



SAFETY DATA SHEET

SECTION 1 : IDENTIFICATION

Product identifier used on the label:

Product Name: VELCADE® (bortezomib) for Injection
SDS Manufacturer Number: Velcade_Product

Other means of identification:

Synonyms: PS-341 drug product

Recommended use of the chemical and restrictions on use:

Product Use/Restriction: The following SDS applies only to formulated lyophilized product in vials and standard shipments of these vials. If handling VELCADE® (bortezomib) for Injection in manufacturing situations, consult the MSDS for the active ingredient and take appropriate precautions.

Chemical manufacturer address and telephone number:

Manufacturer Name: Takeda Pharmaceutical Company Limited - Millennium Pharmaceuticals, Inc.
Address: 40 Landsdowne Street
Cambridge, MA 02139
Website: www.mlnm.com
General Phone Number: 1-617-679-7000

Emergency phone number:

Emergency Phone Number: (800) 424-9300
CHEMTREC: For emergencies in the US, call CHEMTREC: 800-424-9300
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

SECTION 2 : HAZARD(S) IDENTIFICATION

Classification of the chemical in accordance with CFR 1910.1200(d)(f):

GHS Pictograms:



GHS Class: Toxic, Category 3. Eye Damage, Category 1. Skin Irritant, Category 3. Reproductive hazard, Category 2

Hazards not otherwise classified that have been identified during the classification process:

Emergency Overview: Bortezomib API is a specific proteasome inhibitor used in anti-cancer treatments. DANGER! Toxic. Contains a pharmaceutically active ingredient. Handling should only be performed by personnel trained and familiar with handling of potent active pharmaceutical ingredients. Avoid skin contact, eye contact, and inhalation. Exercise due care: wear suitable protective clothing, gloves and eye/face protection.

Route of Exposure: May be absorbed following ingestion, inhalation and through skin contact or contact with mucous membranes (this includes eyes).

Potential Health Effects:

Eye: Moderate to severe eye irritant

Skin: Moderate to severe skin eye irritant

Inhalation: Inhalation data not identified. Based on the high acute toxicity reported in non-clinical IV studies, a potential for toxicity via the inhaled route cannot be excluded.

Ingestion: Very toxic by ingestion

Chronic Health Effects: Repeated occupational overexposure may cause fatigue and fever, and effects on the hematological (decreases in hemoglobin/anemia, blood counts and platelets), gastrointestinal (nausea, diarrhea, vomiting, abdominal pain), and nervous systems (headache, peripheral neuropathy). May affect fertility and fetal development based on mechanism and animal toxicity studies.

Target Organs: See Chronic Health Effects for potential target organ toxicity.

SECTION 3 : COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures:

Chemical Name	CAS#	Ingredient Percent	EC Num.
---------------	------	--------------------	---------

Excipients (mannitol)	69-65-8	90% by weight
Bortezomib API	390800-88-1	10% by weight

SECTION 4 : FIRST AID MEASURES

Description of necessary measures:

Eye Contact:	Immediately flush eyes with plenty of water for at least 15 to 20 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers. Get immediate medical attention.
Skin Contact:	Immediately wash skin with plenty of soap and water for 15 to 20 minutes, while removing contaminated clothing and shoes. Get medical attention if irritation develops or persists.
Inhalation:	If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.
Ingestion:	If swallowed, do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

Indication of immediate medical attention and special treatment needed:

Note to Physicians:	Material is a cytotoxic anticancer drug
----------------------------	---

SECTION 5 : FIRE FIGHTING MEASURES

Suitable and unsuitable extinguishing media:

Suitable Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, dry chemical, or water fog or spray when fighting fires involving this material.
--------------------------------------	--

Specific hazards arising from the chemical:

Hazardous Combustion Byproducts:	Carbon monoxide and nitrogen oxides.
---	--------------------------------------

Special protective equipment and precautions for fire-fighters:

Protective Equipment:	As in any fire, wear Self-Contained Breathing Apparatus (SCBA), MSHA/NIOSH (approved or equivalent) and full protective gear.
Fire Fighting Instructions:	Evacuate area of unprotected personnel. Use cold water spray to cool fire exposed containers to minimize risk of rupture. Do not enter confined fire space without full protective gear. If possible, contain fire run-off water.

