Spiroxamine

sc-224291

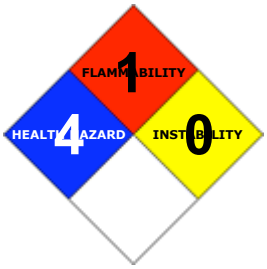
Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Spiroxamine

STATEMENT OF HAZARDOUS NATURE
CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA


SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
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
C18-H35-N-O2, "8-tert-butyl-1, 4-dioxaspiro[4, 5]decan-2-ylmethyl(ethyl)propyl)amine", "8-(1, 1-dimethylethyl)-N-ethyl-N-propyl-1, 4-dioxaspiro[4, 5]decane-2-", methanamine, KWG-4168, "spiroketalamine pesticide/ fungicide"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	1		
Toxicity:	3		
Body Contact:	2		
Reactivity:	1		
Chronic:	2		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

May cause SENSITISATION by skin contact.
Harmful by inhalation, in contact with skin and if swallowed.
Irritating to eyes and skin.
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

EYE

■ This material can cause eye irritation and damage in some persons.

SKIN

■ Skin contact with the material may be harmful; systemic effects may resultfollowing absorption.
■ This material can cause inflammation of the skin oncontact in some persons.
■ The material may accentuate any pre-existing dermatitis condition.
■ 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.
■ Spiroxamine applied to the inside forearm of human volunteers for 8 hours, resulted in negligible plasma levels and a slow, prolonged excretion in the urine over a period of 41 days during which time 18.4% of the applied material was recovered from the urine. Excretion in the faeces was negligible.

INHALED

■ Inhalation of dusts, generated by the material, during the course of normalhandling, may be harmful.
■ The material is not thought to produce respiratory irritation (as classified using animal models). Nevertheless inhalation of dusts, or fume, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
■ 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

■ Repeated or long-term occupational exposure is likely to produce cumulative health effects involving organs or biochemical systems.
Skin contact with the material is more likely to cause a sensitization reaction in some persons compared to the general population.
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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Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
spiroxamine	118134-30-8	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY. · Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:

EYE

■ If this product comes in contact with the eyes: · Wash out immediately with fresh 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 fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN

■ Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Vapor Pressure (mmHg):	12.751x10-5
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	0.930
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 full body protective clothing with breathing apparatus.
When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 800 metres in all directions.

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 (CO_2), nitrogen oxides (NOx), other pyrolysis products typical of burning organic material.
May emit poisonous 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
· Clear area of personnel and move upwind.
· 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
· Lined metal can, Lined metal pail/drum
· Plastic pail.
For low viscosity materials
· Drums and jerricans must be of the non-removable head type.
· Where a can is to be used as an inner package, the can must have a screwed enclosure.
All inner and sole packagings for substances that have been assigned to Packaging Groups I or II on the basis of inhalation toxicity criteria, must be hermetically sealed.

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

• spiroxamine: CAS:118134-30-8

PERSONAL PROTECTION




RESPIRATOR

Particulate
Consult your EHS staff for recommendations

EYE

· Safety glasses with side shields.
· Chemical goggles.

HANDS/FEET

■ Wear chemical protective gloves, eg. PVC.
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.

OTHER

· Overalls.
· Eyewash unit.

ENGINEERING CONTROLS

· Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
· Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.
Does not mix with water.
Floats on water.

State	Divided solid	Molecular Weight	297.5
Melting Range (°F)	<-274	Viscosity	Not Available
Boiling Range (°F)	Not available	Solubility in water (g/L)	Partly miscible
Flash Point (°F)	296.6	pH (1% solution)	Not applicable
Decomposition Temp (°F)	>248	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapor Pressure (mmHg)	12.751x10-5
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	0.930
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	>1

Volatile Component (%vol)	Not available	Evaporation Rate	Not available

APPEARANCE
White crystalline powder; does not mix well with water (1.46 x 10-2 mg/l). Solubilities (g/l, 25 C): methanol 15, acetone, 150, dichloromethane 1307, chloroform 1197, tetrahydrofuran 737. Stable in acid, alkali. pKa 6.9 (aqueous system); 7.9 (water + 40% 2-propanol) Mixture of two stereoisomers (A and B) in the proportion 49-56% and 51-44% respectively.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY
· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY
■ Avoid reaction with oxidizing agents.

