class (WGK):** WGK 1 (Low hazards to water)
- **Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006:** N-Formylpiperidine is not listed

SECTION 16: OTHER INFORMATION

Compilation information of safety data sheet

Chemical: N-Formyl piperidine

CAS: 2591-86-8

File Name: 0161Gj Ghs07 Div.3 sds N-Formyl piperidine

Revision Number: 07

Date of Issue of SDS: March 29, 2024

Revision Due Date: February, 2027

(a) A key or legend to aberrations and acronyms used in the safety data sheet;

- PBT =Persistent Bio accumulative and Toxic.
- vPvB= Very Persistent and Very Bio accumulative.
- 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.



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- NTP=National Toxicology Program.
- 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 .Authorization and Restriction of Chemicals.
- CLP = Classification, Labeling and Packaging.
- LD / LC = Lethal Doses / Lethal Concentration.
- GHS = Globally Harmonized 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.

(b) Key Literature reference and sources for data

Biographical reference and data sources

- REG (EC) no. 1907/2006, last modification by REG (EC) Nr. 453/2009
- Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EC) No. 2020/878
- Federal final rule of hazard communication revised on 2012 (HazCom 2012)

Internet

- RTECS

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)