1 Identification

· Product identifier
· Trade name: Levofloxacin
· Synonym
  (3S)-9-fluoro-2,3-dihydro-3-methyl-10-(4-methyl-1-piperazinyl)-7-oxo-7H-pyrido[1,2,3-de]-1,4-benzoxazine-6-carboxylic acid
  MP-376
· Article number: 20382
· CAS Number: 100986-85-4
· EC number: 600-146-0
· Application of the substance / the mixture: For research use only, not for human or veterinary use.
· Details of the supplier of the safety data sheet
  Manufacturer/Supplier: Cayman Chemical Co.
  1180 E. Ellsworth Rd.
  Ann Arbor, MI 48108
  USA
  · Information department: Product safety department
  · Emergency telephone number:
    During normal opening times: +1 (734) 971-3335
    US/CANADA: 800-424-9300
    Outside US/CANADA: 703-741-5970

2 Hazard(s) identification

· Classification of the substance or mixture

  GHS08 Health hazard

  Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  Repr. 2 H361-H362 Suspected of damaging fertility or the unborn child. May cause harm to breast-fed children.

  GHS07

  Acute Tox. 4 H302 Harmful if swallowed.
  Skin Sens. 1 H317 May cause an allergic skin reaction.

· Label elements
· GHS label elements
  The substance is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms**

![Hazard pictograms](ghs07.png, ghs08.png)

GHS07  GHS08

· **Signal word** Danger

· **Hazard statements**

  - H302 Harmful if swallowed.
  - H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
  - H317 May cause an allergic skin reaction.
  - H361-H362 Suspected of damaging fertility or the unborn child. May cause harm to breast-fed children.

· **Precautionary statements**

  - Obtain special instructions before use.
  - Do not handle until all safety precautions have been read and understood.
  - Do not breathe dusts or mists.
  - Avoid contact during pregnancy/while nursing.
  - Wash thoroughly after handling.
  - Do not eat, drink or smoke when using this product.
  - Contaminated work clothing must not be allowed out of the workplace.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - [In case of inadequate ventilation] wear respiratory protection.
  - If swallowed: Call a poison center/doctor if you feel unwell.
  - Rinse mouth.
  - If on skin: Wash with plenty of water.
  - If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
  - IF exposed or concerned: Get medical advice/attention.
  - Specific treatment (see on this label).
  - If skin irritation or rash occurs: Get medical advice/attention.
  - If experiencing respiratory symptoms: Call a poison center/doctor.
  - Wash contaminated clothing before reuse.
  - Store locked up.
  - Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**

  - **NFPA ratings (scale 0 - 4)**

  ![NFPA ratings](scale.png)

  Health = 1  
  Fire = 0  
  Reactivity = 0

  - **HMIS-ratings (scale 0 - 4)**

  ![HMIS-ratings](scale.png)

  Health = *1  
  Fire = 0  
  Reactivity = 0

· **Other hazards**

  - **Results of PBT and vPvB assessment**

  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.

(Contd. on page 3)
3 Composition/information on ingredients

- Chemical characterization: Substances
- CAS No. Description
  100986-85-4 Levofloxacin
- Identification number(s)
- EC number: 600-146-0

4 First-aid measures

- Description of first aid measures
  - General information:
    Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
  - After inhalation:
    Supply fresh air and to be sure call for a 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.
  - After eye contact:
    Rinse opened eye for several minutes under running water.
  - After swallowing:
    Immediately call a doctor.

- Information for doctor:
  - Most important symptoms and effects, both acute and delayed
    May cause anemia, cough, CNS depression, drowsiness, headache, heart damage, lassitude (weakness, exhaustion), liver damage, narcosis, reproductive effects, teratogenic effects.
    No further relevant information available.
  - Indication of any immediate medical attention and special treatment needed
    No further relevant information available.

5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents:
    Use fire fighting measures that suit the environment.
    A solid water stream may be inefficient.
  - Special hazards arising from the substance or mixture
    No further relevant information available.

- Advice for firefighters
  - Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  - Not required.

- Environmental precautions
  - Do not allow to enter sewers/ surface or ground water.

- Methods and material for containment and cleaning up:
  - Dispose contaminated material as waste according to item 13.

- 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: Substance is not listed.
  - PAC-2: Substance is not listed.
7 Handling and storage

- Handling:
- Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace.
- Information about protection against explosions and fires: No special measures required.

- Conditions for safe storage, including any incompatibilities
- Storage:
- Requirements to be met by storerooms and receptacles: No special requirements.
- Information about storage in one common storage facility: Not required.
- Further information about storage conditions: None.
- 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 item 7.

- Control parameters
- Components with limit values that require monitoring at the workplace: Not required.
- Additional information: The lists that were valid during the creation were used as basis.

