



MATERIAL SAFETY DATA SHEET

Product Name: Vincristine Sulfate Injection

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Manufacturer Name And Address Hospira, Inc.
275 North Field Drive
Lake Forest, Illinois 60045
USA

Emergency Telephone CHEMTREC: 800-424-9300
Hospira, Inc. 224 212-2055

Material Name Vincristine Sulfate Injection

Synonyms Leurocristine sulfate; Oncovin®

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient Name Vincristine Sulfate
Chemical Formula $C_{46}H_{56}N_4O_{10} \cdot H_2SO_4$

Component	Approximate Percent by Weight	CAS Number	RTECS Number
Vincristine Sulfate	0.1	2068-78-2	OH6340000

Non-hazardous ingredients include sterile water and 10% mannitol. Hazardous ingredients present at less than 1% include sodium hydroxide and/or hydrochloric acid which are added to adjust the pH.

3. HAZARD INFORMATION / CLASSIFICATION

Emergency Overview Vincristine Sulfate Injection contains vincristine sulfate, a salt of a vinca alkaloid that binds to microtubule proteins of the spindle, arresting cellular mitosis. Clinically, this product is used to treat some types of cancers. It is cytotoxic. In the workplace, this product should be considered very irritating to the skin, eyes, and respiratory tract, a potential occupational reproductive hazard, harmful to the fetus, and a potential human carcinogen. Following an accidental over-exposure, possible target organs may include the bone marrow, gastrointestinal system, central nervous system, peripheral nervous system, kidneys, skin, gonads, and the fetus.

Occupational Exposure Potential There are scientific studies that suggest that personnel (e.g. nurses, pharmacists, etc.) who prepare and administer parenteral antineoplastics (e.g. in hospitals) may be at some risk due to potential mutagenicity, teratogenicity, and/or carcinogenicity of these materials if workplace exposures are not properly controlled. The actual risk in the workplace is not known.

Signs and Symptoms Vincristine sulfate is irritating to the skin and mucous membranes and extravasation may cause necrosis, cellulitis, and sloughing. This material should also be considered very irritating to the eyes and respiratory tract. In clinical use, adverse effects may include bone-marrow depression, anorexia, nausea and vomiting, and central and peripheral neurotoxicity. Other adverse effects include headache, malaise, dizziness, skin reactions, alopecia, dyspnea and bronchospasm, and infertility. Aspermia in men and amenorrhea in women have been reported following treatment.

Medical Conditions Aggravated by Exposure Pre-existing hypersensitivity to vincristine sulfate or other vinca alkaloids. Pre-existing bone marrow, gastrointestinal, central nervous system, peripheral nervous system, neuromuscular, renal, gonadal, or skin ailments; or pregnancy.

Carcinogen Lists: **IARC:** Group 3 - not classifiable as to its carcinogenicity to humans. **NTP:** Not listed **OSHA:** Not listed

4. FIRST AID MEASURES

Eye Contact	Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.
Skin Contact	Remove from source of exposure. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.
Inhalation	Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.
Ingestion	Remove from source of exposure. If signs of toxicity occur, seek medical attention. Provide symptomatic/supportive care as necessary.

5. FIRE FIGHTING MEASURES

Flammability	Non-flammable aqueous solution.
Fire & Explosion Hazard	None anticipated for this product.
Extinguishing Media	As with any fire, use extinguishing media appropriate for primary cause of fire.
Special Fire Fighting Procedures	Firefighters should wear self-contained breathing apparatus. Protective equipment and clothing should be worn to minimize contact with the respiratory tract, skin and eyes.

6. ACCIDENTAL RELEASE MEASURES

Spill Cleanup and Disposal	Isolate area around spill. Put on suitable protective clothing and equipment as specified by site spill procedures. Absorb liquid with suitable material and clean affected area with soap and water. An undiluted solution of household bleach may be applied to the spill area for ten minutes to further inactivate this material. Absorb the liquid with an inert absorbent material (e.g. absorbent pad). Dispose of materials according to the applicable federal, state, or local regulations.
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7. HANDLING AND STORAGE

Handling	Vincristine sulfate is a cytotoxic agent. Appropriate procedures should be implemented during the handling and disposal of cytotoxic antineoplastics agents to minimize potential exposures. Several guidelines on handling cytotoxic antineoplastic agents have been published. There is no general agreement that all of the procedures recommended in the guidelines are necessary or appropriate. Consult your hygienist or safety professional for your site requirements.
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7. HANDLING AND STORAGE: continued

Handling: continued Avoid ingestion, inhalation, skin contact, and eye contact. When handling, precautions may include the use of a containment cabinet. The use of disposable gloves and respiratory protection is recommended. Proper disposal of contaminated vials, syringes, or other materials is required when working with this product.

