

Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION		
<i>Product Information</i>		
Product name	Paraplatin Injection (carboplatin aqueous solution)	
Version	4.0, 01/30/2009	
Jurisdiction	This Material Safety Data Sheet was prepared for the jurisdiction USA.	
Chemical Name	Platinum, diammine(1,1-cyclobutane-dicarboxylato(2-)-0,0')-,(SP-4-2).	
Active substance	Carboplatin	
Intended Uses	This material is a finished drug product for patient use. It is a cytotoxic anti-cancer compound.	
<i>Company/Undertaking Identification</i>		
Address	Bristol-Myers Squibb Company P.O. Box 191 New Brunswick, New Jersey 08903 United States of America 1-732-227-7380	
Emergency Phone Number	CHEMTREC 1-800-424-9300. For all international transportation emergencies call CHEMTREC at 1-703-527-3887. Collect calls accepted.	
2. COMPOSITION/INFORMATION ON INGREDIENTS		
Components	Concentration	CAS-No.
<i>Hazardous components</i>		
Carboplatin	1 - 3 %	41575-94-4
<i>Other ingredients</i>		
Water	> 1 %	7732-18-5
3. HAZARDS IDENTIFICATION		
<i>Emergency Overview</i>		
Appearance	liquid : clear ; aqueous solution	
Signal Word	Danger	
Hazard Statements	Toxic May cause serious health effects if swallowed. Irritating to eyes, respiratory system and skin. May cause sensitization by inhalation and skin contact. May cause heritable genetic damage. Possible risk of impaired fertility. May cause harm to the unborn child. May cause harm to breastfed babies. Target Organs: bone marrow, kidney, nervous system, liver, inner ear (hearing), gastrointestinal tract, eyes, skin, male reproductive organs, female reproductive organs.	

3. HAZARDS IDENTIFICATION

Precautionary Measures	Avoid ingestion, inhalation, skin and eye contact. Wear suitable protective clothing, gloves and eye/face protection. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. After contact with skin, wash immediately with plenty of water. Pregnant or nursing women should avoid exposure.
<i>Potential Health Effects</i>	
Eyes	May cause conjunctivitis.
Skin	Irritating to skin., Dermal sensitizer
Ingestion	May cause serious health effects if swallowed.
Inhalation	Irritating to respiratory tract. Respiratory sensitizer
Target Organs	bone marrow, kidney, nervous system, liver, inner ear (hearing), gastrointestinal tract, eyes, skin, male reproductive organs, female reproductive organs
Signs and Symptoms	Acute: nausea, vomiting, headache, rash, redness and swelling of skin, breathing difficulties. Chronic: bleeding, gastrointestinal disturbance, colitis, hearing loss, hair loss, numbness, tingling, changes in skin pigment.
Medical Conditions Aggravated Include:	kidney disorders, hearing loss, neurological disorder, bone marrow suppression, bleeding
<i>Environmental Effects</i>	Not available

4. FIRST AID MEASURES

Eye contact	Rinse immediately with plenty of water for at least 15 minutes. Keep eye wide open while rinsing. Obtain medical attention.
Skin contact	Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.
Inhalation	Move to fresh air. Oxygen or artificial respiration if needed. Obtain medical attention.
Ingestion	Obtain medical attention. Do NOT induce vomiting. Never give anything by mouth to an unconscious person.
Notes to Physician	This material is a finished drug product for patient use. It is a cytotoxic anti-cancer compound. This product may cause: nausea, vomiting, headache, rash, redness and swelling of skin, breathing difficulties, bleeding, gastrointestinal disturbance, colitis, hearing loss, hair loss, numbness, tingling, changes in skin pigment, bone marrow suppression, anaphylaxis, hypersensitivity, infection, kidney toxicity, kidney failure, electrolyte disturbance, decreased red blood cell count, decreased white blood cell count, peripheral nervous system toxicity, central nervous system toxicity, increased liver enzymes, liver toxicity, increase in blood pressure. Organs affected may include: bone marrow, kidney, nervous system, liver, inner ear (hearing), gastrointestinal tract, eyes, skin, male reproductive organs, female reproductive organs. Medical conditions aggravated include: kidney disorders, hearing loss, neurological disorder, bone marrow suppression, bleeding. This product has been reported to interact with the following medications: aminoglycosides, ototoxic drugs, cisplatin, other nephrotoxic medications. Refer to Section 11. May cause harm to unborn child. Pregnant or nursing women should avoid exposure.

