

Cinoxacin

sc-202543

Material Safety Data Sheet



The Power to Question

Hazard Alert Code Key: **EXTREME** **HIGH** **MODERATE** **LOW**

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

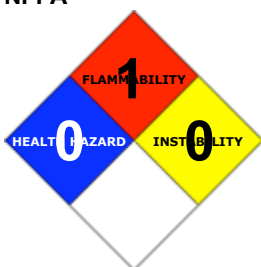
PRODUCT NAME

Cinoxacin

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



SUPPLIER

Santa Cruz Biotechnology, Inc.
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800.457.3801 or 831.457.3800

EMERGENCY:

ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS

C12-H10-N2-O5, "(1, 3)dioxolo[4, 5-g]cinnoline-3-carboxylic acid, 1, 4-dihydro-1-ethyl-4-", oxo-, "1-ethyl-1, 4-dihydro-4-oxo(1, 3)dioxolo[4, 5-g]cinnoline-3-carboxylic", acid, "1-ethyl-6, 7-methylenedioxy-4(1H)-oxocinnoline-3-carboxylic acid", Cinobac, Cinobactin, "Compound 64716", Nofrin, Nossacin, Uronorm, Uroxacin, "4-quinolone bactericide", "Gram-negative urinary tract antibacterial/antibiotic"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max	
Flammability:	1			
Toxicity:	2			
Body Contact:	3			Min/Nil=0 Low=1
Reactivity:	1			Moderate=2
Chronic:	3			High=3 Extreme=4

CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW

RISK

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Accidental ingestion of the material may be damaging to the health of the individual.

■ Nalidixic acid is considered to be the predecessor of all members of the quinolone family, including the second, third and fourth generations commonly known as fluoroquinolones. Chloroquine, from which nalidixic acid is derived, is to be considered the first quinolone drug. Some quinolones were withdrawn from the market because of these adverse events.

Serious and occasionally fatal hypersensitivity (anaphylactic) reactions, some following the first dose, have been reported in patients receiving quinolone class antimicrobials.

Adverse effects are similar to those produced by nalidixic acid. Common side-effects include nausea and vomiting, abdominal cramps, dizziness, headache and hypersensitivity reactions including rash, pruritus, oedema and urticaria. Other, less frequent reactions, include anorexia, diarrhoea, insomnia, tingling sensations, perineal burning, photophobia and tinnitus. Transient changes in liver functions tests may also occur. Diarrhoea, gastro-intestinal bleeding, muscular weakness, myalgia, phototoxicity, hyperglycaemia and allergic reaction might also result from treatment.

Quinolones may also cause central nervous system (CNS) stimulation with tremors, restlessness, light-headedness, confusion, or hallucinations. Some drugs of this class have been shown to have oculotoxic potential.

Convulsions have occurred after high doses or in patients with predisposing factors such as cerebrovascular insufficiency, parkinsonism and epilepsy.

Some reactions were accompanied by cardiovascular collapse, loss of consciousness, tingling, pharyngeal or facial edema, dyspnea, urticaria, and itching. Only a few patients had a history of previous hypersensitivity reactions.

In clinical trials with large doses of quinolones, crystalluria was reported in some volunteers. Moderate to severe phototoxicity reactions have been observed in patients who were exposed to direct sunlight while receiving some members of this drug class.

Achilles and other tendon ruptures that require surgical repair or resulted in prolonged disability have been reported with quinolones. Simultaneous use of corticosteroids is present in almost one-third of quinolone-associated tendon rupture. The risk of adverse events is further increased if the dosage is not properly adjusted, for example if there is renal insufficiency.

Adverse reactions are a class effect of all quinolones, however, certain quinolones are more strongly associated with increased toxicity to certain organs. Convulsions and abnormal electroencephalograms have been reported in a few patients receiving quinolone class antimicrobials. No causal relationship has been established. Convulsions, increased intracranial pressure, and toxic psychoses have also been reported in patients receiving other drugs in this class.

Quinolones have also been shown to interfere with the metabolism of caffeine. This may lead to reduced clearance of caffeine and a prolongation of its plasma half-life.

The quinolone antibiotics have also been associated with the development of arthropathies. Following postnatal administration to juvenile animals, a special phenomenon arises; rats, rabbits, dogs and non-human primates, showed an impairment of the joint cartilage especially of the limbs. This is an effect characteristic of the quinolones, which can be irreversible and which may arise within a dose range not much above the therapeutic level. In juvenile dogs, for example, cartilage toxicity appeared after 1 week of daily administration of 20 mg ofloxacin/kg body weight. In experimental animals, clinical symptoms were only seen when weight was put on the joints during standing or walking. The reason for the special vulnerability of juvenile cartilage may well be that the tissue is a deep compartment, so high concentrations accumulate after long-term administration.

The majority of quinolones in clinical use belong to the subset of fluoroquinolones.

EYE

■ If applied to the eyes, this material causes severe eye damage.