Storage No special storage is required for hazard control. However, employees should be trained on the proper storage procedures for antineoplastic agents. For product protection, follow USP controlled room temperature storage recommendations noted on the product case label, the primary container label, or the product insert.

Special Precautions Persons with known hypersensitivities to vincristine sulfate or other vinca alkaloids, women who are pregnant, or women who want to become pregnant, should consult a health and/or safety professional prior to handling this Product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Component	Exposure limits			
	OSHA-PEL	ACGIH-TLV	Hospira EEL	Other Limits
Vincristine Sulfate	8-hr TWA: Not established	8-hr TWA: Not established	8-hr TWA: Not Established	NA

Notes: OSHA PEL: US Occupational Safety and Health Administration – Permissible Exposure Limit
 ACGIH TLV: American Conference of Governmental Industrial Hygienists – Threshold Limit Value.
 EEL: Employee Exposure Limit.
 TWA: 8-hour Time Weighted Average.
 STEL: 15-minute Short Term Exposure Limit.

Respiratory Protection If the generation of aerosols is likely, and engineering controls are not adequate to control potential airborne exposures, the use of an approved air-purifying respirator with a HEPA cartridge (P100) is recommended. For large spills, the use of a self-contained breathing apparatus may be required. Personnel who wear respirators should be fit tested and approved for respirator use as required.

Skin Protection When handling this product, disposable gloves should be worn at all times. Further, the use of double gloves is recommended. Disposable gloves made from nitrile, neoprene, polyurethane or natural latex generally have low permeability to this material. Persons known to be allergic to latex rubber should select a non-latex glove. Gloves should be changed regularly, and removed immediately after known contamination. Care should be taken to minimize inadvertent contamination when removing and/or disposing of gloves.

Eye Protection As a minimum, the use of chemical safety goggles is recommended when handling this product.

Engineering Controls Good local exhaust ventilation is recommended to minimize employee exposure. The use of an enclosure, such as an approved ventilated cabinet designed to minimize airborne exposures, is also recommended.

9. PHYSICAL/CHEMICAL PROPERTIES

Appearance/Physical State	Vincristine sulfate is a white to slightly yellow odorless crystalline or amorphous powder. Vincristine Sulfate Injection is a clear, colorless liquid in a vial.
Odor	Odorless to faint vinegar-like odor
Odor Threshold:	NA
pH:	4.0 to 5.0
Melting point/Freezing point:	~277°C
Initial Boiling Point/Boiling Point Range	NA
Flash Point:	NA
Evaporation Rate:	NA
Flammability (solid, gas):	NA
Upper/Lower Flammability or Explosive Limits:	NA
Vapor Pressure	NA
Vapor Density (Air =1)	NA
Evaporation Rate	NA
Specific Gravity	NA
Solubility	It is soluble in methanol, freely soluble in water, but only slightly soluble in 95% ethanol.
Partition coefficient: n-octanol/water:	NA
Auto-ignition temperature	NA
Decomposition temperature	NA