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

Section 11 - TOXICOLOGICAL INFORMATION

SPIROXAMINE

TOXICITY AND IRRITATION
SPIROXAMINE:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 245 mg/kg	Eye: SEVERE *
Inhalation (rat) LC50: 330 mg/m³/4h	
Dermal (rat) LD50: >2000 mg/kg	
Oral (mouse) LD50: 440 mg/kg	
Dermal (Rat) LD50: 1068 mg/kg*	
Inhalation (Rat) LC50: 1982 mg/m³ *	

■ Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's edema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type.
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For spiroxamine:
The spiroketalamine, spiroxamine, is rapidly but incompletely absorbed in the rat following oral administration, with peak blood levels reached within 1.5 to 2 hours after doses of 1 mg/kg bw and at 8 hours after a dose of 100 mg/kg bw. Spiroxamine is widely distributed into body tissues and is rapidly excreted, primarily via the urine, with approximately half the dose excreted within 14 hours. Spiroxamine metabolism occurs primarily on two sites of the molecule, oxidation of the tertiary butyl moiety to form the alcohol product which is excreted as its conjugated (sulfated) form, with further oxidation leading to carboxylic acid metabolites and secondly, via desalkylation on the amino group with formation of the desethyl or despropyl metabolites. Metabolism was qualitatively similar in both sexes. Metabolites identified in muscle, liver, fat and eggs were spiroxamine carboxylic acid, despropyl-spiroxamine, desethyl-spiroxamine and spiroxamine-N-oxide).
Acute toxicity: Spiroxamine has moderate acute oral and dermal toxicity in rats, moderate acute oral toxicity in mice, and moderate inhalational toxicity in rats . The compound is a moderate skin and slight eye irritant in rabbits, a skin sensitiser in guinea pigs when administered subcutaneously (the maximisation method) but at most a slight sensitiser when applied to the skin surface (the Buehler method).
Short-term toxicity: Mice received spiroxamine in the feed at levels equivalent to doses of up to 414 mg/kg bw/day. Apart from an increased severity of liver cell enlargement and increased fatty change of the liver in females and thickening of the ears in males at 88 mg/kg bw/day and above, all effects were limited to the top dose as detailed in the following. Two males and one female died, females consumed less food, males drank more water and both sexes lost weight initially, with males below control weights at termination but the females recovering to control levels by week 4. Emaciation, hair loss and ungroomed fur were observed together with dry or crusted areas of skin of the ear and/or tail due to marked skin thickening (hyperplasia). White cell counts were slightly elevated, platelet count was reduced, blood urea was elevated and cholesterol was lowered. Liver weights were increased. The lining of the urinary bladder and renal pelvis was thickened (hyperplasia) in both sexes and kidney weight was increased in males. The NOEL was 25 mg/kg bw/day.
Mice received spiroxamine at up to 240 mg/kg bw/day by gavage for 13 weeks with recovery groups at 0, 180 and 240 mg/kg bw/day followed for another 8 weeks without treatment. Depressed cholesterol levels were observed in both sexes at 240 mg/kg bw/day at week 13 which resolved in females and persisted but declined in males once treatment was stopped.
Induction of liver metabolising enzymes (7-ethoxycoumarin O-deethylase, 7-ethoxyresorufin O-deethylase, and aldrin epoxidase) noted in all treated male groups and in females at 180 and 240 mg/kg bw/day reflects a normal adaptive mechanism to a high chemical load and returned to near control values once treatment was ceased. Thickening (hyperplasia) of the ears (both sexes) and tail tip (males only) was again observed, at 240 mg/kg bw/day. The lining of the urinary bladder was thickened (hyperplasia) more commonly 180 and 240 mg/kg bw/day in males and at 240 mg/kg bw/day in females. Enlarged liver cells in males and reduced glycogen levels in both sexes were found at 180 mg/kg bw/day and above. Effects on the liver, urinary bladder and skin were largely reversible. Thickening of the stomach lining (hyperkeratosis) was increased in intensity and slightly in incidence at 240 mg/kg bw/day. The NOEL was 60 mg/kg bw/day.
Rats were fed spiroxamine in the diet for 28 days at doses equal to up to 36 mg/kg bw/day. Males at 34 mg/kg bw/day gained less weight initially, had slight alterations in their white blood cell profiles (reduced polymorph counts), protein and cholesterol levels in the blood were reduced and liver enzymes were increased (P450 levels). In females at 36 mg/kg bw/day spleen weights were slightly elevated, lower creatinine and glucose concentrations and a non significant increase in liver enzyme (P450) levels were seen, and in both sexes sodium

