

Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 02/13/2017

Reviewed on 02/13/2017

1 Identification

- **Product Identifier**
- **Trade name: Piperidine**
- **CAS Number:**
110-89-4
- **EC number:**
203-813-0
- **Index number:**
613-027-00-3
- **Relevant identified uses of the substance or mixture and uses advised against:**
No further relevant information available.
- **Product Description** PC19 Intermediate
- **Details of the Supplier of the Safety Data Sheet:**
- **Manufacturer/Supplier:**
NuGeneration Technologies, LLC (dba NuGenTec)
1155 Park Avenue, Emeryville, CA 94608
salesteam@nugentec.com www.nugentec.com
1-888-996-8436 or 1-707-820-4080 for product information
- **Emergency telephone number:**
PERS Emergency Response: Domestic and Canada - 1-800-633-8253, International 1-801-629-0667

2 Hazard(s) Identification

- **Classification of the substance or mixture:**



GHS02 Flame

Flam. Liq. 2 H225 Highly flammable liquid and vapor.



GHS06 Skull and crossbones

Acute Tox. 3 H311 Toxic in contact with skin.

Acute Tox. 3 H331 Toxic if inhaled.



GHS05 Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

- **Label elements:**

- **GHS label elements**

The substance is classified and labeled according to the Globally Harmonized System (GHS).

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Trade name: Piperidine
Hazard pictograms:


GHS02 GHS05 GHS06

Signal word: Danger
Hazard statements:

- H225 Highly flammable liquid and vapor.
- H311+H331 Toxic in contact with skin or if inhaled.
- H314 Causes severe skin burns and eye damage.

Precautionary statements:

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P241 Use explosion-proof electrical/ventilating/lighting/equipment.
- P260 Do not breathe dusts or mists.
- P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P240 Ground/bond container and receiving equipment.
- P242 Use only non-sparking tools.
- P243 Take precautionary measures against static discharge.
- P264 Wash thoroughly after handling.
- P303+P361+P353 If on skin (or hair): 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.
- P310 Immediately call a POISON CENTER/doctor.
- P321 Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).
- P311 Call a POISON CENTER/doctor.
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P312 Call a POISON CENTER/doctor if you feel unwell.
- P363 Wash contaminated clothing before reuse.
- P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
- P370+P378 In case of fire: Use for extinction: CO₂, powder or water spray.
- P302+P352 IF ON SKIN: Wash with plenty of water.
- P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
- P405 Store locked up.
- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P403+P235 Store in a well-ventilated place. Keep cool.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Unknown acute toxicity:

This value refers to knowledge of known, established toxicological or ecotoxicological values.
 0 % of the mixture consists of component(s) of unknown toxicity.

Classification system: NFPA/HMIS Definitions: 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme

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· **NFPA ratings (scale 0 - 4)**



· **HMIS-ratings (scale 0 - 4)**



· **Hazard(s) not otherwise classified (HNOC):** None known

3 Composition/Information on Ingredients

- **Chemical characterization:** Substance
- **CAS No. Description**
110-89-4 Piperidine
- **Identification number(s)**
- **EC number:** 203-813-0
- **Index number:** 613-027-00-3

4 First-Aid Measures

- **Description of first aid measures:**
- **General information:**
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation:**
Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
Immediate medical treatment is necessary. Failure to treat burns can prevent wounds from healing.
If skin irritation occurs, consult a doctor.
- **After eye contact:**
Rinse opened eye for several minutes under running water. Then consult a doctor.
If easy to do so, remove contact lenses if worn.
Have eyes examined and tested by medical personnel.
- **After swallowing:** Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed:**
No further relevant information available.

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- **Indication of any immediate medical attention and special treatment needed:**
No further relevant information available.

5 Fire-Fighting Measures

- **Extinguishing media:**
- **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Special hazards arising from the substance or mixture:** No further relevant information available.
- **Advice for firefighters:**
- **Protective equipment:**
Mouth respiratory protective device.
As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.

6 Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures:**
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (i.e. sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
Dispose of the collected material according to regulations.
- **Reference to other sections:**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**
- **PAC-1:** 6.6 ppm
- **PAC-2:** 33 ppm
- **PAC-3:** 110 ppm

7 Handling and Storage

- **Handling**
- **Precautions for safe handling:**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
- **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.