10. STABILITY AND REACTIVITY

Chemical Stability	Not determined.
Incompatibilities	Sensitive to hydrolysis, oxidation and heat. Incompatible with strong oxidizing agents.
Hazardous Decomposition Products	Not determined. During thermal decomposition, it may be possible to generate irritating vapors and/or toxic fumes of carbon oxides (COx), nitrogen oxides (NOx), and sulfur oxides (SOx).
Hazardous Polymerization	Not anticipated to occur with this Product.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Ingredient(s)	Percent	Test Type	Route of Exposure	Value	Units	Species
Vincristine Sulfate Injection	0.1	LD50	Oral	> 1000	mg/kg	Rabbit
Vincristine Sulfate Injection	0.1	LD50	Dermal	> 1000	mg/kg	Rabbit
Vincristine Sulfate Injection	0.1	LC50(1hr)	Inhalation	> 1200	mg/m3	Rat
Vincristine Sulfate	100	LD50	Intraperitoneal	1.9	mg/kg	Rat
Vincristine Sulfate	100	LD50	Intraperitoneal	3.0	mg/kg	Mouse
Vincristine	100	LD50	Intraperitoneal	1.25	mg/kg	Rat
Vincristine	100	LD50	Intraperitoneal	1.3	mg/kg	Mouse
Vincristine Sulfate	100	LD50	Intravenous	1.0	mg/kg	Rat
Vincristine Sulfate	100	LD50	Intravenous	1.7	mg/kg	Mouse
Vincristine	100	LD50	Intravenous	1.0	mg/kg	Rat
Vincristine	100	LD50	Intravenous	3.0	mg/kg	Mouse

LD50 is the dosage producing 50% mortality.

11. TOXICOLOGICAL INFORMATION: continued

Aspiration Hazard	None anticipated from normal handling of this product.
Dermal Irritation/Corrosion	Moderate skin irritation was noted when applied to the skin of rabbits as a dilute (9%) aqueous solution for 24 hours. Based on clinical use, this product may be irritating to the skin.
Ocular Irritation/Corrosion	Irritant. This product has produced severe eye irritation and pitting of the cornea followed by healing. Occupational exposure during manufacturing setting and in clinical settings has produced severe irritation, tearing, pain, and blurred vision.
Dermal or Respiratory Sensitization	No data found. Rare instances of allergic reactions have occurred from clinical use of vincristine. No data on allergic sensitization potential from repeated skin contact were found.
Reproductive Effects	Vincristine sulfate has been shown to impair fertility and to be embryocidal and teratogenic in mice, rats, hamsters, rabbits and monkeys at very low dosages (lowest LOAEL = 0.05 mg/kg). In monkeys, a single injection of vincristine of 0.15-0.175 mg/kg on day 27 or 29 of gestation produced one fetus with encephalocele (skull defect) and one with syndactyly (webbing of fingers or toes). In rats, a single injection of vincristine of 0.05-0.075 mg/kg on day 9 of gestation produced a high incidence of eye defects and some microcephaly and neural tube closure defects.
Mutagenicity	Vincristine sulfate was not mutagenic <i>Salmonella typhimurium</i> with or without microsomal activation produced no chromosomal aberrations in CHO cells or in a Syrian hamster fibroblast cell line and failed to transform C3H/10T½ clone 8 cells. However, the drug did increase numerical and/or structural chromosomal aberrations in mouse bone-marrow cells and embryonic tissues. It also increased micronuclei formation in mouse bone-marrow cells and increased sister chromatid exchanges in a hamster cell line and human lymphocytes.
Carcinogenicity	Vincristine sulfate was negative in one cancer study in rats and mice although the study was limited. Patients who received chemotherapy with vincristine in combination with anti-cancer drugs known to be carcinogenic have developed second malignancies.
Target Organ Effects	This product should be considered irritating to the skin, eyes and respiratory tract. Following an accidental over-exposure, possible target organs may include the bone marrow, gastrointestinal system, central nervous system, peripheral nervous system, kidneys, skin, gonads, and the fetus.

12. ECOLOGICAL INFORMATION

Aquatic Toxicity	Not determined.
Persistence/Biodegradability	Vincristine is not considered readily biodegradable; it degraded about 30% in a 28-day biodegradation assay.
Bioaccumulation	Not determined.
Mobility in Soil	Not determined.
General Notes	None

13. DISPOSAL CONSIDERATIONS

Waste Disposal	Disposal should be performed in accordance with the federal, state or local regulatory requirements. Disposal by an approved facility is recommended.
Container Handling and Disposal	Dispose of containers and unused contents in accordance with federal, state and local regulations. Disposal by an approved facility is recommended.