levels were slightly but significantly lower. Liver weight was slightly elevated in males at 11 mg/kg bw/day and above. An increase in the severity, but not incidence, of fatty deposits in the liver cells (hepatocytes) and thickening of the oesophageal mucosa was observed in both sexes at 11/12 mg/kg bw/day and above. In addition one female at 36 mg/kg bw/day exhibited moderate thickening (hyperplasia) of the urinary bladder epithelium. There were no effects at 3.4 mg/kg bw.
Rats received spiroxamine orally at up to 90 mg/kg bw/day for 28 days. In all dose-groups salivation, tremor, digging and preening activities were observed after dosing. Animals at 90 mg/kg bw/day ate less and gained less weight, and water intake was elevated in all treated
Rats were exposed, head only, to spiroxamine at 14.3, 87.0 or 518.4 mg/m3 for 6 hours/day, 5 days/week for 4 weeks. Effects at 87 mg/m3 and above were; altered white blood cell pattern, slight anaemia (decreased Hb and Hct) in females (and in males at 518.4 mg/m3), reduced cholesterol, and increased urinary phosphate levels in females. The remaining effects were observed only at 518 mg/m3, and a large proportion of these were attributable to the irritancy of spiroxamine. Signs of toxicity observed were; ungroomed fur and decreased motility, staggering gait, narrowed palpebral fissure, hypersalivation, reddened conjunctivae, reddened and bloody nostrils, transient breathing sounds, and abnormal digging and preening activities. Urinary proteins, bilirubin, urobilinogen, ketone bodies, phosphate and blood cells were elevated. Liver and kidney weights were increased, and spleen weights decreased. Thymus weights were reduced more than 60% and in males degenerative (atrophic) changes were seen. Altered cell appearance (metaplasia) in the lining of the nasal cavity, thickening (hyperplasia/hyperkeratosis) in the lining of the larynx, oesophagus, cornea, and eyelids and signs of irritation in the lungs (bronchiolo-alveolar proliferation, increased alveolar macrophages) were seen. Skin thickening (hyperkeratosis, hyperplasia) was seen in the mammary area, on the tail, and in the lining of the urinary bladder. No effects were observed at 14.3 mg/m3.
Rabbits were treated with spiroxamine at up to 5 mg/kg bw/day applied to the skin for 6 hours per day over a period of 3 weeks under a gauze dressing. All effects were confined to the skin. A dose related erythema was seen in all groups treated at greater than 0.2 mg/kg bw/day, which was severe at 5 mg/kg bw/day. Scales, swelling, hardening and cracking occurred in all animals at 5 mg/kg bw/day, in some females at 1 mg/kg bw/day and in one male at 0.5 mg/kg bw/day. The skin of all treated animals had diffuse and focal thickening, and inflammation, which were largely reversible once treatment stopped.
Long-Term Studies: Life time studies in mice at up to 250 mg/kg bw/day and rats at doses of up to 43 mg/kg bw/day did not reveal any evidence of carcinogenicity. In both species the primary effects of treatment were related to the irritancy of spiroxamine. In mice drying and thickening of the skin of the ears was observed at 103 mg/kg bw/day and above and thickening was also observed in the lining of the oesophagus, and the skin of the tip of the tail at 60 mg/kg bw/day and above. Thickening of the skin of the tongue was observed at 103 mg/kg bw/day. Animals gained less weight at 103 mg/kg bw/day and above. In rats, at 43 mg/kg bw/day animals drank less, body weights were slightly below controls and slightly more females died in the late phase of the study. Thickening (hyperkeratosis and acanthosis) was observed in the oesophagus and there was an increased number of females exhibiting hyperplasia in the urinary bladder. The overall NOEL was 4.2 mg/kg bw/day.
Spiroxamine was administered in the diet to Beagle dogs at for a period of 52 weeks at up to 57 mg/kg bw/day. From about 9 months after the start of the study, cataracts and lenticular opacity were observed in animals at 2.5 mg/kg bw/day and above and at termination opacity of the lens and subcapsular cataractic change or clouding were more common in these groups. At 2.5 and 5.7 mg/kg bw/day; a mild anaemia (decreased RBC, Hb and Hct) was seen in females, decreased serum albumin levels in both sexes, and decreased triglyceride levels in females were observed and histologically, there was evidence of a enlarged liver cells (minimal diffuse hepatocytomegaly) in both sexes. The NOEL was 2.5 mg/kg bw/day.
Reproduction and Developmental Studies: The reproductive performance of rats fed spiroxamine at up to 42 mg/kg bw/day continuously over 2 generations was unaffected. Both parental generations gained less weight at 42 mg/kg bw/day and had thickening of the oesophagus which was also seen in females at 11 mg/kg bw/day. The NOEL for parental toxicity was 2.1 mg/kg bw/day, and for reproductive toxicity was 9.2 mg/kg bw/day.
Studies were performed on pregnant rats and rabbits to examine the effects of spiroxamine on foetal development during the period of foetal organ formation. In an oral study in rats maternal animals ate less and gained less weight at 100 mg/kg bw/day, foetal body weights were lower and three foetuses (from three litters) had cleft palate. Cleft palate was also seen at the same dose in a range finding study. The incidence of incomplete ossification of the cranial bones and non-ossified cervical bones was increased at all doses. The maternal NOEL was 30 mg/kg bw/day, there was no NOEL for foetal toxicity because of the skeletal effects at the lowest dose tested, and the NOEL for foetal developmental toxicity was 30 mg/kg bw/day. In a dermal study in rats the incidence of foetal skeletal abnormalities, due primarily to an increase in the incidence of wavy ribs, was observed at 80 mg/kg bw/day and the maternal animals gained less weight. There was no maternal toxicity at 5 mg/kg bw/day and no effect on foetal development at 20 mg/kg bw/day. In rabbits maternal toxicity was observed at 80 mg/kg bw/day, reflected in lower gains in body weight together with encrustation in the corner of the mouth, and the incidence of foetal malformations was increased at this dose. The foetal developmental and maternal NOELs were 20 mg/kg bw/day.
Genotoxicity: No evidence of genotoxicity was observed with spiroxamine in; an Ames test, a UDS study in rat hepatocytes, an in vivo mouse micronucleus study, or in cytogenetic and forward mutation studies in CHO cells. Similarly an Ames test, and chromosome aberration and forward mutation studies in CH V79 cells using spiroxamine-N-oxide revealed no evidence of genotoxicity.
Liver changes, change in cardiac rate, diarrhoea recorded.
* Nichino (US) MSDS
*Public Release Summary - National Registration Authority Australia October 2001