4. FIRST AID MEASURES

Medical Surveillance	<p>A pre-placement physical examination and history for employees with potential exposure to this compound is recommended. Baseline testing would include: a urine analysis, a complete blood count with differential, a blood test for kidney function, a blood test for liver function. Supplemental testing may include: hearing test, lung function test. Based on opportunity for exposure and duration of exposure a periodic follow-up examination may be considered. This exam should be overseen by a physician thoroughly knowledgeable about both the toxicity of this compound and the extent of work place exposure. It is recommended that the content be similar to the pre-placement exam.</p> <p>Employees who are pregnant, are breast-feeding, or who are concerned with other reproductive issues should be encouraged to consult with the occupational health physician monitoring worker's health.</p>
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5. FIRE-FIGHTING MEASURES

Flammable Properties	Not available
Extinguishing Media	<p>Suitable extinguishing media: Dry chemical, Water spray, Foam</p> <p>Unsuitable extinguishing media: Do NOT use water jet.</p>
Protection of Firefighters	<p>Specific hazards: Dermal sensitizer Respiratory sensitizer Irritant Teratogen, Mutagen</p> <p>Protective equipment: Use personal protective equipment. In the event of fire, wear self-contained breathing apparatus.</p> <p>Hazardous Combustion Products: carbon oxides(COx), nitrogen oxides (NOx), platinum</p>
Other information:	Decontaminate protective clothing and equipment before reuse.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	<p>Refer to protective measures listed in sections 7 and 8. Use personal protective equipment. Examples include tightly fitting safety goggles, disposable lab coat of low permeability with cuffs, double gloves and shoe covers. Wear respiratory protection. Depending on the nature of the spill (quantity and extent of spill) additional protective clothing and equipment such as a self-contained breathing apparatus may be needed.</p>
Environmental precautions	Prevent release to drains and waterways. Prevent release to the environment.
Containment Methods	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Cleanup Methods	Contain and collect spillage and place in container for disposal according to local regulations (see Section 13). Clean spill area with a deactivating solution (if available) followed by detergent and water after spill pick-up. Handle waste materials, including gloves, protective clothing, contaminated spill cleanup material, etc., as appropriate for chemically and pharmacologically similar materials.

7. HANDLING AND STORAGE

Handling Precautions	<p>Highly potent material. Avoid exposure - obtain special instructions before use. Avoid inhalation of vapour or mist. Keep away from heat and sources of ignition. Prevent release to drains and waterways.</p>
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7. HANDLING AND STORAGE

Storage Conditions Store at controlled room temperature of 15 - 30°C. Avoid freezing and refrigeration. Protect against light. Keep away from heat, sparks and flames. Do not store near incompatible substances.

Container Requirements Store in the original primary packaging as provided.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limit(s)	Company Guideline	ACGIH	OSHA	NIOSH
Carboplatin	2 µg/m3 Sensitizer	--	--	--
Exposure Control Band	<u>Carboplatin</u> 4 -- The established company exposure guideline falls within Exposure Control Band 4 (range 1 - <10 µg/m3).			
Bristol-Myers Squibb Exposure Guidelines Summary	<u>Carboplatin</u> Adherence to this guideline should protect employees from experiencing the therapeutic and/or adverse effects of this drug.			
Recommended Industrial Hygiene Monitoring Methods	Contact the Bristol-Myers Squibb AIHA accredited Industrial Hygiene Laboratory at 732-227-7368. See Section 4 "Notes to Physician" for information on medical surveillance.			
Engineering Controls and Ventilation	If significant aerosol (mist) is generated, use process enclosures, containment technology, or other engineering controls to keep airborne levels below recommended exposure limit.			
Respiratory protection	Use and selection of respiratory protection is based upon engineering controls in use and potential for aerosol generation. When engineering controls are not sufficient to control exposure, wear an approved respirator with NIOSH Class 100 or high efficiency particulate (HEPA) filters or cartridges when exposures are up to 10 times the exposure control guideline. Wear a loose-fitting (Tyvek or helmet type) HEPA powered-air purifying respirator (PAPR) when exposures are 10-25 times the exposure control guideline. Wear a full facepiece negative pressure respirator with Class 100 or HEPA filters when exposures are 25-50 times the exposure control guideline. Wear a tight-fitting, full facepiece HEPA PAPR when exposures are 50-100 times the exposure control guideline. Wear a hood-shroud HEPA PAPR or full facepiece supplied air respirator operated in a pressure demand or other positive pressure mode when exposures are 100-1000 times the exposure control guideline.			
Eye protection	Chemical splash resistant goggles should be worn when potential for splash exists.			