■ Phototoxic agents such as sulfonamides can cause inflammation of the conjunctiva and cornea, and clouding.

SKIN

■ Skin contact is not thought to have harmful health effects, however the material may still produce health damage following entry through wounds, lesions or abrasions.

■ There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons.

■ Open cuts, abraded or irritated skin should not be exposed to this material.

■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

■ Exposure to this product can cause sensitization of skin under sunlight. The product can reach the skin via the bloodstream either if swallowed or ingested.

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INHALED

■ The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified using animal models). Nevertheless, adverse effects have been produced following exposure of animals by at least one other route and good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur

further disability if excessive concentrations of particulate are inhaled.

CHRONIC HEALTH EFFECTS

■ Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.

There is limited evidence that, skin contact with this product is more likely to cause a sensitization reaction in some persons compared to the general population.

There is some evidence that human exposure to the material may result in developmental toxicity. This evidence is based on animal studies where effects have been observed in the absence of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not secondary non-specific consequences of the other toxic effects.

Prolonged or repeated use of antibiotics, at therapeutic doses, may produce bacterial resistance for some types of bacteria. Prolonged use may result in the overgrowth of non-susceptible organisms (i.e.

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Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung.

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Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).

Exposure to small quantities may induce hypersensitivity reactions characterized by acute bronchospasm, hives (urticaria), deep dermal wheals (angioneurotic edema), running nose (rhinitis) and blurred vision . Anaphylactic shock and skin rash (non-thrombocytopenic purpura) may occur.

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Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
cinoxacin	28657-80-9	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

· If swallowed do NOT induce vomiting. · If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

EYE

■ If this product comes in contact with the eyes: · Immediately hold eyelids apart and flush the eye continuously with running water. · Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN

■ If skin contact occurs: · Immediately remove all contaminated clothing, including footwear · Flush skin and hair with running water (and soap if available).

INHALED

· If dust is inhaled, remove from contaminated area. · Encourage patient to blow nose to ensure clear passage of breathing. · If irritation or discomfort persists seek medical attention.

NOTES TO PHYSICIAN

■ Treat symptomatically.

Rapidly and almost completely absorbed from the gastrointestinal tract. Plasma half-life is about 1-1.5 hours. More than 60% is bound to plasma proteins. Metabolised in the liver and excreted via the kidney. Over 95% of the dose appears in the urine within 24 hours; over half is unaltered whilst the remainder consists of inactive metabolites.

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Symptoms following an overdose of cinoxacin may include anorexia, nausea, vomiting, epigastric distress, and diarrhea. The severity of the epigastric distress and the diarrhea are dose related. Headache, dizziness, insomnia, photophobia, tinnitus, and a tingling sensation have been reported in some patients. If other symptoms are present, they are probably secondary to an underlying disease state, an allergic reaction, or the ingestion of a second medication with toxicity.

Patients who have ingested an overdose of cinoxacin should be kept well hydrated to prevent crystalluria.

Protect the patient's airway and support ventilation and perfusion. Meticulously monitor and maintain, within acceptable limits, the patient's vital signs, blood gases, serum electrolytes, etc. Absorption of drugs from the gastrointestinal tract may be decreased by giving activated charcoal, which in many cases, is more effective than emesis or lavage; consider charcoal instead of, or in addition to, gastric emptying. Repeated doses of charcoal over time may hasten elimination of some drugs that have been absorbed. Safeguard the patient's airway when employing gastric emptying or charcoal.

Forced diuresis, peritoneal dialysis, hemodialysis, or charcoal hemoperfusion have not been established as beneficial for an overdose of cinoxacin

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Negligible
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Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	Not available
Lower Explosive Limit (%):	Not available

EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.

FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- Combustible solid which burns but propagates flame with difficulty.
- Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
- Combustion products include: carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides (NO_x), other pyrolysis products typical of burning organic material.
- May emit poisonous fumes.
- May emit corrosive fumes.

FIRE INCOMPATIBILITY

- Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION

- Glasses:
- Chemical goggles.
- Gloves:
- Respirator:
- Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Clean up waste regularly and abnormal spills immediately.
- Avoid breathing dust and contact with skin and eyes.
- Wear protective clothing, gloves, safety glasses and dust respirator.
- Use dry clean up procedures and avoid generating dust.
- Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).
- Dampen with water to prevent dusting before sweeping.
- Place in suitable containers for disposal.

MAJOR SPILLS

- Moderate hazard.
- CAUTION: Advise personnel in area.
- Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
 - Wear protective clothing when risk of exposure occurs.
- Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.
- Do NOT cut, drill, grind or weld such containers.
 - In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

RECOMMENDED STORAGE METHODS

- Glass container.
- Packaging as recommended by manufacturer.
- Check that containers are clearly labelled.
- Tamper-proof containers.
- Polyethylene or polypropylene containers.
- Metal drum with sealed plastic liner.

