(-)-Nicotine ditartrate

sc-203161

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

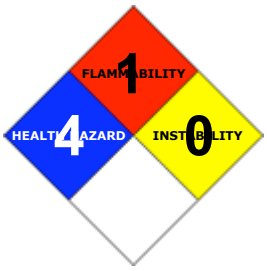
Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
(-)-Nicotine ditartrate

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



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

SYNONYMS
C10-H14-N2.2C4-H6-O6, "nicotine tartrate (1:2)", "nicotine acid tartrate", "nicotine bitartrate", "nicotine hydrogen tartrate", "(-)-nicotine hydrogen tartrate", "pyridine, 3-(1-methyl-2-pyrrolidinyl)-", "(S)-, (R-(R*, R*))-2, 3-dihydroxybutanedioate (1:2)", alkaloid

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min / Max
Flammability:	1	
Toxicity:	4	
Body Contact:	4	
Reactivity:	1	
Chronic:	3	

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

CANADIAN WHMIS SYMBOLS

EMERGENCY OVERVIEW

RISK

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

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Severely toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 5 gram may be fatal or may produce serious damage to the health of the individual.
■ Nicotine is amongst the most toxic of poisons, acting quickly.
The probable lethal dose by ingestion, in man, is about 0.
■ Salts of tartaric acid (including Rochelle salt and Seidlitz powder) and the acid itself have all produced serious poisonings or fatalities in man.
Gastrointestinal symptoms are marked and include violent vomiting, diarrhea, abdominal pain and thirst followed by cardiovascular collapse and/or kidney failure.

EYE

■ Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn).
Slight abrasive damage may also result.

SKIN

■ Skin contact with the material may produce severely toxic effects; systemic effects may result following absorption and these may be fatal.
■ The material is not thought to be a skin irritant (as classified using animal models).
Abrasive damage however, may result from prolonged exposures.
■ 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.
■ Extreme care must be taken when handling nicotine compounds or congeners.
A self-limiting illness, known as "green tobacco sickness" has been described amongst workers handling uncured tobacco leaves in the field; the disease consists of pallor, vomiting and prostration and is probably due to the percutaneous absorption of nicotine from wet leaves.

INHALED

■ Inhalation of dusts, generated by the material, during the course of normal handling, may produce severely toxic effects; these may be fatal.
■ 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

■ Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems.
There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.
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.
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.
Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).
Data from experimental studies indicate that pyridines represent a potential cause of cancer in man. They have also been shown to cross the placental barrier in rats and cause premature delivery, miscarriages and stillbirths.
Chronic nicotine poisoning may produce digestive and nutritional disturbances, peripheral vasoconstriction and a rise in blood pressure and rarely, amblyopia (a small area of visual loss at the centre of the visual field that slowly enlarges and can lead to complete blindness). Nicotine dependence remains controversial only in a diminishing number of schools. Tolerance may occur. Chronic exposure to nicotine may produce adverse effects on the developing foetus. Along with decreased birth weights, attention deficit disorders are more common in children whose mothers smoke cigarettes during pregnancy; nicotine has been shown to lead to analagous neurobehavioural abnormalities in animals exposed prenatally to nicotine. Nicotinic receptors are expressed early in the development of the nervous system beginning in the developing brainstem and later expressed in the diencephalon. It is quite possible that the interaction of nicotine with its receptors, during the prenatal period, is the basis of subsequent attention disorders. The formation of tobacco-specific nitrosamines results during processing and fermentation as a result of reaction between nicotine and exogenous nitrates and nitrites. Nicotine may behave as a secondary amine due to its pyridyl moiety. Secondary amines may react in the acid conditions of the stomach with endogenous nitrites or nitrites found in various food-stuffs (as anti-oxidants or preservatives) to form potentially carcinogenic N-nitrosamines.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
nicotine tartrate	65-31-6	>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: Although use of Ipecac syrup is sometimes advised, this would appear to be contra-indicated because of its mode of action. (See advise to Doctor)

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 or hair contact occurs: · Immediately flush body and clothes with large amounts of water, using safety shower if available. · Quickly remove all contaminated clothing, including footwear.

INHALED
· If fumes or combustion products are inhaled remove from contaminated area. · Lay patient down. Keep warm and rested.