Section 12 - ECOLOGICAL INFORMATION

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
This material and its container must be disposed of as hazardous waste.
Avoid release to the environment.
Refer to special instructions/ safety data sheets.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
¦ Puncture containers to prevent re-use and bury at an authorized landfill.
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

DOT:
Symbols: None Hazard class or Division: 6.1
Identification Numbers: UN2588 PG: II
Label Codes: 6.1 Special provisions: IB8, IP2,
IP4, T3,
TP33
Packaging: Exceptions: 153 Packaging: Non- bulk: 212
Packaging: Exceptions: 153 Quantity limitations: 25 kg
Passenger aircraft/rail:
Quantity Limitations: Cargo 100 kg Vessel stowage: Location: A
aircraft only:
Vessel stowage: Other: 40
Hazardous materials descriptions and proper shipping names:
Pesticides, solid, toxic, n.o.s.

Air Transport IATA:

ICAO/IATA Class: 6.1 ICAO/IATA Subrisk: None
UN/ID Number: 2588 Packing Group: II
Special provisions: A3
Cargo Only
Packing Instructions: 615 Maximum Qty/Pack: 100 kg
Passenger and Cargo Passenger and Cargo
Packing Instructions: 613 Maximum Qty/Pack: 25 kg
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: Y613 Maximum Qty/Pack: 1 kg
Shipping Name: PESTICIDE, SOLID, TOXIC, N.O.S. *(CONTAINS
SPIROXAMINE)

Maritime Transport IMDG:

IMDG Class: 6.1 IMDG Subrisk: None
UN Number: 2588 Packing Group: II
EMS Number: F-A , S-A Special provisions: 61 274
Limited Quantities: 500 g Marine Pollutant: Yes
Shipping Name: PESTICIDE, SOLID, TOXIC, N.O.S.

Section 15 - REGULATORY INFORMATION

No data for spiroxamine (CAS: , 118134-30-8)

Section 16 - OTHER INFORMATION

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from 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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