STORAGE REQUIREMENTS

- Store in original containers.
- Keep containers securely sealed.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- cinoxacin: CAS:28657-80-9

PERSONAL PROTECTION



RESPIRATOR

Particulate

Consult your EHS staff for recommendations

EYE

■ When handling very small quantities of the material eye protection may not be required.

For laboratory, larger scale or bulk handling or where regular exposure in an occupational setting occurs:

- Chemical goggles
- Face shield. Full face shield may be required for supplementary but never for primary protection of eyes
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

HANDS/FEET

■ NOTE: The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
- Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

- Rubber gloves (nitrile or low-protein, powder-free latex). Employees allergic to latex gloves should use nitrile gloves in preference.
- Double gloving should be considered.
- PVC gloves.
- Protective shoe covers.
- Head covering.

Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, where abrasive particles are not present.

- polychloroprene
- nitrile rubber
- butyl rubber
- fluorocautchouc
- polyvinyl chloride

Gloves should be examined for wear and/ or degradation constantly.

OTHER

- For quantities up to 500 grams a laboratory coat may be suitable.
- For quantities up to 1 kilogram a disposable laboratory coat or coverall of low permeability is recommended. Coveralls should be buttoned at collar and cuffs.
- For quantities over 1 kilogram and manufacturing operations, wear disposable coverall of low permeability and disposable shoe covers.
- For manufacturing operations, air-supplied full body suits may be required for the provision of advanced respiratory protection.

- Eye wash unit.
- Ensure there is ready access to an emergency shower.
- For Emergencies: Vinyl suit.

ENGINEERING CONTROLS

■ Enclosed local exhaust ventilation is required at points of dust, fume or vapor generation.
HEPA terminated local exhaust ventilation should be considered at point of generation of dust, fumes or vapors.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.

Does not mix with water.

State	Divided solid	Molecular Weight	262.2
Melting Range (°F)	501.8- 503.6	Viscosity	Not Applicable
Boiling Range (°F)	Not available	Solubility in water (g/L)	Immiscible
Flash Point (°F)	Not available	pH (1% solution)	Not available
Decomposition Temp (°F)	Not available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Negligible
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	Not available
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	Not Applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not available

APPEARANCE

White to yellowish-white, odourless, crystalline solid; does not mix well with water. Soluble in alkaline solutions (pH 10 or more).

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.

STORAGE INCOMPATIBILITY

- Avoid strong acids, bases.
- Avoid reaction with oxidizing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

CINOXACIN

TOXICITY AND IRRITATION

CINOXACIN:

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 3610 mg/kg	Nil Reported
Subcutaneous (rat) LD50: 1380 mg/kg	
Intravenous (rat) LD50: 860 mg/kg	
Oral (mouse) LD50: 2330 mg/kg	
Subcutaneous (mouse) LD50: 900 mg/kg	
Intravenous (mouse) LD50: 850 mg/kg	

■ Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).
Mydriasis, somnolence, muscle weakness, respiratory depression, maternal effects, extra-embryonic structures, foetotoxicity, specific developmental abnormalities (musculoskeletal system).

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Crystalluria, sometimes associated with secondary urinary tract pathology, occurs in laboratory animals treated orally with cinoxacin. In the rhesus monkey crystalluria (without urinary tract pathology) has been noted at doses as low as 50 mg/kg/day (lowest dose tested). Cinoxacin-related crystalluria has not been observed in humans receiving twice the recommended daily dosage.

Some drugs of this class have been shown to have oculotoxic potential. Cinoxacin administered to cats at high dosages (200 mg/kg/day) resulted in retinal degeneration and other ocular changes. The dog appeared to be somewhat resistant to these effects, but high dosages (500 mg/kg/day) resulted in mild retinal atrophy. No cinoxacin-related ocular changes were noted in rabbit, rat, monkey, or human studies. (In one of the studies involving the monkey, cinoxacin was administered for 1 year at 10 times the recommended clinical dose.)

Cinoxacin and other quinolones have been shown to cause arthropathy in immature animals of most species tested

Reproduction studies have been performed in rats and rabbits at doses up to 10 times the daily human dose and have revealed no evidence of impaired fertility or harm to the foetus due to cinoxacin. There are, however, no adequate and well-controlled studies in pregnant women. Cinoxacin should be used during pregnancy only if the potential benefit justifies the potential risk to the foetus

Section 12 - ECOLOGICAL INFORMATION

No data

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
cinoxacin	LOW		LOW	HIGH

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

‡ Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.

Section 14 - TRANSPORTATION INFORMATION

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

Section 15 - REGULATORY INFORMATION

No data for cinoxacin (CAS: , 28657-80-9)

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE

- Ingestion may produce health damage*.
- Cumulative effects may result following exposure*.
- May produce skin discomfort*.
- Eye contact may produce serious damage*.
- Possible skin sensitiser*.
- May be harmful to the foetus/ embryo*.

* (limited evidence).

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its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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