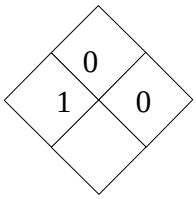
NOVARTIS



MATERIAL SAFETY DATA SHEET

NOVARTIS PHARMACEUTICALS CORPORATION
One Health Plaza
East Hanover, NJ 07936

24-Hour Emergency Telephone Number: 1-862-778-7000
Customer Interaction Center (MSDS requests): 1-888-669-6682
For Technical Information: 1-862-778-3680 (9:00 AM – 5:00 PM E.S.T.)

SECTION 1. PRODUCT IDENTIFICATION

PRODUCT NAME:	**Zometa® Lyphilized Vial 4mg**
SYNONYMS:	None
THERAPEUTIC CATEGORY:	Hypercalcemia of malignancy (HCL), tumor induced hypercalcemia.
GENERIC NAME:	Zoledronic acid
CHEMICAL NAME:	Mixture
CHEMICAL FORMULA:	Not applicable
MOLECULAR WEIGHT:	Not applicable

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS

COMPOSITION	CAS#	CONCENTRATION (% BY WT.)
Zoledronic Acid	165800-06-6	1.7
Sodium citrate dihydrate	6132-04-3	0-98
D-Mannitol	69-65-8	0-98

SECTION 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

****

FINISHED PHARMACEUTICAL PRODUCT
REFER TO PHYSICIANS' DESK REFERENCE
MAY ADVERSELY AFFECT THE DEVELOPING FETUS
MAY AFFECT KIDNEYS AND LIVER

****

PRIMARY ROUTE(S) OF ENTRY: Not applicable

EFFECTS OF OVEREXPOSURE:	Finished pharmaceutical product. Potential for exposure reduced in this form.
Skin:	No hazard is expected from normal clinical use.
Eye:	No hazard is expected from normal clinical use.
Inhalation:	No hazard is expected from normal clinical use.
Ingestion:	No hazard is expected from normal clinical use.
THERAPEUTIC SIDE EFFECTS:	Fever, anemia, nausea, constipation and dyspnea (common with other chemotherapy patients).
TARGET ORGAN EFFECTS:	Prolonged or repeated exposure may adversely affect the bone, liver and kidneys.
REPRODUCTIVE HAZARDS:	Experimental (animal) teratogenicity.
CARCINOGENICITY:	Not a carcinogen.
Not listed on:	ACGIH, EPA, IARC, NIOSH, NTP, OSHA.
MUTAGENICITY:	No genotoxic or mutagenic effects.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Liver and kidney problems.

SECTION 4. EMERGENCY AND FIRST AID MEASURES

Skin Contact:	Wash contaminated area with soap and water.
Eye Contact:	Flush with running water for 15 minutes holding eyelids open.
Inhalation:	This product is not likely to be inhaled.
Ingestion:	Get medical attention immediately.

SECTION 5. FIRE FIGHTING MEASURES

Flash Point: not available **Method Used**: not applicable

Flammable Limits (% in air)
Lower: not available Upper: not available

Autoignition Temperature:	Not available
Extinguishing Media:	Use media suitable for fire in surrounding area.
Special Fire Fighting Procedures and Precautions:	Evacuate area and fight fire from safe distance.
Fire and Explosion Hazards:	Not available
Fire-Fighting Equipment:	Wear full protective clothing and positive pressure self-contained breathing apparatus.
Products of Combustion:	COx, NOx, POx..

NFPA Ratings: Health = 1 Flammability = 0 Reactivity = 0 Special Hazard = None
Hazard Rating Scales: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe U = Unknown

SECTION 6. ACCIDENTAL RELEASE MEASURES

Steps to be taken if Material is Released or Spilled: Using appropriate protective equipment, sweep up and containerize spilled material. Avoid contamination of sewers and waterways.

SECTION 7. HANDLING AND STORAGE

Storage Temperature (Min./Max.):	Do not store above 86°F (30°C).
Shelf Life:	Two years.
Special Sensitivity:	Protect from light and temperatures exceeding 86°F (30°C).
Handling and Storage Precautions:	None.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection:	Not required under normal conditions of therapeutic administration and use.
Skin Protection:	Not required under normal conditions of therapeutic administration and use.
Respiratory Protection:	Not required under normal conditions of therapeutic administration and use.
Ventilation Requirements:	Not required under normal conditions of therapeutic administration and use.
Additional Measures:	None

Exposure Limits (Definition of terms):

ACGIH:	American Conference of Governmental Industrial Hygienists
NIOSH:	National Institute for Occupational Safety and Health
NPIEL:	Novartis Pharma Internal Exposure Limit
OSHA:	Occupational Safety and Health Administration [USA]
TLV:	Threshold Limit Values
TWA:	Time-Weighted Average

Component		**Exposure Limit**
Zoledronic Acid	NPIEL	0.03 mg/m^3
Sodium citrate dihydrate		10mg/m^3 (total) Nuisance Dust3mg/m^3 (respirable)
D-Mannitol		10mg/m^3 (total) Nuisance Dust3mg/m^3 (respirable)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	solution in ampuls	**Odor Threshold:**	not available
Color:	clear, water-white	**Vapor Pressure (mm Hg):**	not available
pH:	not available	**Vapor Density:**	not available
Boiling Point:	not available	**Specific Gravity:**	not available
Melting Point/Range:	not applicable	**% Volatile by Wt:**	not available
Freezing Point:	not available	**Viscosity:**	not available
Soluble In:	water		

SECTION 10. STABILITY AND REACTIVITY

Stable (yes/no):	Yes
Hazardous Polymerization:	Will not occur.
Conditions and Materials to Avoid:	Protect from light and temperatures exceeding 86°F (30°C).
Incompatibility:	Not known.
Hazardous Decomposition Products:	Not known.