NOTES TO PHYSICIAN
■ Treat symptomatically.
For nicotine intoxication:
· Administer 6 to 8 heaped teaspoons of activated charcoal, as a slurry, in water.
· Because nicotine induces vomiting by stimulating the chemoreceptor trigger zones of the brainstem, it seems inadvisable to administer syrup of Ipecac, which acts by the same mechanism.
· Unless spontaneous emesis is vigorous and productive, gastric lavage with a 0.5% solution of tannic acid, or a 1:5000 solution of potassium permanganate. Use water if these solutions are not immediately available.
· If nicotine is spilled on skin, wash thoroughly and IMMEDIATELY with diluted vinegar and / or cold running water. (Nicotine salts are less readily absorbed).
· Administer artificial ventilation and oxygen therapy until spontaneous breathing is adequate or until the heart ceases to beat. Central respiratory stimulants are rarely if ever indicated. Keep airway clear. Profuse salivation may require continuous oral suction.
· If severe or persistent, convulsions may be controlled with small intravenous doses of barbiturates or diazepam.
· Most of the visceral manifestations can be controlled by various combinations of autonomic blocking drugs, such as atropine and phenoxybenzamine (Dibenzyline). Caramiphen (Parpanit) hydrochloride and diethazine (Diparcol) hydrochloride have been recommended in the experimental poisoning but may not be readily available.
GOSSELIN, SMITH & HODGE: Clinical Toxicology of Commercial Products, 5th Ed.
Nicotine undergoes a large first-pass effect during which the liver metabolises 80-89%. Smaller amounts are metabolised in the lung and kidney. Nicotine and its metabolites (cotinine and nicotine-1'-N-oxide) are excreted in the urine. At a pH of 5.5 or less, 23% is excreted unchanged. At a pH of 8, only 2% is excreted in the urine. The effect of urinary pH on total clearance is entirely due to changes in renal clearance. Blood cotinine levels, and possibly, saliva cotinine levels, are good measures of passive smoking. Tobacco is less toxic than expected from its nicotine content, among tobacco chewers. Apparently intestinal absorption of nicotine from tobacco is so slow that metabolic inactivation keeps pace with absorption.
for ingested poison
.

Section 5 - FIRE FIGHTING MEASURES

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

EXTINGUISHING MEDIA
· Water spray or fog.
· Foam.

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:
Full face- shield.
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
• nicotine tartrate: CAS:65-31-6

PERSONAL PROTECTION



RESPIRATOR
• particulate.

EYE
· Chemical goggles.
· Full face shield.

HANDS/FEET
■ Elbow length PVC gloves.
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.
Mixes with water.

State	Divided solid	Molecular Weight	462.46
Melting Range (°F)	194	Viscosity	Not Applicable
Boiling Range (°F)	Not available	Solubility in water (g/L)	Miscible
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 applicable

APPEARANCE
Pale yellow crystalline powder; mixes with water and alcohol

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

nicotine tartrate

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

TOXICITY	IRRITATION
Oral (rat) LD50: 65 mg/kg	Nil Reported
Oral (mouse) LD50: 65 mg/kg	

■ For nicotine:

Nicotine is acutely toxic by all routes of exposure (oral, dermal, and inhalation). The LD50 of nicotine is 50 mg/kg for rats and 3 mg/kg for mice. A dose of 40-60 mg can be a lethal dosage for adult human beings and doses as low as 1-4 mg can be associated with toxic effects in some individuals. Nicotine is an agonist at nicotinic receptors in the peripheral and central nervous system
In a subchronic oral rat toxicity study conducted with nicotine hydrogen tartrate, the substance was administered to pregnant and non-pregnant female rats in the drinking water for 10 days at doses equivalent to 1.25 and 2.5 mg/kg/day. The animals exhibited mild fatty change, mild focal necrosis and mild dark cell change, with effects on the mitochondria, in a dose proportional manner.
Effects at the lower dose were not statistically significant, so the NOAEL was identified as 1.25 mg/kg/day; the LOAEL was identified as 2.5 mg/kg/day. .
According to various authorities, nicotine is neither an initiator nor a promoter of tumors in rodents.

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

Section 12 - ECOLOGICAL INFORMATION

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.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
nicotine tartrate	No Data Available	No Data Available		

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: UN1659 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: None
Hazardous materials descriptions and proper shipping names:
Nicotine tartrate

Air Transport IATA:

ICAO/IATA Class: 6.1 ICAO/IATA Subrisk: None
UN/ID Number: 1659 Packing Group: II
Special provisions: None
Cargo Only
Packing Instructions: 100 kg Maximum Qty/Pack: 676
Passenger and Cargo Passenger and Cargo
Packing Instructions: 25 kg Maximum Qty/Pack: 669
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: 1 kg Maximum Qty/Pack: Y644
Shipping Name: NICOTINE TARTRATE

Maritime Transport IMDG:

IMDG Class: 6.1 IMDG Subrisk: None
UN Number: 1659 Packing Group: II

EMS Number: F-A , S-A Special provisions: None
Limited Quantities: 500 g Marine Pollutant: Yes
Shipping Name: NICOTINE TARTRATE

Section 15 - REGULATORY INFORMATION

nicotine tartrate (CAS: 65-31-6) is found on the following regulatory lists;
"US - Massachusetts Oil & Hazardous Material List","US - Vermont Hazardous Constituents","US - Vermont Hazardous Waste - Acutely Hazardous Wastes","US - Washington Dangerous waste constituents list","US - Washington Discarded Chemical Products List - ""P"" Chemical Products","US Department of Transportation (DOT) List of Hazardous Substances and Reportable Quantities - Hazardous Substances Other Than Radionuclides","US DOE Temporary Emergency Exposure Limits (TEELs)","US EPCRA Section 313 Chemical List","US List of Lists - Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clean Air Act","US RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261","US RCRA (Resource Conservation & Recovery Act) - List of Hazardous Wastes"

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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