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Keep protective respiratory device available.

- **Conditions for safe storage, including any incompatibilities:**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
- **Specific end use(s):** No further relevant information available.

8 Exposure Controls/Personal Protection

- **Additional information about design of technical systems:** No further data; see section 7.
- **Control parameters:**

- **Components with occupational exposure limits:**

110-89-4 Piperidine

WEEL	Long-term value: 1 ppm
	Skin

- **Additional information:** The lists that were valid during the creation of this SDS were used as basis.
- **Exposure controls:**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing and wash before reuse.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
- **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure, use respiratory protective device that is independent of circulating air.
- **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Select glove material based on penetration times, rates of diffusion and degradation.

- **Material of gloves:**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.

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- **Penetration time of glove material:**
The exact break-through time has to be determined and observed by the manufacturer of the protective gloves.
- **Eye protection:**



Tightly sealed goggles

9 Physical and Chemical Properties

- **Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form:	Liquid
Color:	Yellowish
· Odor:	Recognizable
· Odor threshold:	Not determined.
· pH-value:	Not determined.

- **Change in condition**

Melting point/Melting range:	-9 °C (16 °F)
Boiling point/Boiling range:	106 °C (223 °F)

- **Flash point:** 4 °C (39 °F)
- **Flammability (solid, gaseous):** Not applicable.
- **Ignition temperature:** 320 °C (608 °F)
- **Decomposition temperature:** Not determined.
- **Auto igniting:** Not determined.
- **Danger of explosion:** Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
- **Explosion limits:**

Lower:	1.3 Vol %
Upper:	10.3 Vol %
- **Vapor pressure @ 20 °C (68 °F):** 33 hPa (25 mm Hg)
- **Density @ 20 °C (68 °F):** 0.861 g/cm³ (7.185 lbs/gal)
- **Relative density:** Not determined.
- **Vapor density:** Not determined.
- **Evaporation rate:** Not determined.
- **Solubility in / Miscibility with:**

Water:	Fully miscible.
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- **Partition coefficient (n-octanol/water):** Not determined.

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- **Viscosity:**
 - Dynamic:** Not determined.
 - Kinematic:** Not determined.
- **Other information:** No further relevant information available.

10 Stability and Reactivity

- **Reactivity:** No further relevant information available.
- **Chemical stability:** Stable under normal conditions.
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions:** No dangerous reactions known.
- **Conditions to avoid:** Heat, flame and ignition sources.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological Information

- **Information on toxicological effects:**
- **Acute toxicity:**

- **LD/LC50 values that are relevant for classification:**

Oral	LD50	400 mg/kg (Rat)
Dermal	LD50	320 mg/kg (Rabbit)

- **Primary irritant effect:**
- **On the skin:**
 - Caustic effect on skin and mucous membranes.
 - Corrosive effect on skin and mucous membranes.
- **On the eye:**
 - Strong caustic effect.
 - Corrosive effect.
- **Additional toxicological information:**
 - Swallowing will lead to a corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.
- **Carcinogenic categories:**
- **IARC (International Agency for Research on Cancer):** Substance is not listed.
- **NTP (National Toxicology Program):** Substance is not listed.
- **OSHA-Ca (Occupational Safety & Health Administration):** Substance is not listed.

12 Ecological Information

- **Toxicity:**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability:** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential:** No further relevant information available.

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- **Mobility in soil:** No further relevant information available.
- **Additional ecological information:**
- **General notes:**
Do not allow product to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even small quantities leak into the ground.
- **Results of PBT and vPvB assessment:**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects:** No further relevant information available.

13 Disposal Considerations

- **Waste treatment methods:**
- **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Observe all federal, state and local environmental regulations when disposing of this material.
- **Uncleaned packagings**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport Information

- **UN-Number:**
- **DOT, ADR/ADN, IMDG, IATA** UN2401
- **UN proper shipping name:**
- **DOT** Piperidine
- **ADR/ADN** UN2401 Piperidine
- **IMDG, IATA** PIPERIDINE
- **Transport hazard class(es):**
- **DOT**



- **Class:** 8 Corrosive substances
- **Label:** 8, 3

ADR/ADN



- **Class:** 8 (CF1) Corrosive substances

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· **Label:** 8+3


· **IMDG**



· **Class:** 8 Corrosive substances

· **Label:** 8/3

· **IATA**



· **Class:** 8 Corrosive substances

· **Label:** 8 (3)

· **Packing group:** I

· **DOT, ADR/ADN, IMDG, IATA** I

· **Environmental hazards:** Not applicable.