SECTION 11. TOXICOLOGICAL INFORMATION

On Finished Pharmaceutical Product:

No information available on formulated product.

On Active Ingredient:

Eye Irritation:	Severely irritating to the eyes of albino rabbits.
Skin Irritation/Sensitization:	Moderately to severely irritating to the skin of albino rabbits ($\geq$ 10 mg/ml). No sensitization was observed in guinea pigs.
Oral Toxicity:	Rat 14 day 200-2000 mg/kg
Dermal Toxicity:	Rabbit 1-month, No systemic toxicity up to 0.5 mg/kg (5 mg/ml).
SubChronic:	Multidose oral studies in rats and dogs, and parenteral studies in rats and dogs produced dose-dependent pathological alterations (with associated clinical chemistry changes) of an irritant nature in the gastrointestinal tract, liver, kidneys, spleen, lungs. Bone changes were attributed to the compound's desired pharmacologic effect of reducing bone calcium resorption.
Chronic/Carcinogenicity:	No evidence in carcinogenicity studies in mice and rats.
Mutagenicity:	Negative in the following tests: *In vitro*: Ames test; cytogenicity test (Chinese hamster ovarian cells); point mutation test (hamster V79 cells) *In vivo*: Rat micronucleus test
Reproductive Effects:	Subcutaneous studies were performed in rats and rabbits. Increasing intensity of the pharmacological activity of the compound in dams was accompanied by an increase in fetal/embryonal mortality.

SECTION 12. ECOLOGICAL INFORMATION

No data on finished product available.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: All wastes must be disposed of in accordance with local, state and federal laws and regulations. (Contact local or state environmental agency for specific rules).

EPA Hazardous Waste Number: None

SECTION 14. TRANSPORTATION INFORMATION

Ground Regulations:

Proper Shipping Description:	Drugs, N.O.I., NMFC Item 60000
DOT Proper Shipping Name:	Not Applicable
DOT Hazard Class:	Not Applicable
DOT Identification Number:	Not Applicable
Packing Group:	Not Applicable
Hazard Label:	Not Applicable
Package Weight Limits:	Not Applicable
Special Requirements:	Not Applicable
Exceptions:	Not Applicable
Non-Bulk Requirements:	Not Applicable
Bulk Requirements:	Not Applicable
Reportable Quantity (lbs.):	Not Applicable
Stowage:	Not Applicable
Other Requirements:	Not Applicable

Air Regulations:

Proper Shipping Description:	Drugs, N.O.I., NMFC Item 60000
IATA Proper Shipping Name:	Not Applicable
IATA Hazard Class:	Not Applicable
IATA Identification Number:	Not Applicable
Packing Group:	Not Applicable
Hazard Label:	Not Applicable
Special Requirements:	Not Applicable
Max. wgt/pkg - Passgr. Aircraft:	Not Applicable
Max. wgt/pkg - Cargo Only Air:	Not Applicable

SECTION 15. REGULATORY INFORMATION

OSHA (Occupational Safety & Health Administration): This Material Safety Data Sheet contains the information required by the Federal OSHA Hazard Communication Standard (29 CFR 1910.1200).

OSHA PSM (Process Safety Management): Not listed (29 CFR 1910.119, Appendix A).

NJ TCPA (Toxic Catastrophe Prevention Act): This product contains NONE of the substances subject to the reporting requirements of Section N.J.A.C. 7:31 of this act.

TSCA (Toxic Substance Control Act): Not applicable

CERCLA (Comprehensive Response Compensation & Liability Act): Not listed

SARA Title III (Superfund Amendments & Reauthorization Act):

Section 302 Extremely Hazardous Substances:	Not listed
Section 311/312 Hazard Categories:	Acute health effects, chronic health effects
Section 313 Reportable Ingredients:	Not listed

RCRA (Resource Conservation & Recovery Act): Not listed

Other State Regulatory Information:

New Jersey: NJ RTK Threshold Planning Quantity = 10,000 lbs.

Other USA Regulations: None

California Proposition 65: The following statement is made in order to comply with the California Safe Drinking Water and Toxic Enforcement Act of 1986. *This product contains no chemicals known to the State of California to cause cancer or reproductive toxicity.*

Canada: WHMIS Ingredient Disclosure List
Not listed

EEC Classification (European Economic Community): Warning Symbol: not available
Risk Phrases: not available
Safety Phrases: not available

SECTION 16. OTHER INFORMATION

Reason for Issue: Revision #1 – Changes to Company address; changes to Company and Emergency telephone numbers; addition of NPIEL (section 8).

Supersedes Date:	6 Dec 00		
Written By:	C. Perino	**Date:**	22 Nov 02
Approved By:	J. Affuso	**Date:**	22 Nov 02

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