14. TRANSPORTATION INFORMATION

DOT STATUS: Not Regulated
Proper Shipping Name: NA
Hazard Class: NA
UN Number: NA
Packing Group: NA
Reportable Quantity: NA

ICAO/IATA STATUS Not Regulated
Proper Shipping Name: NA
Hazard Class: NA
UN Number: NA
Packing Group: NA
Reportable Quantity: NA

IMDG STATUS Not Regulated
Proper Shipping Name: NA
Hazard Class: NA
UN Number: NA
Packing Group: NA
Reportable Quantity: NA

Notes: DOT – US Department of Transportation Regulations

15. REGULATORY INFORMATION




TSCA Status Exempt
CERCLA Status Not listed
SARA 302 Status Not listed
SARA 304 Status Not listed
SARA 313 Status Not listed
RCRA Status Not listed
PROP 65 (Calif.) This product is, or contains chemical(s) known to the State of California to cause developmental toxicity.

Notes: TSCA, Toxic Substance Control Act; CERCLA, US EPA law, Comprehensive Environmental Response, Compensation, and Liability Act; SARA, Superfund Amendments and Reauthorization Act; RCRA, US EPA, Resource Conservation and Recovery Act; Prop 65, California Proposition 65.

U.S. OSHA Classification Possibly Toxic by Ingestion
Irritant
Reproductive Toxin
Target Organ Toxin

15. REGULATORY INFORMATION: continued

GHS Classification

	Acute Oral Toxicity	Eye Irritation	Toxic to Reproduction	Target Organ Toxicity
Hazard Class	4	2B	2	2
Hazard Category				
Symbol				
Signal Word	Warning	Warning	Danger	Warning
Hazard Statement	Harmful if swallowed	Causes eye irritation	Suspected of damaging fertility or the unborn child	May cause damage to the include the bone marrow, gastrointestinal system, central nervous system, peripheral nervous system, kidneys, skin, and gonads through prolonged or repeated exposure.

* By analogy to vinblastine sulfate.

GHS Precautionary Statements:

Prevention:

- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Use personal protective equipment as required.
- Avoid breathing aerosols or vapors.
- In case of inadequate ventilation wear respiratory protection.
- Wear protective gloves.
- Contaminated work clothing should not be allowed out of the workplace.
- Do not eat, drink or smoke when using this product.
- Wash hands thoroughly after handling.





Response:

- IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth.
- IF INHALED: If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms call a POISON CENTER or a doctor.
- IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs, seek medical attention. Take off contaminated clothing and wash before reuse.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.
- IF exposed or concerned, get medical attention.

15. REGULATORY INFORMATION: continued

EU Classification

*Medicinal products are exempt from the requirements of the EU Dangerous Preparations Directive. Information provided below is for the pure drug substance vincristine sulfate.

Classification(s):	Harmful	Irritant	Toxic to Reproduction Category 2	Carcinogen Category 3
Symbol:				
Indication of Danger:	Xn	Xi	T	Xn
Risk Phrases:	R22- Harmful if swallowed R36/37/38 - Irritating to eyes, respiratory system, and skin R40 - Limited evidence of a carcinogenic effect R41 - Risk of serious damage to eyes R60 - May impair fertility R61 - May cause harm to the unborn child R64 - May cause harm to breastfed babies			
Safety Phrases:	S23: Do not breathe vapor/spray S24: Avoid contact with the skin S25: Avoid contact with eyes S35: This material and its container must be disposed of in a safe way. S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.			

16. OTHER INFORMATION

Notes:

ACGIH TLV	American Conference of Governmental Industrial Hygienists – Threshold Limit Value
CAS	Chemical Abstracts Service Number
CERCLA	US EPA law, Comprehensive Environmental Response, Compensation, and Liability Act
DOT	US Department of Transportation Regulations
EEL	Employee Exposure Limit
IATA	International Air Transport Association
LD ₅₀	Dosage producing 50% mortality
NA	Not applicable/Not available
NE	Not established
NIOSH	National Institute for Occupational Safety and Health
OSHA PEL	US Occupational Safety and Health Administration – Permissible Exposure Limit
Prop 65	California Proposition 65
RCRA	US EPA, Resource Conservation and Recovery Act
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act
STEL	15-minute Short Term Exposure Limit
TSCA	Toxic Substance Control Act
TWA	8-hour Time Weighted Average

16. OTHER INFORMATION: continued

MSDS Coordinator: Global Occupational Toxicology
Date Prepared: April 28, 2008

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