· **Special precautions for user:** Warning: Corrosive substances

· **Danger code (Kemler):** 883

· **EMS Number:** 8-01

· **Segregation groups:** Alkalis

· **Stowage Category** D

· **Segregation Code** SG35 Stow "separated from" acids.

· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:** Not applicable.

· **Transport/Additional information:**

· **DOT**

· **Quantity limitations:** On passenger aircraft/rail: 0.5 L
On cargo aircraft only: 2.5 L

· **ADR/ADN**

· **Excepted quantities (EQ):** Code: E0
Not permitted as Excepted Quantity

· **IMDG**

· **Limited quantities (LQ):** 0

· **Excepted quantities (EQ):** Code: E0
Not permitted as Excepted Quantity

· **UN "Model Regulation":** UN 2401 PIPERIDINE, 8 (3), I

15 Regulatory Information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture:**
- **SARA (Superfund Amendments and Reauthorization):**
- **Section 355 (extremely hazardous substances):** Substance is listed.

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- **Section 313 (Specific toxic chemical listings):** Substance is not listed.
- **TSCA (Toxic Substances Control Act):** Substance is listed.
- **California Proposition 65:**
- **Chemicals known to cause cancer:** Substance is not listed.
- **Chemicals known to cause reproductive toxicity for females:** Substance is not listed.
- **Chemicals known to cause reproductive toxicity for males:** Substance is not listed.
- **Chemicals known to cause developmental toxicity:** Substance is not listed.
- **New Jersey Right-to-Know List:** Substance is listed.
- **New Jersey Special Hazardous Substance List:** F3
- **Pennsylvania Right-to-Know List:** Substance is listed.
- **Pennsylvania Special Hazardous Substance List:** E
- **Carcinogenic categories:**
- **EPA (Environmental Protection Agency):** Substance is not listed.
- **TLV (Threshold Limit Value established by ACGIH):** Substance is not listed.
- **NIOSH-Ca (National Institute for Occupational Safety and Health):** Substance is not listed.
- **GHS label elements**
The substance is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms:**



GHS02 GHS05 GHS06

- **Signal word:** Danger
- **Hazard statements:**
 - H225 Highly flammable liquid and vapor.
 - H311+H331 Toxic in contact with skin or if inhaled.
 - H314 Causes severe skin burns and eye damage.
- **Precautionary statements:**
 - P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
 - P241 Use explosion-proof electrical/ventilating/lighting/equipment.
 - P260 Do not breathe dusts or mists.
 - P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
 - P271 Use only outdoors or in a well-ventilated area.
 - P280 Wear protective gloves/protective clothing/eye protection/face protection.
 - P240 Ground/bond container and receiving equipment.
 - P242 Use only non-sparking tools.
 - P243 Take precautionary measures against static discharge.
 - P264 Wash thoroughly after handling.
 - P303+P361+P353 If on skin (or hair): 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.
 - P310 Immediately call a POISON CENTER/doctor.
 - P321 Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).
 - P311 Call a POISON CENTER/doctor.
 - P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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Trade name: Piperidine

P312	Call a POISON CENTER/doctor if you feel unwell.
P363	Wash contaminated clothing before reuse.
P301+P330+P331	If swallowed: Rinse mouth. Do NOT induce vomiting.
P370+P378	In case of fire: Use for extinction: CO ₂ , powder or water spray.
P302+P352	IF ON SKIN: Wash with plenty of water.
P361+P364	Take off immediately all contaminated clothing and wash it before reuse.
P405	Store locked up.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

- **National regulations:** Non-Regulated Material
- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other Information

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied, and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.

- **Date of preparation / last revision:** 02/13/2017 / 3

- **Abbreviations and acronyms:**

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road

ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety and Health

OSHA: Occupational Safety & Health Administration

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

Flam. Liq. 2: Flammable liquids – Category 2

Acute Tox. 3: Acute toxicity – Category 3

Skin Corr. 1B: Skin corrosion/irritation – Category 1B

- *** Data compared to the previous version altered.**

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