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Hand protection	Wear gloves at all times when handling containers, including when unpacking, inspecting or transporting within a facility. Disposable chemotherapy gloves made from nitrile, neoprene, polyurethane and natural latex have been shown to have low permeability to many chemotherapy agents. Persons who are allergic to natural rubber latex should select gloves made from one of the other materials. Check gloves frequently to ensure that there are no small cuts or holes. Change gloves frequently, and remove immediately after overt contamination. Use care when removing and disposing of gloves in order to minimize exposure.
Skin and body protection	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Hygiene	Wash hands and face before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State	liquid
Color	clear
Form	aqueous solution

Other information

Molecular Weight	Not available
Molecular formula	Not applicable
Bulk density	Not available
Chemical Name	Platinum, diammine(1,1-cyclobutane-dicarboxylato(2-)-0,0')-,(SP-4-2).
Evaporation rate	(Approximately the same as water.)
Hydrolysis/Photolysis	Not available
Hygroscopicity	Not available
Log Octanol/Water Partition Coeff [log Kow]	Not available
Surface Tension	Not available
Odor	Not available
Odor Threshold	Not available
pH	5 - 7
pKa	Not available
Particle Size	Not available
Solubility, Water	completely miscible
Specific Gravity/ Relative density	Not available
Viscosity	Approximately the same as water.

Thermal/Stability properties

Autoignition temperature	Not available
Boiling Point	100 °C
Thermal decomposition	Not available
Explosive Limits, LEL	Not available
Explosive limits, UEL	Not available
Explosiveness	Not available
Flammability	Not available
Flash point	Not available
Melting Point	0 °C
Oxidizing Potential	Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Properties

Vapor Density	Not available
Vapor Pressure	Not available
Saturated Vapor Concentration	Not available

10. STABILITY AND REACTIVITY

Stability

Chemical Stability	Stable under recommended storage conditions. Aluminum reacts with material, causing precipitate formation and a loss of potency.
Conditions to avoid	Not available
Incompatible products	Aluminium
Hazardous decomposition products	carbon oxides(COx), nitrogen oxides (NOx), platinum
Hazardous reactions	Not available

Sensitivity to static discharge/Dust exp.

Summary Statements	not applicable
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11. TOXICOLOGICAL INFORMATION

Routes of Entry Ingestion, Inhalation, Eye contact, Skin contact

Eye Irritation Carboplatin
May cause conjunctivitis.

Skin Irritation Carboplatin
Irritating to skin.

Respiratory Irritation Carboplatin
Irritating to respiratory tract. Respiratory sensitizer

Sensitization Carboplatin
Dermal sensitizer

Acute Toxicity Study **Acute Oral**
Carboplatin
LD50(rat): 343 mg/kg

Acute toxicity (other routes of administration)
Carboplatin
LD50 (rat, intravenous): 61 mg/kg
LD50 (rat, Subcutaneous): 72 mg/kg
LD50 (mouse, Intraperitoneal): 118 mg/kg
LD50 (mouse, intravenous): 89 mg/kg

Repeated Dose Toxicity Carboplatin
5 Days intravenous (daily) mouse study with recovery period (33 Days): NOAEL = 16.2 mg/kg (males). Effects include: decreased red blood cell count, decreased white blood cell count, male reproductive organs. Microscopic changes were observed in

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11. TOXICOLOGICAL INFORMATION

the following organs: thymus, large intestine, small intestine.
 5 Days intravenous (daily) mouse study with recovery period (33 Days): NOAEL = 21.5 mg/kg (females). Effects include: decreased red blood cell count, decreased white blood cell count, female reproductive organs. Microscopic changes were observed in the following organs: thymus, large intestine, small intestine.
 3 Weeks intravenous (5/week) rat study with recovery period (45 D): NOAEL = 3 mg/kg (males and females). Effects include: decreased body weight, decreased red blood cell count, decreased white blood cell count, gastrointestinal bleeding, death. Microscopic changes were observed in the following organs: bone marrow, stomach.
 intravenous (5/week) dog study with recovery period (44 D): NOAEL = 0.75 mg/kg (males and females). Effects include: decreased red blood cell count, decreased white blood cell count, bleeding, death.

Genetic Toxicity Carboplatin
Mutagenicity Assessment
 This material was positive in a battery of in vivo and in vitro genotoxicity assays.

Carcinogenicity Carboplatin
Carcinogenicity Assessment
 The carcinogenic potential has not been studied. Compounds with similar mechanisms of action and mutagenic potential were reported to be carcinogenic. This material is considered to be a possible human carcinogen.

Carcinogenicity	ACGIH	OSHA	NTP	IARC
Carboplatin	--	--	--	--

Reproductive Toxicity Carboplatin
Assessment Reproductive Toxicity
 Animal studies indicate that reproductive effects can occur. See also "Repeated Dose Toxicity" for information on reproductive effects. Compound may cause injury to male reproductive organs. Compound may cause changes in female reproductive organs. Possible risk of impaired fertility.

Developmental Toxicity Carboplatin
Developmental Toxicity Assessment
 Several developmental studies were conducted. Adverse effects were observed. Potential embryo-foetal toxicity and teratogenicity.