- Exposure controls
- Personal protective equipment:
  - General protective and hygienic measures:
    - Keep away from foodstuffs, beverages and feed.
    - Immediately remove all soiled and contaminated clothing.
    - Wash hands before breaks and at the end of work.
  - 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. Selection of the glove material on consideration of the penetration times, rates of diffusion and the 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.

- Penetration time of glove material
  - The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- Eye protection: Not required.
## 9 Physical and chemical properties

- **Information on basic physical and chemical properties**
  - **General Information**
    - **Appearance:** Crystalline
    - **Color:** Not determined.
    - **Odor:** Characteristic
    - **Structural Formula:** C18H20FN3O4
    - **Molecular Weight:** 361.4 g/mol
    - **Odor threshold:** Not determined.
  - **pH-value:** Not applicable.
  - **Change in condition**
    - **Melting point/Melting range:** Undetermined.
    - **Boiling point/Boiling range:** Undetermined.
  - **Flash point:** Not applicable.
  - **Flammability (solid, gaseous):** Product is not flammable.
  - **Decomposition temperature:** Not determined.
  - **Auto igniting:** Not determined.
  - **Danger of explosion:** Product does not present an explosion hazard.
  - **Explosion limits:**
    - **Lower:** Not determined.
    - **Upper:** Not determined.
  - **Vapor pressure:** Not applicable.
  - **Density:** Not determined.
  - **Relative density:** Not determined.
  - **Vapor density:** Not applicable.
  - **Evaporation rate:** Not applicable.
  - **Solubility in / Miscibility with**
    - **Water:** Not determined.
  - **Partition coefficient (n-octanol/water):** Not determined.
  - **Viscosity:**
    - **Dynamic:** Not applicable.
    - **Kinematic:** Not applicable.
  - **SOLUBILITY**
    - ~5 mg/ml in PBS (pH 7.2);
    - ~1 mg/ml in EtOH;
    - ~25 mg/ml in DMSO;
    - ~30 mg/ml in DMF
  - **Other information**
    - No further relevant information available.

## 10 Stability and reactivity

- **Reactivity**
  - No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
  - No decomposition if used according to specifications.
- **Possibility of hazardous reactions**
  - No dangerous reactions known.
Trade name: Levofloxacin

- Conditions to avoid: No further relevant information available.
- Incompatible materials: strong oxidizing agents
- Hazardous decomposition products: carbon oxides, hydrogen fluoride, nitrogen oxides

11 Toxicological information

- RTECS Number: UU8815550
- Information on toxicological effects
  - Acute toxicity:
    - LD/LC50 values that are relevant for classification:
      | Route          | Value          |
      |----------------|----------------|
      | Oral LD50      | 1,803 mg/kg (mouse) |
      |                | 1,478 mg/kg (rat)  |
      | TDLO           | 10 mg/kg (wmn)    |
      | Intraperitoneal TDLO | 20 mg/kg (rat) |
  - Primary irritant effect:
    - on the skin: No irritant effect.
    - on the eye: No irritating effect.
  - Sensitization:
    Sensitization possible through inhalation.
    Sensitization possible through skin contact.
  - Additional toxicological information:
    - 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.
  - Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    Water hazard class 1 (Self-assessment): slightly hazardous for water
    Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- 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.

- Uncleaned packagings:
  - Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, IMDG, IATA: not regulated

- UN proper shipping name
  - DOT, IMDG, IATA: not regulated

- Transport hazard class(es)
  - DOT, ADN, IMDG, IATA: not regulated

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

- UN "Model Regulation": not regulated

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - No further relevant information available.

- Sara

- Section 355 (extremely hazardous substances): Substance is not listed.

- Section 313 (Specific toxic chemical listings): Substance is not listed.

- TSCA (Toxic Substances Control Act): Substance is not listed.

- Hazardous Air Pollutants: Substance is not listed.

- 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.

- Carcinogenic categories

- EPA (Environmental Protection Agency): Substance is not listed.

- TLV (Threshold Limit Value): Substance is not listed.

- NIOSH-Ca (National Institute for Occupational Safety and Health): Substance is not listed.
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Department issuing SDS: Environment protection department.
· Contact: -
· Date of preparation / last revision 04/01/2021 / -
· Abbreviations and acronyms:
  IMDG: International Maritime Code for Dangerous Goods
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  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
  OSHA: Occupational Safety & Health
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  Acute Tox. 4: Acute toxicity – Category 4
  Resp. Sens. 1: Respiratory sensitisation – Category 1
  Skin Sens. 1: Skin sensitisation – Category 1
  Repr. 2: Reproductive toxicity – Category 2