SECTION 6 : ACCIDENTAL RELEASE MEASURES

Environmental precautions:

Environmental Precautions:	Dispose of all collected material as pharmaceutical biological/medical waste in accordance with applicable local, state and federal waste disposal regulations
-----------------------------------	--

Methods and materials for containment and cleaning up:

Spill Cleanup Measures:	Liquid form; Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Provide ventilation. Clean up spills immediately observing precautions in the protective equipment section. After removal, flush spill area with soap and water to remove trace residue. Solid or powder form; do not raise dust. Surround spill or powder with absorbents and place a damp cloth or towel over the area to minimize powder from entering the air. Add excess liquid to allow for the material to enter solution. Capture remaining liquid onto spill absorbents. Place spill materials into a leak-proof container suitable for disposal. After removal, flush spill area with soap and water to remove trace residue.
--------------------------------	--

SECTION 7 : HANDLING and STORAGE

Precautions for safe handling:

Handling:	Use with adequate ventilation. Wash thoroughly after handling. Avoid contact with eyes and skin. Avoid inhaling Dust, vapor, or mist. Follow recommendations for handling pharmaceutical agents (i.e., use of engineering controls and/or other personnel protective equipment if needed).
Hygiene Practices:	Wash thoroughly after handling.

Conditions for safe storage, including any incompatibilities:

Storage:	Store at 25°C +/- 5°C away from sunlight. Store in a cool, dry, well ventilated area away from sources of heat and incompatible materials. Keep container tightly closed when not in use. Protect against physical damage. Shelf life 36 months.
-----------------	--

SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION

EXPOSURE GUIDELINES:

Guideline Info: None currently established by OSHA, NIOSH or ACGIH. Millennium considers the active pharmaceutical ingredient to be highly toxic and potent because of its significant potency and cytotoxicity.

Appropriate engineering controls:

Engineering Controls: Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Good general ventilation should be sufficient to control airborne levels. Where such systems are not effective wear suitable personal protective equipment, which performs satisfactorily and meets OSHA or other recognized standards. Consult with local procedures for selection, training, inspection and maintenance of the personal protective equipment.

Individual protection measures:

Eye/Face Protection: Wear appropriate protective glasses or splash goggles as described by 29 CFR 1910.133, OSHA eye and face protection regulation, or the European standard EN 166.

Skin Protection Description: Wear appropriate protective gloves and other protective apparel to prevent skin contact. Consult manufacturer's data for permeability data.

Respiratory Protection: A NIOSH approved air-purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

Other Protective: Facilities storing or utilizing this material should be equipped with an eyewash and a deluge shower safety station. Decontaminate all protective equipment after use. Exercise extreme care when working with sharps/needles/syringes and potent drugs.

SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES

PHYSICAL AND CHEMICAL PROPERTIES:

Physical State Appearance: White to off-white cake or powder.

Boiling Point: Not determined.

Melting Point: 140 – 150 °C

Density: Not determined.

Solubility: soluble in water

Vapor Density: Not determined.

Vapor Pressure: Not determined.

Percent Volatile: Not determined.

Evaporation Rate: Not determined.

pH: Not determined.

Molecular Formula: C₅₇H₆₉B₃N₁₂O₉ (Bortezomib API)

Molecular Weight: Mixture

Flash Point: Not determined.

Lower Flammable/Explosive Limit: Not determined.

Upper Flammable/Explosive Limit: Not determined.

Auto Ignition Temperature: Not determined.

SECTION 10 : STABILITY and REACTIVITY

Chemical Stability:

Chemical Stability: Pharmacologically stable

Possibility of hazardous reactions:

Hazardous Polymerization: Not reported.

Conditions To Avoid:

Conditions to Avoid: Not known

Incompatible Materials:

Incompatible Materials: Not known

SECTION 11 : TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION:

Inhalation: Not tested.

Ingestion: Not tested.