Human experience **Experiences with Human Exposure**
Carboplatin
 General effects therapeutic use - Symptoms: bleeding, nausea, vomiting, gastrointestinal disturbance, colitis, hearing loss, headache, hair loss, numbness, tingling, rash, redness and swelling of skin, changes in skin pigment, breathing difficulties. Other effects include: bone marrow suppression, infection, kidney toxicity, kidney failure, electrolyte disturbance, decreased red blood cell count, decreased white blood cell count, peripheral nervous system toxicity, central nervous system toxicity, anaphylaxis, increased liver enzymes, liver toxicity, hypersensitivity, increase in blood pressure.

11. TOXICOLOGICAL INFORMATION

Target Organs	<u>Carboplatin</u> bone marrow, kidney, nervous system, liver, inner ear (hearing), gastrointestinal tract, eyes, skin, male reproductive organs, female reproductive organs
Symptoms	<u>Carboplatin</u> See "Human Experience".
Other Toxicity Information	Not available

12. ECOLOGICAL INFORMATION

Ecotoxicological Information (Aquatic)	Not available
Ecotoxicological Information (Terrestrial)	Not available
Chemical fate information	Not available

13. DISPOSAL CONSIDERATIONS

Advice On Disposal And Packaging	Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements. This information presented only applies to the material as supplied.
Other information	Disposal by incineration is recommended.

14. TRANSPORT INFORMATION

This material is not a dangerous good for the purpose of transportation.

15. REGULATORY INFORMATION

United States of America	
OSHA Hazard Classification	Toxic Mutagen Skin, Eye and Respiratory Irritant Respiratory sensitizer Dermal sensitizer Reproductive toxicant developmental toxicant Target Organs
313 Toxic Release Inventory. Listed Chemicals/Compounds	No components listed on the SARA 313 inventory.
TSCA Inventory	Not listed. Food, drug and cosmetic products are exempt from TSCA.
California Prop. 65	developmental toxicant Carboplatin
International	
Canada	
WHMIS	Finished medicinal products are not classified under WHMIS, but using the classification criteria this material would be considered: D1B Toxic Material Causing Immediate and Serious Toxic Effects D2A Very Toxic Material Causing Other Toxic Effects D2B Toxic Material Causing Other Toxic Effects
DSL/NDSL	Not listed.

15. REGULATORY INFORMATION

Mexico

Mexico Classification	Health classification - Moderate Hazard 2 - Substances that may cause temporary disability or residual harm under emergency conditions Mutagen Reproductive hazard developmental toxicant
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Europe

EINECS/ELINCS/Registration Number	Carboplatin: 255-446-0 Water: 231-791-2
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Other information	Medicinal products are exempt from classification and labeling requirements under EU Preparations Directive 1999/45/EC.
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Globally Harmonized System (GHS) - Classification	Acute Toxicity - Oral - Category 4 Skin Irritation - Category 2 Eye Irritation - Category 2A Skin Sensitization - Category 1 Respiratory Sensitization - Category 1 Germ Cell Mutagenicity - Category 2 Toxic To Reproduction - Reproductive Toxicity - Category 2 Toxic To Reproduction - Developmental Toxicity - Category 1B Specific Target Organ Systemic Toxicity (Single Exposure) - Category 1 Specific Target Organ Systemic Toxicity (Repeated Exposure) - Category 2
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Labeling

Symbol	
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Signal Word	Warning Danger
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Hazard Statements	Harmful if swallowed. Causes skin irritation. Causes eye irritation. May cause allergic or asthmatic symptoms or breathing difficulties if inhaled. May cause allergic skin reaction. May cause genetic defects. Suspected of damaging fertility or the unborn child May damage fertility or the unborn child (oral). Causes damage to organs. (bone marrow, kidney, ears, eyes, nervous system, liver, skin, male reproductive organs, female reproductive organs) through prolonged or repeated exposure (oral). May cause damage to organs. (bone marrow, kidney, ears, eyes, nervous system, liver, skin, male reproductive organs, female reproductive organs) through prolonged or repeated exposure (oral).
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16. OTHER INFORMATION

MSDS preparation information

Prepared by	Corporate Environment, Health & Safety 1-732-227-7380
Prepared on	12/19/2007

This Safety Data Sheet has been revised. This MSDS has been reformatted in a new electronic system. This data sheet contains changes from the previous version in section(s): All.

Other information

HMIS	Health	2
	Flammability	0
	Reactivity	Not Determined (ND)
	Personal protective equipment	See Section 8.

NFPA	Health	2	
	Fire	0	
	Reactivity	ND	
	Special	ND	

The information contained in this MSDS is believed to be accurate and represents the best information reasonably available at the time of preparation. However, we make no warranty, express or implied, with respect to such information. and we assume no liability from its use.