Carcinogenicity: IARC, NTP, and OSHA studies not conducted

Mutagenicity:	Bortezomib API showed clastogenic activity in the in vitro chromosomal aberration assay using chinese hamster ovary cells, but bortezomib was not genotoxic in the in vitro mutagenicity assay (Ames test), or in the in vivo micronucleus assay in mice.
Reproductive Toxicity:	Fertility studies have not been performed, but degenerative effects have been observed in the ovaries and testes of rats in a 6 month toxicity study. Bortezomib API could affect male or female fertility.
Teratogenicity:	Not conducted
Other Toxicological Information:	Bortezomib API is a cytotoxic antineoplastic compound that exerts its biological effects by inhibiting the activity of the proteasome, a macromolecular complex found in all cells that plays a critical role in protein homeostasis. In local tolerance studies bortezomib showed minimal tissue irritancy; however direct skin contact should be avoided. Bortezomib API is acutely lethal in animals, when delivered intravenously at sufficient doses, and death is due to cardiovascular effects. Systemic, therapeutic exposure to bortezomib in humans is associated with a variety of adverse events, including peripheral neuropathy, hypotension, cardiac disorders, pulmonary disorders, reversible posterior leukoencephalopathy syndrome (RPLS), gastrointestinal disturbances (nausea, diarrhea, constipation, vomiting, decreased platelet count and neutrophil counts in the blood, tumor lysis syndrome, and liver disturbances.

SECTION 12 : ECOLOGICAL INFORMATION

Ecotoxicity:

Ecotoxicity: No Data

Other adverse effects:

Effect of Material On Aquatic Life: No Data

SECTION 13 : DISPOSAL CONSIDERATIONS

Description of waste:

Waste Disposal: All wastes containing the material should be properly labeled. Dispose of any waste residues according to prescribed federal, state, and local guidelines, e.g., appropriately permitted chemical waste incinerator. Rinse waters resulting from spill cleanups should be discharged in an environmentally safe manner, e.g., appropriately permitted municipal or on-site wastewater treatment facility.

SECTION 14 : TRANSPORT INFORMATION

DOT Shipping Name: Not regulated

DOT UN Number: Not regulated

DOT Hazard Class: Not regulated

DOT Packing Group: Not regulated

IATA Shipping Name: Not Regulated

IATA UN Number: Not Regulated

IATA Hazard Class: Not Regulated

IATA Packing Group: Not Regulated

SECTION 15 : REGULATORY INFORMATION

Safety, health and environmental regulations specific for the product:

TSCA Inventory Status: Not listed

SARA: No Data

California PROP 65: No Data

Canada WHMIS: Drugs are exempt, however, if not a drug, the most appropriate classification for Velcade® would be Class D, Division 1, Subdivision A; based on its potential to be cytotoxic and a reproductive or developmental toxicant

Risk Phrases:
R 28 Very toxic if swallowed.
R 38 Irritating to skin.
R 41 Risk of serious damage to eyes.
R 48 Toxic: danger of serious damage to health by prolonged exposure.
R 62 Possible risk of impaired fertility.
R 63 Possible risk of harm to the unborn child.

Safety Phrase:
S 24/25 Avoid contact with skin and eyes.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 28 After contact with skin, wash immediately with plenty of water.
S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.



SECTION 16 : ADDITIONAL INFORMATION

HMIS Ratings:

HMIS Health Hazard: 4
HMIS Fire Hazard: 1
HMIS Reactivity: 0
HMIS Personal Protection: X

Health Hazard	4
Fire Hazard	1
Reactivity	0
Personal Protection	X

Other Information: Version 2.0
SDS Revision Date: February 21, 2013
SDS Author: Actio Corporation

Disclaimer: The above information is based on data available to us and is believed to be correct. Since the information may be applied under conditions beyond our control and with which we may be unfamiliar, we do not assume any responsibility for the results of its use and all persons receiving it must make their own determination of the effects, properties and protections which pertain to their particular conditions. No representation, warranty, or guarantee, express or implied (including a warranty of fitness or merchantability for a particular purpose), is made with respect to the materials, the accuracy of this information, the results to be obtained from the use thereof, or the hazards connected with the use of the material. Caution should be used in the handling and use of the material because it is a potent pharmaceutical product.

Copyright© 1996-2015 Actio Corporation. All Rights Reserved.